UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2020

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from _____ to _____

Commission file number: 001-38855

Nasdaq, Inc.

(Exact name of registrant as specified in its charter)

Delaware	**52-1165937**
(State or Other Jurisdiction of Incorporation or Organization)	**(I.R.S. Employer Identification No.)**

151 W. 42nd Street, New York, New York	**10036**
(Address of Principal Executive Offices)	**(Zip Code)**

Registrant's telephone number, including area code: +1 212 401 8700

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, $0.01 par value per share	**NDAQ**	**The Nasdaq Stock Market**
0.875% Senior Notes due 2030	**NDAQ30**	**The Nasdaq Stock Market**
1.75% Senior Notes due 2029	**NDAQ29**	**The Nasdaq Stock Market**
1.75% Senior Notes due 2023	**NDAQ23**	**The Nasdaq Stock Market**

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☒ No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Exchange Act. Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☒	Accelerated filer	☐
Non-accelerated filer	☐	Smaller reporting company	☐
Emerging growth company	☐		

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☒

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

As of June 30, 2020, the aggregate market value of the registrant's common stock held by non-affiliates of the registrant was approximately $13.6 billion (this amount represents approximately 114.4 million shares of Nasdaq, Inc.'s common stock based on the last reported sales price of $119.47 of the common stock on The Nasdaq Stock Market on such date).

Indicate the number of shares outstanding of each of the issuer's classes of common stock, as of the latest practicable date.

Class	**Outstanding at February 11, 2021**
Common Stock, $0.01 par value per share	164,795,634 shares

Documents Incorporated by Reference: Certain portions of the Definitive Proxy Statement for the 2021 Annual Meeting of Shareholders are incorporated by reference into Part III of this Form 10-K.

Nasdaq, Inc.

About this Form 10-K

Throughout this Form 10-K, unless otherwise specified:

- "Nasdaq," "we," "us" and "our" refer to Nasdaq, Inc.
- "Nasdaq Baltic" refers to collectively, Nasdaq Tallinn AS, Nasdaq Riga, AS, and AB Nasdaq Vilnius.
- "Nasdaq BX" refers to the cash equity exchange operated by Nasdaq BX, Inc.
- "Nasdaq BX Options" refers to the options exchange operated by Nasdaq BX, Inc.
- "Nasdaq Clearing" refers to the clearing operations conducted by Nasdaq Clearing AB.
- "Nasdaq CXC" and "Nasdaq CX2" refer to the Canadian cash equity trading books operated by Nasdaq CXC Limited.
- "Nasdaq First North" refers to our alternative marketplaces for smaller companies and growth companies in the Nordic and Baltic regions.
- "Nasdaq GEMX" refers to the options exchange operated by Nasdaq GEMX, LLC.
- "Nasdaq ISE" refers to the options exchange operated by Nasdaq ISE, LLC.
- "Nasdaq MRX" refers to the options exchange operated by Nasdaq MRX, LLC.
- "Nasdaq Nordic" refers to collectively, Nasdaq Clearing AB, Nasdaq Stockholm AB, Nasdaq Copenhagen A/S, Nasdaq Helsinki Ltd, and Nasdaq Iceland hf.
- "Nasdaq PHLX" refers to the options exchange operated by Nasdaq PHLX LLC.
- "Nasdaq PSX" refers to the cash equity exchange operated by Nasdaq PHLX LLC.
- "The Nasdaq Options Market" refers to the options exchange operated by The Nasdaq Stock Market LLC.
- "The Nasdaq Stock Market" refers to the cash equity exchange and listing venue operated by The Nasdaq Stock Market LLC.

* * * * * *

Nasdaq also provides as a tool for the reader the following list of abbreviations and acronyms that are used throughout this Annual Report on Form 10-K.

401(k) Plan: Voluntary Defined Contribution Savings Plan

2017 Credit Facility: $1 billion senior unsecured revolving credit facility, which was terminated in December 2020

2020 Credit Facility: $1.25 billion senior unsecured revolving credit facility, which matures on December 22, 2025

2021 Notes: €600 million aggregate principal amount of 3.875% senior unsecured notes due June 7, 2021, repaid in full and terminated in March 2020

2022 Notes: $600 million aggregate principal amount of 0.455% senior unsecured notes due December 21, 2022

2023 Notes: €600 million aggregate principal amount of 1.75% senior unsecured notes due May 19, 2023

2024 Notes: $500 million aggregate principal amount of 4.25% senior unsecured notes due June 1, 2024

2026 Notes: $500 million aggregate principal amount of 3.85% senior unsecured notes due June 30, 2026

2029 Notes: €600 million aggregate principal amount of 1.75% senior unsecured notes due March 28, 2029

2030 Notes: €600 million aggregate principal amount of 0.875% senior unsecured notes due February 13, 2030

2031 Notes: $650 million aggregate principal amount of 1.650% senior unsecured notes due January 15, 2031

2040 Notes: $650 million aggregate principal amount of 2.500% senior unsecured notes due December 21, 2040

2050 Notes: $500 million aggregate principal amount of 3.25% senior unsecured notes due April 28, 2050

ASU: Accounting Standards Update

ATS: Alternative Trading System

ASU 2016-13: Measurement of Credit Losses on Financial Instruments

AUM: Assets Under Management

CAT: A market-wide consolidated audit trail established under an SEC approved plan by Nasdaq and other exchanges

CCP: Central Counterparty

CFTC: U.S. Commodity Futures Trading Commission

EMIR: European Market Infrastructure Regulation

Equity Plan: Nasdaq Equity Incentive Plan

ESG: Environmental, Social and Governance

ESPP: Nasdaq Employee Stock Purchase Plan

ETF: Exchange Traded Fund

ETP: Exchange Traded Product

Exchange Act: Securities Exchange Act of 1934, as amended

FASB: Financial Accounting Standards Board

FICC: Fixed Income and Commodities Trading and Clearing

FINRA: Financial Industry Regulatory Authority

IPO: Initial Public Offering

LIBOR: London Interbank Offered Rate

MiFID II: Update to the Markets in Financial Instruments Directive

MiFIR: Markets in Financial Instruments Regulation

MTF: Multilateral Trading Facility

NFF: Nasdaq Financial Framework; Nasdaq's end-to-end technology solutions for market infrastructure operators, buy-side firms, sell-side firms and other non-financial markets

NFX: Nasdaq Futures, Inc.

NPM: The NASDAQ Private Market, LLC

NSCC: National Securities Clearing Corporation

OCC: The Options Clearing Corporation

OTC: Over-the-Counter

Proxy Statement: Nasdaq's Definitive Proxy Statement for the 2021 Annual Meeting of Shareholders

PSU: Performance Share Unit

Regulation NMS: Regulation National Market System

Regulation SCI: Regulation Systems Compliance and Integrity

SaaS: Software as a Service

SEC: U.S. Securities and Exchange Commission

SERP: Supplemental Executive Retirement Plan

SFSA: Swedish Financial Supervisory Authority

SI: Systematic Internalizer

S&P: Standard & Poor’s

S&P 500: S&P 500 Stock Index

SPAC: Special Purpose Acquisition Company

SRO: Self-regulatory Organization

SSMA: Swedish Securities Markets Act 2007:528

TSR: Total Shareholder Return

U.S. GAAP: U.S. Generally Accepted Accounting Principles

UTP: Unlisted Trading Privileges

UTP Plan: Joint SRO Plan Governing the Collection, Consolidation, and Dissemination of Quotation and Transaction Information for Nasdaq-Listed Securities Traded on Exchanges on a UTP Basis

* * * * * *

* * * * * *

This Annual Report on Form 10-K includes market share and industry data that we obtained from industry publications and surveys, reports of governmental agencies and internal company surveys. Industry publications and surveys generally state that the information they contain has been obtained from sources believed to be reliable, but we cannot assure you that this information is accurate or complete. We have not independently verified any of the data from third-party sources nor have we ascertained the underlying economic assumptions relied upon therein. Statements as to our market position are based on the most currently available market data. For market comparison purposes, The Nasdaq Stock Market data in this Annual Report on Form 10-K for IPOs is based on data generated internally by us; therefore, the data may not be comparable to other publicly-available IPO data. Data in this Annual Report on Form 10-K for new listings of equity securities on The Nasdaq Stock Market is based on data generated internally by us, which includes issuers that switched from other listing venues, closed-end funds and ETPs. Data in this Annual Report on Form 10-K for IPOs and new listings of equity securities on the Nasdaq Nordic and Nasdaq Baltic exchanges and Nasdaq First North also is based on data generated internally by us. IPOs and new listings data is presented as of period end. While we are not aware of any misstatements regarding industry data presented herein, our estimates involve risks and uncertainties and are subject to change based on various factors, including those discussed in “Item 1A. Risk Factors” in this Annual Report on Form 10-K.

* * * * * *

Nasdaq intends to use its website, ir.nasdaq.com, as a means for disclosing material non-public information and for complying with SEC Regulation FD and other disclosure obligations.

Forward-Looking Statements

The SEC encourages companies to disclose forward-looking information so that investors can better understand a company's future prospects and make informed investment decisions. This Annual Report on Form 10-K contains these types of statements. Words such as "may," "will," "could," "should," "anticipates," "envisions," "estimates," "expects," "projects," "intends," "plans," "believes" and words or terms of similar substance used in connection with any discussion of future expectations as to industry and regulatory developments or business initiatives and strategies, future operating results or financial performance, and other future developments are intended to identify forward-looking statements. These include, among others, statements relating to:

- *our strategic direction;*
- *the integration of acquired businesses, including accounting decisions relating thereto;*
- *the scope, nature or impact of acquisitions, divestitures, investments, joint ventures or other transactional activities;*
- *the effective dates for, and expected benefits of, ongoing initiatives, including transactional activities and other strategic, restructuring, technology, de-leveraging and capital return initiatives;*
- *our products and services;*
- *the impact of pricing changes;*
- *tax matters;*
- *the cost and availability of liquidity and capital;*
- *any litigation, or any regulatory or government investigation or action, to which we are or could become a party or which may affect us; and*
- *the potential impact of the COVID-19 pandemic and the response of governments and other third parties on our business, operations, results of operations, financial condition, workforce or the operations or decisions of our customers, suppliers or business partners.*

Forward-looking statements involve risks and uncertainties. Factors that could cause actual results to differ materially from those contemplated by the forward-looking statements include, among others, the following:

- *our operating results may be lower than expected;*
- *our ability to successfully integrate acquired businesses or divest sold businesses or assets, including the fact that any integration or transition may be more difficult, time consuming or costly than expected, and we may be unable to realize synergies from business combinations, acquisitions, divestitures or other transactional activities;*
- *loss of significant trading and clearing volumes or values, fees, market share, listed companies, market data customers or other customers;*
- *our ability to develop and grow our non-trading businesses, including our technology and analytics offerings;*
- *our ability to keep up with rapid technological advances and adequately address cybersecurity risks;*
- *economic, political and market conditions and fluctuations, including interest rate and foreign currency risk, inherent in U.S. and international operations;*
- *the performance and reliability of our technology and technology of third parties on which we rely;*
- *any significant error in our operational processes;*
- *our ability to continue to generate cash and manage our indebtedness; and*
- *adverse changes that may occur in the litigation or regulatory areas, or in the securities markets generally, or increased regulatory oversight domestically or internationally.*

Most of these factors are difficult to predict accurately and are generally beyond our control. You should consider the uncertainty and any risk related to forward-looking statements that we make. These risk factors are discussed under the caption "Item 1A. Risk Factors," in this Annual Report on Form 10-K. You are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date of this report. You should carefully read this entire Annual Report on Form 10-K, including "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations" and the consolidated financial statements and the related notes. Except as required by the federal securities laws, we undertake no obligation to update any forward-looking statement, release publicly any revisions to any forward-looking statements or report the occurrence of unanticipated events. For any forward-looking statements contained in any document, we claim the protection of the safe harbor for forward-looking statements contained in the Private Securities Litigation Reform Act of 1995.

PART I

Item 1. Business

Overview

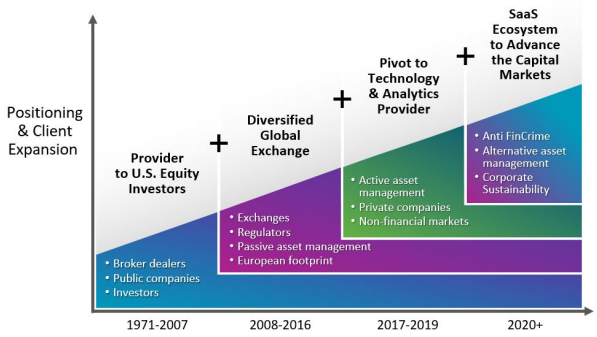
Nasdaq is a global technology company serving the capital markets and other industries. Our diverse offerings of data, analytics, software and services enables clients to optimize and execute their business vision with confidence.

We manage, operate and provide our products and services in four business segments: Market Services, Corporate Platforms, Investment Intelligence and Market Technology. In the fourth quarter of 2020, we renamed certain of our segments and businesses. See Note 1, "Organization and Nature of Operations," to the consolidated financial statements for further discussion.

History

Nasdaq was founded in 1971 as a wholly-owned subsidiary of FINRA. Beginning in 2000, FINRA restructured and broadened ownership in Nasdaq by selling shares to FINRA members, investment companies and issuers listed on The Nasdaq Stock Market. In connection with this restructuring, FINRA fully divested its ownership of Nasdaq in 2006, and The Nasdaq Stock Market became an independent registered national securities exchange in 2007.

In February 2008, Nasdaq and OMX AB combined their businesses, and we changed our corporate name to The NASDAQ OMX Group, Inc. This transformational combination resulted in the expansion of our business from a U.S.-based exchange operator to a global exchange company offering technology that powers our own exchanges and markets as well as many other marketplaces around the world. We operated as the NASDAQ OMX Group until we rebranded our business as Nasdaq, Inc. in 2015. The chart below shows our historical evolution from 1971 through the present.



Growth Strategy

Since our transformative combination with OMX AB in 2008, we have grown our business both organically and through acquisitions that have expanded our operations globally and increasingly diversified our product and service offerings. This evolution was driven by our ability to create opportunities in areas adjacent to our core businesses, many of which are non-transaction based and rooted in innovative technology. To keep pace with our understanding of future trends and to ensure our continued success in the evolving business environment, we have focused on refining our vision, mission, purpose and strategy:

Our Vision: To reimagine markets to realize the potential of tomorrow.

Our Mission: To provide the premier platform and ecosystem for global capital markets and beyond with unmatched technology, insights and markets expertise.

Our Purpose: To champion inclusive growth and prosperity. We power stronger economies, create more equitable opportunities and contribute to a more sustainable world to help our communities, clients, employees and people of all backgrounds reach their full potential.

Our Strategy: Our strategic direction is driven by our continuous examination of: (i) key macroeconomic, regulatory and technology trends, (ii) consultation with our clients about short- and long-term trends in their businesses and (iii) the competitive landscape.

Under the strategic direction that we have been implementing over the past four years, we have focused on maximizing the resources, people and capital allocated to our largest growth opportunities, particularly in our Market Technology and Investment Intelligence segments, as we seek to execute on our transformation into a higher growth, more scalable platform to meet our clients' most critical needs. We are also committed to maintaining and enhancing the marketplace platform businesses that are core to Nasdaq, including Market Services and Corporate Platforms. Additionally, we will continue to execute on our strategy to reduce capital and resources in areas that we believe are not as strategic to our clients and have less growth potential within Nasdaq. Our four business segments reflect our broad capabilities, with Market Technology and Investment Intelligence providing our technology and intelligence growth platform, and Corporate Platforms and Market Services serving as our foundational marketplace core.

- *Increasing Investment in Businesses Where We See the Highest Growth Opportunity*. We have increased investment in areas that we believe help solve our clients' biggest challenges and are likely to generate growth for our stockholders. These areas include: the index and analytics business within our Investment Intelligence segment; ESG-focused solutions, within our Corporate Platforms segment; and our Market Technology segment (including our anti-financial crime technology business).

  Consistent with this objective, in 2020 we acquired Solovis, a provider of multi-asset class portfolio management, analytics and reporting tools across public and private markets, which is a part of our Investment Intelligence segment. In February 2021, we completed the acquisition of Verafin, a provider of anti-financial

crime management solutions, which is part of our Market Technology segment. We are continuing to invest in the Market Technology segment through the expansion, enhancement, and flexibility of our technology platform, in addition to leveraging emerging technologies such as machine intelligence in our Trade Surveillance offering.

- *Enhancing Our Foundation.* As we strive to grow our business, we also have focused on enhancing our leadership position in the marketplaces in which we operate as we continue to innovate with new functionality and strong market share in our core markets. We migrated Nasdaq BX Options to a new trading platform that leverages the NFF. This updated technology will drive commonality across our internal derivatives markets.
- *Optimizing Slower Growth Businesses*. We continually review areas that are not critical to our core. In these areas, we expect to continue to target resiliency and efficiency versus growth, and free up resources when possible to redirect toward greater opportunities. In February 2021, we entered into an agreement to sell our U.S. fixed income business. This transaction aligns with our strategy to concentrate our resources and capital in order to maximize our potential as a major technology and analytics provider to the global capital markets. See "Sale of U.S. Fixed Income Business," of Note 21, "Subsequent Events," to the consolidated financial statements for further discussion of this transaction.

Products and Services

Market Services

Our Market Services segment includes our Equity Derivative Trading and Clearing, Cash Equity Trading, FICC and Trade Management Services businesses.

Equity Derivative Trading and Clearing

We operate six options exchanges in the U.S.: Nasdaq PHLX, The Nasdaq Options Market, Nasdaq BX Options, Nasdaq ISE, Nasdaq GEMX and Nasdaq MRX. These exchanges facilitate the trading of equity, ETF, index and foreign currency options. Together, our combined options market share in 2020 represented the largest share of the U.S. market for all categories, including single-exchange-listed options products. Our options trading platforms provide trading opportunities to both retail investors, algorithmic trading firms and market makers, who tend to prefer electronic trading, and institutional investors, who typically pursue more complex trading strategies and often trade on the floor.

In Europe, Nasdaq offers trading in derivatives, such as stock options and futures and index options and futures. Nasdaq Clearing offers central counterparty clearing services for stock options and futures and index options and futures.

Cash Equity Trading

In the U.S., we operate three cash equity exchanges: The Nasdaq Stock Market, Nasdaq BX and Nasdaq PSX. Our U.S. cash equity exchanges offer trading of both Nasdaq-listed and non-Nasdaq-listed securities. The Nasdaq Stock Market is the largest single venue of liquidity for trading U.S.-listed cash equities. Market participants include market makers, broker-dealers, ATSs, institutional investors, and registered securities exchanges.

In Canada, we operate an exchange with three independent markets, Nasdaq Canada CXC, Nasdaq Canada CX2 and Nasdaq Canada CXD, for the trading of Canadian-listed securities.

In Europe, Nasdaq operates exchanges in Stockholm (Sweden), Copenhagen (Denmark), Helsinki (Finland), and Reykjavik (Iceland). We also operate exchanges in Tallinn (Estonia), Riga (Latvia) and Vilnius (Lithuania).

Collectively, the Nasdaq Nordic and Nasdaq Baltic exchanges offer trading in cash equities, depository receipts, warrants, convertibles, rights, fund units and ETFs, as well as trading and clearing of derivatives and clearing of resale and repurchase agreements. Our platform allows the exchanges to share the same trading system, which enables efficient cross-border trading and settlement, cross membership and a single source for Nordic data products. Settlement and registration of cash equity trading takes place in Sweden, Finland, and Denmark via the local central securities depositories. In addition, Nasdaq owns a central securities depository that provides notary, settlement, central maintenance and other services in the Baltic countries and Iceland.

FICC

Our FICC business includes the U.S. and European portions of the Nasdaq Fixed Income, or NFI, business and Nasdaq Commodities.

The U.S. portion of Nasdaq Fixed Income includes an electronic platform for trading U.S. Treasuries. The electronic trading platform provides real-time institutional trading of benchmark U.S. Treasury securities. Through this business, we provide trading access to the U.S. Treasury securities market with an array of trading instruments to meet various investment goals across the fixed income spectrum. On February 2, 2021, we announced that we entered into a purchase and sale agreement, or the Purchase Agreement, to sell our U.S. Fixed Income business. See "Sale of U.S. Fixed Income Business," of Note 21, "Subsequent Events," to the consolidated financial statements for further discussion of this transaction.

The European portion of Nasdaq Fixed Income provides a wide range of products and services, such as trading and clearing, for fixed income products in Sweden, Denmark, Finland, Iceland, Estonia, Lithuania and Latvia. Nasdaq is the largest bond listing venue in the Nordics, with more than 5,800 listed retail and institutional bonds. In addition, Nasdaq Nordic facilitates the trading and clearing of Nordic fixed

income derivatives in a unique market structure. Buyers and sellers agree to trades in fixed income derivatives through bilateral negotiations and then report those trades to Nasdaq Clearing. Nasdaq Clearing offers central counterparty clearing services for fixed-income options and futures and interest rate swaps. Nasdaq Clearing also operates a clearing service for the resale and repurchase agreement market.

Nasdaq Commodities is the brand name for Nasdaq's European commodity-related products and services. Nasdaq Commodities' offerings include derivatives in power, natural gas and carbon emission markets, seafood, electricity certificates and clearing services. These products are listed on Nasdaq Oslo ASA, except for seafood, which is listed on Fishpool, a third party platform.

Nasdaq Oslo ASA is the commodity derivatives exchange for European products. All trades with Nasdaq Oslo ASA are subject to clearing with Nasdaq Clearing, which offers central counterparty clearing services for commodities options and futures.

Trade Management Services

We provide market participants with a wide variety of alternatives for connecting to and accessing our markets for a fee. Our marketplaces may be accessed via a number of different protocols used for quoting, order entry, trade reporting and connectivity to various data feeds. We also offer the Nasdaq Workstation, a browser-based, front-end interface that allows market participants to view data and enter orders, quotes and trade reports. In addition, we offer a variety of add-on compliance tools to help firms comply with regulatory requirements.

We provide colocation services to market participants, whereby we offer firms cabinet space and power to house their own equipment and servers within our data centers. Additionally, we offer a number of wireless connectivity offerings between select data centers using millimeter wave and microwave technology.

Our broker services operations business primarily offers technology and customized securities administration solutions to financial participants in the Nordic market. Such services and solutions primarily consist of flexible back-office systems, which allow customers to efficiently manage safekeeping, settlement and corporate actions and reporting, and include connectivity to exchanges and central securities depositories. In January 2020, we commenced an orderly wind-down of this broker services operations business. We expect this wind-down to continue through 2021.

Corporate Platforms

Our Corporate Platforms segment includes our Listing Services and IR & ESG Services businesses. These businesses deliver critical capital market and governance solutions across the lifecycle of public and private companies.

Listing Services

We operate a variety of listing platforms around the world to provide multiple global capital raising solutions for private and public companies. Companies listed on our markets represent a diverse array of industries including, among others, health care, consumer products, telecommunication services, information technology, financial services, industrials and energy. Our main listing markets are The Nasdaq Stock Market and the Nasdaq Nordic and Nasdaq Baltic exchanges.

Companies seeking to list securities on The Nasdaq Stock Market may do so on one of the three market tiers: The Nasdaq Global Select Market, The Nasdaq Global Market, or The Nasdaq Capital Market. To qualify, companies must meet minimum listing requirements, including specified financial and corporate governance criteria. Once listed, companies must maintain rigorous listing and corporate governance standards. We offer a suite of products to assist companies manage corporate governance standards, discussed below in "IR & ESG Services."

As of December 31, 2020, a total of 3,392 companies listed securities on The Nasdaq Stock Market, with 1,476 listings on The Nasdaq Global Select Market, 907 on The Nasdaq Global Market and 1,009 on The Nasdaq Capital Market.

We seek new listings from companies conducting IPOs, including SPACs, and direct listings as well as companies looking to switch from alternative exchanges. In 2020, The Nasdaq Stock Market attracted 454 new listings, including 316 IPOs, representing 67% of U.S. IPOs in 2020. Of the 316 IPOs that listed on The Nasdaq Stock Market, 184 were operating companies, representing 83% of all operating company IPOs in 2020 and a 53% win rate among SPACs. The new listings were comprised of the following:

IPOs	316
Switches from the New York Stock Exchange LLC, or NYSE and the NYSE American LLC, or NYSE American	20
Upgrades from OTC	46
ETPs and Other Listings	72
Total	454

During 2020, we had 20 new listings resulting from companies switching their listings from NYSE or NYSE American to join Nasdaq. Together with companies that transferred additional securities to Nasdaq during 2020, an aggregate of $282 billion in global equity market capitalization switched to Nasdaq. Notable switches in 2020 included AstraZeneca PLC, American Electric Power Company, Inc., Keurig Dr Pepper Inc., and Opendoor Technologies.

We also offer listings on the exchanges that comprise Nasdaq Nordic and Nasdaq Baltic. For smaller companies and growth companies, we offer access to the financial markets through the Nasdaq First North alternative marketplaces. As of December 31, 2020, a total of 1,071 companies listed

securities on our Nordic and Baltic exchanges and Nasdaq First North.

Our European listing customers include companies, funds and governments. Customers issue securities in the form of cash equities, depository receipts, warrants, ETPs, convertibles, rights, options, bonds or fixed-income related products. In 2020, a total of 67 new companies listed on our Nordic and Baltic exchanges and Nasdaq First North. In addition, 12 companies upgraded their listings from Nasdaq First North to the Nordic and Baltic exchanges.

Our Listing Services business also includes NPM, which provides liquidity solutions for private companies to enable employees, investors, and companies to execute transactions.

We are continuing to grow our U.S. Corporate Bond exchange for the listing of corporate bonds. This exchange operates pursuant to The Nasdaq Stock Market exchange license and is powered by the NFF. Surveillance is conducted by the Nasdaq regulatory team, assisted by our Nasdaq Trade Surveillance solution. As of December 31, 2020, 86 corporate bonds were listed on the Corporate Bond exchange. Our U.S. corporate bond listing offering won 11 new issues and we added 20 existing bond listings that transferred from the NYSE.

IR & ESG Services

Our IR & ESG Services business serves both public and private companies and organizations. Our public company clients can be companies listed on our exchanges or other U.S. and global exchanges. We help organizations enhance their ability to understand and expand their global shareholder base, improve corporate governance, and navigate the evolving ESG landscape through our suite of advanced technology, analytics, and consultative services. We also provide clients with counsel on a range of governance and sustainability-related issues.

As of December 31, 2020, we provided IR & ESG Services products and services in the following key areas:

- *Investor Relations Intelligence*. We offer a global team of consultative experts that deliver advisory services including Strategic Capital Intelligence, Shareholder Identification and Perception Studies, as well as an industry-leading platform, Nasdaq IR Insight, to investor relations professionals. These solutions allow investor relations officers to better manage their investor relations programs, understand their investor base, target new investors, manage meetings and consume key data such as investor profiles, equity research, consensus estimates and news.
- *Governance Solutions.* We provide a global technology offering and consultative services that streamline the meeting process for board of directors and executive leadership teams and help them accelerate decision making and strengthen governance. Our solutions protect sensitive data and facilitate productive collaboration, so board members and teams can work faster and more effectively.

In January 2020, Nasdaq acquired OneReport, a provider of ESG reporting solutions that helps organizations to navigate corporate responsibility frameworks, manage the information capture and response process, and deliver ESG data to ratings agencies and other stakeholders.

Investment Intelligence

Our Investment Intelligence business provides the global investing community with access to the financial markets together with strong investment insights.

Our Investment Intelligence segment is organized into the following businesses:

- Market Data;
- Index; and
- Analytics.

For both institutional and retail investors, our market and alternative data enhances transparency and access to the markets we operate, and we help guide investment decisions around the globe through our proprietary indexes and analytics.

Market Data

Our Market Data business sells and distributes historical and real-time market data to the sell-side, the institutional investing community, retail online brokers, proprietary trading shops, other venues, internet portals and data distributors.

Our market data products enhance transparency of market activity within our exchanges and provide critical information to professional and non-professional investors globally. We collect, process and create information and earn revenues as a distributor of our own, as well as select third-party content. We provide varying levels of quote and trade information to our customers who in turn provide subscriptions for this information. Our systems enable distributors to gain access to our market depth, fund valuation, order imbalances, market sentiment and other analytical data.

We distribute this proprietary market information to both market participants and non-participants through a number of proprietary products, including Nasdaq TotalView, our flagship market depth quote product. TotalView shows subscribers quotes, orders and total anonymous interest at every displayed price level in The Nasdaq Stock Market for Nasdaq-listed securities and critical data for the opening, closing, halt and IPO crosses. We also offer TotalView products for our Nasdaq BX, Nasdaq PSX, Nasdaq Fixed Income and other Nordic markets.

We operate several other proprietary services and data products to provide market information, including Nasdaq Basic, a low cost alternative to the industry Level 1 feed and Nasdaq Canada Basic, a low cost alternative to other high

priced data feeds. We also provide various other data, including data relating to our six U.S. options exchanges, Nordic and U.S. futures, Nordic commodities, and U.S. Treasuries.

Our Market Data business also includes revenues from U.S. tape plans. The plan administrators sell quotation and last sale information for all transactions in Nasdaq-listed securities, whether traded on The Nasdaq Stock Market or other exchanges, to market participants and to data distributors, who then provide the information to subscribers. After deducting costs, the plan administrators distribute the tape revenues to the respective plan participants based on a formula required by Regulation NMS that takes into account both trading and quoting activity.

The Nasdaq Nordic and Nasdaq Baltic exchanges, as well as Nasdaq Commodities, also offer data products and services. These data products and services provide critical market transparency to professional and non-professional investors who participate in European marketplaces and, at the same time, give investors greater insight into these markets.

Much like the U.S. products, European data products and services are based on trading information from the Nasdaq Nordic and Nasdaq Baltic exchanges, as well as Nasdaq Commodities, for the following classes of assets: cash equities, bonds, derivatives and commodities. We provide varying levels of quote and trade information to market participants and to data distributors, who in turn provide subscriptions for this information. Significant European data products include Nordic Equity TotalView, Nordic Derivative TotalView, and Nordic Fixed Income TotalView, Level 2 and Analytics.

Index

Our Index business develops and licenses Nasdaq-branded indexes and financial products. License fees for our trademark licenses vary by product based on a percentage of underlying assets, dollar value of a product issuance, number of products or number of contracts traded. We also license cash-settled options, futures and options on futures on our indexes.

As of December 31, 2020, 339 ETPs listed in over 20 countries and exchanges tracked a Nasdaq index and accounted for $359 billion in AUM. This includes approximately $121 billion in ETP AUM, or 34% of the total AUM that tracked our smart beta indexes during this same time period. Our flagship index, the Nasdaq-100 Index, includes the top 100 non-financial securities listed on The Nasdaq Stock Market, and is tracked by more than 70 ETPs worldwide, and had nearly $200 billion in assets tracking the index as of December 31, 2020.

We provide index data products based on Nasdaq indexes. Index data products include our Global Index Data Service, which delivers real-time index values throughout the trading day, and Global Index Watch/Global Index File Delivery Service, which delivers daily as well as historical weightings and components data, corporate actions and a breadth of additional data for our more than 46,000 indexes that we operate.

Nasdaq Dorsey Wright, or NDW, provides passive indexing and smart beta strategies to support the financial advisor community, as well as Systematic Relative Strength strategies to manage separately and unified managed accounts. NDW strengthens Nasdaq's position as a leading smart beta index provider in the U.S.

Analytics

Our Analytics business provides asset managers, investment consultants and institutional asset owners with information and analytics to make data-driven investment decisions, deploy their resources more productively, and provide liquidity solutions for private funds. Through eVestment and Solovis, we provide a suite of cloud-based solutions that help institutional investors and consultants conduct pre-investment due diligence, and monitor their portfolios post-investment. The eVestment platform also enables asset managers to market their institutional products worldwide.

Additionally, our Nasdaq Cloud Data Service provides a flexible and efficient method of delivery for real-time exchange data and other financial information. Data is made available through a suite of application programming interfaces, or APIs, allowing for the integration of data from disparate sources and a reduction in time to market for customer-designed applications. The API is highly scalable and can support the delivery of real-time exchange data.

Through the Solovis platform, endowments, foundations, pensions and family offices transform how they collect and aggregate investment data, analyze portfolio performance, model and predict future outcomes, and share meaningful portfolio insights with key stakeholders. The Nasdaq Fund Network and Quandl are additional components in our suite of investment data and analytics offerings. Nasdaq Fund Network gathers and distributes daily net asset values from over 33,000 funds and other investment vehicles across North America. We have extended Nasdaq Fund Network to support the distribution of collective investment trusts, hedge funds, managed accounts, separate accounts and demand deposit accounts. Quandl strengthens our position as a leading source for financial, economic, and alternative datasets. For investment management firms, investment banks and other investors, we provide predictive insights to inform investment decisions from discovered data.

Market Technology

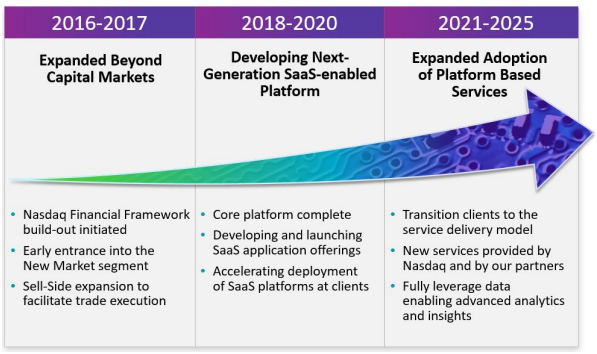
Powering over 130 market infrastructure operators and new market clients in more than 50 countries, our Market Technology business is a leading global technology solutions provider and partner to exchanges, clearing organizations, central securities depositories, regulators, banks, brokers, buy-side firms and corporate businesses. Our solutions can handle a wide array of assets, including but not limited to cash equities, equity derivatives, currencies, various interest-bearing securities, commodities, energy products and digital currencies. Our solutions can also be used in the creation of

new asset classes, and non-capital markets customers, including those in insurance liabilities securitization, cryptocurrencies and sports wagering.

Nasdaq's market technology is utilized by leading markets in the U.S., Europe and Asia as well as emerging markets in the Middle East, Latin America, and Africa. Additionally, more than 180 market participants leverage our surveillance technology globally to manage their integrity obligations and assist them in complying with market rules, regulations and internal market surveillance policies.

During 2020, we advanced our strategic goals in order to establish a comprehensive SaaS business with a broad and interconnected portfolio by extending and migrating our current offerings to services. We created a cross-discipline transformation program, successfully migrated our Nasdaq Market Surveillance offering for marketplaces and regulators, advanced our Universal Matching Service, which is a cloud-optimize matching service, and launched our new SaaS marketplace platform layer, the Nasdaq Marketplace Services Platform, which leverages the NFF. We added 10 SaaS market infrastructure customers and 17 market participant customers, and established a partnership with Microsoft to deliver our Marketplace Services Platform via Microsoft's Azure cloud platform.

Our Market Technology business has evolved from its origins serving the capital markets, as we have leveraged NFF to develop our SaaS platform and offerings. We expect to continue to expand adoption by our clients to this SaaS model in the future.



Market Infrastructure Operators (MIO) & New Markets Portfolio

For MIOs, we provide and deliver mission-critical solutions across the trade lifecycle via the NFF, which is our flexible and modular architecture and technology that provides next generation capital markets capabilities in an open and agile environment. The NFF is designed to cover all aspects of a market operator's needs, from trading and clearing to risk management, market surveillance, index development, data, management, testing, and quality assurance. During 2020, we continued to invest in the NFF by enabling emerging technologies, including integrating technology for issuance and settlement of securities, cloud-enabled trading and clearing, and machine learning applications. In 2020, we also materially completed development of the core NFF platform and moved to the deployment phase.

Our New Markets initiative is focused on extending the NFF's capabilities and our expertise as a market operator outside of capital markets. Market Technology currently offers its services to several digital assets exchanges, two commercial real estate markets, the reinsurance market, and several sports wagering operators. Our Marketplaces Services Platform provides next-generation marketplace capabilities spanning the transaction lifecycle to facilitate the exchange of assets, services and information across various types of market ecosystems and machine-to-machine transactions. The Marketplaces Services Platform is targeted at new markets and enables end-to-end marketplace implementation without the resources required with on-premise solutions.

Many MIO and New Markets projects involve complex delivery management and systems integration. Through our integration services, we can assume responsibility for projects that involve migration to a new system and the establishment of entirely new marketplaces. We also offer operation and support for the applications, systems platforms, networks and other components included in an information technology solution, as well as advisory services.

Buy- and Sell-side Portfolio

We continue to expand the NFF offering to the global bank and broker community. Regulatory pressure across multiple jurisdictions has made outsourcing of front-office infrastructure an attractive option for sell-side organizations and, as a result, we offer trading and execution infrastructure for SIs, single-dealer platforms and both multi-lateral and organized trading facilities. Our execution platform business continued its growth in 2020.

We also continue to extend our anti-financial crime strategy. Our Nasdaq Trade Surveillance solution is a managed service designed for brokers and other market participants to assist them in complying with market rules, regulations and internal market surveillance policies. In 2020, we added an anti-money laundering offering with a new automated investigator tool for retail banks, the Nasdaq Automated Investigator. Additionally, in February 2021, we completed the acquisition of Verafin, a provider of anti-financial crime management solutions that provides a cloud-based platform to help detect, investigate, and report money laundering and financial fraud to more than 2,000 financial institutions in North America. We also offer our clients Nasdaq Risk, which is a suite of products that offer a real-time, multi-tiered risk solution that integrates pre-, at- and on-trade risk management, including margining.

Technology

Technology plays a key role in ensuring the growth, reliability and regulation of financial markets. We have established a technology risk program to evaluate the resiliency of critical systems, including risks associated with cybersecurity. This program is focused on identifying areas for improvement in systems, and implementing changes and

upgrades to technology and processes to minimize future risk. We have continued our focus on improving the security of our technology with an emphasis on employee awareness through training, targeted phishing campaigns, and new tool deployment for our securities operations team. See "Item 1A. Risk Factors," in this Annual Report on Form 10-K for further discussion.

Core Technology. The NFF is Nasdaq's approach to delivering end-to-end solutions for market infrastructure operators, buy-side firms, sell-side firms and other non-financial markets. The framework consists of a single operational core platform that ties together Nasdaq's portfolio of functionality across the trade lifecycle, in an open framework whereby exchanges, clearinghouses, central securities depositories, and other entities can easily integrate Nasdaq's business applications with each other, as well as other third-party solutions. In addition to being able to integrate a broad range of business functions, the NFF enables end users to leverage recent technology developments.

Competitive Strengths

We are a global technology company and we continue to diversify our product and service offerings by having a client-first focus and orientation; unparalleled expertise in markets; a trusted, independent, global brand; unique technology capabilities and reputation; and fostering a leading issuer community and investor intelligence platform. We believe that our strong competitive position in large, high-growth markets positions us for sustained growth.

A Unique Value Proposition

We operate a diverse and resilient capital markets franchise with a marketplace core. Our businesses provide capital-markets infrastructure services to industry players, allowing us to:

- Develop efficient and reliable technologies to facilitate capital markets activity;
- Manage the complexities and costs of business on a global scale; and
- Provide data, tools and insights that drive sound decision making.

Technological Strength

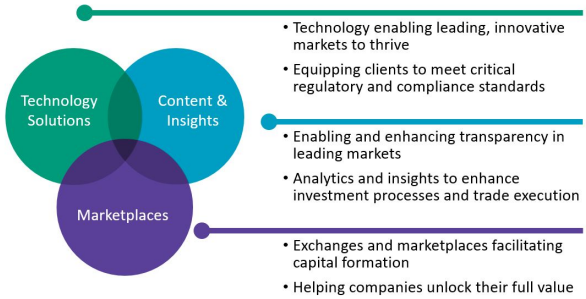
The strength and resiliency of our technology, enhanced by our Market Technology business, in meeting the advancing demands of our global customer base is vital to the continued success of our business and distinguishes us from our competitors.

A Focus on Client Needs Throughout the Marketplace

We strive to serve a diverse range of clients including:

- **Brokers and Traders** - Helping brokers and traders to confidently plan, optimize and execute their business vision.
- **Market Participants** - Enabling market participants to monitor and capitalize on real-time market changes.
- **Investors and Asset Managers** - Offering products and services to assist investors and asset managers in optimizing their portfolios and offerings.
- **Listed Companies** - Promoting the capital health of our listed companies.
- **Private Companies** - Working with private companies to meet liquidity needs, manage relationships with long-term institutional investors and oversee their entire equity program.
- **Market Infrastructure Players** - Assisting market infrastructure players (exchanges, regulators, clearinghouses, and central securities depositories) in increasing efficiency, meeting customer needs and growing revenue.
- **Capital-Markets** - Delivering efficiencies through economies of scale (cost, speed, connectivity) to all members of the capital-markets ecosystem.
- **Banks and Financial Institutions** - Providing a suite of trade surveillance and anti-financial crime management solutions.

Client Orientation



Competition

Market Services

We face intense competition in North America and Europe in businesses that comprise our Market Services segment. We seek to provide market participants with greater functionality, trading system stability, speed of execution, high levels of customer service, and efficient pricing. In both North America and Europe, our competitors include other exchange operators, operators of non-exchange trading systems and banks and brokerages that operate their own internal trading pools and platforms.

In the U.S., our options markets compete with exchanges operated by Cboe Global Markets, Inc., or Cboe, Miami International Holdings, Inc., or MIAX, and Intercontinental Exchange, Inc., or ICE. In cash equities in the U.S., we compete with exchanges operated by Cboe, ICE, MIAX, The Investors Exchange, and the recently launched Members Exchange and the Long Term Stock Exchange. We also face

competition from ATSs, known as "dark pools," and other less-heavily regulated broker-owned trade facilitation systems, as well as from other types of OTC trading. In Canada, our cash equities exchange competes with exchanges such as the Toronto Stock Exchange, or TSX, and other marketplaces.

In Europe, our cash equities markets compete with exchanges such as Euronext N.V., Deutsche Börse AG and London Stock Exchange Group plc, or LSE, and many MTFs such as Cboe, Turquoise and Aquis. Our competitors in the trading and clearing of options and futures on European equities include Eurex, Cboe, ICE Futures Europe and London Clearing House, or LCH. In addition, in equities in Europe we face competition from other broker-owned systems, dark pools, SIs, and other types of OTC trading. Competition among exchanges for trading European equity derivatives tends to occur where there is competition in the trading of the underlying equities. In addition to exchange-based competition, we face competition from OTC derivative markets.

The implementation of MiFID II and MiFIR has resulted in further competitive pressure on our European trading business. SIs are already attracting a significant share of electronically matched volume and we expect such venues to compete aggressively for the trading of equity securities listed on our Nordic exchanges. Different bilateral trading systems pursuing block business also remain active in Europe. As part of this, trading on SIs has increased markedly as volumes migrate from more transparent types of trading venues. Regulators are continuously monitoring the market structure and have, in a series of consultations, asked for input regarding suggested changes to MiFID II.

Our FICC business also operates in an intensely competitive environment. Our trading platform for benchmark U.S. treasuries faces competition from both long-established competitors, such as CME Group Inc. and newly emerging electronic and voice brokerages, and the operating environment remains extremely challenging. Our European fixed income and commodities products and services are subject to relentless competitive pressure from European exchanges and clearinghouses.

Our Trade Management Services business competes with other exchange operators, extranet providers, and data center providers.

Corporate Platforms

Our Listing Services business in both the U.S. and Europe provides a means of facilitating capital formation through public capital markets. There are competing ways of raising capital, and we seek to demonstrate the benefits of listing shares on our exchange. Our primary competitor for larger company stock share listings in the U.S. is NYSE. The Nasdaq Stock Market competes with local and international markets located outside the U.S. for listings of equity securities of both U.S. and non-U.S. companies that choose to list (or dual-list) outside of their home country. For example, The Nasdaq Stock Market competes for listings with exchanges in Europe and Asia, such as LSE and The Stock Exchange of Hong Kong Limited. Additionally, we face competition from private equity firms that may elect to keep their portfolio companies as private companies.

The Listings Services business in Europe is characterized by a large number of exchanges competing for new or secondary listings. Each country has one or more national exchanges, which are often the first choice of companies in each respective country. For those considering an alternative, competing European exchanges that frequently attract many listings from outside their respective home countries include LSE, Euronext N.V. and Deutsche Börse AG. In addition to the larger exchanges, companies seeking capital or liquidity from public capital markets are able to raise capital without a regulated market listing and can consider trading their shares on smaller markets and quoting facilities.

In our IR & ESG Services business, competition is varied and can be fragmented. For our Investor Relations Intelligence business, there are many regional competitors and relatively few global providers. Other exchange operators are partnering with firms that have capabilities in this area and seeking to acquire relevant assets in order to provide investor relations services to customers alongside listing services. The competitive landscape for our Governance Solutions business varies by customer segment and geography. Most competitors offer SaaS solutions that are supported by a data center strategy. Some firms offer specialized services that focus on a single niche segment. The larger players often offer additional services. Customers frequently seek single-source providers that are able to address a broad range of needs within a single platform. Our ESG-focused services, including Nasdaq OneReport and ESG Advisory, are positioned in evolving markets with competitors offering multiple point solutions providing software, data or consulting services.

Investment Intelligence

Our Market Data business in the U.S. includes both proprietary and consolidated data products. Proprietary data products are made up exclusively of data derived from each exchange's systems. Consolidated data products are distributed by SEC-mandated consolidators (one for Nasdaq-listed stocks and another for NYSE and other-listed stocks) that share the revenue among the exchanges that contribute data. In Europe, all data products are proprietary, as there is no official data consolidator. Competition in the data business is intense and is influenced by rapidly changing technology and the creation of new product and service offerings.

The sale of our proprietary data products in both the U.S. and Europe is under competitive threat from alternative exchanges and trading venues that offer similar products. Our data business competes with other exchanges and third party vendors to provide information to market participants. Examples of our competitors in proprietary data products are ICE, Cboe, TSX, and Dow Jones & Company.

The consolidated data business is under competitive pressure from other securities exchanges that trade Nasdaq-listed securities. In addition, The Nasdaq Stock Market similarly competes for the tape fees from the sale of information on securities listed on other markets.

Our Index business faces competition from providers of various competing financial indexes. For example, there are a number of indexes that aim to track the technology sector and thereby compete with the Nasdaq-100 Index and the Nasdaq Composite Index. We face competition from investment banks, dedicated index providers, markets and other product developers, including S&P Dow Jones Indices, MSCI and FTSE Russell.

Our Analytics business faces competition from a broad array of data and analytics suppliers, both established firms and small start-ups. Our primary competitors are Morningstar, FactSet, Mercer and any number of smaller firms along with start-up data providers and aggregators. Our Solovis offering competes with other analytics providers, including Addepar and Caissa. Additionally, other large providers to the financial services industry, such as Bloomberg and Refinitiv, are believed to be interested in pursuing certain aspects of the services we provide.

Market Technology

Traditionally, exchanges and exchange-related businesses internally developed technology, sometimes aided by consultants. However, over time this model has changed as many operators have recognized the cost-savings made possible by buying technology from third parties. As a result, two types of competitors have emerged in our Market Technology segment: exchange operators and technology providers unaffiliated with exchanges. These organizations make available a range of off-the-shelf technology, including trading, clearing, market surveillance, settlement, depository and information dissemination, and offer customization and operation expertise. Market conditions in Market Technology are evolving rapidly, which makes continuous investment and innovation a necessity.

A wide range of providers compete with us in surveillance. In surveillance, standardization of products and budget pressures drive customers to focus on pricing. Our competitors range from large enterprise software providers that cover the broader compliance lifecycle to smaller vendors focusing on a single silo of the compliance workflow. Recently, an influx of start-ups have entered the space from the FinTech landscape, often shifting from data and analytics, or a complimentary silo like electronic communications, to surveillance. Our offerings must demonstrate ability to decrease false-positives, provide in-depth views into potential abuses and risks that stem from those cases and help firms both reduce the reputational and regulatory risk and complexity in efforts to keep markets safe.

Intellectual Property

We believe that our intellectual property assets are important for maintaining the competitive differentiation of our products, systems, software and services, enhancing our ability to access technology of third parties and maximizing our return on research and development investments.

To support our business objectives and benefit from our investments in research and development, we actively create and maintain a wide array of intellectual property assets, including patents and patent applications related to our innovations, products and services; trademarks related to our brands, products and services; copyrights in software and creative content; trade secrets; and through other intellectual property rights, licenses of various kinds and contractual provisions. We enter into confidentiality and invention assignment agreements with our employees and contractors, and utilize non-disclosure agreements with third parties with whom we conduct business in order to secure and protect our proprietary rights and to limit access to, and disclosure of, our proprietary information.

We own, or have licensed, rights to trade names, trademarks, domain names and service marks that we use in conjunction with our operations and services. We have registered many of our most important trademarks in the U.S. and in foreign countries. For example, our primary “Nasdaq” mark is a registered trademark that we actively seek to protect in the U.S. and in over 50 other countries worldwide.

Over time, we have accumulated a robust portfolio of issued patents in the U.S. and in many other jurisdictions across the world. We currently hold rights to patents relating to certain aspects of our products, systems, software and services, but we primarily rely on the innovative skills, technical competence and marketing abilities of our personnel. No single patent is in itself core to the operations of Nasdaq or any of its principal business areas.

Corporate Venture Practice

We operate a corporate venture program to make minority investments primarily in emerging growth financial technology companies that are strategically relevant to, and aligned with, Nasdaq. Investments are made through the venture program to further our organic research and development efforts and accelerate the path to commercial viability. We expect that capital invested will continue to be modest and will not have a material impact on our consolidated financial statements, existing capital return or deployment priorities. Since its inception in 2017, our venture program has grown, with aggregate initial and follow-on investments of approximately $67 million in 15 companies in various sectors, including data and analytics, blockchain and digital assets, market infrastructure, machine intelligence and regulatory technology and compliance, ESG and new marketplaces.

Environmental, Social and Governance Matters

Nasdaq is committed to long-term ESG, advocacy, oversight, and philanthropy to engage with stakeholders at all levels. During 2020, particularly in response to the COVID-19 pandemic and the social justice movement, we broadened our corporate and community ESG efforts, including expanding ESG oversight of our own operations and furthering our commitment to greater sustainability. Nasdaq achieved its continued commitment to be carbon neutral across all business operations through the purchase of green power, carbon offsets, and renewable energy certificates. We were named to the Dow Jones Sustainability North America Index for the fifth consecutive year. We also expanded our ESG services and solutions with new offerings for our clients, including our new platform Nasdaq OneReport to help clients streamline the data gathering process to provide data to ratings agencies, the Nasdaq Sustainable Bond Network, which provides access to detailed information on sustainable, green and social bonds and allows investors to obtain detailed information on sustainable bonds for product due diligence, selection and monitoring, the Nasdaq ESG Data Portal, which now includes ESG-related data from more than 600 companies and the Nasdaq ESG Footprint, a tool to help both institutional and retail investors understand the real-life impact of their portfolios. We also provide clients with counsel on a range of governance and sustainability-related issues.

Additionally, we filed a new proposed U.S. listing rule with the SEC that seeks to standardize disclosure of board-level diversity statistics through a consistent disclosure framework. The proposal includes disclosure of either the recommended minimum diversity goal of two diverse directors or an explanation, and is subject to SEC approval.

For more information regarding our ESG efforts in 2020, both internally and externally, please see the section entitled "Human Capital Management" below and our 2021 Proxy Statement.

Regulation

We are subject to extensive regulation in the U.S., Canada and Europe.

U.S. Regulation

U.S. federal securities laws establish a system of cooperative regulation of securities markets, market participants and listed companies. SROs conduct the day-to-day administration and regulation of the nation's securities markets under the close supervision of, and subject to extensive regulation, oversight and enforcement by, the SEC. SROs, such as national securities exchanges, are registered with the SEC.

This regulatory framework applies to our U.S. business in the following ways:

- regulation of our registered national securities exchanges; and
- regulation of our U.S. broker-dealer and investment advisor subsidiaries.

National Securities Exchanges. SROs in the securities industry are an essential component of the regulatory scheme of the Exchange Act for providing fair and orderly markets and protecting investors. The Exchange Act and the rules thereunder, as well as each SRO's own rules, impose many regulatory and operational responsibilities on SROs, including the day-to-day responsibilities for market and broker-dealer oversight. Moreover, an SRO is responsible for enforcing compliance by its members, and persons associated with its members, with the provisions of the Exchange Act, the rules and regulations thereunder, and the rules of the SRO, including rules and regulations governing the business conduct of its members.

Nasdaq currently operates three cash equity, six options markets and one corporate bond market in the U.S. We operate The Nasdaq Stock Market, The Nasdaq Options Market and the Corporate Bond Market pursuant to The Nasdaq Stock Market's SRO license; Nasdaq BX and Nasdaq BX Options pursuant to Nasdaq BX's SRO license; Nasdaq PSX and Nasdaq PHLX pursuant to Nasdaq PHLX's SRO license; and Nasdaq ISE, Nasdaq GEMX and Nasdaq MRX, each of which operates an options market under its own SRO license. As SROs, each entity has separate rules pertaining to its broker-dealer members and listed companies. Broker-dealers that choose to become members of our exchanges are subject to the rules of those exchanges.

All of our U.S. national securities exchanges are subject to SEC oversight, as prescribed by the Exchange Act, including periodic and special examinations by the SEC. Our exchanges also are potentially subject to regulatory or legal action by the SEC at any time in connection with alleged regulatory violations. We have been subject to a number of routine reviews and inspections by the SEC or external auditors in the ordinary course, and we have been and may in the future be subject to SEC enforcement proceedings. To the extent such actions or reviews and inspections result in regulatory or other changes, we may be required to modify the manner in which we conduct our business, which may adversely affect our business.

Section 19 of the Exchange Act provides that our exchanges must submit to the SEC proposed changes to any of the SROs' rules, practices and procedures, including revisions to provisions of our certificate of incorporation and by-laws that constitute SRO rules. The SEC will typically publish such proposed changes for public comment, following which the SEC may approve or disapprove the proposal, as it deems appropriate. SEC approval requires a finding by the SEC that the proposal is consistent with the requirements of the Exchange Act and the rules and regulations thereunder. Pursuant to the requirements of the Exchange Act, our exchanges must file with the SEC, among other things, all proposals to change their pricing structure.

Nasdaq conducts real-time market monitoring, certain equity surveillance not involving cross-market activity, most options

surveillance, rulemaking and membership functions through our Nasdaq Regulation department. We review suspicious trading behavior discovered by our regulatory staff, and depending on the nature of the activity, may refer the activity to FINRA for further investigation. Pursuant to regulatory services agreements between FINRA and our SROs, FINRA provides certain regulatory services to our markets, including some regulation of trading activity and surveillance and investigative functions. Our SROs retain ultimate regulatory responsibility for all regulatory activities performed under regulatory agreements by FINRA, and for fulfilling all regulatory obligations for which FINRA does not have responsibility under the regulatory services agreements.

In addition to its other SRO responsibilities, The Nasdaq Stock Market, as a listing market, also is responsible for overseeing each listed company's compliance with The Nasdaq Stock Market's financial and corporate governance standards. Our listing qualifications department evaluates applications submitted by issuers interested in listing their securities on The Nasdaq Stock Market to determine whether the quantitative and qualitative listing standards have been satisfied. Once securities are listed, the listing qualifications department monitors each issuer's on-going compliance with The Nasdaq Stock Market's continued listing standards.

Broker-dealer regulation. Nasdaq's broker-dealer subsidiaries are subject to regulation by the SEC, the SROs and various state securities regulators. Nasdaq operates five broker-dealers: Nasdaq Execution Services, LLC, Execution Access, LLC, NPM Securities, SMTX, LLC, and Nasdaq Capital Markets Advisory LLC. Each broker-dealer is registered with the SEC, a member of FINRA and registered in the U.S. states and territories required by the operation of its business.

Nasdaq Execution Services operates as our routing broker for sending orders from Nasdaq's U.S. cash equity and options exchanges to other venues for execution. SMTX acts as an intermediary to facilitate closings of, and introduce prospective accredited investors in connection with, private non-capital raising transactions. Nasdaq Capital Markets Advisory acts as a third-party advisor to privately-held or publicly-traded companies during IPOs and various other offerings.

Two of our broker-dealers also are registered with the SEC as ATSs. Execution Access operates as the broker-dealer for our fixed income business, including as Nasdaq Fixed Income's registered ATS for U.S. Treasury securities. NPM Securities operates an ATS that facilitates the purchase and sale of ownership interests in primary and secondary transactions in certain funds (both registered or not registered under the Investment Company Act of 1940), business development companies, certain closed end funds and private real estate investment funds.

The SEC, FINRA and the exchanges adopt rules and examine broker-dealers and require strict compliance with their rules and regulations. The SEC, SROs and state securities commissions may conduct administrative proceedings which can result in censures, fines, the issuance of cease-and-desist orders or the suspension or expulsion of a broker-dealer, its officers or employees. The SEC and state regulators may also institute proceedings against broker-dealers seeking an injunction or other sanction. All broker-dealers have an SRO that is assigned by the SEC as the broker-dealer's Designated Examining Authority. The Designated Examining Authority is responsible for examining a broker-dealer for compliance with the SEC's financial responsibility rules. FINRA is the current Designated Examining Authority for each of our broker-dealer subsidiaries.

Our registered broker-dealers are subject to regulatory requirements intended to ensure their general financial soundness and liquidity, which require that they comply with certain minimum capital requirements. As of December 31, 2020, each of our broker-dealers were in compliance with all of the applicable capital requirements.

Regulatory contractual relationships with FINRA. Our SROs have signed a series of regulatory service agreements covering the services FINRA provides to the respective SROs. Under these agreements, FINRA personnel act as our agents in performing the regulatory functions outlined above, and FINRA bills us a fee for these services. These agreements have enabled us to reduce our headcount while ensuring that the markets for which we are responsible are properly regulated. However, we have reduced the scope of services provided by FINRA under these regulatory services agreements and are performing certain of those regulatory functions directly. In addition, our SROs retain ultimate regulatory responsibility for all regulatory activities performed under these agreements by FINRA.

Exchange Act Rule 17d-2 permits SROs to enter into agreements, commonly called Rule 17d-2 agreements, approved by the SEC with respect to enforcement of common rules relating to common members. Our SROs have entered into several such agreements under which FINRA assumes regulatory responsibility for specifics covered by the agreement, including:

- agreements with FINRA covering the enforcement of common rules, the majority of which relate to the regulation of common members of our SROs and FINRA;
- joint industry agreements with FINRA covering responsibility for enforcement of insider trading rules;
- joint industry agreement with FINRA covering enforcement of rules related to cash equity sales practices and certain other non-market related rules; and
- joint industry agreement covering enforcement of rules related to options sales practices.

Regulation NMS and Options Intermarket Linkage Plan. We are subject to Regulation NMS for our cash equity markets, and our options markets have joined the Options Intermarket Linkage Plan. These are designed to facilitate the routing of orders among exchanges to create a national market system

as mandated by the Exchange Act. One of the principal purposes of a national market system is to assure that brokers may execute investors' orders at the best market price. Both Regulation NMS and the Options Intermarket Linkage Plan require that exchanges avoid trade-throughs, locking or crossing of markets and provide market participants with electronic access to the best prices among the markets for the applicable cash equity or options order.

In addition, Regulation NMS requires that every national securities exchange on which an NMS stock is traded and every national securities association act jointly pursuant to one or more national market system plans to disseminate consolidated information, including a national best bid and national best offer, on quotations for transactions in NMS stocks, and that such plan or plans provide for the dissemination of all consolidated information for an individual NMS stock through a single plan processor.

The UTP Plan was filed with and approved by the SEC as a national market system plan in accordance with the Exchange Act and Regulation NMS to provide for the collection, consolidation and dissemination of such information for Nasdaq-listed securities. The Nasdaq Stock Market serves as the processor for the UTP Plan pursuant to a contract that was recently extended for a two-year term through October 2023. The Nasdaq Stock Market also serves as the administrator for the UTP Plan. To fulfill its obligations as the processor, The Nasdaq Stock Market has designed, implemented, maintained, and operated a data processing and communications system, hardware, software and communications infrastructure to provide processing for the UTP Plan. As the administrator, The Nasdaq Stock Market manages the distribution of market data, the collection of the resulting market data revenue, and the dissemination of that revenue to plan members in accordance with the terms of the UTP Plan and of Regulation NMS.

In May 2020, the SEC adopted an order to require changes to the governance of securities information processors. The SEC also approved, with material amendments, SRO proposed policies regarding the governance of these entities. In June and July 2020, we and several other exchanges petitioned the U.S. Court of Appeals for the District of Columbia Circuit to review both the SEC's governance order and its amendments to the SRO-proposed policies. In December 2020, the SEC adopted a rule to modify the infrastructure for the collection, consolidation and dissemination of market data for exchange-listed national market stocks, or NMS data. The rule changes include, among other things, requiring exchanges to add more "core data" to the securities information processors, including partial depth-of-book, certain odd-lot quotations/transactions, auction, regulatory, and administrative data; eliminating central, official consolidators of tape plans and enables multiple competing consolidators to register to aggregate and disseminate core data; and authorizing persons to purchase and aggregate core data directly from the exchanges for their own use. The rule implementation schedule has not yet been finalized by the SEC, and we are not certain of the timing, or the impact, of these new rules on our business or role as a securities information processor. In February 2021, we petitioned the U.S. Court of Appeals for the District of Columbia Circuit to review the SEC's rulemaking. In addition, we requested the SEC to stay implementation of the rule.

Regulation SCI. Regulation SCI is a set of rules designed to strengthen the technology infrastructure of the U.S. securities markets. Regulation SCI applies to national securities exchanges, operators of certain ATSs, market data information providers and clearing agencies, subjecting these entities to extensive new compliance obligations, with the goals of reducing the occurrence of technical issues that disrupt the securities markets and improving recovery time when disruptions occur. We implemented an inter-disciplinary program to ensure compliance with Regulation SCI. Regulation SCI policies and procedures were created, internal policies and procedures were updated, and an information technology governance program was developed to ensure compliance.

Regulation of Registered Investment Advisor Subsidiary. Our subsidiary NDW is an investment advisor registered with the SEC under the Investment Advisors Act of 1940. In this capacity, NDW is subject to oversight and inspections by the SEC. Among other things, registered investment advisors like NDW must comply with certain disclosure obligations, advertising and fee restrictions and requirements relating to client suitability and custody of funds and securities. Registered investment advisors are also subject to anti-fraud provisions under both federal and state law.

CFTC Regulation. The Dodd-Frank Wall Street Reform and Consumer Protection Act also has resulted in increased CFTC regulation of our use of certain regulated derivatives products, as well as the operations of some of our subsidiaries outside the U.S. and their customers.

Canadian Regulation

Regulation of Nasdaq Canada is performed by the Canadian Securities Administrators, an umbrella organization of Canada's provincial and territorial securities regulators. As a recognized exchange in Ontario, Nasdaq Canada must comply with the terms and conditions of its exchange recognition order. While exempt from exchange recognition in each jurisdiction in Canada other than Ontario where Nasdaq Canada carries on business, Nasdaq must comply with the terms and conditions of an exemption order granted by the other jurisdictions. Oversight of the exchange is performed by Nasdaq Canada's lead regulator, the Ontario Securities Commission. Additionally, Nasdaq Fixed Income provides access to Canadian-based "Permitted Clients" for trading non-Canadian fixed income securities and is subject to Canadian securities regulations in connection with providing these services.

Nasdaq Canada is subject to several national marketplace related instruments which set out requirements for marketplace operations, trading rules and managing

electronic trading risk. Exchange terms and conditions include but are not limited to, requirements for, governance, regulation, rules and rulemaking, fair access, conflict management and financial viability.

European Regulation

Regulation of our markets in the European Union and the European Economic Area focuses on matters relating to financial services, listing and trading of securities, clearing and settlement of securities and commodities as well as issues related to market abuse.

In July 2016, the European Union's Market Abuse Regulation, which is intended to prevent market abuse, entered into force. MiFID II and MiFIR entered into force in January 2018 and primarily affect our European trading businesses. Many of the provisions of MiFID II and MiFIR are implemented through technical standards drafted by the European Securities and Markets Authority and approved by the European Commission. In addition, in 2016, the European Union adopted legislation on governance and control of the production and use of benchmark indexes. The Benchmark Regulation applies in the European Union from early 2018. However, due to transitional clauses in the Benchmark Regulation, Nasdaq as a benchmark provider, did not need to be in compliance with the Benchmark Regulation until January 1, 2020 in relation to benchmarks provided by Nasdaq's European subsidiaries, or until January 1, 2024, in relation to benchmarks provided by non-European Nasdaq entities. As the regulatory environment continues to evolve and related opportunities arise, we intend to continue developing our products and services to ensure that the exchanges and clearinghouse that comprise Nasdaq Nordic and Nasdaq Baltic maintain favorable liquidity and offer fair and efficient trading.

The entities that operate trading venues in the Nordic and Baltic countries are each subject to local regulations. As a result, we have a strong local presence in each jurisdiction in which we operate regulated businesses. The regulated entities have decision-making power and can adopt policies and procedures and retain resources to manage all operations subject to their license. In Sweden, general supervision of the Nasdaq Stockholm exchange is carried out by the SFSA, while Nasdaq Clearing's role as CCP in the clearing of derivatives is supervised by the SFSA and overseen by the Swedish central bank (Riksbanken). Additionally, as a function of the Swedish two-tier supervisory model, certain surveillance in relation to the exchange market is carried out by the Nasdaq Stockholm exchange, through its surveillance function.

Nasdaq Stockholm's exchange activities are regulated primarily by the SSMA, which implements MiFID II into Swedish law and which sets up basic requirements regarding the board of the exchange and its share capital, and which also outlines the conditions on which exchange licenses are issued. The SSMA also provides that any changes to the exchange's articles of association following initial registration must be approved by the SFSA. Nasdaq Clearing holds the license as a CCP under EMIR.

With respect to ongoing operations, the SSMA requires exchanges to conduct their activities in an honest, fair and professional manner, and in such a way as to maintain public confidence in the securities markets. When operating a regulated market, an exchange must apply the principles of free access (i.e., that each person which meets the requirements established by law and by the exchange may participate in trading), neutrality (i.e., that the exchange's rules for the regulated market are applied in a consistent manner to all those who participate in trading) and transparency (i.e., that the participants must be given speedy, simultaneous and correct information concerning trading and that the general public must be given the opportunity to access this information). Additionally, the exchange operator must identify and manage the risks that may arise in its operations, use secure technical systems and identify and handle the conflicts of interest that may arise between the exchange or its owners' interests and the interest in safeguarding effective risk management and secure technical systems. Similar requirements are set up by EMIR in relation to clearing operations.

The SSMA also contains the framework for both the SFSA's supervisory work in relation to exchanges and clearinghouses and the surveillance to be carried out by the exchanges themselves. The latter includes the requirement that an exchange should have "an independent surveillance function with sufficient resources and powers to meet the exchange's obligations." That requires the exchange to, among other things, supervise trading and price information, compliance with laws, regulations and good market practice, participant compliance with trading participation rules, financial instrument compliance with relevant listing rules and the extent to which issuers meet their obligation to submit regular financial information to relevant authorities.

The regulatory environment in the other Nordic and Baltic countries in which a Nasdaq entity has a trading venue is broadly similar to the regulatory environment in Sweden. Since 2005, there has been cooperation between the supervisory authorities in Sweden, Iceland, Denmark and Finland, which looks to safeguard effective and comprehensive supervision of the exchanges comprising Nasdaq Nordic and the systems operated by it, and to ensure a common supervisory approach. In 2019, the supervisory authority in Norway joined this cooperation.

Nasdaq owns a central securities depository known as Nasdaq CSD SE (Societas Europaea), that provides notary, settlement, central maintenance and other services in the Baltic countries and in Iceland. Nasdaq CSD SE is licensed under the European Central Securities Depositories Regulation and is supervised by the respective regulatory institutions.

We operate a licensed exchange, Nasdaq Oslo ASA, in Norway that trades and lists commodity derivatives. Although Norway is not a member of the EU, as a result of

the European Economic Area, or EEA, agreement (agreement on the EEA entered into between the EU and European Free Trade Association) the regulatory environment is broadly similar to what applies in EU member states. In addition, in January 2019 new legislation entered into force in Norway mirroring the provisions of MiFID II and MIFIR. As a result, the regulatory environment in Norway is similar to Sweden. The Financial Supervisory Authority of Norway supervises the Norwegian exchange on an autonomous basis and the Norwegian exchange also has a separate market surveillance function overseen by the Financial Supervisory Authority.

Confidence in capital markets is paramount for trading to function properly. Nasdaq Nordic carries out market surveillance through an independent unit that is separate from the business operations. The surveillance work is conceptually organized into two functions: one for the review and admission of listing applications and surveillance activities related to issuers (issuer surveillance) and one for surveillance of trading (trading surveillance). The real-time trading surveillance for the Finnish, Icelandic, Danish and Swedish markets has been centralized to Stockholm. In addition, there are special personnel who carry out surveillance activities at Nasdaq Oslo and each of the three Baltic exchanges. In Finland and Sweden, decisions to list new companies on the main market are made by listing committees that have external members in addition to members from each respective exchange and in the other countries the decision is made by the respective president of the exchange.

If there is suspicion that a listed company or member has acted in breach of exchange regulations, the matter is handled by the respective surveillance department. Serious breaches are considered by the respective disciplinary committee in Denmark, Finland, Iceland, Sweden and Norway. Suspected insider trading is reported to the appropriate authorities in the respective country.

In the United Kingdom, The Nasdaq Stock Market and Nasdaq Oslo ASA are each subject to regulation by the Financial Conduct Authority as "Recognised Overseas Investment Exchanges." Exchanges in Sweden, Denmark, and Finland have applied for status as "Recognised Overseas Investment Exchanges" and we expect these exchanges to receive such status during 2021. Pending approval, we are able to operate in the United Kingdom under the overseas person exemption. Nasdaq Clearing is registered as a recognized third country CCP with the Bank of England under the temporary recognition regime. The registration became effective on December 31, 2020, and lasts for three years. We will be applying for permanent recognition within eighteen months of the end of this implementation period.

Human Capital Management

Nasdaq's commitment to, and investment in, attracting, retaining, developing and motivating its employees strengthened during 2020, and while the COVID-19 pandemic has created certain challenges for our employees, we have bolstered our human capital management efforts throughout the past year. We have built on our existing foundation of striving to create a diverse and inclusive work environment of equal opportunity, where employees feel respected and valued for their contributions, and where Nasdaq and its employees have opportunities to make positive contributions to our local communities and to social justice initiatives.

As of December 31, 2020, we had 4,830 employees.

ESG Oversight

The Nominating & ESG Committee has formal responsibility and oversight for ESG policies and programs and receives regular reporting on key ESG matters and initiatives. Our internal ESG Working Group is co-chaired by executive leaders and comprised of geographically diverse representatives from multiple business units. The ESG Working Group serves as the central oversight body for our ESG strategy.

COVID-19 and Employee Safety

As the COVID-19 pandemic continues around the world, affecting all of our offices, we are committed to ensuring the safety and well-being of our employees and stakeholders, and complying with local government regulations in the areas in which we operate. This includes having the vast majority of our employees work from home, while implementing additional safety measures and precautions for employees continuing critical on-site work in certain of our offices. We have informed our employees that they may continue to work remotely through at least June 30, 2021, and we will continue to evaluate local conditions and regulations before we fully transition back to our offices.

Talent Management and Development

We continued to increase our efforts in attracting and retaining our employees.

Nasdaq seeks to hire world-class, innovative, and diverse talent across the globe. We recently strengthened our employer brand strategy with an updated "People Promise," which encapsulates Nasdaq's vision, mission, purpose and employment experience in order to become a leading company for highly sourced talent. In addition, we created a new diversity recruiting function to help us attract talent using innovative new techniques and channels.

We introduced new onboarding and exit surveys to better understand why employees join, and leave, Nasdaq. We conducted annual performance management, succession planning and advancement exercises to ensure we are aligning our employees with the right opportunities across the company. Additionally, we introduced a peer-to-peer employee recognition program. Finally, as a result of COVID-19 restrictions, we reinvented our internship program to remotely welcome 151 interns to Nasdaq.

We have invested in professional development for our employees, including offering access to more than 14,000 professional development programs; providing tuition

assistance to employees enrolled in degree-granting academic programs; holding internal career fairs and career development programs; and providing one-on-one professional coaching opportunities.

Diversity and Inclusion

In 2020, we established three pillars to guide our diversity and inclusion efforts with our employees: *Workforce*, to ensure our employee population is representative of the communities in which we operate; *Workplace*, to ensure a positive workplace experience for all employees of Nasdaq; and *Marketplace*, to positively influence our peers in the capital market space and to invest in our local communities in which we operate.

Nasdaq sponsors eleven employee-led internal affinity networks. These networks include more than 1,500 employee members to support the diverse communities that comprise our workforce, and include networks for our Black, Asian American, Hispanic, LGBTQ, female, disabled, veteran, and parent/caregiver employees. The networks provide both formal and informal development programs and guidance for their members, and benefit the entire Nasdaq workforce through educational events, guest speakers, and volunteering opportunities.

We created a dedicated diversity recruiting function to further our recruiting efforts and enhance the representation of women and minorities at Nasdaq. In order to monitor our diversity efforts on an ongoing basis, each business unit has a dashboard reflecting the diversity of their employee population and can track changes on a monthly basis. We launched a new "Inclusive Leadership" training program for all employees, starting with our Chief Executive Officer and senior executives. We also added customized developmental programs for underrepresented talent, including executive mentoring and accelerated leadership development programs. Additionally, as a signatory to the Parity Pledge, we fulfilled our commitment to interview female candidates for all externally advertised roles at the Vice President level and above.

On a company-wide basis, as the social justice movement gained momentum in 2020, we hosted a series of educational discussions for all of our employees featuring internal and external guest speakers addressing racial dynamics in our society and fostering greater understanding in the workplace. In honor of Juneteenth, we debuted "Amplifying Black Voices," a series of art by Black artists displayed on the Nasdaq Tower in New York's Times Square.

Finally, Nasdaq published statistics on the composition of its own global workforce by gender, and of its U.S. workforce by gender, race and ethnicity, in our U.S. EEO-1 report and our Sustainability Report, which reports are available on our website.

Compensation and Benefits

Our Total Rewards compensation program is designed to attract, retain, and empower employees to successfully execute our growth strategy. Nasdaq's balanced Total Rewards program encourages decisions and behaviors that align with the short and long-term interests of our shareholders. The building blocks of our Total Rewards program are designed to promote and support our strategy and reinforce our cultural values of: Act as an Owner, Play as a Team, Fuel Client Success, Lead with Integrity, Expand Your Expertise, and Drive Innovation. Our Company values energize and align employees with the most important priorities, and encourage and reward high levels of performance, innovation and growth, while not promoting undue risk. Our compensation program seeks to retain our most talented employees in a highly dynamic, competitive talent market, while also engaging and exciting current and future employees who possess the leading skills and competencies needed for us to achieve our strategy and objectives. The Total Rewards compensation program is comprised of base salary, an annual cash bonus incentive program and long-term equity incentive awards. The long-term equity awards align our employee interests with our shareholders.

In addition to cash and equity compensation, we also offer employee benefits such as health (medical, dental, vision and telehealth) insurance, paid time off, paid parental leave, adoption assistance and a U.S. 401(k) Plan with company matching. We also introduced additional new benefits this year as a result of the COVID-19 pandemic in an effort to help our employees with the additional stress in balancing their work and personal commitments, including providing "flex days" for additional time away from the office without requiring the usage of vacation or personal leave days, additional family care resources and benefits, including back-up childcare and other caregiver support, wellness benefits, and student loan repayment benefits. We also provide additional benefits to our international employees based on local regulations and practice to address market-specific needs.

Community Involvement

We are committed to creating lasting, positive change within our Company and the communities we serve, and increased our community involvement during 2020, both as a result of the COVID-19 pandemic and the heightened focus on social inequality in the United States.

Our employees take pride in being active in our communities. Through our Nasdaq GoodWorks Corporate Responsibility Program, we have committed to supporting the communities in which we live and work by providing eligible full and part-time employees two paid days off per year to volunteer. We also match charitable donations of all Nasdaq employees and contractors up to $1,000, or more in certain circumstances, per calendar year, and during 2020, we offered additional, higher matching programs for employee donations to global COVID-19 relief and response organizations and other charities selected by the Nasdaq employee networks. While most of our in-person volunteer efforts in 2020 pivoted to virtual volunteering events due to the pandemic, we still organized more than 90 volunteer events around the world,

and more than 260 associates volunteered and contributed over 2,600 service hours.

In 2020, we announced actions to strengthen our continued commitment to diversity and inclusion and donated an aggregate of $7 million, including $6 million in cash, to organizations serving underserved, minority communities in fighting the impact of the COVID-19 health crisis. These organizations included the Equal Justice Initiative, the NAACP's COVID-19 project and World Central Kitchen's Restaurants for the People. Additionally, we contributed $10 million to support the Nasdaq Foundation and plan to annually fund the Nasdaq Foundation with approximately one quarter of one percent of our operating profits beginning in 2021.

In September 2020, we launched the "Purpose Initiative," which is designed to advance inclusive growth and prosperity. The Purpose Initiative comprises our philanthropic, community outreach, corporate sustainability, and employee volunteerism programs, all designed to leverage our unique place at the center of capital creation, markets, and technology and drive stronger economies, more equitable opportunities and contribute to a more sustainable world. We also relaunched the Nasdaq Foundation in September 2020, with a renewed mission focused on two primary goals: (i) reimagining investor engagement to equip under-represented communities with the financial knowledge to share in the wealth that markets create; and (ii) leveraging our investment in the Nasdaq Entrepreneurial Center alongside new strategic partnerships with organizations that can help build a deeper, data-led understanding of where the challenges are greatest, what existing efforts could be amplified, and how the Nasdaq Foundation can make new and distinctive contributions.

Nasdaq Website and Availability of SEC Filings

We file periodic reports, proxy statements and other information with the SEC. The SEC maintains a website that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC. The address of that site is http://www.sec.gov.

Our website is http://ir.nasdaq.com. Information on our website is not a part of this Form 10-K. We make available free of charge on our website, or provide a link to, our Forms 10-K, Forms 10-Q and Forms 8-K and any amendments to these documents, that are filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. To access these filings, go to Nasdaq's website and click on "Financials" then click on "SEC Filings."

Item 1A. Risk Factors

The risks and uncertainties described below are not the only ones facing us. Additional risks and uncertainties not presently known to us or that we currently believe to be immaterial may also adversely affect our business. If any of the following risks actually occur, our business, financial condition, or operating results could be adversely affected.

RISKS RELATED TO OUR BUSINESS AND INDUSTRY

The COVID-19 pandemic could have an adverse effect on our business, financial condition, liquidity or results of operations.

We are continuing to closely monitor the evolving impact of the COVID-19 pandemic on our industry and business in the United States and worldwide, including its effect on our customers, employees, vendors and other stakeholders. The COVID-19 pandemic has created significant volatility, uncertainty and economic disruption, which may adversely affect our business, financial condition, liquidity or results of operations.

While results in our Market Services segment were strong in 2020, reflecting elevated trading volumes amidst the COVID-19 pandemic, there is no assurance that such trading levels will continue. In our Corporate Platforms segment, while we have experienced strong demand for IPOs in 2020, we cannot predict whether investor demand for IPOs and new listings will continue in the future. We continue to observe that certain Market Technology customers are delaying purchasing decisions or extending implementation schedules. While our licensed ETPs, and in particular our Nasdaq-100 index, have grown due to the increases in the market and net inflows, there is no assurance that such AUM levels or volume trends will continue in the future.

As the COVID-19 pandemic and its resultant economic effects continue, existing customers in each of our segments may reduce or cancel spending for our products and services. Additionally, our sales pipeline with new client prospects may be further affected as new clients may delay or cancel purchase decisions while they evaluate the continuing impact of COVID-19.

In response to COVID-19, we have shifted to having a majority of our staff work from home and have added additional network capacity and monitoring. However, such remote work may cause heightened cybersecurity and operational risks. Certain of our global offices have re-opened on a limited basis, with applicable safety protocols in place, or expect to re-open subject to limitations during 2021. We could face disruption to our business or operations if a significant number of our employees or any of our key employees becomes ill due to the virus. We have filed a proposal with the SEC to amend Nasdaq PHLX's business continuity plan to permit a virtual trading crowd, which would allow Nasdaq PHLX to operate its trading floor remotely in the event the physical trading floor becomes unavailable due to COVID-19. If our pending rule change is not approved by the SEC, and Nasdaq PHLX is unable to operate its physical trading floor due to COVID-19 or other restrictions, our revenue, market share and reputation may be adversely affected. If the rule change is approved by the SEC and we are unable to successfully operate the virtual trading

crowd in compliance with the SEC rules, our revenues and reputation may be harmed. Any disruption to our ability to deliver services to our clients could result in liability to our customers, regulatory fines, penalties or other sanctions, increased operational costs or harm to our reputation and brand. This, in turn, may have an adverse effect on our business, financial condition, liquidity or results of operations.

The extent to which the COVID-19 pandemic impacts our business, financial condition, liquidity or results of operations will depend on future developments, which are uncertain and cannot be predicted, including the scope and duration of the COVID-19 pandemic, the length of time government, commercial and travel limitations are in place, the continued effectiveness of our remote work arrangements, actions taken by governmental authorities, regulators and other third parties in response to the pandemic, as well as other direct and indirect impacts on us, our exchanges, our customers, our vendors and other stakeholders.

Economic conditions and market factors, which are beyond our control, may adversely affect our business and financial condition.

Our business performance is impacted by a number of factors, including general economic conditions, market volatility, changes in investment patterns and priorities, pandemics and other factors that are generally beyond our control. To the extent that global or national economic conditions weaken and result in slower growth or recessions, our business is likely to be negatively impacted. Adverse market conditions could reduce customer demand for our services and the ability of our customers, lenders and other counterparties to meet their obligations to us. Poor economic conditions may result in a reduction in the demand for our products and services, including our market technology, data, indexes and IR & ESG Services, a decline in trading volumes or values and deterioration of the economic welfare of our listed companies.

Trading volumes and values are driven primarily by general market conditions and declines in trading volumes or values may affect our market share and impact our pricing. In addition, our Market Services businesses receive revenues from a relatively small number of customers concentrated in the financial industry, so any event that impacts one or more customers or the financial industry in general could impact our revenues.

The number of listings on our markets is primarily influenced by factors such as investor demand, the global economy, available sources of financing, and tax and regulatory policies. Adverse conditions may jeopardize the ability of our listed companies to comply with the continued listing requirements of our exchanges, or reduce the number of issuers launching IPOs, including SPACs, and direct listings.

Investment Intelligence revenues may be significantly affected by global economic conditions. Professional subscriptions to our data products are at risk if staff reductions occur in financial services companies or if our customers consolidate, which could result in significant reductions in our professional user revenue or expose us to increased risks relating to dependence on a smaller number of customers. In addition, adverse market conditions may cause reductions in the number of non-professional investors with investments in the market and in ETP AUM tracking Nasdaq indexes as well as trading in futures linked to Nasdaq indexes.

There may be less demand for our IR & ESG Services or Market Technology products if global economic conditions are weak. Our customers historically cut back on purchases of new services and technology when growth rates decline, thereby reducing our opportunities to sell new products and services or upgrade existing products and services.

A reduction in trading volumes or values, market share of trading, the number of our listed companies, or demand for Investment Intelligence, Market Technology or Corporate Platforms products and services due to economic conditions or other market factors could adversely affect our business, financial condition and operating results.

The industries we operate in are highly competitive.

We face significant competition in our Market Technology, Investment Intelligence and Corporate Platforms businesses from other market participants. We face intense competition from other exchanges and markets for market share of trading activity and listings. This competition includes both product and price competition.

The liberalization and globalization of world markets has resulted in greater mobility of capital, greater international participation in local markets and more competition. As a result, both in the U.S. and in other countries, the competition among exchanges and other execution venues has become more intense. Marketplaces in both Europe and the U.S. have also merged to achieve greater economies of scale and scope.

Regulatory changes also have facilitated the entry of new participants in the European Union that compete with our European markets. The regulatory environment, both in the U.S. and in Europe, is structured to maintain this environment of intense competition. In addition, a high proportion of business in the securities markets is becoming concentrated in a smaller number of institutions and our revenue may therefore become concentrated in a smaller number of customers.

We also compete globally with other regulated exchanges and markets, ATSs, MTFs and other traditional and non-traditional execution venues. Some of these competitors also are our customers. In addition, competitors recently have launched new exchanges in the U.S., including an exchange established by a group of our customers. Competitors may develop market trading platforms that are more competitive than ours. Competitors may leverage data more effectively or enter into strategic partnerships, mergers or acquisitions that could make their trading, listings, clearing, data or technology businesses more competitive than ours.

We face intense price competition in all areas of our business. In particular, the trading industry is characterized by price competition. We have in the past lowered prices, and in the U.S., increased rebates for trade executions to attempt to gain or maintain market share. These strategies have not always been successful and have at times hurt operating performance. Additionally, we have also been, and may once again be, required to adjust pricing to respond to actions by competitors and new entrants, or due to new SEC regulations, which could adversely impact operating results. We also compete with respect to the pricing of data products and with respect to products for pre-trade book data and for post-trade last sale data. In addition, pricing in our Corporate Platforms, Index and Market Technology businesses is subject to competitive pressures.

If we are unable to compete successfully in the industries in which we do business, our business, financial condition and operating results will be adversely affected.

System limitations or failures could harm our business.

Our businesses depend on the integrity and performance of the technology, computer and communications systems supporting them. If new systems fail to operate as intended or our existing systems cannot expand to cope with increased demand or otherwise fail to perform, we could experience unanticipated disruptions in service, slower response times and delays in the introduction of new products and services. These consequences could result in service outages, lower trading volumes or values, financial losses, decreased customer satisfaction and regulatory sanctions. Our markets and the markets that rely on our technology have experienced systems failures and delays in the past and could experience future systems failures and delays.

Although we currently maintain and expect to maintain multiple computer facilities that are designed to provide redundancy and back-up to reduce the risk of system disruptions and have facilities in place that are expected to maintain service during a system disruption, such systems and facilities may prove inadequate. If trading volumes increase unexpectedly or other unanticipated events occur, we may need to expand and upgrade our technology, transaction processing systems and network infrastructure. We do not know whether we will be able to accurately project the rate, timing or cost of any volume increases, or expand and upgrade our systems and infrastructure to accommodate any increases in a timely manner.

While we have programs in place to identify and minimize our exposure to vulnerabilities and work in collaboration with the technology industry to share corrective measures with our business partners, we cannot guarantee that such events will not occur in the future. Any system issue that causes an interruption in services, decreases the responsiveness of our services or otherwise affects our services could impair our reputation, damage our brand name and negatively impact our business, financial condition and operating results.

We must continue to introduce new products, initiatives and enhancements to maintain our competitive position.

We intend to launch new products and initiatives and continue to explore and pursue opportunities to strengthen our business and grow our company. We may spend substantial time and money developing new products, initiatives and enhancements to existing products. If these products and initiatives are not successful, we may not be able to offset their costs, which could have an adverse effect on our business, financial condition and operating results.

In our technology operations, we have invested substantial amounts in the development of system platforms, the rollout of our platforms and the adoption of new technologies. Although investments are carefully planned, there can be no assurance that the demand for such platforms or technologies will justify the related investments. If we fail to generate adequate revenue from planned system platforms or the adoption of new technologies, or if we fail to do so within the envisioned timeframe, it could have an adverse effect on our results of operations and financial condition. In addition, clients may delay purchases in anticipation of new products or enhancements. Additionally, it is also possible that we may allocate significant amounts of cash and other resources to product technologies or business models for which market demand is lower than anticipated. In addition, the introduction of new products by competitors, the emergence of new industry standards or the development of entirely new technologies to replace existing product offerings could render our existing or future products obsolete.

A decline in trading and clearing volumes or values or market share will decrease our trading and clearing revenues.

Trading and clearing volumes and values are directly affected by economic, political and market conditions, broad trends in business and finance, unforeseen market closures or other disruptions in trading, the level and volatility of interest rates, inflation, changes in price levels of securities and the overall level of investor confidence. In recent years, and particularly in 2020, trading and clearing volumes and values across our markets have fluctuated significantly depending on market conditions and other factors beyond our control, including the COVID-19 pandemic. Current initiatives being considered by regulators and governments could have a material adverse effect on overall trading and clearing volumes or values. Because a significant percentage of our revenues is tied directly to the volume or value of securities traded and cleared on our markets, it is likely that a general decline in trading and clearing volumes or values would lower revenues and may adversely affect our operating results if we are unable to offset falling volumes or values through pricing changes. Declines in trading and clearing volumes or values may also impact our market share or pricing structures and adversely affect our business and financial condition.

If our total market share in securities decreases relative to our competitors, our venues may be viewed as less attractive sources of liquidity. If our exchanges are perceived to be less

liquid, then our business, financial condition and operating results could be adversely affected.

Since some of our exchanges offer clearing services in addition to trading services, a decline in market share of trading could lead to a decline in clearing and depository revenues. Declines in market share also could result in issuers viewing the value of a listing on our exchanges as less attractive, thereby adversely affecting our listing business. Finally, declines in market share of Nasdaq-listed securities, or recently adopted SEC rules and regulations, could lower The Nasdaq Stock Market's share of tape pool revenues under the consolidated data plans, thereby reducing the revenues of our Market Data business.

Our role in the global marketplace may place us at greater risk for a cyberattack.

Our systems and operations are vulnerable to damage or interruption from security breaches. Due to COVID-19, most of our workforce may continue to work from home, creating a broader and more distributed network footprint and increased reliance on the home networks of employees. Some of these threats include attacks from foreign governments, hacktivists, insiders and criminal organizations. Foreign governments may seek to obtain a foothold in U.S. critical infrastructure, hacktivists may seek to deploy denial of service attacks to bring attention to their cause, insiders may pose a risk by human error or malicious activity and criminal organizations may seek to profit from stolen data. Computer viruses and worms also continue to be a threat with ransomware increasingly being used by criminals to extort money. Given our position in the global securities industry, we may be more likely than other companies to be a direct target, or an indirect casualty, of such events.

While we continue to employ resources to monitor our systems and protect our infrastructure, these measures may prove insufficient depending upon the attack or threat posed. Any system issue, whether as a result of an intentional breach, collateral damage from a new virus or a non-malicious act, could damage our reputation and cause us to lose customers, experience lower trading volumes or values, incur significant liabilities or otherwise have a negative impact on our business, financial condition and operating results. Any system breach may go undetected for an extended period of time. As cybersecurity threats continue to increase in frequency and sophistication, and as the domestic and international regulatory and compliance structure related to information security, data privacy and data usage becomes increasingly complex and exacting, we may be required to devote significant additional resources to strengthen our cybersecurity capabilities, and to identify and remediate any security vulnerabilities, which could adversely impact our business, financial condition and operating results.

The success of our business depends on our ability to keep up with rapid technological and other competitive changes affecting our industry. Specifically, we must complete development of, successfully implement and maintain platforms that have the functionality, performance, capacity, reliability and speed required by our business and our regulators, as well as by our customers.

The markets in which we compete are characterized by rapidly changing technology, evolving industry and regulatory standards, frequent enhancements to existing products and services, the adoption of new services and products and changing customer demands. We are reliant on our customers that purchase our on-premise solutions to maintain a certain level of network infrastructure for our products to operate and to allow for our support of those products, and there is no assurance that a customer will implement such measures. We may not be able to keep up with rapid technological and other competitive changes affecting our industry. For example, we must continue to enhance our platforms to remain competitive as well as to address our regulatory responsibilities, and our business will be negatively affected if our platforms or the technology solutions we sell to our customers fail to function as expected. If we are unable to develop our platforms to include other products and markets, or if our platforms do not have the required functionality, performance, capacity, reliability and speed required by our business and our regulators, as well as by our customers, we may not be able to compete successfully. Further, our failure to anticipate or respond adequately to changes in technology and customer preferences or any significant delays in product development efforts, could have a material adverse effect on our business, financial condition and operating results.

Our clearinghouse operations expose us to risks, including credit or liquidity risks that may include defaults by clearing members, or insufficiencies in margins or default funds.

We are subject to risks relating to our operation of a clearinghouse, including counterparty and liquidity risks, risk of defaults by clearing members and risks associated with adequacy of the customer margin and of default funds. Our clearinghouse operations expose us to counterparties with differing risk profiles. We may be adversely impacted by the financial distress or failure of a clearing member, which may cause us negative financial impact, reputational harm or regulatory consequences, including litigation or regulatory enforcement actions.

In September 2018, a member of the Nasdaq Clearing commodities market defaulted due to an inability to post sufficient collateral to cover increased margin requirements for the positions of the relevant member. For further discussion of the default, see Note 15, "Clearing Operations," to the consolidated financial statements. There are no assurances that similar defaults will not occur again, which could result in losses. To the extent that our regulatory capital and risk management policies are not adequate to manage future financial and operational risks in our clearinghouse, we may experience adverse consequences to our operating results or ability to conduct our business.

We are exposed to credit risk from third parties, including customers, counterparties and clearing agents.

We are exposed to credit risk from third parties, including customers, counterparties and clearing agents. These parties may default on their obligations to us due to the effects of COVID-19 on their business, bankruptcy, lack of liquidity, operational failure or other reasons.

We clear a range of equity-related and fixed-income-related derivative products, commodities and resale and repurchase agreements. We assume the counterparty risk for all transactions that are cleared through Nasdaq Clearing on our markets and guarantee that our cleared contracts will be honored. We enforce minimum financial and operational criteria for membership eligibility, require members and investors to provide collateral, and maintain established risk policies and procedures to ensure that the counterparty risks are properly monitored and proactively managed; however, none of these measures provides absolute assurance against experiencing financial losses from defaults by our counterparties on their obligations. No guarantee can be given that the collateral provided will at all times be sufficient. Although we maintain clearing capital resources to serve as an additional layer of protection to help ensure that we are able to meet our obligations, these resources may not be sufficient.

In addition, one of our broker-dealer subsidiaries, Execution Access, has a clearing arrangement with the Industrial and Commercial Bank of China Financial Services LLC, or ICBC. As of December 31, 2020, we have contributed $13 million of clearing deposits to ICBC in connection with this clearing arrangement. Some of the trading activity in Execution Access is cleared by ICBC through the Fixed Income Clearing Corporation. Execution Access assumes the counterparty risk of clients that do not clear through the Fixed Income Clearing Corporation. Counterparty risk of clients exists for Execution Access between the trade date and settlement date of the individual transactions, which is at least one business day (or more, if specified by the U.S. Treasury issuance calendar). Counterparties that do not clear through the Fixed Income Clearing Corporation are subject to a credit due diligence process and may be required to post collateral, provide principal letters, or provide other forms of credit enhancement to Execution Access for the purpose of mitigating counterparty risk. Daily position trading limits are also enforced for such counterparties. Although we believe that the potential for us to be required to make payments under these arrangements is mitigated through the pledged collateral and our risk management policies, no guarantee can be provided that these arrangements will at all times be sufficient.

We also have credit risk related to transaction and subscription-based revenues that are billed to customers on a monthly or quarterly basis, in arrears.

Credit losses such as those described above could adversely affect our consolidated financial position and results of operations.

Technology issues relating to our role as exclusive processor for Nasdaq-listed stocks could affect our business.

Nasdaq, as technology provider to the UTP Operating Committee, has implemented measures to enhance the resiliency of the existing processor system. Nasdaq transferred the processor technology platform to our INET platform and this migration further enhanced the resiliency of the processor systems. We further improved the systems' resiliency by adding the UTP SnapShot service. However, if future outages occur or the processor systems fail to function properly while we are operating the systems, it could have an adverse effect on our business, reputation and financial condition.

Stagnation or decline in the listings market could have an adverse effect on our revenues.

The market for listings is dependent on the prosperity of companies and the availability of risk capital. A stagnation or decline in the number of new listings, or an increase in the number of delistings, on The Nasdaq Stock Market and the Nasdaq Nordic and Nasdaq Baltic exchanges could cause a decrease in revenues for future years. Furthermore, a prolonged decrease in the number of listings could negatively impact the growth of our transactions revenues. Our IR & ESG Services business is also impacted by declines in the listings market or increases in acquisitions activity as there will be fewer publicly-traded customers that need our products.

RISKS RELATED TO TRANSACTIONAL ACTIVITIES AND STRATEGIC RELATIONSHIPS

We may not be able to successfully integrate acquired businesses, which may result in an inability to realize the anticipated benefits of our acquisitions.

We must rationalize, coordinate and integrate the operations of our acquired businesses. This process involves complex technological, operational and personnel-related challenges, which are time-consuming and expensive and may disrupt our business. The difficulties, costs and delays that could be encountered may include:

- difficulties, costs or complications in combining the companies' operations, including technology platforms, which could lead to us not achieving the synergies we anticipate or customers not renewing their contracts with us as we migrate platforms;
- incompatibility of systems and operating methods;
- reliance on, or provision of, transition services;
- inability to use capital assets efficiently to develop the business of the combined company;
- difficulties of complying with government-imposed regulations in the U.S. and abroad, which may be conflicting;

- resolving possible inconsistencies in standards, controls, procedures and policies, business cultures and compensation structures;
- the diversion of management's attention from ongoing business concerns and other strategic opportunities;
- difficulties in operating businesses we have not operated before;
- difficulties of integrating multiple acquired businesses simultaneously;
- the retention of key employees and management;
- the implementation of disclosure controls, internal controls and financial reporting systems at non-U.S. subsidiaries to enable us to comply with U.S. GAAP and U.S. securities laws and regulations, including the Sarbanes Oxley Act of 2002, required as a result of our status as a reporting company under the Exchange Act;
- the coordination of geographically separate organizations;
- the coordination and consolidation of ongoing and future research and development efforts;
- possible tax costs or inefficiencies associated with integrating the operations of a combined company;
- pre-tax restructuring and revenue investment costs;
- the retention of strategic partners and attracting new strategic partners; and
- negative impacts on employee morale and performance as a result of job changes and reassignments.

Foreign acquisitions involve risks in addition to those mentioned above, including those related to integration of operations across different cultures and languages, our ability to enforce contracts in various jurisdictions, currency risks and the particular economic, political and regulatory risks associated with specific countries. We may not be able to address these risks successfully, or at all, without incurring significant costs, delays or other operating problems that could disrupt our business and have a material adverse effect on our financial condition.

For these reasons, we may not achieve the anticipated financial and strategic benefits from our acquisitions and strategic initiatives. Any actual cost savings and synergies may be lower than we expect and may take a longer time to achieve than we anticipate, and we may fail to realize the anticipated benefits of acquisitions.

We may be required to recognize impairments of our goodwill, intangible assets or other long-lived assets in the future.

Our business acquisitions typically result in the recording of goodwill and intangible assets, and the recorded values of those assets may become impaired in the future. As of December 31, 2020, goodwill totaled $6.9 billion and intangible assets, net of accumulated amortization, totaled $2.3 billion. The determination of the value of such goodwill and intangible assets requires management to make estimates and assumptions that affect our consolidated financial statements.

We assess goodwill and intangible assets, as well as other long-lived assets, including equity method investments, equity securities, and property and equipment, for potential impairment on an annual basis or more frequently if indicators of impairment arise. We estimate the fair value of such assets by assessing many factors, including historical performance and projected cash flows. Considerable management judgment is necessary to project future cash flows and evaluate the impact of expected operating and macroeconomic changes on these cash flows. The estimates and assumptions we use are consistent with our internal planning process. However, there are inherent uncertainties in these estimates.

There was no impairment of goodwill for the years ended December 31, 2020, 2019 and 2018, and there were no indefinite-lived intangible asset impairment charges in 2020, 2019 and 2018.

We may experience future events that may result in asset impairments. Future disruptions to our business, prolonged economic weakness, due to COVID-19 or otherwise, or significant declines in operating results at any of our reporting units or businesses, may result in impairment charges to goodwill, intangible assets or other long-lived assets. A significant impairment charge in the future could have a material adverse effect on our operating results.

Acquisitions, divestments, investments, joint ventures and other transactional activities may require significant resources and/or result in significant unanticipated losses, costs or liabilities.

Over the past several years, acquisitions have been significant factors in our growth. We have, and may continue to, divest additional businesses or assets in the future. Although we cannot predict our transactional activities, we believe that additional acquisitions, divestments, investments, joint ventures and other transactional activities will be important to our strategy. Such transactions may be material in size and scope. Many of the other potential purchasers of assets in our industry have greater financial resources than we have. Therefore, we cannot be sure that we will be able to complete future transactions on terms favorable to us.

We also invest in early-stage companies through our Nasdaq Venture program and hold minority interests in other entities. Given the size of these investments, we do not have operational control of these entities and may have limited visibility into risk management practices. Thus, we may be subject to additional capital requirements in certain circumstances and financial and reputational risks if there are operational failures.

We may finance future transactions by issuing additional equity and/or debt. The issuance of additional equity in connection with any such transaction could be substantially

dilutive to existing shareholders. In addition, the announcement or implementation of future transactions by us or others could have a material effect on the price of our common stock. The issuance of additional debt could increase our leverage substantially. We could face financial risks associated with incurring additional debt, particularly if the debt results in significant incremental leverage. Additional debt may reduce our liquidity, curtail our access to financing markets, impact our standing with credit rating agencies and increase the cash flow required for debt service. Any incremental debt incurred to finance a transaction could also place significant constraints on the operation of our business.

Furthermore, any future transactions could entail a number of additional risks, including:

- the inability to maintain key pre-transaction business relationships;
- increased operating costs;
- the inability to meet our target for return on invested capital;
- increased debt obligations, which may adversely affect our targeted debt ratios;
- risks to the continued achievement of our strategic direction;
- risks associated with divesting employees, customers or vendors when divesting businesses or assets;
- declines in the value of investments;
- exposure to unanticipated liabilities, including after a transaction is completed;
- incurred but unreported claims for an acquired company;
- difficulties in realizing projected efficiencies, synergies and cost savings; and
- changes in our credit rating and financing costs.

Charges to earnings resulting from acquisition, integration and restructuring costs may materially adversely affect the market value of our common stock.

In accordance with U.S. GAAP, we account for the completion of our acquisitions using the acquisition method of accounting. We allocate the total estimated purchase price to net tangible and identifiable intangible assets based on their fair values as of the date of completion of the acquisition and record the excess of the purchase price over those fair values as goodwill. Our financial results, including earnings per share, could be adversely affected by a number of financial adjustments including the following:

- we may incur additional amortization expense over the estimated useful lives of certain of the intangible assets acquired in connection with acquisitions during such estimated useful lives;
- we may have additional depreciation expense as a result of recording acquired tangible assets at fair value, in accordance with U.S. GAAP, as compared to book value as recorded;
- to the extent the value of goodwill or intangible assets becomes impaired, we may be required to incur material charges relating to the impairment of those assets;
- we may incur additional costs from integrating our acquisitions. The success of our acquisitions depends, in part, on our ability to integrate these businesses into our existing operations and realize anticipated cost savings, revenue synergies and growth opportunities; and
- we may incur restructuring costs in connection with the reorganization of any of our businesses.

RISKS RELATED TO LEGAL AND REGULATORY MATTERS

We operate in a highly regulated industry and may be subject to censures, fines and enforcement proceedings if we fail to comply with regulatory obligations that can be ambiguous and can change unexpectedly.

We operate in a highly regulated industry and are subject to extensive regulation in the U.S., Europe and Canada. The securities trading industry is subject to significant regulatory oversight and could be subject to increased governmental and public scrutiny in the future that can change in response to global conditions and events, or due to changes in trading patterns, such as due to the recent volatility involving the trading of certain stocks.

Our ability to comply with complex and changing regulation is largely dependent on our establishment and maintenance of compliance, audit and reporting systems that can quickly adapt and respond, as well as our ability to attract and retain qualified compliance and other risk management personnel. There is no assurance that our policies and procedures will always be effective or that we will always be successful in monitoring or evaluating the risks to which we are or may be exposed.

Our regulated markets are subject to audits, investigations, administrative proceedings and enforcement actions relating to compliance with applicable rules and regulations. Regulators have broad powers to impose fines, penalties or censure, issue cease-and-desist orders, prohibit operations, revoke licenses or registrations and impose other sanctions on our exchanges, broker-dealers, central securities depositories, clearinghouse and markets for violations of applicable requirements.

In the future, we could be subject to regulatory investigations or enforcement proceedings that could result in substantial sanctions, including revocation of our operating licenses. Any such investigations or proceedings, whether successful or unsuccessful, could result in substantial costs, the diversion of resources, including management time, and potential harm to our reputation, which could have a material adverse effect on our business, results of operations or

financial condition. In addition, our exchanges could be required to modify or restructure their regulatory functions in response to any changes in the regulatory environment, or they may be required to rely on third parties to perform regulatory and oversight functions, each of which may require us to incur substantial expenses and may harm our reputation if our regulatory services are deemed inadequate.

The regulatory framework under which we operate and new regulatory requirements or new interpretations of existing regulatory requirements could require substantial time and resources for compliance, which could make it difficult and costly for us to operate our business.

Under current U.S. federal securities laws, changes in the rules and operations of our securities markets, including our pricing structure, must be reviewed and in many cases explicitly approved by the SEC. The SEC may approve, disapprove, or recommend changes to proposals that we submit. In addition, the SEC may delay either the approval process or the initiation of the public comment process. Favorable SEC rulings and interpretations can be challenged in and reversed by federal courts of appeals, reducing or eliminating the value of such prior interpretations. Any delay in approving changes, or the altering of any proposed change, could have an adverse effect on our business, financial condition and operating results.

We must compete not only with ATSs that are not subject to the same SEC approval process but also with other exchanges that may have lower regulation and surveillance costs than us. There is a risk that trading will shift to exchanges that charge lower fees because, among other reasons, they spend significantly less on regulation.

In 2016, the SEC approved a plan for Nasdaq and other exchanges to establish a CAT, to improve regulators' ability to monitor trading activity. In addition to increased regulatory obligations, implementation of a consolidated audit trail has resulted in significant additional expenditures, including to implement the new technology to meet any plan's requirements. Creating CAT has required the development and implementation of complex and costly technology. This development effort has been funded by the SROs (including Nasdaq) in exchange for promissory notes that Nasdaq expects to be repaid at such time that the SEC approves the assessment of fees for the funding of CAT. The SEC could determine not to approve the assessment of such fees in which case some or all of the promissory notes would not be repaid. In addition, the ongoing failure to timely launch or properly operate such technology exposes Nasdaq and other exchanges to SEC fines.

In addition, our registered broker-dealer subsidiaries are subject to regulation by the SEC, FINRA and other SROs. These subsidiaries are subject to regulatory requirements intended to ensure their general financial soundness and liquidity, which require that they comply with certain minimum capital requirements. The SEC and FINRA impose rules that require notification when a broker-dealer's net capital falls below certain predefined criteria, dictate the ratio of debt to equity in the regulatory capital composition of a broker-dealer and constrain the ability of a broker-dealer to expand its business under certain circumstances. Additionally, the SEC's Uniform Net Capital Rule and FINRA rules impose certain requirements that may have the effect of prohibiting a broker-dealer from distributing or withdrawing capital and requiring prior notice to the SEC and FINRA for certain withdrawals of capital. Any failure to comply with these broker-dealer regulations could have a material adverse effect on the operation of our business, financial condition and operating results.

Our non-U.S. business is subject to regulatory oversight in all the countries in which we operate regulated businesses, such as exchanges, clearinghouses or central securities depositories. In these countries, we have received authorization from the relevant authorities to conduct our regulated business activities. The authorities may issue regulatory fines or may ultimately revoke our authorizations if we do not suitably carry out our regulated business activities. The authorities are also entitled to request that we adopt measures in order to ensure that we continue to fulfill the authorities' requirements. Additionally, we are subject to the obligations under the Benchmark Regulation ((EU) 2016/1011), compliance with which could be costly or cause a change in our business practices.

Furthermore, certain of our customers operate in a highly regulated industry. Regulatory authorities could impose regulatory changes that could impact the ability of our customers to use our exchanges. The loss of a significant number of customers or a reduction in trading activity on any of our exchanges as a result of such changes could have a material adverse effect on our business, financial condition and operating results.

Regulatory changes and changes in market structure and proprietary data could have a material adverse effect on our business.

Regulatory changes adopted by the SEC or other regulators of our markets, and regulatory changes that our markets may adopt in fulfillment of their regulatory obligations, could materially affect our business operations. In recent years, there has been increased regulatory and governmental focus on issues affecting the securities markets, including market structure, technological oversight and fees for proprietary market data, connectivity and transactions. The SEC, FINRA and the national securities exchanges have introduced several initiatives to ensure the oversight, integrity and resilience of markets.

With respect to our regulated businesses, our business model can be severely impacted by policy decisions. In May 2020, the SEC adopted a rule to require changes to the governance of securities information processors. In December 2020, the SEC adopted a rule to modify the infrastructure for the collection, consolidation and dissemination of market data for exchange-listed national market stocks. If either or both of these rules are fully implemented, they may adversely affect our revenues. The timing for the implementation of these

rules is currently unknown, and we believe they may take two to three years to fully implement. If the rules are ultimately implemented as set forth in their adopting releases, demand for certain of our proprietary tape share data products may be reduced, or we may have to reduce our pricing to compete with other entrants into the market for consolidated data. Our opponents in some markets are larger and better funded and, if successful in influencing certain policies, may successfully advocate for positions that adversely impact our business. These regulatory changes could impose significant costs, including litigation costs, and other obligations on the operation of our exchanges and processor systems and have other impacts on our business.

In Canada, all new marketplace fees and changes to existing fees, including trading and market data fees, must be filed with and approved by the Ontario Securities Commission. The Canadian Securities Administrators adopted a Data Fees Methodology that restricts the total amount of fees that can be charged by all marketplaces to a reference benchmark. Currently, all marketplaces are subject to annual reviews of their market data fees tying market data revenues to pre- and post- trade market share metrics. Permitted fee ranges are based on an interim domestic benchmark that is subject to change to an international benchmark, which could lower the permitted fees charged by marketplaces, which could adversely impact our revenues.

Our European exchanges currently offer market data products to customers on a non-discriminatory and reasonable commercial basis. The MiFID II/MiFIR rules entail that the price for regulated market data such as pre- and post-trade data shall be based on cost plus a reasonable margin. However, these terms are not clearly defined. There is a risk that a different interpretation of these terms may influence the fees for European market data products adversely. In addition, any future actions by European Union institutions could affect our ability to offer market data products in the same manner as today, thereby causing an adverse effect on our market data revenues.

We are subject to litigation risks and other liabilities.

Many aspects of our business potentially involve substantial liability risks. Although under current law we are immune from private suits arising from conduct within our regulatory authority and from acts and forbearances incident to the exercise of our regulatory authority, this immunity only covers certain of our activities in the U.S., and we could be exposed to liability under national and local laws, court decisions and rules and regulations promulgated by regulatory agencies.

Some of our other liability risks arise under the laws and regulations relating to the tax, employment, intellectual property, anti-money laundering, technology export, foreign asset controls, foreign corrupt practices, employee labor and employment areas, including anti-discrimination and fair-pay laws and regulations.

Liability could also result from disputes over the terms of a trade, claims that a system failure or delay cost a customer money, claims we entered into an unauthorized transaction or claims that we provided materially false or misleading statements in connection with a securities transaction. As we intend to defend any such litigation actively, significant legal expenses could be incurred. Although we carry insurance that may limit our risk of damages in some cases, we still may sustain uncovered losses or losses in excess of available insurance that would affect our financial condition and results of operations.

We have self-regulatory obligations and also operate for-profit businesses, and these two roles may create conflicts of interest.

We have obligations to regulate and monitor activities on our markets and ensure compliance with applicable law and the rules of our markets by market participants and listed companies. In the U.S., some have expressed concern about potential conflicts of interest of "for-profit" markets performing the regulatory functions of an SRO. We perform regulatory functions and bear regulatory responsibility related to our listed companies and our markets. Any failure by us to diligently and fairly regulate our markets or to otherwise fulfill our regulatory obligations could significantly harm our reputation, prompt SEC scrutiny and adversely affect our business and reputation.

Our Nordic and Baltic exchanges monitor trading and compliance with listing standards in accordance with the European Union's Market Abuse Regulation and other applicable laws. The prime objective of such monitoring activities is to promote confidence in the exchanges among the general public and to ensure fair and orderly functioning markets. The monitoring functions within the Nasdaq Nordic and Nasdaq Baltic exchanges are the responsibility of the surveillance departments or other surveillance personnel. The surveillance departments or personnel are intended to strengthen the integrity of and confidence in these exchanges and to avoid conflicts of interest. Any failure to diligently and fairly regulate the Nordic and Baltic exchanges could significantly harm our reputation, prompt scrutiny from regulators and adversely affect our business and reputation.

Laws and regulations regarding the handling of personal data and information may affect our services or result in increased costs, legal claims or fines against us.

Our business relies on the processing of data in many jurisdictions and the movement of data, including personal data, across national borders. Legal and contractual requirements relating to the collection, storage, handling, use, disclosure, transfer and security of personal data continue to evolve; regulatory scrutiny and customer requirements in this area are increasing around the world. Significant uncertainty exists as privacy and data protection laws may be interpreted and applied differently across jurisdictions and may create inconsistent or conflicting requirements with privacy and other laws to which we are subject.

Laws and regulations such as the European Union General Data Protection Regulation, or GDPR, and the California Consumer Privacy Act, or CCPA, can have application and effect beyond their territorial limits, and require companies to meet new requirements regarding the handling of personal data. In addition to directly applying to certain Nasdaq business activities, these laws impact many of our customers, which may affect their requirements and decisions related to services that we offer. Our efforts to comply with GDPR, CCPA and other privacy and data protection laws may entail substantial expenses, may divert resources from other initiatives and projects, and could impact the services that we offer. Furthermore, enforcement actions and investigations by regulatory authorities, as well as third party litigation, related to data security incidents and privacy violations continue to increase. The enactment of more restrictive laws, rules or regulations, future enforcement actions or investigations, or the creation of new rights to pursue damages could impact us through increased costs or restrictions on our business, and noncompliance could result in regulatory penalties and significant legal liability.

Changes in tax laws, regulations or policies could have a material adverse effect on our financial results.

Like other corporations, we are subject to taxes at the federal, state and local levels, as well as in non-U.S. jurisdictions. Changes in tax laws, regulations or policies could result in us having to pay higher taxes, which may reduce our net income, or could adversely affect our ability to continue our capital allocation program or effect strategic transactions in a tax-favorable manner. In addition, such changes, including federal or state financial transaction taxes, may increase the cost of our offerings or services, which may cause our clients to reduce their use of our services.

In addition, some of our subsidiaries are subject to tax in the jurisdictions in which they are organized or operate. In computing our tax obligation in these jurisdictions, we take various tax positions. We cannot ensure that upon review of these positions, the applicable authorities will agree with our positions. A successful challenge by a tax authority could result in additional taxes imposed on our clients or our subsidiaries.

RISKS RELATED TO LIQUIDITY AND CAPITAL RESOURCES

Our credit rating could increase the cost of our funding from the capital markets.

Our debt is currently rated investment grade by two of the major rating agencies. These rating agencies regularly evaluate us, and their ratings of our long-term debt and commercial paper are based on a number of factors, including our financial strength and corporate development activity, as well as factors not entirely within our control, including conditions affecting our industry generally. There can be no assurance that we will maintain our current ratings. Our failure to maintain such ratings could reduce or eliminate our ability to issue commercial paper and adversely affect the cost and other terms upon which we are able to obtain funding and increase our cost of capital. A reduction in credit ratings would also result in increases in the cost of our commercial paper and other outstanding debt as the interest rate on the outstanding amounts under our credit facilities and our senior notes fluctuates based on our credit ratings.

Our leverage limits our financial flexibility, increases our exposure to weakening economic conditions and may adversely affect our ability to obtain additional financing.

Our indebtedness as of December 31, 2020 was $5.5 billion. We may borrow additional amounts by utilizing available liquidity under our existing credit facilities, issuing additional debt securities or issuing short-term, unsecured commercial paper notes through our commercial paper program.

Our leverage could:

- reduce funds available to us for operations and general corporate purposes or for capital expenditures as a result of the dedication of a substantial portion of our consolidated cash flow from operations to the payment of principal and interest on our indebtedness;
- increase our exposure to a continued downturn in general economic conditions;
- place us at a competitive disadvantage compared with our competitors with less debt;
- affect our ability to obtain additional financing in the future for refinancing indebtedness, acquisitions, working capital, capital expenditures or other purposes; and
- increase our cost of debt and reduce or eliminate our ability to issue commercial paper.

In addition, we must comply with the covenants in our credit facilities. Among other things, these covenants restrict our ability to effect certain fundamental transactions, dispose of certain assets, incur additional indebtedness and grant liens on assets. Failure to meet any of the covenant terms of our credit facilities could result in an event of default. If an event of default occurs, and we are unable to receive a waiver of default, our lenders may increase our borrowing costs, restrict our ability to obtain additional borrowings and accelerate all amounts outstanding.

We will need to invest in our operations to maintain and grow our business and to integrate acquisitions, and we may need additional funds, which may not be readily available.

We depend on the availability of adequate capital to maintain and develop our business. Although we believe that we can meet our current capital requirements from internally generated funds, cash on hand and borrowings under our revolving credit facility and commercial paper program, if the capital and credit markets experience volatility, access to capital or credit may not be available on terms acceptable to us or at all. Limited access to capital or credit in the future could have an impact on our ability to refinance debt,

maintain our credit rating, meet our regulatory capital requirements, engage in strategic initiatives, make acquisitions or strategic investments in other companies, pay dividends, repurchase our stock or react to changing economic and business conditions. If we are unable to fund our capital or credit requirements, it could have an adverse effect on our business, financial condition and operating results.

In addition to our debt obligations, we will need to continue to invest in our operations for the foreseeable future to integrate acquired businesses and to fund new initiatives. If we do not achieve the expected operating results, we will need to reallocate our cash resources. This may include borrowing additional funds to service debt payments, which may impair our ability to make investments in our business or to integrate acquired businesses.

Should we need to raise funds through issuing additional equity, our equity holders will suffer dilution. Should we need to raise funds through incurring additional debt, we may become subject to covenants more restrictive than those contained in our credit facilities, the indentures governing our notes and our other debt instruments. Furthermore, if adverse economic conditions occur, we could experience decreased revenues from our operations which could affect our ability to satisfy financial and other restrictive covenants to which we are subject under our existing indebtedness.

RISKS RELATED TO INTELLECTUAL PROPERTY AND BRAND REPUTATION

Damage to our reputation or brand name could have a material adverse effect on our businesses.

One of our competitive strengths is our strong reputation and brand name. Various issues may give rise to reputational risk, including issues relating to:

- our ability to maintain the security of our data and systems;
- the quality and reliability of our technology platforms and systems;
- the ability to fulfill our regulatory obligations;
- the ability to execute our business plan, key initiatives or new business ventures and the ability to keep up with changing customer demand;
- the representation of our business in the media;
- the accuracy of our financial statements and other financial and statistical information;
- the accuracy of our financial guidance or other information provided to our investors;
- the quality of our corporate governance structure;
- the quality of our products, including the reliability of our transaction-based, IR & ESG Services and market technology products, the accuracy of the quote and trade information provided by our Market Data business and the accuracy of calculations used by our Indexes business for indexes and unit investment trusts;
- the quality of our disclosure controls or internal controls over financial reporting, including any failures in supervision;
- extreme price volatility on our markets;
- any negative publicity surrounding our listed companies;
- any negative publicity surrounding the use of our products and/or services by our customers, including in connection with emerging asset classes such as crypto assets; and
- any misconduct, fraudulent activity or theft by our employees or other persons formerly or currently associated with us.

Damage to our reputation could cause some issuers not to list their securities on our exchanges, as well as reduce the trading volumes or values on our exchanges or cause us to lose customers in our Market Data, Index, IR & ESG Services or Market Technology businesses. This, in turn, may have a material adverse effect on our business, financial condition and operating results.

Failure to meet customer expectations or deadlines for the implementation of our products could result in negative publicity, losses and reduced sales, each of which may harm our reputation, business and results of operations.

We generally mutually agree with our customers on the duration, budget and costs associated with the implementation of certain of our products, particularly our Market Technology large-scale market infrastructure projects. Various factors may cause implementations to be delayed, inefficient or otherwise unsuccessful, including due to unforeseen project complexities, our deployment of insufficient resources, logistical challenges due to the effects of COVID-19 or other external factors. The effects of a failure to meet an implementation schedule could include monetary credits for current or future service engagements, a reduction in fees for the project, or the expenditure of additional expenses to mitigate such delays. In addition, time-consuming implementations may also increase the personnel we must allocate to such customer, thereby increasing our costs and diverting attention from other projects. Unsuccessful, lengthy, or costly customer implementation projects could result in claims from customers, decreased customer satisfaction, harm to our reputation, and opportunities for competitors to displace us, each of which could have an adverse effect on our reputation, business and results of operations.

Failure to protect our intellectual property rights, or allegations that we have infringed on the intellectual property rights of others, could harm our brand-building efforts and ability to compete effectively.

To protect our intellectual property rights, we rely on a combination of trademark laws, copyright laws, patent laws,

trade secret protection, confidentiality agreements and other contractual arrangements with our affiliates, clients, strategic partners, employees and others. However, the efforts we have taken to protect our intellectual property and proprietary rights might not be sufficient, or effective, at stopping unauthorized use of those rights. We may be unable to detect the unauthorized use of, or take appropriate steps to enforce, our intellectual property rights.

We have registered, or applied to register, our trademarks in the United States and in over 50 foreign jurisdictions and have pending U.S. and foreign applications for other trademarks. We also maintain copyright protection for software products and pursue patent protection for inventions developed by us. We hold a number of patents, patent applications and licenses in the United States and other foreign jurisdictions. However, effective trademark, copyright, patent and trade secret protection might not be available or cost-effective in every country in which our services and products are offered. Moreover, changes in patent law, such as changes in the law regarding patentable subject matter, could also impact our ability to obtain patent protection for our innovations. There is also a risk that the scope of protection under our patents may not be sufficient in some cases, or that existing patents may be deemed invalid or unenforceable. Failure to protect our intellectual property adequately could harm our brand and affect our ability to compete effectively. Further, defending our intellectual property rights could result in the expenditure of significant financial and managerial resources.

Third parties may assert intellectual property rights claims against us, which may be costly to defend, could require the payment of damages and could limit our ability to use certain technologies, trademarks or other intellectual property. Any intellectual property claims, with or without merit, could be expensive to litigate or settle and could divert management resources and attention. Successful challenges against us could require us to modify or discontinue our use of technology or business processes where such use is found to infringe or violate the rights of others, or require us to purchase licenses from third parties, any of which could adversely affect our business, financial condition and operating results.

GENERAL RISK FACTORS

We are a holding company that depends on cash flow from our subsidiaries to meet our obligations, and any restrictions on our subsidiaries' ability to pay dividends or make other payments to us may have a material adverse effect on our results of operations and financial condition.

As a holding company, we require dividends and other payments from our subsidiaries to meet cash requirements. Minimum capital requirements mandated by regulatory authorities having jurisdiction over some of our regulated subsidiaries indirectly restrict the amount of dividends paid upstream.

In addition, unremitted earnings of certain subsidiaries outside of the U.S. are used to finance our international operations and are considered to be indefinitely reinvested.

If our subsidiaries are unable to pay dividends and make other payments to us when needed, we may be unable to satisfy our obligations, which would have a material adverse effect on our business, financial condition and operating results.

We may experience fluctuations in our operating results, which may adversely affect the market price of our common stock.

Our industry is risky and unpredictable and is directly affected by many national and international factors beyond our control, including:

- economic, political and geopolitical market conditions;
- natural disasters, terrorism, pandemics, war or other catastrophes;
- broad trends in finance and technology;
- changes in price levels and volatility in the stock markets;
- the level and volatility of interest rates;
- changes in government monetary or tax policy;
- the perceived attractiveness of the U.S. or European capital markets; and
- inflation.

Any one of these factors could have a material adverse effect on our business, financial condition and operating results by causing a substantial decline in the financial services markets and reducing trading volumes or values.

Additionally, since borrowings under our credit facilities bear interest at variable rates and commercial paper is issued at prevailing interest rates, any increase in interest rates on debt that we have not fixed using interest rate hedges will increase our interest expense, reduce our cash flow or increase the cost of future borrowings or refinancings. Other than variable rate debt, we believe our business has relatively large fixed costs and low variable costs, which magnifies the impact of revenue fluctuations on our operating results. As a result, a decline in our revenue may lead to a relatively larger impact on operating results. A substantial portion of our operating expenses is related to personnel costs, regulation and corporate overhead, none of which can be adjusted quickly and some of which cannot be adjusted at all. Our operating expense levels are based on our expectations for future revenue. If actual revenue is below management's expectations, or if our expenses increase before revenues do, both revenues less transaction-based expenses and operating results would be materially and adversely affected. Because of these factors, it is possible that our operating results or other operating metrics may fail to meet the expectations of stock market analysts and investors. If this happens, the market price of our common stock may be adversely affected.

We rely on third parties to perform certain functions, and our business could be adversely affected if these third parties fail to perform as expected.

We rely on third parties for regulatory, data center, cloud, data storage, data content, clearing and other services. Interruptions or delays in services from our third-party data center hosting facilities or cloud computing platform providers could impair the delivery of our services and harm our business. To the extent that any of our vendors or other third-party service providers experiences difficulties, materially changes their business relationship with us or is unable for any reason to perform their obligations, our business or our reputation may be materially adversely affected.

We also rely on members of our trading community to maintain markets and add liquidity. To the extent that any of our largest members experiences difficulties, materially changes its business relationship with us or is unable for any reason to perform market making activities, our business or our reputation may be materially adversely affected.

Our operational processes are subject to the risk of error, which may result in financial loss or reputational damage.

We have instituted extensive controls to reduce the risk of error inherent in our operations; however, such risk cannot completely be eliminated. Our businesses are highly dependent on our ability to process and report, on a daily basis, a large number of transactions across numerous and diverse markets. Some of our operations require complex processes, and the introduction of new products or services or changes in processes or reporting due to regulatory requirements may result in an increased risk of errors for a period after implementation. Additionally, the likelihood of such errors or vulnerabilities is heightened as we acquire new products from third parties, whether as a result of acquisitions or otherwise.

Data, other content or information that we distribute may contain errors or be delayed, causing reputational harm. Use of our products and services as part of the investment process creates the risk that clients, or the parties whose assets are managed by our clients, may pursue claims against us in the event of such delay or error. Even with a favorable outcome, significant litigation against us might unduly burden management, personnel, financial and other resources.

In addition, the sophisticated software we sell to our customers may contain undetected errors or vulnerabilities, some of which may be discovered only after delivery, or could fail to perform its intended purpose. Because our clients depend on our solutions for critical business functions, any service interruptions, failures or other issues may result in lost or delayed market acceptance and lost sales, or negative customer experiences that could damage our reputation, resulting in the loss of customers, loss of revenues and liability for damages, which may adversely affect our business and financial results.

Climate change may have a long-term adverse impact on our business.

While we seek to mitigate our business risks associated with climate change by establishing robust environmental and sustainability programs, there are inherent climate related risks wherever our business is conducted. There is an increased focus from our investors, clients, employees, and other stakeholders concerning corporate citizenship and sustainability matters. Access to clean water and reliable energy in the communities where we conduct our business, whether for our offices, data centers, vendors, clients or other stakeholders, is a priority. For example, changes in weather where we operate may increase the costs of powering and cooling our data centers or the facilities that we use to operate our exchanges and clearinghouses, develop our products or provide cloud-based services. Climate related events, including extreme weather events and their impact on the critical infrastructure in the United States and elsewhere, have the potential to disrupt our business or the business of our clients; cause increased volatility in commodity markets in which Nasdaq Clearing operates as a clearinghouse, which may result in Nasdaq Clearing holding insufficient collateral for such volatility; and create adverse market conditions, including trading volatility beyond historical levels, any of which could adversely affect our business, reputation, financial condition and operating results.

Failure to attract and retain key personnel may adversely affect our ability to conduct our business.

Our future success depends, in large part, upon our ability to attract and retain highly qualified and skilled professional personnel that can learn and embrace new technologies. Competition for key personnel in the various localities and business segments in which we operate is intense. Our ability to attract and retain key personnel, in particular senior officers or technology personnel, will be dependent on a number of factors, including prevailing market conditions, office/remote working arrangements and compensation packages offered by companies competing for the same talent. There is no guarantee that we will have the continued service of key employees who we rely upon to execute our business strategy and identify and pursue strategic opportunities and initiatives. In particular, we may have to incur costs to replace senior officers or other key employees who leave, and our ability to execute our business strategy could be impaired if we are unable to replace such persons in a timely manner.

Our non-U.S. business operates in various international markets, particularly emerging markets that are subject to greater political, economic and social uncertainties than developed countries.

Our non-U.S. business operates in various international markets, including but not limited to Northern Europe, the Baltics, the Middle East, Africa and Asia. Therefore, our non-U.S. operations are subject to the risk inherent in the international environment. Political, economic or social events or developments in one or more of our non-U.S.

locations could adversely affect our operations and financial results. Some locations, such as Lithuania, India and the Philippines, have economies that may be subject to greater political, economic and social uncertainties than countries with more developed institutional structures, which may increase our operational risk.

Unforeseen or catastrophic events could interrupt our critical business functions. In addition, our U.S. and European businesses are heavily concentrated in particular areas and may be adversely affected by events in those areas.

We may incur losses as a result of unforeseen or catastrophic events, such as terrorist attacks, natural disasters, pandemics (such as COVID-19), extreme weather, fire, power loss, telecommunications failures, human error, theft, sabotage and vandalism. Given our position in the global capital markets, we may be more likely than other companies to be a target for malicious disruption activities.

In addition, our U.S. and European business operations are heavily concentrated in the U.S. East Coast, and Stockholm, Sweden, respectively. Any event that impacts either of those geographic areas could potentially affect our ability to operate our businesses.

We have disaster recovery and business continuity plans and capabilities for critical systems and business functions to mitigate the risk of an interruption. Any interruption in our critical business functions or systems could negatively impact our financial condition and operating results. Additionally, some colocation customers may lack adequate disaster recovery solutions to avoid loss of trade flow from a sustained interruption of our critical systems.

Because we have operations in numerous countries, we are exposed to currency risk.

We have operations in the U.S., the Nordic and Baltic countries, the United Kingdom, Australia and many other foreign countries. We therefore have significant exposure to exchange rate movements between the Euro, Swedish Krona and other foreign currencies towards the U.S. dollar. Significant inflation or disproportionate changes in foreign exchange rates with respect to one or more of these currencies could occur as a result of general economic conditions, acts of war or terrorism, changes in governmental monetary or tax policy, changes in local interest rates or other factors. These exchange rate differences will affect the translation of our non-U.S. results of operations, interest expense and financial condition into U.S. dollars as part of the preparation of our consolidated financial statements.

If our risk management methods are not effective, our business, reputation and financial results may be adversely affected.

We utilize widely-accepted methods to identify, assess, monitor and manage our risks, including oversight of risk management, by Nasdaq's Global Risk Management Committee, which is comprised of senior executives and has the responsibility for regularly reviewing risks and referring significant risks to the board of directors or specific board committees. Local risk management committees in our international offices provide local risk oversight and escalation to local boards, as appropriate. Certain risk management methods require subjective evaluation of dynamic information regarding markets, customers or other matters. That variable information may not in all cases be accurate, complete, up-to-date or properly evaluated. If we do not successfully identify, assess, monitor or manage the risks to which we are exposed, our business, reputation, financial condition and operating results could be materially adversely affected.

Decisions to declare future dividends on our common stock will be at the discretion of our board of directors based upon a review of relevant considerations. Accordingly, there can be no guarantee that we will pay future dividends to our stockholders.

Our board of directors regularly declares quarterly cash dividend payments on our outstanding common stock. Future declarations of quarterly dividends and the establishment of future record and payment dates are subject to approval by Nasdaq's board of directors. The board's determination to declare dividends will depend upon our profitability and financial condition, contractual restrictions, restrictions imposed by applicable law and other factors that the board deems relevant. Based on an evaluation of these factors, the board of directors may determine not to declare future dividends at all or to declare future dividends at a reduced amount. Accordingly, there can be no guarantee that we will pay future dividends to our stockholders.

Provisions of our certificate of incorporation, by-laws, exchange rules (including provisions included to address SEC concerns) and governing law restrict the ownership and voting of our common stock. In addition, such provisions could delay or prevent a change in control of us and entrench current management.

Our organizational documents place restrictions on the voting rights of certain stockholders. The holders of our common stock are entitled to one vote per share on all matters to be voted upon by the stockholders except that no person may exercise voting rights in respect of any shares in excess of 5% of the then outstanding shares of our common stock. Any change to the 5% voting limitation would require SEC approval.

In response to the SEC's concern about a concentration of our ownership, the rules of some of our exchange subsidiaries include a prohibition on any member or any person associated with a member of the exchange from beneficially owning more than 20% of our outstanding voting interests. SEC consent would be required before any investor could obtain more than a 20% voting interest in us. The rules of some of our exchange subsidiaries also require the SEC's approval of any business ventures with exchange members, subject to exceptions.

Our organizational documents contain provisions that may be deemed to have an anti-takeover effect and may delay, deter or prevent a change of control of us, such as a tender offer or takeover proposal that might result in a premium over the market price for our common stock. Additionally, certain of these provisions make it more difficult to bring about a change in the composition of our board of directors, which could result in entrenchment of current management.

Our certificate of incorporation and by-laws:

- do not permit stockholders to act by written consent;
- require certain advance notice for director nominations and actions to be taken at annual meetings; and
- authorize the issuance of undesignated preferred stock, or "blank check" preferred stock, which could be issued by our board of directors without stockholder approval.

Section 203 of the Delaware General Corporation Law imposes restrictions on mergers and other business combinations between us and any holder of 15% or more (or, in some cases, a holder who previously held 15% or more) of our common stock. In general, Delaware law prohibits a publicly held corporation from engaging in a "business combination" with an "interested stockholder" for three years after the stockholder becomes an interested stockholder, unless the corporation's board of directors and stockholders approve the business combination in a prescribed manner.

Finally, many of the European countries where we operate regulated entities require prior governmental approval before an investor acquires 10% or greater of our common stock.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

We conduct our business operations in leased facilities. We do not own any real property. Our U.S. headquarters are located in New York, New York, and our European headquarters are located in Stockholm, Sweden. We also lease space in multiple locations around the world, which are used for research and development, sales and support, and administrative activities, as well as for data centers and disaster preparedness facilities.

Generally, our properties are not allocated for use by a particular segment. Instead, most of our properties are used by two or more segments. We believe the facilities that we occupy are adequate for the purposes for which they are currently used and are well-maintained.

Item 3. Legal Proceedings

See "Legal and Regulatory Matters - Litigation," of Note 18, "Commitments, Contingencies and Guarantees," to the consolidated financial statements, which is incorporated herein by reference.

Item 4. Mine Safety Disclosures

Not applicable.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Market Information

Our common stock is listed on The Nasdaq Stock Market under the ticker symbol "NDAQ." As of February 11, 2021, we had approximately 229 holders of record of our common stock.

Issuer Purchases of Equity Securities

Share Repurchase Program

See "Share Repurchase Program," of Note 12, "Nasdaq Stockholders' Equity," to the consolidated financial statements for further discussion of our share repurchase program.

Purchases of Equity Securities by the Issuer and Affiliated Purchasers

The table below represents repurchases made by or on behalf of us or any "affiliated purchaser" of our common stock during the fiscal quarter ended December 31, 2020:

Period	(a) Total Number of Shares Purchased	(b) Average Price Paid Per Share	(c) Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	(d) Maximum Dollar Value of Shares that May Yet Be Purchased Under the Plans or Programs (in millions)
October 2020				
Share repurchase program[1]	—	$ —	—	$ 446
Employee transactions[2]	12,466	$ 127.08	N/A	N/A
November 2020				
Share repurchase program[1]	77,364	$ 126.70	77,364	$ 436
Employee transactions[2]	55	$ 133.20	N/A	N/A
December 2020				
Share repurchase program[1]	203,617	$ 127.16	203,617	$ 410
Employee transactions[2]	55,205	$ 133.72	N/A	N/A
Total Quarter Ended December 31, 2020				
Share repurchase program	280,981	$ 127.04	280,981	$ 410
Employee transactions	67,726	$ 132.49	N/A	N/A

N/A Not applicable.

(1) See "Share Repurchase Program," of Note 12, "Nasdaq Stockholders' Equity," to the consolidated financial statements for further discussion of our share repurchase program.

(2) Represents shares surrendered to us to satisfy tax withholding obligations arising from the vesting of restricted stock and PSUs issued to employees.

PERFORMANCE GRAPH

The following graph compares the total return of our common stock to the Nasdaq Composite Index, the S&P 500 and a peer group selected by us, shown below, for the past five years:

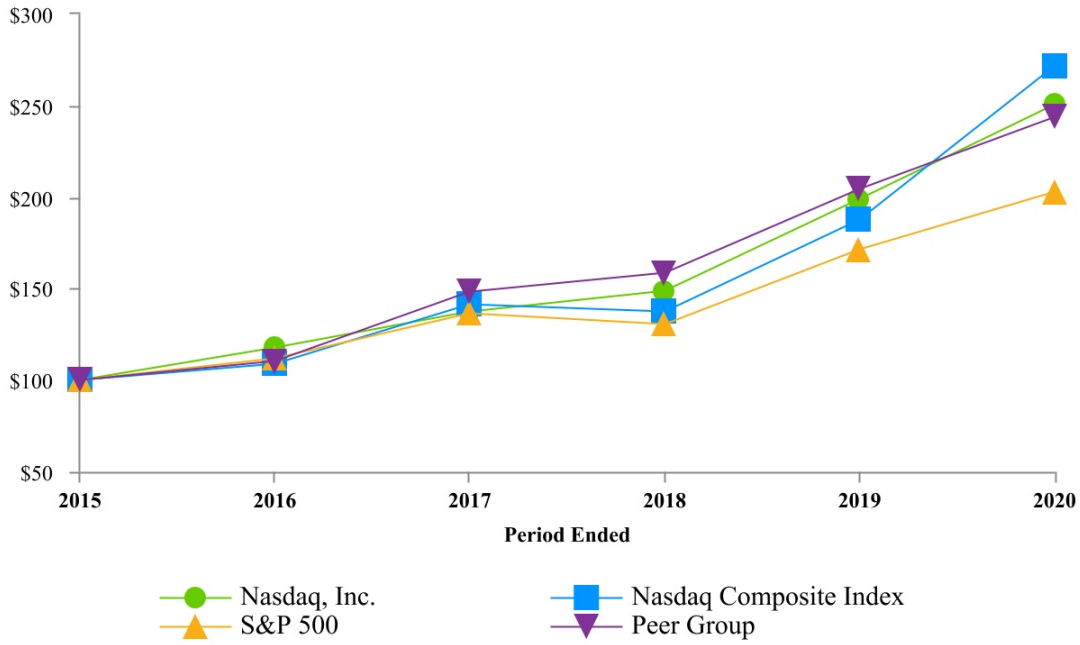
Peer Group

• ASX Limited	• Deutsche Börse AG	• LSE
• B3 S.A.	• Euronext N.V.	• Singapore Exchange Limited
• Bolsas Mexicana de Valores, S.A.B. de C.V.	• Hong Kong Exchanges and Clearing Limited	• TMX Group Limited
• Cboe	• ICE	
• CME Group Inc.	• Japan Exchange Group, Inc	

The figures represented below assume an initial investment of $100 in the common stock or index at the closing price on December 31, 2015 and the reinvestment of all dividends.

COMPARISON OF 5 YEAR CUMULATIVE TOTAL RETURN*

Among Nasdaq, Inc., the Nasdaq Composite Index, the S&P 500, and a Peer Group



* $100 invested on 12/31/2015 in stock or index, including reinvestment of dividends.

	Fiscal Year Ended December 31,					
	2015	2016	2017	2018	2019	2020
Nasdaq, Inc.	$ 100	$ 117	$ 137	$ 148	$ 199	$ 251
Nasdaq Composite Index	100	109	141	137	187	272
S&P 500	100	112	136	130	171	203
Peer Group	100	110	148	159	204	244

Item 6. Selected Financial Data

As a result of our early adoption, in December 2020, of SEC Final Rule Release No. 33-10890, "Management's Discussion and Analysis, Selected Financial Data, and Supplementary Financial Information," this item has been omitted.

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

The following discussion and analysis of the financial condition and results of operations of Nasdaq should be read in conjunction with our consolidated financial statements and related notes included in this Form 10-K, as well as the discussion under "Item 1A. Risk Factors." For further discussion of our growth strategy, products and services, and competitive strengths, see "Item 1. Business." Unless stated otherwise, the comparisons presented in this discussion and analysis refer to the year-over-year comparison of changes in our financial condition and results of operations as of and for the fiscal years ended December 31, 2020 and December 31, 2019. Discussion of fiscal year 2018 items and the year-over year comparison of changes in our financial condition and results of operations as of and for the fiscal years ended December 31, 2019 and December 31, 2018 can be found in Part II, "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations" of our Annual Report on Form 10-K for the fiscal year ended December 31, 2019, which was previously filed with the SEC on February 25, 2020.

Business Segments

We manage, operate and provide our products and services in four business segments: Market Services, Corporate Platforms, Investment Intelligence and Market Technology. See Note 1, "Organization and Nature of Operations," and Note 19, "Business Segments," to the consolidated financial statements for further discussion of our reportable segments and geographic data, as well as how management allocates resources, assesses performance and manages these businesses as four separate segments.

Impact of COVID-19 on Our Business

For a discussion of the impact of COVID-19 on our business, see "Item 1A. Risk Factors - Risks Related To Our Business and Industry - The COVID-19 pandemic could have an adverse effect on our business, financial condition, liquidity or results of operations," and "Liquidity and Capital Resources."

Sources of Revenues and Transaction-Based Expenses

See "Revenue Recognition and Transaction-Based Expenses," of Note 2, "Summary of Significant Accounting Policies," to the consolidated financial statements for further discussion of our sources of revenues and transaction-based expenses.

Nasdaq's Operating Results

Key Drivers

The following table and charts include key drivers and other metrics for our Market Services, Corporate Platforms, Investment Intelligence and Market Technology segments. In evaluating the performance of our business, our senior management closely evaluates these key drivers.

	Year Ended December 31,		
	2020	2019	2018
Market Services			
Equity Derivative Trading and Clearing			
U.S. equity options			
Total industry average daily volume (in millions)	27.7	17.5	18.2
Nasdaq PHLX matched market share	12.7 %	15.9 %	15.7 %
The Nasdaq Options Market matched market share	9.8 %	8.8 %	9.4 %
Nasdaq BX Options matched market share	0.2 %	0.2 %	0.4 %
Nasdaq ISE Options matched market share	7.8 %	9.0 %	8.8 %
Nasdaq GEMX Options matched market share	5.6 %	4.2 %	4.5 %
Nasdaq MRX Options matched market share	0.7 %	0.2 %	0.1 %
Total matched market share executed on Nasdaq's exchanges	36.8 %	38.3 %	38.9 %
Nasdaq Nordic and Nasdaq Baltic options and futures			
Total average daily volume of options and futures contracts[1]	320,204	366,289	339,139
Cash Equity Trading			
Total U.S.-listed securities			
Total industry average daily share volume (in billions)	10.9	7.0	7.3
Matched share volume (in billions)	508.3	348.1	358.5
The Nasdaq Stock Market matched market share	16.8 %	17.2 %	15.9 %
Nasdaq BX matched market share	0.9 %	1.7 %	2.8 %
Nasdaq PSX matched market share	0.6 %	0.7 %	0.8 %
Total matched market share executed on Nasdaq's exchanges	18.3 %	19.6 %	19.5 %
Market share reported to the FINRA/Nasdaq Trade Reporting Facility	31.8 %	29.8 %	31.3 %
Total market share[2]	50.1 %	49.4 %	50.8 %
Nasdaq Nordic and Nasdaq Baltic securities			
Average daily number of equity trades executed on Nasdaq's exchanges	933,822	590,705	618,579
Total average daily value of shares traded (in billions)	$ 5.6	$ 4.5	$ 5.6
Total market share executed on Nasdaq's exchanges	78.1 %	72.8 %	68.8 %
FICC			
Fixed Income			
U.S. fixed income volume ($ billions traded)	$ 6,169	$ 10,465	$ 15,983
Total average daily volume of Nasdaq Nordic and Nasdaq Baltic fixed income contracts	103,379	112,738	132,475
Commodities			
Power contracts cleared (TWh)[3]	956	842	1,067
Corporate Platforms			
IPOs			
The Nasdaq Stock Market	316	188	186
Exchanges that comprise Nasdaq Nordic and Nasdaq Baltic	45	34	53
Total new listings			
The Nasdaq Stock Market[4]	454	313	303
Exchanges that comprise Nasdaq Nordic and Nasdaq Baltic[5]	67	53	72
Number of listed companies			
The Nasdaq Stock Market[6]	3,392	3,140	3,058
Exchanges that comprise Nasdaq Nordic and Nasdaq Baltic[7]	1,071	1,040	1,019
Investment Intelligence			
Number of licensed ETPs	339	332	365
ETP AUM tracking Nasdaq indexes (in billions)	$ 359	$ 233	$ 172
Market Technology			
Order intake (in millions)[8]	$ 240	$ 366	$ 223
Annualized recurring revenue, or ARR (in millions)[9]	$ 283	$ 260	$ 222

(1) Includes Finnish option contracts traded on Eurex for which Nasdaq and Eurex have a revenue sharing arrangement.

(2) Includes transactions executed on The Nasdaq Stock Market's, Nasdaq BX's and Nasdaq PSX's systems plus trades reported through the FINRA/Nasdaq Trade Reporting Facility.

(3) Transactions executed on Nasdaq Commodities or OTC and reported for clearing to Nasdaq Commodities measured by Terawatt hours (TWh).

(4) New listings include IPOs, including issuers that switched from other listing venues, closed-end funds and separately listed ETPs.

(5) New listings include IPOs and represent companies listed on the Nasdaq Nordic and Nasdaq Baltic exchanges and companies on the alternative markets of Nasdaq First North.

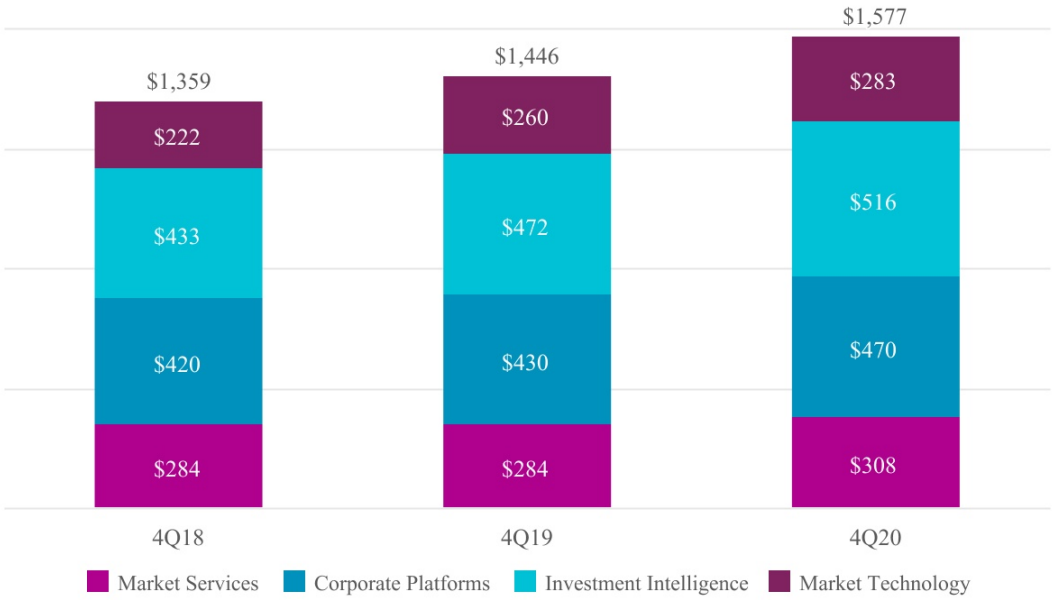
(6) Number of total listings on The Nasdaq Stock Market at period end, including 412 ETPs as of December 31, 2020, 412 as of December 31, 2019 and 392 as of December 31, 2018.

(7) Represents companies listed on the Nasdaq Nordic and Nasdaq Baltic exchanges and companies on the alternative markets of Nasdaq First North.

(8) Total contract value of orders signed during the period.

(9) ARR for a given period is the annualized revenue of active Market Technology support and SaaS subscription contracts. ARR is currently one of our key performance metrics to assess the health and trajectory of our recurring business. ARR does not have any standardized definition and is therefore unlikely to be comparable to similarly titled measures presented by other companies. ARR should be viewed independently of revenue and deferred revenue and is not intended to be combined with or to replace either of those items. ARR is not a forecast and the active contracts at the end of a reporting period used in calculating ARR may or may not be extended or renewed by our customers.

The following chart summarizes our annualized recurring revenue, or ARR (in millions):

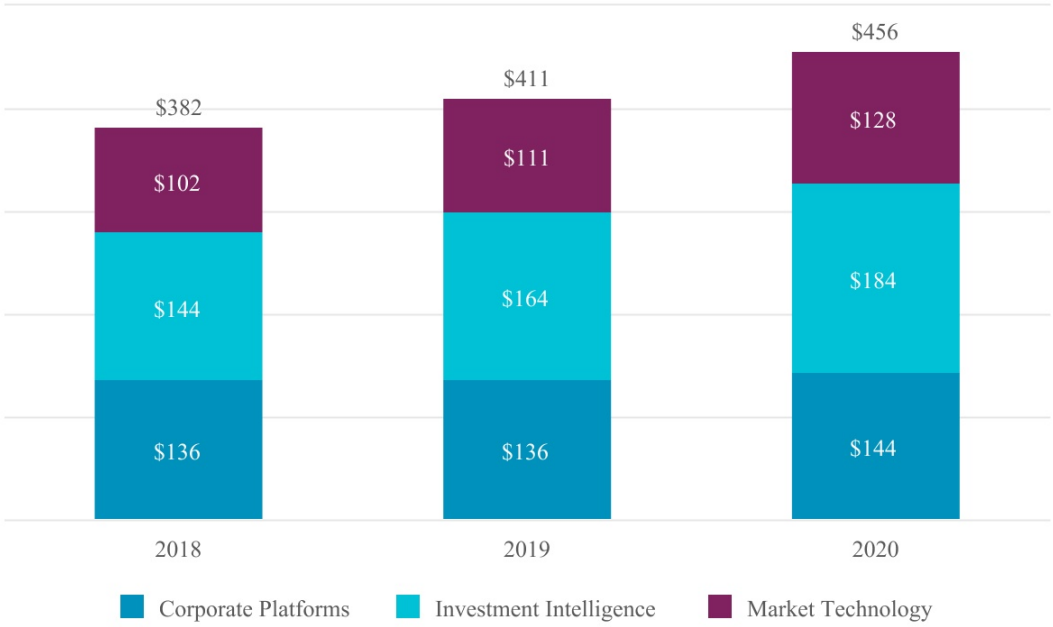


ARR for a given period is the annualized revenue derived from subscription contracts with a defined contract value. This excludes contracts that are not recurring, are one-time in nature, or where the contract value fluctuates based on defined metrics. ARR is currently one of our key performance metrics to assess the health and trajectory of our recurring business. ARR does not have any standardized definition and is therefore unlikely to be comparable to similarly titled measures presented by other companies. ARR should be viewed independently of revenue and deferred revenue and is not intended to be combined with or to replace either of those items. ARR is not a forecast and the active contracts at the end of a reporting period used in calculating ARR may or may not be extended or renewed by our customers.

Includes:

- Trade Management Services business, excluding one-time service requests.
- U.S. and Nordic annual listing fees, IR and ESG products, including subscription contracts for IR Insight, Boardvantage and OneReport, and IR advisory services.
- Proprietary market data and index data subscriptions as well as subscription contracts for eVestment, Solovis, DWA tools and services, Nasdaq Fund Network and Quandl. Also includes guaranteed minimum on futures contracts within the Index business.
- Active Market Technology support and SaaS subscription contracts.

The following chart summarizes our SaaS revenues for the years ended December 31, 2018, 2019 and 2020 (in millions):



Financial Summary

The following table summarizes our financial performance for the year ended December 31, 2020 when compared to the same period in 2019 and for the year ended December 31, 2019 when compared with the same period in 2018. For a detailed discussion of our results of operations, see "Segment Operating Results" below.

	Year End December 31,			Percentage Change	
	2020	2019	2018	2020 vs. 2019	2019 vs. 2018
	(in millions, except per share amounts)				
Revenues less transaction-based expenses	$ 2,903	$ 2,535	$ 2,526	14.5 %	0.4 %
Operating expenses	$ 1,669	$ 1,518	$ 1,498	9.9 %	1.3 %
Operating income	$ 1,234	$ 1,017	$ 1,028	21.3 %	(1.1)%
Net income attributable to Nasdaq	$ 933	$ 774	$ 458	20.5 %	69.0 %
Diluted earnings per share	$ 5.59	$ 4.63	$ 2.73	20.7 %	69.6 %
Cash dividends declared per common share	$ 1.94	$ 1.85	$ 1.70	4.9 %	8.8 %

In countries with currencies other than the U.S. dollar, revenues and expenses are translated using monthly average exchange rates. Impacts on our revenues less transaction-based expenses and operating income associated with fluctuations in foreign currency are discussed in more detail under "Item 7A. Quantitative and Qualitative Disclosures about Market Risk."

Segment Operating Results

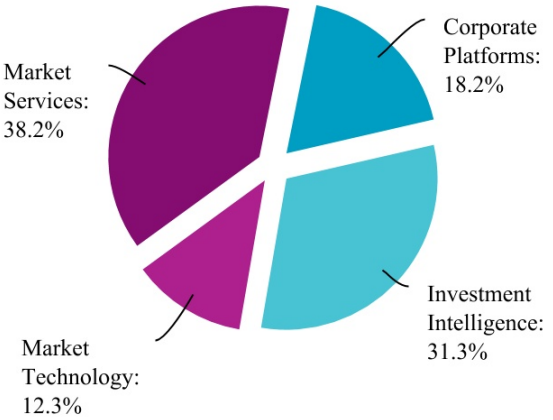
The following table shows our revenues by segment, transaction-based expenses for our Market Services segment and total revenues less transaction-based expenses:

	Year Ended December 31,			Percentage Change	
	2020	2019	2018	2020 vs. 2019	2019 vs. 2018
	(in millions)				
Market Services	$ 3,832	$ 2,639	$ 2,709	45.2 %	(2.6)%
Transaction-based expenses	(2,724)	(1,727)	(1,751)	57.7 %	(1.4)%
Market Services revenues less transaction-based expenses	1,108	912	958	21.5 %	(4.8)%
Corporate Platforms	530	496	487	6.9 %	1.8 %
Investment Intelligence	908	779	714	16.6 %	9.1 %
Market Technology	357	338	270	5.6 %	25.2 %
Other revenues[(1)]	—	10	97	(100.0)%	(89.7)%
Total revenues less transaction-based expenses	$ 2,903	$ 2,535	$ 2,526	14.5 %	0.4 %

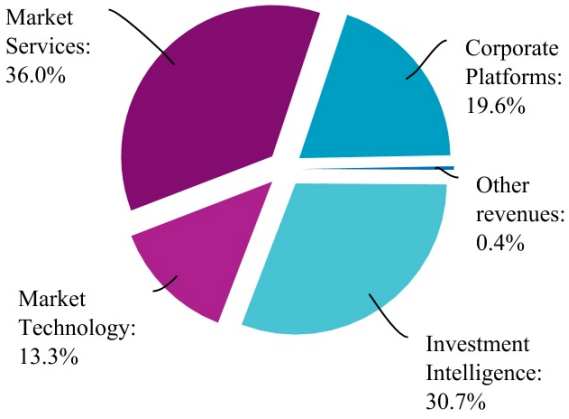
(1) For the year ended December 31, 2019 and 2018, other revenues include the revenues from the BWise enterprise governance, risk and compliance software platform, which was sold in March 2019, and for the year ended December 31, 2018, other revenues also include revenues from the Public Relations Solutions and Digital Media Services businesses which were sold in April 2018. Prior to the sale dates, these revenues were included in our IR & ESG Services business within our Corporate Platforms segment.

The following charts show our Market Services, Corporate Platforms, Investment Intelligence, and Market Technology segments as a percentage of our total revenues less transaction-based expenses of $2,903 million in 2020, $2,535 million in 2019, and $2,526 million in 2018:

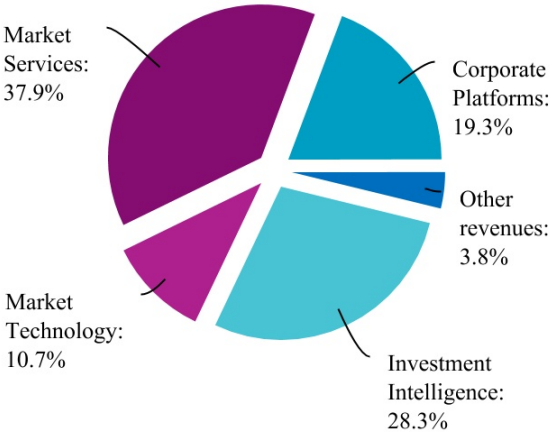
2020 Percentage of Revenues Less Transaction-based Expenses by Segment



2019 Percentage of Revenues Less Transaction-based Expenses by Segment



2018 Percentage of Revenues Less Transaction-based Expenses by Segment



MARKET SERVICES

The following table shows total revenues, transaction-based expenses, and total revenues less transaction-based expenses from our Market Services segment:

	Year Ended December 31,			Percentage Change	
	2020	2019	2018	2020 vs. 2019	2019 vs. 2018
	(in millions)				
Market Services Revenues:					
Equity Derivative Trading and Clearing Revenues[1]	$ 1,258	$ 816	$ 849	54.2 %	(3.9) %
Transaction-based expenses:					
Transaction rebates	(828)	(477)	(506)	73.6 %	(5.7) %
Brokerage, clearance and exchange fees[1]	(76)	(47)	(44)	61.7 %	6.8 %
Equity derivative trading and clearing revenues less transaction-based expenses	**354**	**292**	**299**	**21.2 %**	**(2.3)%**
Cash Equity Trading Revenues[2]	2,211	1,462	1,476	51.2 %	(0.9) %
Transaction-based expenses:					
Transaction rebates	(1,200)	(847)	(830)	41.7 %	2.0 %
Brokerage, clearance and exchange fees[2]	(618)	(352)	(361)	75.6 %	(2.5) %
Cash equity trading revenues less transaction-based expenses	**393**	**263**	**285**	**49.4 %**	**(7.7)%**
FICC Revenues	64	70	92	(8.6) %	(23.9) %
Transaction-based expenses:					
Transaction rebates	(1)	(3)	(8)	(66.7) %	(62.5) %
Brokerage, clearance and exchange fees	(1)	(1)	(2)	— %	(50.0) %
FICC revenues less transaction-based expenses	**62**	**66**	**82**	**(6.1)%**	**(19.5)%**
Trade Management Services Revenues	**299**	**291**	**292**	**2.7 %**	**(0.3)%**
Total Market Services revenues less transaction-based expenses	**$ 1,108**	**$ 912**	**$ 958**	**21.5 %**	**(4.8)%**

(1) Includes Section 31 fees of $69 million in 2020, $43 million in 2019, and $39 million in 2018. Section 31 fees are recorded as equity derivative trading and clearing revenues with a corresponding amount recorded in transaction-based expenses.

(2) Includes Section 31 fees of $586 million in 2020, $337 million in 2019, and $343 million in 2018. Section 31 fees are recorded as cash equity trading revenues with a corresponding amount recorded in transaction-based expenses.

Equity Derivative Trading and Clearing Revenues

Equity derivative trading and clearing revenues and equity derivative trading and clearing revenues less transaction-based expenses increased in 2020 compared with 2019. The increase in equity derivative trading and clearing revenues was primarily due to higher U.S. industry trading volumes, a higher U.S. gross capture rate, and higher Section 31 pass-through fee revenue, partially offset by lower overall U.S. matched market share executed on Nasdaq's exchanges. The increase in equity derivative trading and clearing revenues less transaction-based expenses was primarily due to higher U.S. industry trading volumes, partially offset by a lower U.S. net capture rate and lower overall U.S. matched market share executed on Nasdaq's exchanges.

Section 31 fees are recorded as equity derivative trading and clearing revenues with a corresponding amount recorded as transaction-based expenses. In the U.S., we are assessed these fees from the SEC and pass them through to our customers in the form of incremental fees. Pass-through fees can increase or decrease due to rate changes by the SEC, our percentage of the overall industry volumes processed on our systems, and differences in actual dollar value of shares traded. Since the amount recorded in revenues is equal to the amount recorded as transaction-based expenses, there is no impact on our revenues less transaction-based expenses. Section 31 fees increased in 2020 compared with 2019 primarily due to higher dollar value traded on Nasdaq's exchanges and higher average SEC fee rates.

Transaction rebates, in which we credit a portion of the per share execution charge to the market participant, increased in 2020 compared with 2019 due to higher U.S. industry trading volumes and an increase in the U.S. rebate capture rate,

partially offset by a decrease in our overall U.S. matched market share executed on Nasdaq's exchanges.

Brokerage, clearance and exchange fees increased in 2020 compared with 2019 primarily due to higher Section 31 pass-through fees, as discussed above.

Cash Equity Trading Revenues

Cash equity trading revenues and cash equity trading revenues less transaction-based expenses increased in 2020 compared with 2019 primarily due to higher U.S. industry trading volumes and higher European value traded, partially offset by lower overall U.S. matched market share executed on Nasdaq's exchanges. Also contributing to the increase in cash equity trading revenues were higher Section 31 pass-through fee revenue, while a higher net U.S. capture rate also contributed to the increase in cash equity trading revenues less transaction-based expenses in 2020.

Similar to equity derivative trading and clearing, in the U.S. we record Section 31 fees as cash equity trading revenues with a corresponding amount recorded as transaction-based expenses. We are assessed these fees from the SEC and pass them through to our customers in the form of incremental fees. Since the amount recorded as revenues is equal to the amount recorded as transaction-based expenses, there is no impact on our revenues less transaction-based expenses. Section 31 fees increased in 2020 compared with 2019 due to higher dollar value traded on Nasdaq's exchanges and higher average SEC fee rates.

Transaction rebates increased in 2020 compared with 2019. For The Nasdaq Stock Market, Nasdaq PSX and Nasdaq CXC, we credit a portion of the per share execution charge to the market participant that provides the liquidity, and for Nasdaq BX and Nasdaq CX2, we credit a portion of the per share execution charge to the market participant that takes the liquidity. The increase in 2020 was primarily due to higher U.S. industry trading volumes, partially offset by lower overall U.S. matched market share executed on Nasdaq's exchanges and a lower rebate capture rate.

Brokerage, clearance and exchange fees increased in 2020 compared with 2019 primarily due to higher Section 31 pass-through fees, as discussed above.

FICC Revenues

FICC revenues and FICC revenues less transaction-based expenses decreased in 2020 compared with 2019 driven by lower U.S. fixed income volumes and the sale of the core assets of our NFX business, partially offset by higher European products revenues.

Trade Management Services Revenues

Trade management services revenues increased in 2020 compared with 2019 primarily due to higher demand for our connectivity services.

* * * * * *

CORPORATE PLATFORMS

The following table shows revenues from our Corporate Platforms segment:

	Year Ended December 31,			Percentage Change	
	2020	2019	2018	2020 vs. 2019	2019 vs. 2018
	(in millions)				
Corporate Platforms:					
Listing Services	$ 316	$ 296	$ 290	6.8 %	2.1 %
IR & ESG Services	214	200	197	7.0 %	1.5 %
Total Corporate Platforms	$ 530	$ 496	$ 487	6.9 %	1.8 %

Listing Services Revenues

Listing services revenues increased in 2020 compared with 2019. The increase was primarily due to higher U.S. listings revenues due to an increase in the overall number of listed companies and a favorable impact from foreign exchange of $2 million.

IR & ESG Services Revenues

IR & ESG Services revenues increased in 2020 compared with 2019 primarily due to increases in demand for both governance and investor relations intelligence services.

INVESTMENT INTELLIGENCE

The following table shows revenues from our Investment Intelligence segment:

	Year Ended December 31,			Percentage Change	
	2020	2019	2018	2020 vs. 2019	2019 vs. 2018
	(in millions)				
Investment Intelligence:					
Market Data	$ 409	$ 398	$ 390	2.8 %	2.1 %
Index	324	223	206	45.3 %	8.3 %
Analytics	175	158	118	10.8 %	33.9 %
Total Investment Intelligence	$ 908	$ 779	$ 714	16.6 %	9.1 %

Market Data Revenues

Market data revenues increased in 2020 compared with 2019 primarily due to organic growth in proprietary products from new sales, including continued expansion geographically, partially offset by a decrease in shared tape plan revenues.

Index Revenues

Index revenues increased in 2020 compared with 2019 primarily due to higher licensing revenues from higher average AUM in ETPs linked to Nasdaq indexes and higher licensing revenues from futures trading linked to the Nasdaq-100 Index.

Analytics Revenues

Analytics revenues increased in 2020 compared with 2019 primarily due to the acquisition of Solovis and growth in eVestment.

* * * * * *

MARKET TECHNOLOGY

The following table shows revenues from our Market Technology segment:

	Year Ended December 31,			Percentage Change	
	2020	2019	2018	2020 vs. 2019	2019 vs. 2018
	(in millions)				
Market Technology	$ 357	$ 338	$ 270	5.6 %	25.2 %

Market Technology Revenues

Market technology revenues increased in 2020 compared with 2019. The increase was primarily due to higher SaaS revenues and a favorable impact from foreign exchange of $6 million.

OTHER REVENUES

For the year ended December 31, 2019 and 2018, other revenues include the revenues from the BWise enterprise governance, risk and compliance software platform, which was sold in March 2019, and for the year ended December 31, 2018, other revenues also include revenues from the Public Relations Solutions and Digital Media Services businesses which were sold in April 2018. Prior to the sale dates, these revenues were included in our IR & ESG Services business within our Corporate Platforms segment.

Expenses

Operating Expenses

The following table shows our operating expenses:

	Year Ended December 31,			Percentage Change	
	2020	2019	2018	2020 vs. 2019	2019 vs. 2018
	(in millions)				
Compensation and benefits	$ 786	$ 707	$ 712	11.2 %	(0.7)%
Professional and contract services	137	127	144	7.9 %	(11.8)%
Computer operations and data communications	151	133	127	13.5 %	4.7 %
Occupancy	107	97	95	10.3 %	2.1 %
General, administrative and other	142	125	120	13.6 %	4.2 %
Marketing and advertising	39	39	37	— %	5.4 %
Depreciation and amortization	202	190	210	6.3 %	(9.5)%
Regulatory	24	31	32	(22.6)%	(3.1)%
Merger and strategic initiatives	33	30	21	10.0 %	42.9 %
Restructuring charges	48	39	—	23.1 %	N/M
Total operating expenses	$ 1,669	$ 1,518	$ 1,498	9.9 %	1.3 %

N/M Not meaningful.

The increase in compensation and benefits expense in 2020 was primarily driven by an increase in headcount as a result of our strategic initiatives, higher performance incentives and higher compensation costs resulting from our recent acquisitions. Partially offsetting the higher compensation and benefits expense in 2020 was lower compensation costs resulting from our 2019 divestiture.

Headcount increased to 4,830 employees as of December 31, 2020 from 4,361 as of December 31, 2019 primarily due to our strategic initiatives, mainly growth in our Market Technology business, and recent acquisitions.

Professional and contract services expense increased in 2020 primarily due to higher consulting and legal costs.

Computer operations and data communications expense increased in 2020 primarily due to higher software and hardware maintenance costs, higher cloud costs, higher market data feed costs, and our recent acquisitions.

Occupancy expense increased in 2020 mainly due to higher costs associated with additional facility and rent costs resulting from the expansion of our new U.S. headquarters in New York.

General, administrative and other expense increased in 2020 primarily due to a higher loss on extinguishment of debt, a reserve recorded for a loss on a Market Technology implementation project, and charitable donations made to the Nasdaq Foundation, COVID-19 response and relief efforts, and social justice charities. These increases were partially offset by a higher provision for notes receivable in 2019 and lower corporate travel costs in 2020.

Depreciation and amortization expense increased in 2020 primarily due to an increase in capitalized software placed in service.

Regulatory expense decreased in 2020 primarily due to a favorable decision on a regulatory matter. In December 2016, we were issued a $6 million fine by the SFSA as a result of findings following its investigations of cybersecurity processes at our Nordic exchanges and clearinghouse. We appealed the SFSA's decision, including the amount of the fine and received a favorable decision in the third quarter of 2020 where the court set aside the SFSA's decision including the fine. The SFSA decided not to appeal the decision and the decision is therefore now final. As a result, the $6 million fine was reversed to regulatory expense in the consolidated statements of income for 2020.

Merger and strategic initiatives expense increased in 2020. We have pursued various strategic initiatives and completed acquisitions and divestitures in recent years which have resulted in expenses which would not have otherwise been incurred. These expenses generally include integration costs, as well as legal, due diligence and other third party transaction costs and will vary based on the size and frequency of the activities described above.

See Note 20, "Restructuring Charges," to the consolidated financial statements for further discussion of our 2019 restructuring plan and charges associated with this plan.

Non-operating Income and Expenses

The following table shows our non-operating income and expenses:

	Year Ended December 31,			Percentage Change	
	2020	2019	2018	2020 vs. 2019	2019 vs. 2018
	(in millions)				
Interest income	$ 4	$ 10	$ 10	(60.0)%	— %
Interest expense	(101)	(124)	(150)	(18.5)%	(17.3)%
Net interest expense	(97)	(114)	(140)	(14.9)%	(18.6)%
Gain on sale of investment security	—	—	118	— %	(100.0)%
Net gain on divestiture of businesses	—	27	33	(100.0)%	(18.2)%
Other income	5	5	7	— %	(28.6)%
Net income from unconsolidated investees	70	84	18	(16.7)%	366.7 %
Total non-operating income (expenses)	$ (22)	$ 2	$ 36	(1,200.0)%	(94.4)%

Interest Income

Interest income decreased in 2020 compared to 2019 primarily due to a decrease in interest rates.

Interest Expense

Interest expense decreased in 2020 compared with 2019 primarily due to the refinancing of our 3.875% senior notes in March 2020 with the 2030 Notes and the refinancing of our 5.55% senior notes in May 2019 with the 2029 Notes, both at lower interest rates, and the repayment of our senior unsecured floating rate notes in March 2019 with commercial paper issuances and cash on hand. See Note 9, “Debt Obligations,” to the consolidated financial statements for further discussion of our debt obligations.

The following table shows our interest expense:

	Year Ended December 31,			Percentage Change	
	2020	2019	2018	2020 vs. 2019	2019 vs. 2018
	(in millions)				
Interest expense on debt	$ 93	$ 115	$ 140	(19.1)%	(17.9)%
Accretion of debt issuance costs and debt discount	6	6	7	— %	(14.3)%
Other fees	2	3	3	(33.3)%	— %
Interest expense	$ 101	$ 124	$ 150	(18.5)%	(17.3)%

Net Gain on Divestiture of Businesses

The net gain on divestiture of businesses in 2019 related to the divestiture of BWise. See “2019 Divestiture,” of Note 4, “Acquisitions and Divestiture,” to the consolidated financial statements for further discussion. The net gain on divestiture of businesses in 2018 related to the sale of the Public Relations Solutions and Digital Media Services business, which was part of our IR & ESG Services business within our Corporate Platforms segment.

Net Income from Unconsolidated Investees

Net income from unconsolidated investees decreased in 2020 compared with 2019 primarily due to a decrease in income recognized from our equity method investment in OCC. See “Equity Method Investments,” of Note 6, “Investments,” to the consolidated financial statements for further discussion.

Tax Matters

The following table shows our income tax provision and effective tax rate:

	Year Ended December 31,			Percentage Change	
	2020	2019	2018	2020 vs. 2019	2019 vs. 2018
	($ in millions)				
Income tax provision	$ 279	$ 245	$ 606	13.9 %	(59.6)%
Effective tax rate	23.0 %	24.0 %	57.0 %		

For further discussion of our tax matters, see Note 17, “Income Taxes,” to the consolidated financial statements.

Non-GAAP Financial Measures

In addition to disclosing results determined in accordance with U.S. GAAP, we also have provided non-GAAP net income attributable to Nasdaq and non-GAAP diluted earnings per share. Management uses this non-GAAP information internally, along with U.S. GAAP information, in evaluating our performance and in making financial and operational decisions. We believe our presentation of these measures provides investors with greater transparency and supplemental data relating to our financial condition and results of operations. In addition, we believe the presentation of these measures is useful to investors for period-to-period comparisons of our ongoing operating performance.

These measures are not in accordance with, or an alternative to, U.S. GAAP, and may be different from non-GAAP measures used by other companies. In addition, other companies, including companies in our industry, may calculate such measures differently, which reduces their usefulness as comparative measures. Investors should not rely on any single financial measure when evaluating our business. This non-GAAP information should be considered as supplemental in nature and is not meant as a substitute for our operating results in accordance with U.S. GAAP. We recommend investors review the U.S. GAAP financial measures included in this Annual Report on Form 10-K, including our consolidated financial statements and the notes thereto. When viewed in conjunction with our U.S. GAAP results and the accompanying reconciliation, we believe these non-GAAP measures provide greater transparency and a more complete understanding of factors affecting our business than U.S. GAAP measures alone.

We understand that analysts and investors regularly rely on non-GAAP financial measures, such as non-GAAP net income attributable to Nasdaq and non-GAAP diluted earnings per share, to assess operating performance. We use non-GAAP net income attributable to Nasdaq and non-GAAP diluted earnings per share because they highlight trends more clearly in our business that may not otherwise be apparent when relying solely on U.S. GAAP financial measures, since these measures eliminate from our results specific financial items that have less bearing on our ongoing operating performance. Non-GAAP net income attributable to Nasdaq for the periods presented below is calculated by adjusting for the following items:

Amortization expense of acquired intangible assets: We amortize intangible assets acquired in connection with various acquisitions. Intangible asset amortization expense can vary from period to period due to episodic acquisitions completed, rather than from our ongoing business operations. As such, if intangible asset amortization is included in performance measures, it is more difficult to assess the day-to-day operating performance of the businesses, the relative operating performance of the businesses between periods, and the earnings power of Nasdaq. Performance measures excluding intangible asset amortization expense therefore provide investors with a useful representation of our businesses' ongoing activity in each period.

Merger and strategic initiatives expense: We have pursued various strategic initiatives and completed acquisitions and divestitures in recent years that have resulted in expenses which would not have otherwise been incurred. These expenses generally include integration costs, as well as legal, due diligence and other third party transaction costs. The frequency and the amount of such expenses vary significantly based on the size, timing and complexity of the transaction. Accordingly, we exclude these costs for purposes of calculating non-GAAP measures which provide a more meaningful analysis of Nasdaq's ongoing operating performance or comparisons in Nasdaq's performance between periods.

Restructuring charges: We initiated the transition of certain technology platforms to advance our strategic opportunities as a technology and analytics provider and continue the re-alignment of certain business areas. See Note 20, "Restructuring Charges," to the consolidated financial statements for further discussion of our 2019 restructuring plan. Charges associated with this plan represent a fundamental shift in our strategy and technology as well as executive re-alignment and will be excluded for purposes of calculating non-GAAP measures as they are not reflective of ongoing operating performance or comparisons in Nasdaq's performance between periods.

Net income from unconsolidated investee: See "Equity Method Investments," of Note 6, "Investments," to the consolidated financial statements for further discussion. Our income on our investment in OCC may vary significantly compared to prior years due to the changes in the OCC's capital management policy. Accordingly, we will exclude this income from current and prior periods for purposes of calculating non-GAAP measures which provide a more meaningful analysis of Nasdaq's ongoing operating performance or comparisons in Nasdaq's performance between periods.

Other significant items: We have excluded certain other charges or gains, including certain tax items, that are the result of other non-comparable events to measure operating performance. We believe the exclusion of such amounts allows management and investors to better understand the ongoing financial results of Nasdaq.

For 2020, other significant items primarily included:

- a provision for notes receivable associated with the funding of technology development for the CAT;
- a loss on extinguishment of debt;
- charges associated with duplicative rent and impairment of leasehold assets related to our global headquarter move;
- charitable donations made to the Nasdaq Foundation, COVID-19 response and relief efforts, and social justice charities; and

- the reversal of a $6 million regulatory fine issued by the SFSA which is recorded in regulatory expense in the Consolidated Statements of Income.

For 2019, other significant items primarily included:

- a provision for notes receivable associated with the funding of technology development for the CAT;
- a loss on extinguishment of debt; and
- a net gain on divestiture of business which represents our pre-tax net gain of $27 million on the sale of BWise;
- other items:
  - a tax reserve for certain prior year examinations; and
  - certain litigation costs which are recorded in professional and contract services expense in the Consolidated Statements of Income.

The above charges, with the exception of those noted differently above, are recorded in general, administrative and other expense in our Consolidated Statements of Income.

Significant tax items:

The non-GAAP adjustment to the income tax provision included the tax impact of each non-GAAP adjustment and:

- for 2020:
  - a tax benefit related to favorable audit settlements;
  - a release of tax reserves due to statute of limitation expiration, partially offset with an increase to certain tax reserves related to certain tax filings; and
  - a tax benefit on compensation related deductions determined to be allowable.
- for 2020 and 2019, excess tax benefits related to employee share-based compensation to reflect the recognition of the income tax effects of share-based awards when awards vest or are settled. This item is subject to volatility and will vary based on the timing of the vesting of employee share-based compensation arrangements and fluctuation in our stock price.
- for 2019, a tax benefit primarily related to an adjustment to the 2018 federal and state tax returns and a tax benefit related to capital distributions from the OCC. See “Equity Method Investments,” of Note 6, “Investments,” to the consolidated financial statements for further discussion of our OCC investment.

The following table shows reconciliations between U.S. GAAP net income attributable to Nasdaq and diluted earnings per share and non-GAAP net income attributable to Nasdaq and diluted earnings per share:

	Year End December 31,		
	2020	2019	2018
	(in millions, except share and per share amounts)		
U.S. GAAP net income attributable to Nasdaq	$ 933	$ 774	$ 458
Non-GAAP adjustments:			
Amortization expense of acquired intangible assets	103	101	109
Merger and strategic initiatives expense	33	30	21
Restructuring charges	48	39	—
Net income from unconsolidated investees	(70)	(82)	(16)
Clearing default loss	—	—	31
Provision for notes receivable	6	20	—
Extinguishment of debt	36	11	—
Net gain on divestiture of businesses	—	(27)	(33)
Gain on sale of investment security	—	—	(118)
Charitable donations	17	—	—
Other	8	17	17
Total non-GAAP adjustments	181	109	11
Adjustment to the income tax provision to reflect non-GAAP adjustments and other tax items	(77)	(43)	6
Excess tax benefits related to employee share-based compensation	(6)	(5)	(9)
Impact of enacted U.S. tax legislation	—	—	290
Reversal of certain Swedish tax benefits	—	—	41
Total non-GAAP tax adjustments	(83)	(48)	328
Total non-GAAP adjustments, net of tax	98	61	339
Non-GAAP net income attributable to Nasdaq	$ 1,031	$ 835	$ 797
Weighted-average common shares outstanding for diluted earnings per share	166,903,941	166,970,161	167,691,299
U.S. GAAP diluted earnings per share	$ 5.59	$ 4.63	$ 2.73
Total adjustments from non-GAAP net income	0.59	0.37	2.02
Non-GAAP diluted earnings per share	$ 6.18	$ 5.00	$ 4.75

Liquidity and Capital Resources

Historically, we have funded our operating activities and met our commitments through cash generated by operations, augmented by the periodic issuance of our common stock and debt. Currently, our cost and availability of funding remain healthy.

In response to the uncertainties posed by COVID-19 and related economic impacts, we took actions to strengthen our liquidity and cash position and to reduce our refinancing risk.

In March 2020, we observed that conditions in the market for Tier 2 commercial paper issuers were deteriorating, impacting both costs and actionable duration of commercial paper issues. To mitigate funding uncertainties and as a precautionary measure to maximize our liquidity and increase our available cash on hand, Nasdaq borrowed $799 million under the revolving credit commitment of the 2017 Credit Facility. See "Early Extinguishment of 2017 Credit Facility," of Note 9, "Debt Obligations," to the consolidated financial statements for further discussion of the 2017 Credit Facility.

In April 2020, we issued the 2050 Notes and used the net proceeds from the 2050 Notes to repay a portion of amounts previously borrowed under the 2017 Credit Facility. For further discussion of the 2050 Notes, see "3.25% Senior Unsecured Notes Due 2050," of Note 9, "Debt Obligations," to the consolidated financial statements. In June 2020, the remaining outstanding amount under the 2017 Credit Facility was repaid using cash on hand. In June 2020, we also repaid all outstanding borrowings under our commercial paper program.

Other Financing Transactions

In February 2020, we issued the 2030 Notes. We primarily used the net proceeds from the 2030 Notes to redeem the 2021 Notes and for other general corporate purposes. See "0.875% Senior Unsecured Notes Due 2030," and "Early Extinguishment of 3.875% Senior Unsecured Notes Due 2021," of Note 9, "Debt Obligations," to the consolidated financial statements for further discussion.

In December 2020, we issued the 2022 Notes, 2031 Notes and 2040 Notes. The net proceeds were used to partially finance the acquisition of Verafin. For further discussion of these notes, see "Senior Unsecured Notes Due 2022, 2031 and 2040," of Note 9, "Debt Obligations," to the consolidated financial statements. For further discussion of the acquisition of Verafin, see "Acquisition of Verafin," of Note 4, "Acquisitions and Divestiture," to the consolidated financial statements.

In December 2020, we also terminated the 2017 Credit Facility and entered into the 2020 Credit Facility. See "Credit Facilities," of Note 9, "Debt Obligations," to the consolidated financial statements for further discussion.

As of December 31, 2020, our sources and uses of cash were not materially impacted by COVID-19 and we have not identified any material liquidity deficiencies as a result of the COVID-19 pandemic. We will continue to closely monitor and manage our liquidity and capital resources. In addition, we continue to prudently assess our capital deployment strategy through balancing acquisitions, internal investments, debt repayments, and shareholder return activity including share repurchases and dividends.

Other Liquidity and Capital Considerations

In the near term, we expect that our operations and the availability under our revolving credit facility and commercial paper program will provide sufficient cash to fund our operating expenses, capital expenditures, debt repayments, any share repurchases, and any dividends. In January 2021, we increased the size of our commercial paper program from $1 billion to $1.25 billion. In February 2021, we issued $475 million of commercial paper to partially fund the acquisition of Verafin. For further discussion of the acquisition of Verafin, see "Acquisition of Verafin," of Note 4, "Acquisitions and Divestiture," to the consolidated financial statements.

As part of the purchase price consideration of a prior acquisition, Nasdaq has contingent future obligations to issue 992,247 shares of Nasdaq common stock annually through 2027. See "Non-Cash Contingent Consideration," of Note 18, "Commitments, Contingencies and Guarantees," to the consolidated financial statements for further discussion.

The value of various assets and liabilities, including cash and cash equivalents, receivables, accounts payable and accrued expenses, the current portion of long-term debt, and commercial paper, can fluctuate from month to month. Working capital (calculated as current assets less current liabilities) was $2,736 million as of December 31, 2020, compared with $63 million as of December 31, 2019, an increase of $2,673 million. Current asset balance changes increased working capital by $3,370 million, with increases in cash and cash equivalents, primarily due to net proceeds of $1.9 billion from issuances of long-term debt in the fourth quarter of 2020 for the acquisition of Verafin, default funds and margin deposits, receivables, net, and restricted cash and cash equivalents, partially offset by decreases in financial investments and other current assets. Current liability balance changes decreased working capital by $697 million, due to increases in default funds and margin deposits, Section 31 fees payable to the SEC, accrued personnel costs, accounts payable and accrued expenses, and deferred revenue, partially offset by decreases in short-term debt and other current liabilities.

Principal factors that could affect the availability of our internally-generated funds include:

- deterioration of our revenues in any of our business segments;
- changes in regulatory and working capital requirements; and
- an increase in our expenses.

Principal factors that could affect our ability to obtain cash from external sources include:

- operating covenants contained in our credit facilities that limit our total borrowing capacity;
- increases in interest rates under our credit facilities;
- credit rating downgrades, which could limit our access to additional debt;
- a decrease in the market price of our common stock;
- volatility or disruption in the public debt and equity markets; and
- the impact of the COVID-19 pandemic on our business.

The following sections discuss the effects of changes in our financial assets, debt obligations, regulatory capital requirements, and cash flows on our liquidity and capital resources.

Financial Assets

The following table summarizes our financial assets:

	December 31, 2020	December 31, 2019
	(in millions)	
Cash and cash equivalents	$ 2,745	$ 332
Restricted cash and cash equivalents	37	30
Financial investments	195	291
Total financial assets	$ 2,977	$ 653

Cash and Cash Equivalents and Restricted Cash and Cash Equivalents

Cash and cash equivalents includes all non-restricted cash in banks and highly liquid investments with original maturities of 90 days or less at the time of purchase. The balance retained in cash and cash equivalents is a function of anticipated or possible short-term cash needs, prevailing interest rates, our investment policy, and alternative investment choices. As of December 31, 2020, our cash and cash equivalents of $2,745 million were primarily invested in bank deposits and money market funds. In the long-term, we may use both internally generated funds and external sources to satisfy our debt obligations and other long-term liabilities. Cash and cash equivalents as of December 31, 2020 increased $2,413 million from December 31, 2019, primarily due to:

- proceeds from issuances of long-term debt, net of issuance costs. For further discussion, see "Senior Unsecured Notes Due 2022, 2031, and 2040," of Note 9, "Debt Obligations," to the consolidated financial statements;
- net cash provided by operating activities; and
- proceeds from the net sales of securities. These increases were partially offset by:
  - repayments of borrowings under our credit commitment and debt obligations;
  - repayments of commercial paper, net;
  - cash dividends paid on our common stock;
  - repurchases of our common stock;
  - purchases of property and equipment;
  - cash paid for acquisitions, net of cash and cash equivalents acquired;
  - payments related to employee shares withheld for taxes; and
  - payment of debt extinguishment costs.

See "Cash Flow Analysis" below for further discussion.

Restricted cash and cash equivalents are restricted from withdrawal due to contractual or regulatory requirements or is not available for general use. Restricted cash and cash equivalents were $37 million as of December 31, 2020 and $30 million as of December 31, 2019, an increase of $7 million. Restricted cash and cash equivalents are classified as restricted cash and cash equivalents in the Consolidated Balance Sheets.

Repatriation of Cash

Our cash and cash equivalents held outside of the U.S. in various foreign subsidiaries totaled $237 million as of December 31, 2020 and $160 million as of December 31, 2019. The remaining balance held in the U.S. totaled $2,508 million as of December 31, 2020 and $172 million as of December 31, 2019. See "Cash and Cash Equivalents," of Note 2, "Summary of Significant Accounting Policies," to the consolidated financial statements for discussion of the increase in cash and cash equivalents.

Unremitted earnings of certain subsidiaries outside of the U.S. are used to finance our international operations and are considered to be indefinitely reinvested.

Share Repurchase Program

See "Share Repurchase Program," of Note 12, "Nasdaq Stockholders' Equity," to the consolidated financial statements for further discussion of our share repurchase program.

Cash Dividends on Common Stock

The following table shows quarterly cash dividends paid per common share on our outstanding common stock:

	2020	2019
First quarter	$ 0.47	$ 0.44
Second quarter	0.49	0.47
Third quarter	0.49	0.47
Fourth quarter	0.49	0.47
Total	$ 1.94	$ 1.85

See "Cash Dividends on Common Stock," of Note 12, "Nasdaq Stockholders' Equity," to the consolidated financial statements for further discussion of the dividends.

Financial Investments

Our financial investments totaled $195 million as of December 31, 2020 and were trading securities primarily comprised of highly rated European government debt securities. As of December 31, 2019, financial investments totaled $291 million and were trading securities primarily comprised of highly rated European government debt securities, time deposits and highly rated corporate debt. Of these securities, $175 million as of December 31, 2020 and $169 million as of December 31, 2019 are assets primarily utilized to meet regulatory capital requirements, mainly for our clearing operations at Nasdaq Clearing. See Note 6, "Investments," to the consolidated financial statements for further discussion.

Debt Obligations

The following table summarizes our debt obligations by contractual maturity:

	Maturity Date	December 31, 2020	December 31, 2019
		(in millions)	
Short-term debt - commercial paper		$ —	$ 391
Long-term debt:			
3.875% senior unsecured notes	Repaid March 2020	$ —	$ 671
$1 billion senior unsecured revolving credit facility	Terminated December 2020	—	(2)
0.445% senior unsecured notes	December 2022	597	—
1.75% senior unsecured notes	May 2023	730	668
4.25% senior unsecured notes	June 2024	498	497
$1.25 billion senior unsecured revolving credit facility	December 2025	(4)	—
3.85% senior unsecured notes	June 2026	497	497
1.75% senior unsecured notes	March 2029	726	665
0.875% senior unsecured notes	February 2030	726	—
1.650% senior unsecured notes	January 2031	643	—
2.500% senior unsecured notes	December 2040	643	—
3.25% senior unsecured notes	April 2050	485	—
Total long-term debt		$ 5,541	$ 2,996
Total debt obligations		$ 5,541	$ 3,387

In addition to the $1.25 billion revolving credit facility, we also have other credit facilities primarily to support our Nasdaq Clearing operations in Europe, as well to provide a cash pool credit line for one subsidiary. These credit facilities, which are available in multiple currencies, totaled $232 million as of December 31, 2020 and $203 million as of December 31, 2019 in available liquidity, none of which was utilized as of December 31, 2020, and of which $15 million was utilized as of December 31, 2019.

As of December 31, 2020, we were in compliance with the covenants of all of our debt obligations.

See Note 9, “Debt Obligations,” to the consolidated financial statements for further discussion of our debt obligations.

Regulatory Capital Requirements

Clearing Operations Regulatory Capital Requirements

We are required to maintain minimum levels of regulatory capital for the clearing operations of Nasdaq Clearing. The level of regulatory capital required to be maintained is dependent upon many factors, including market conditions and creditworthiness of the counterparty. As of December 31, 2020, our required regulatory capital of $145 million was comprised of highly rated European government debt securities that are included in financial investments in the Consolidated Balance Sheets.

Broker-Dealer Net Capital Requirements

Our broker-dealer subsidiaries, Nasdaq Execution Services, Execution Access, NPM Securities, SMTX, and Nasdaq Capital Markets Advisory, are subject to regulatory requirements intended to ensure their general financial soundness and liquidity. These requirements obligate these subsidiaries to comply with minimum net capital requirements. As of December 31, 2020, the combined required minimum net capital totaled $1 million and the combined excess capital totaled $55 million, substantially all of which is held in cash and cash equivalents in the Consolidated Balance Sheets. The required minimum net capital is included in restricted cash and cash equivalents in the Consolidated Balance Sheets.

Nordic and Baltic Exchange Regulatory Capital Requirements

The entities that operate trading venues in the Nordic and Baltic countries are each subject to local regulations and are required to maintain regulatory capital intended to ensure their general financial soundness and liquidity. As of December 31, 2020, our required regulatory capital of $39 million was primarily invested in European debt securities that are included in financial investments in the Consolidated Balance Sheets and cash which is included in restricted cash and cash equivalents in the Consolidated Balance Sheets.

Other Capital Requirements

We operate several other businesses which are subject to local regulation and are required to maintain certain levels of regulatory capital. As of December 31, 2020, other required regulatory capital was $12 million and was primarily included in restricted cash in the Consolidated Balance Sheets.

* * * * * *

Cash Flow Analysis

The following table summarizes the changes in cash flows:

	Year Ended December 31,			Percentage Change	
	2020	2019	2018	2020 vs. 2019	2019 vs. 2018
Net cash provided by (used in):		(in millions)			
Operating activities	$ 1,252	$ 963	$ 1,028	30.0 %	(6.3)%
Investing activities	(231)	(240)	196	(3.8)%	(222.4)%
Financing activities	1,383	(937)	(1,027)	(247.6)%	(8.8)%
Effect of exchange rate changes on cash and cash equivalents and restricted cash and cash equivalents	16	(10)	(10)	(260.0)%	— %
Net increase (decrease) in cash and cash equivalents and restricted cash	2,420	(224)	187	(1,180.4)%	(219.8)%
Cash and cash equivalents and restricted cash and cash equivalents at beginning of period	362	586	399	(38.2)%	46.9 %
Cash and cash equivalents and restricted cash and cash equivalents at end of period	$ 2,782	$ 362	$ 586	668.5 %	(38.2)%

Net Cash Provided by Operating Activities

Net cash provided by operating activities primarily consists of net income adjusted for certain non-cash items such as: depreciation and amortization expense of property and equipment; amortization expense of acquired finite-lived intangible assets; expense associated with share-based compensation; and net income from unconsolidated investees.

Net cash provided by operating activities is also impacted by the effects of changes in operating assets and liabilities such as: accounts receivable which is impacted by the timing of customer billings and related collections from our customers; accounts payable and accrued expenses due to timing of payments; accrued personnel costs which are impacted by employee performance targets and the timing of payments related to employee bonus incentives; and Section 31 fees payable to the SEC, which is impacted by the timing of collections from customers and payments to the SEC.

Net cash provided by operating activities increased $289 million for the year ended December 31, 2020 compared with the same period in 2019. The increase was primarily driven by higher net income, an increase in Section 31 fees payable to the SEC due to elevated U.S. industry trading volumes, lower performance incentive payments made in 2020 compared with 2019 primarily due to prior year performance and lower interest paid due to a decline in average interest rates on our debt obligations, partially offset by an increase in receivables, net, due to elevated U.S. industry trading volumes and higher income taxes paid. The remaining change is primarily due to fluctuations in our working capital.

Net Cash Used in Investing Activities

Net cash used in investing activities for 2020 primarily related to $188 million of purchases of property and equipment and $157 million of cash used for acquisitions, net of cash and cash equivalents acquired, partially offset by $119 million of proceeds from the net sales of securities.

Net cash used in investing activities for 2019 primarily relates to $206 million of cash used for acquisitions, net of cash and cash equivalents acquired, $127 million of purchases of property and equipment, and $36 million of net purchases of securities, partially offset by receipt of cash of $132 million related to our 2019 divestiture.

Net Cash Used in (Provided by) Financing Activities

Net cash provided by financing activities for 2020 primarily related to $3,811 million of proceeds from issuances of long-term debt and the utilization of our credit commitment, partially offset by $1,472 million in repayments of borrowings under our credit commitment and debt obligations, $391 million of net repayments of commercial paper, $320 million of dividend payments to our shareholders, and $222 million in repurchases of common stock.

Net cash used in financing activities for 2019 primarily relates to $1,215 million in repayments of debt obligations, $305 million of dividend payments to our shareholders, and $200 million in repurchases of common stock, partially offset by $680 million from proceeds related to long-term debt issuances and $116 million in net borrowings of commercial paper.

See Note 4, “Acquisitions and Divestiture,” to the consolidated financial statements for further discussion of our acquisitions and divestiture.

See Note 9, “Debt Obligations,” to the consolidated financial statements for further discussion of our debt obligations.

See “Share Repurchase Program,” and “Cash Dividends on Common Stock,” of Note 12, “Nasdaq Stockholders’ Equity,” to the consolidated financial statements for further discussion of our share repurchase program and cash dividends paid on our common stock.

* * * * * *

Contractual Obligations and Contingent Commitments

Nasdaq has contractual obligations to make future payments under debt obligations by contract maturity, operating lease payments, and other obligations. The following table shows these contractual obligations as of December 31, 2020.

	Payments Due by Period				
Contractual Obligations	**Total**	**Less than 1 year**	**1-3 years**	**3-5 years**	**More than 5 years**
			(in millions)		
Debt obligations by contract maturity[1]	$ 6,915	$ 114	$ 1,557	$ 684	$ 4,560
Operating lease obligations[2]	558	62	108	77	311
Purchase obligations[3]	43	31	12	—	—
Total	$ 7,516	$ 207	$ 1,677	$ 761	$ 4,871

(1) Our debt obligations include both principal and interest obligations. As of December 31, 2020, an interest rate of 1.39% was used to compute the amount of the contractual obligations for interest on the 2020 Credit Facility. All other debt obligations were primarily calculated on a 365-day basis at the contractual fixed rate multiplied by the aggregate principal amount as of December 31, 2020. See Note 9, “Debt Obligations,” to the consolidated financial statements for further discussion.

(2) Operating lease obligations represent our undiscounted operating lease liabilities as of December 31, 2020. See Note 16, “Leases,” to the consolidated financial statements for further discussion of our leases.

(3) Purchase obligations primarily represent minimum outstanding obligations due under software license agreements.

Acquisition of Verafin

For further discussion of our acquisition of Verafin, see “Acquisition of Verafin,” of Note 4, “Acquisitions and Divestiture,” to the consolidated financial statements.

* * * * * *

Non-Cash Contingent Consideration

See “Non-Cash Contingent Consideration,” of Note 18, “Commitments, Contingencies and Guarantees,” to the consolidated financial statements for further discussion.

Off-Balance Sheet Arrangements

For discussion of off-balance sheet arrangements see:

- Note 15, “Clearing Operations,” to the consolidated financial statements for further discussion of our non-cash default fund contributions and margin deposits received for clearing operations; and
- Note 18, “Commitments, Contingencies and Guarantees,” to the consolidated financial statements for further discussion of:
  - Guarantees issued and credit facilities available;
  - Other guarantees;
  - Non-cash contingent consideration;
  - Routing brokerage activities;
  - Acquisition of Verafin;
  - Legal and regulatory matters; and
  - Tax audits.

Quantitative and Qualitative Disclosures About Market Risk

As a result of our operating, investing and financing activities, we are exposed to market risks such as interest rate risk and foreign currency exchange rate risk. We are also exposed to credit risk as a result of our normal business activities.

We have implemented policies and procedures to measure, manage, monitor and report risk exposures, which are reviewed regularly by management and the board of directors. We identify risk exposures and monitor and manage such risks on a daily basis.

We perform sensitivity analyses to determine the effects of market risk exposures. We may use derivative instruments solely to hedge financial risks related to our financial positions or risks that are incurred during the normal course of business. We do not use derivative instruments for speculative purposes.

Interest Rate Risk

We are subject to the risk of fluctuating interest rates in the normal course of business. Our exposure to market risk for changes in interest rates relates primarily to our financial investments and debt obligations which are discussed below.

Financial Investments

As of December 31, 2020, our investment portfolio was primarily comprised of highly rated European government debt securities, which pay a fixed rate of interest. These securities are subject to interest rate risk and the fair value of these securities will decrease if market interest rates increase. If market interest rates were to increase immediately and uniformly by 100 basis points from levels as of December 31, 2020, the fair value of this portfolio would have declined by $5 million.

Debt Obligations

As of December 31, 2020, the majority of our debt obligations were fixed-rate obligations. Interest rates on certain tranches of notes are subject to adjustment to the extent our debt rating is downgraded below investment grade, as further discussed in Note 9, "Debt Obligations," to the consolidated financial statements. While changes in interest rates will have no impact on the interest we pay on fixed-rate obligations, we are exposed to changes in interest rates as a result of borrowings under our 2020 Credit Facility, as the interest rate on this facility has a variable interest rate. We are also exposed to changes in interest rates as a result of the amounts outstanding from the sale of commercial paper under our commercial paper program, which have variable interest rates. As of December 31, 2020, there were no outstanding borrowings under our 2020 Credit Facility or commercial paper program.

We may utilize interest rate swap agreements to achieve a desired mix of variable and fixed rate debt.

* * * * * *

Foreign Currency Exchange Rate Risk

We are subject to foreign currency exchange rate risk. Our primary transactional exposure to foreign currency denominated revenues less transaction-based expenses and operating income for the years ended December 31, 2020 and 2019 are presented in the following table:

	Euro	Swedish Krona	Other Foreign Currencies	U.S. Dollar	Total
	(in millions, except currency rate)				
Year End December 31, 2020					
Average foreign currency rate to the U.S. dollar	1.1398	0.1086	#	N/A	N/A
Percentage of revenues less transaction-based expenses	7.7 %	6.6 %	4.7 %	81.0 %	100.0 %
Percentage of operating income	10.7 %	(4.6)%	(4.9)%	98.8 %	100.0 %
Impact of a 10% adverse currency fluctuation on revenues less transaction-based expenses	$ (22)	$ (19)	$ (14)	$ —	$ (55)
Impact of a 10% adverse currency fluctuation on operating income	$ (13)	$ (6)	$ (6)	$ —	$ (25)

	Euro	Swedish Krona	Other Foreign Currencies	U.S. Dollar	Total
	(in millions, except currency rate)				
Year End December 31, 2019					
Average foreign currency rate to the U.S. dollar	1.1193	0.1057	#	N/A	N/A
Percentage of revenues less transaction-based expenses	7.7 %	7.6 %	5.0 %	79.7 %	100.0 %
Percentage of operating income	13.9 %	(4.3)%	(5.8)%	96.2 %	100.0 %
Impact of a 10% adverse currency fluctuation on revenues less transaction-based expenses	$ (19)	$ (19)	$ (13)	$ —	$ (51)
Impact of a 10% adverse currency fluctuation on operating income	$ (14)	$ (4)	$ (6)	$ —	$ (24)

Represents multiple foreign currency rates.
N/A Not applicable.

Our investments in foreign subsidiaries are exposed to volatility in currency exchange rates through translation of the foreign subsidiaries' net assets or equity to U.S. dollars. Substantially all of our foreign subsidiaries operate in

functional currencies other than the U.S. dollar. The financial statements of these subsidiaries are translated into U.S. dollars for consolidated reporting using a current rate of exchange, with net gains or losses recorded in accumulated other comprehensive loss within stockholders' equity in the Consolidated Balance Sheets.

Our primary exposure to net assets in foreign currencies as of December 31, 2020 is presented in the following table:

	Net Assets	Impact of a 10% Adverse Currency Fluctuation
	(in millions)	
Swedish Krona[(1)]	$ 3,675	$ 367
British Pound	212	21
Norwegian Krone	177	18
Canadian Dollar	123	12
Australian Dollar	122	12
Euro	39	4

(1) Includes goodwill of $2,728 million and intangible assets, net of $665 million.

Credit Risk

Credit risk is the potential loss due to the default or deterioration in credit quality of customers or counterparties. We are exposed to credit risk from third parties, including customers, counterparties and clearing agents. These parties may default on their obligations to us due to bankruptcy, lack of liquidity, operational failure or other reasons. We limit our exposure to credit risk by evaluating the counterparties with which we make investments and execute agreements. For our investment portfolio, our objective is to invest in securities to preserve principal while maximizing yields, without significantly increasing risk. Credit risk associated with investments is minimized substantially by ensuring that these financial assets are placed with governments which have investment grade ratings, well-capitalized financial institutions and other creditworthy counterparties.

Our subsidiary, Nasdaq Execution Services, may be exposed to credit risk due to the default of trading counterparties in connection with the routing services it provides for our trading customers. System trades in cash equities routed to other market centers for members of our cash equity exchanges are routed by Nasdaq Execution Services for clearing to the NSCC. In this function, Nasdaq Execution Services is to be neutral by the end of the trading day, but may be exposed to intraday risk if a trade extends beyond the trading day and into the next day, thereby leaving Nasdaq Execution Services susceptible to counterparty risk in the period between accepting the trade and routing it to the clearinghouse. In this interim period, Nasdaq Execution Services is not novating like a clearing broker but instead is subject to the short-term risk of counterparty failure before the clearinghouse enters the transaction. Once the clearinghouse officially accepts the trade for novation, Nasdaq Execution Services is legally removed from trade execution risk. However, Nasdaq has membership obligations to NSCC independent of Nasdaq Execution Services' arrangements.

Pursuant to the rules of the NSCC and Nasdaq Execution Services' clearing agreement, Nasdaq Execution Services is liable for any losses incurred due to a counterparty or a clearing agent's failure to satisfy its contractual obligations, either by making payment or delivering securities. Adverse movements in the prices of securities that are subject to these transactions can increase our credit risk. However, we believe that the risk of material loss is limited, as Nasdaq Execution Services' customers are not permitted to trade on margin and NSCC rules limit counterparty risk on self-cleared transactions by establishing credit limits and capital deposit requirements for all brokers that clear with NSCC. Historically, Nasdaq Execution Services has never incurred a liability due to a customer's failure to satisfy its contractual obligations as counterparty to a system trade. Credit difficulties or insolvency, or the perceived possibility of credit difficulties or insolvency, of one or more larger or visible market participants could also result in market-wide credit difficulties or other market disruptions.

Execution Access is our introducing broker which operates the trading platform for our Fixed Income business to trade in U.S. Treasury securities. Execution Access has a clearing arrangement with ICBC. As of December 31, 2020, we have contributed $13 million of clearing deposits to ICBC in connection with this clearing arrangement. These deposits are recorded in other current assets in our Consolidated Balance Sheets. Some of the trading activity in Execution Access is cleared by ICBC through the Fixed Income Clearing Corporation, with ICBC acting as agent. Execution Access assumes the counterparty risk of clients that do not clear through the Fixed Income Clearing Corporation. Counterparty risk of clients exists for Execution Access between the trade date and settlement date of the individual transactions, which is at least one business day (or more, if specified by the U.S. Treasury issuance calendar). Counterparties that do not clear through the Fixed Income Clearing Corporation are subject to a credit due diligence process and may be required to post collateral, provide principal letters, or provide other forms of credit enhancement to Execution Access for the purpose of mitigating counterparty risk. Daily position trading limits are also enforced for such counterparties.

We have credit risk related to transaction and subscription-based revenues that are billed to customers on a monthly or quarterly basis, in arrears. Our potential exposure to credit losses on these transactions is represented by the receivable balances in our Consolidated Balance Sheets. We review and evaluate changes in the status of our counterparties' creditworthiness. Credit losses such as those described above could adversely affect our consolidated financial position and results of operations.

On January 1, 2020, we adopted ASU 2016-13. "See "Receivables, net - Measurement of Credit Losses on

Financial Instruments," of Note 2, "Summary of Significant Accounting Policies," to the consolidated financial statements for further discussion. This ASU changes the impairment model for certain financial instruments. The new model is a forward looking expected loss model and applies to financial assets subject to credit losses and measured at amortized cost and certain off-balance sheet credit exposures. This includes loans, held-to-maturity debt securities, loan commitments, financial guarantees and trade receivables.

We also are exposed to credit risk through our clearing operations with Nasdaq Clearing. See Note 15, "Clearing Operations," to the consolidated financial statements for further discussion. Our clearinghouse holds material amounts of clearing member cash deposits which are held or invested primarily to provide security of capital while minimizing credit, market and liquidity risks. While we seek to achieve a reasonable rate of return, we are primarily concerned with preservation of capital and managing the risks associated with these deposits. As the clearinghouse may pass on interest revenues (minus costs) to the members, this could include negative or reduced yield due to market conditions. The following is a summary of the risks associated with these deposits and how these risks are mitigated.

- *Credit Risk.* When the clearinghouse has the ability to hold cash collateral at a central bank, the clearinghouse utilizes its access to the central bank system to minimize credit risk exposures. When funds are not held at a central bank, we seek to substantially mitigate credit risk by ensuring that investments are primarily placed in large, highly rated financial institutions, highly rated government debt instruments and other creditworthy counterparties.
- *Liquidity Risk.* Liquidity risk is the risk a clearinghouse may not be able to meet its payment obligations in the right currency, in the right place and the right time. To mitigate this risk, the clearinghouse monitors liquidity requirements closely and maintains funds and assets in a manner which minimizes the risk of loss or delay in the access by the clearinghouse to such funds and assets. For example, holding funds with a central bank where possible or investing in highly liquid government debt instruments serves to reduce liquidity risks.
- *Interest Rate Risk.* Interest rate risk is the risk that interest rates rise causing the value of purchased securities to decline. If we were required to sell securities prior to maturity, and interest rates had risen, the sale of the securities might be made at a loss relative to the latest market price. Our clearinghouse seeks to manage this risk by making short term investments of members' cash deposits. In addition, the clearinghouse investment guidelines allow for direct purchases or repurchase agreements with short dated maturities of high quality sovereign debt (for example, European government and U.S. Treasury securities), central bank certificates and supranational debt instruments.
- *Security Issuer Risk.* Security issuer risk is the risk that an issuer of a security defaults on its payment when the security matures. This risk is mitigated by limiting allowable investments and collateral under reverse repurchase agreements to high quality sovereign, government agency or supranational debt instruments.

Critical Accounting Policies and Estimates

The preparation of financial statements and related disclosures in conformity with U.S. GAAP requires management to make judgments, assumptions, and estimates that affect the amounts reported in the consolidated financial statements and accompanying notes. Note 2, "Summary of Significant Accounting Policies," to the consolidated financial statements describes the significant accounting policies and methods used in the preparation of the consolidated financial statements. The accounting policies described below are significantly affected by critical accounting estimates. Such accounting policies require significant judgments, assumptions, and estimates used in the preparation of the consolidated financial statements, and actual results could differ materially from the amounts reported based on these policies.

Revenue Recognition

Market Technology Revenues

We enter into long-term contracts with customers to develop customized technology solutions, license the right to use software and provide support and other services to our customers which results in these contracts containing multiple performance obligations. We allocate the contract transaction price to each performance obligation using our best estimate of the standalone selling price of each distinct good or service in the contract. In instances where standalone selling price is not directly observable, such as when we do not sell the product or service separately, we determine the standalone selling price predominantly through an expected cost plus a margin approach.

We generally recognize revenue over time as our customers simultaneously receive and consume the benefits provided by our performance because our customer controls the asset for which we are creating, our performance does not create an asset with alternative use, and we have a right to payment for performance completed to date. For these services, we recognize revenue over time using costs incurred to date relative to total estimated costs at completion to measure progress toward satisfying our performance obligation. Incurred costs represent work performed, which corresponds with, and thereby depicts, the transfer of control to the customer.

Accounting for our long-term contracts requires judgment relative to assessing risks and their impact on the estimate of revenues and costs. Our estimates are impacted by factors such as the potential for schedule and technical issues, productivity, the complexity of work performed, and logistical challenges due to the effects of COVID-19. Revenue and cost estimates for our long-term contracts are

reviewed and reassessed at least quarterly. When adjustments in estimated total contract costs are required, any changes in the estimated revenues from prior estimates are recognized in the current period for the effect of such change. If estimates of total costs to be incurred on a contract exceed estimates of total revenues, a provision for the entire estimated loss on the contract is recorded in the period in which the loss is determined. During the fourth quarter, as part of our regular review of significant implementation projects, we refined and revised our plans relating to a large-scale post-trade clearing implementation project for a specific client. At that point it became probable that we would incur a loss over the remainder of that particular project, in part due to the logistical implications of COVID-19. As a result, we recorded a $25 million provision for the estimated loss in general, administrative and other expense in our Consolidated Statements of Income and is included in other current and other non-current liabilities in our Consolidated Balance Sheets.

Due to the significance of judgment in the estimation process, as discussed above, changes in assumptions and estimates may adversely or positively affect financial performance in future periods.

For further discussion related to recognition of these fees, see "Revenue From Contracts with Customers - Revenue Recognition - Market Technology," of Note 2, "Summary of Significant Accounting Policies," to the consolidated financial statements.

Goodwill and Related Impairment

Goodwill represents the excess of purchase price over the value assigned to the net assets, including identifiable intangible assets, of a business acquired. Goodwill is allocated to our reporting units based on the assignment of the fair values of each reporting unit of the acquired company. We test goodwill for impairment at the reporting unit level annually, or in interim periods if certain events occur indicating that the carrying amount may be impaired, such as changes in the business climate, poor indicators of operating performance or the sale or disposition of a significant portion of a reporting unit. For purposes of performing our goodwill impairment test, our five reporting units are the Market Services segment, the two businesses comprising the Corporate Platforms segment: Listing Services and IR & ESG Services, the Investment Intelligence segment, and the Market Technology segment. We test for impairment during the fourth quarter of our fiscal year using an October 1 measurement date. When testing goodwill for impairment, we have the option of first performing a qualitative assessment to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount as the basis to determine if it is necessary to perform a quantitative goodwill impairment test. In performing a qualitative assessment, we consider the extent to which unfavorable events or circumstances identified, such as changes in economic conditions, industry and market conditions or company specific events, could affect the comparison of the reporting unit's fair value with its carrying amount. If we choose not to complete a qualitative assessment for a given reporting unit, or if the initial assessment indicates that it is more likely than not that the carrying amount of a reporting unit exceeds its estimated fair value, a quantitative test is required.

When assessing goodwill for impairment, our decision to perform a qualitative impairment assessment for a reporting unit in a given year is influenced by a number of factors, including but not limited to, the size of the reporting unit's goodwill, the significance of the excess of the reporting unit's estimated fair value over its carrying amount at the last quantitative assessment date, and the amount of time in between quantitative fair value assessments.

On January 1, 2020, we adopted ASU 2017-04, "Simplifying the Test for Goodwill Impairment," and as a result, when performing the quantitative goodwill impairment test, we compare the fair value of each reporting unit with its carrying amount. The fair value of each reporting unit is estimated using a combination of a discounted cash flow valuation, which incorporates assumptions regarding future growth rates, terminal values, and discount rates, as well as guideline public company valuations, incorporating relevant trading multiples of comparable companies and other factors. The estimates and assumptions used consider historical performance and are consistent with the assumptions used in determining future profit plans for each reporting unit, which are approved by our board of directors. If the reporting unit's fair value exceeds its estimated carrying amount, goodwill is not impaired. If the carrying amount exceeds the fair value of the reporting unit, an impairment charge is recognized in an amount equal to the difference, limited to the total amount of goodwill allocated to that reporting unit.

The following table presents the balances of goodwill for our reportable segments at the time of our 2020 annual impairment test:

	October 1, 2020
	(in millions)
Market Services	$ 3,391
Corporate Platforms	465
Investment Intelligence	2,457
Market Technology	287
	$ 6,600

In 2020, we performed a quantitative test for our annual impairment test for goodwill for all reporting units based on our policy of performing a quantitative impairment test every three years, even if qualitative considerations do not indicate the fair value of a reporting unit is less than its carrying amount. The periodic and timely calculation of the quantitative assessment provides better support for our qualitative assessment. In conducting the quantitative assessment, we determined that fair value sufficiently exceeded the carrying amount for each of our reporting units. As a result, no goodwill impairment was recorded in 2020. In 2019 and 2018, we performed a qualitative assessment and

no goodwill impairment was recorded.

Although we believe our estimates of fair value are reasonable, the determination of certain valuation inputs is subject to management's judgment. Changes in these inputs could materially affect the results of our impairment review. If our forecasts of cash flows or other key inputs are negatively revised in the future, the estimated fair value of each reporting unit would be adversely impacted, potentially leading to an impairment in the future that could materially affect our operating results.

Subsequent to our annual impairment test, no indications of impairment were identified.

Indefinite-Lived Intangible Assets and Related Impairment

Intangible assets deemed to have indefinite useful lives, primarily exchange and clearing registrations, are not amortized but instead are tested for impairment at least annually and more frequently whenever events or changes in circumstances indicate that the fair value of the asset may be less than its carrying amount. Similar to goodwill impairment testing, we test for impairment of indefinite-lived intangible assets during the fourth quarter of our fiscal year using an October 1 measurement date and may first perform a qualitative assessment, considering similar factors as discussed above in the goodwill impairment discussion, to determine if it is more likely than not that the fair value of the indefinite-lived intangible asset is less than its carrying amount. If we elect to perform or are required to perform a quantitative assessment, the test consists of a comparison of the fair value of the indefinite-lived intangible asset to its carrying amount as of the impairment testing date. If the carrying amount of the indefinite-lived intangible asset exceeds its fair value, an impairment charge is recorded for the difference. The fair value of indefinite-lived intangible assets is primarily determined on the basis of estimated discounted value, using the Greenfield Approach for exchange and clearing registrations and licenses and the relief from royalty approach or excess earnings approach for trade names, both of which incorporate assumptions regarding future revenue projections and discount rates. During our annual indefinite-lived intangible asset impairment test during the fourth quarter of 2020, we performed a quantitative test based on our policy of performing a quantitative impairment test every three years as discussed above in the goodwill impairment discussion.

There were no indefinite-lived intangible asset impairment charges in 2020 and there were no impairment charges recorded in 2019 and 2018.

Subsequent to our annual indefinite-lived impairment test, no indications of impairment were identified.

Other Long-Lived Assets and Related Impairment

We review our other long-lived assets, such as finite-lived intangible assets, equity method investments, equity securities, property and equipment, and operating lease assets for potential impairment when there is evidence that events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. The carrying amount of an asset is not recoverable if it exceeds the sum of the undiscounted cash flows expected to result from the use and eventual disposition of the asset. Fair value of finite-lived intangible assets and property and equipment is based on various valuation techniques. We evaluate our equity method investments for other-than-temporary declines in value by considering a variety of factors such as the earnings capacity of the investment and the fair value of the investment compared to its carrying amount. In addition, for investments where the market value is readily determinable, we consider the underlying stock price as an additional factor. For equity securities, when assessing investments in private companies for impairment, we consider such factors as, among others, the share price from the investee's latest financing round, the performance of the investee in relation to its own operating targets, the investee's liquidity and cash position, and general market conditions. Any required impairment loss is measured as the amount by which the carrying amount of the asset exceeds its fair value and is recorded as a reduction in the carrying amount of the related asset and a charge to operating results.

We recorded pre-tax, non-cash property and equipment asset impairment charges of $4 million in 2020 and $24 million in 2019. The asset impairment charges in 2020 and 2019 primarily related to capitalized software that was retired and are included in restructuring charges in the Consolidated Statements of Income for 2020 and 2019. See Note 20, "Restructuring Charges," to the consolidated financial statements for a discussion of our 2019 restructuring plan. For the year ended December 31, 2018, there were no material property and equipment asset impairment charges.

No material impairments were recorded to reduce the carrying value of our other long-lived assets during 2020, 2019 or 2018.

Income Taxes

Estimates and judgments are required in the calculation of certain tax liabilities and in the determination of the recoverability of certain deferred tax assets, which arise from net operating loss carryforwards, tax credit carryforwards and temporary differences between the tax and financial statement recognition of revenue and expense. Our deferred tax assets are reduced by a valuation allowance if it is more likely than not that some portion or all of the recorded deferred tax assets will not be realized in future periods. Management is required to determine whether a tax position is more likely than not to be sustained upon examination, including resolution of any related appeals or litigation processes, based on the technical merits of the position. Once it is determined that a position meets the recognition thresholds, the position is measured to determine the amount of benefit to be recognized in the consolidated financial statements.

In assessing the need for a valuation allowance, we consider

all available evidence including past operating results, the existence of cumulative losses in the most recent fiscal years, estimates of future taxable income and the feasibility of tax planning strategies. In the event that we change our determination as to the amount of deferred tax assets that can be realized, we will adjust our valuation allowance with a corresponding impact to the provision for income taxes in the period in which such determination is made.

In addition, the calculation of our tax liabilities involves uncertainties in the application of tax regulations in the U.S. and other tax jurisdictions. We recognize potential liabilities for anticipated tax audit issues in such jurisdictions based on our estimate of whether, and the extent to which, additional taxes and interest may be due. While we believe that our tax liabilities reflect the probable outcome of identified tax uncertainties, it is reasonably possible that the ultimate resolution of any tax matter may be greater or less than the amount accrued. If events occur and the payment of these amounts ultimately proves unnecessary, the reversal of the liabilities would result in tax benefits being recognized in the period when we determine the liabilities are no longer necessary. If our estimate of tax liabilities proves to be less than the ultimate assessment, a further charge to expense would result.

Recent Accounting Pronouncements Not Yet Adopted

We have considered all recent accounting pronouncements and have concluded that no accounting pronouncements that have not yet been adopted would have a material impact on our financial position or results of operations.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

Information about quantitative and qualitative disclosures about market risk is incorporated herein by reference from "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations - Quantitative and Qualitative Disclosures About Market Risk."

Item 8. Financial Statements and Supplementary Data

Nasdaq's consolidated financial statements, including Consolidated Balance Sheets as of December 31, 2020 and 2019, Consolidated Statements of Income for the years ended December 31, 2020, 2019 and 2018, Consolidated Statements of Comprehensive Income for the years ended December 31, 2020, 2019 and 2018, Consolidated Statements of Changes in Stockholders' Equity for the years ended December 31, 2020, 2019 and 2018, Consolidated Statements of Cash Flows for the years ended December 31, 2020, 2019 and 2018 and notes to our consolidated financial statements, together with a report thereon of Ernst & Young LLP, dated February 23, 2021, are attached hereto as pages F-1 through F-46 and incorporated by reference herein.

Summarized Quarterly Financial Data (Unaudited)

As a result of our early adoption, in December 2020, of SEC Final Rule Release No. 33-10890, "Management's Discussion and Analysis, Selected Financial Data, and Supplementary Financial Information," this data has been omitted.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

None.

Item 9A. Controls and Procedures

Disclosure controls and procedures. Nasdaq's management, with the participation of Nasdaq's President and Chief Executive Officer, and Executive Vice President, Corporate Strategy and Chief Financial Officer, has evaluated the effectiveness of Nasdaq's disclosure controls and procedures (as defined in Rule 13a-15(e) and Rule 15d-15(e) under the Exchange Act) as of the end of the period covered by this report. Based upon that evaluation, Nasdaq's President and Chief Executive Officer and Executive Vice President, Corporate Strategy and Chief Financial Officer, have concluded that, as of the end of such period, Nasdaq's disclosure controls and procedures are effective.

Changes in internal control over financial reporting. There have been no changes in Nasdaq's internal control over financial reporting (as defined in Rule 13a-15(f) and Rule 15d-15(f) under the Exchange Act) that occurred during the quarter ended December 31, 2020 that have materially affected, or are reasonably likely to materially affect, Nasdaq's internal control over financial reporting.

Management's Report on Internal Control Over Financial Reporting

Management is responsible for the preparation and integrity of the consolidated financial statements appearing in the reports that we file with the SEC. The consolidated financial statements were prepared in conformity with U.S. generally accepted accounting principles and include amounts based on management's estimates and judgments.

Management is also responsible for establishing and maintaining adequate internal control over Nasdaq's financial reporting. Although there are inherent limitations in the effectiveness of any system of internal control over financial reporting, we maintain a system of internal control that is designed to provide reasonable assurance as to the fair and reliable preparation and presentation of the consolidated financial statements, as well as to safeguard assets from unauthorized use or disposition that could have a material effect on the financial statements.

Our management assessed the effectiveness of our internal control over financial reporting as of December 31, 2020, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) (2013 framework). This evaluation included review of the documentation of controls, evaluation of the design effectiveness of controls, testing of the operating effectiveness of controls and a conclusion on this evaluation. Based on its assessment, our management believes that, as of December 31, 2020, our internal control over financial reporting is effective.

Ernst & Young LLP, an independent registered public accounting firm, has issued an attestation report on Nasdaq's internal control over financial reporting, which is included herein.

Report of Independent Registered Public Accounting Firm

To the Shareholders and the Board of Directors of Nasdaq, Inc.

Opinion on Internal Control over Financial Reporting
We have audited Nasdaq, Inc.'s internal control over financial reporting as of December 31, 2020, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, Nasdaq, Inc. (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2020, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of December 31, 2020 and 2019, and the related consolidated statements of income, comprehensive income, changes in stockholders' equity and cash flows for each of the three years in the period ended December 31, 2020, and the related notes and our report dated February 23, 2021 expressed an unqualified opinion thereon.

Basis for Opinion
The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Report on Internal Control Over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting
A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.
Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ *Ernst & Young LLP*

New York, New York
February 23, 2021

Item 9B. Other Information

None.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

Information about Nasdaq's directors, as required by Item 401 of Regulation S-K, is incorporated by reference from the discussion under the caption "Board of Directors-Proposal 1: Election of Directors" in Nasdaq's Proxy Statement. Information about Nasdaq's executive officers, as required by Item 401 of Regulation S-K, is incorporated by reference from the discussion under the caption "Other Items-Executive Officers" in the Proxy Statement. Information about Section 16 reports, as required by Item 405 of Regulation S-K, is incorporated by reference from the discussion under the caption "Other Items-Delinquent Section 16(a) Reports" in the Proxy Statement. Information about Nasdaq's code of ethics, as required by Item 406 of Regulation S-K, is incorporated by reference from the discussion under the caption "Our Ethical Culture" in the Proxy Statement. Information about Nasdaq's nomination procedures, Audit & Risk Committee and Audit & Risk Committee financial experts, as required by Items 407(c)(3), 407(d)(4) and 407(d)(5) of Regulation S-K, is incorporated by reference from the discussions under the headings "Board of Directors-Proposal 1: Election of Directors" and "Board of Directors-Board Committees" in the Proxy Statement.

Item 11. Executive Compensation

Information about Nasdaq's director and executive compensation, as required by Items 402, 407(e)(4) and 407(e)(5) of Regulation S-K, is incorporated by reference from the discussions under the headings "Board of Directors-Director Compensation" and "Named Executive Officer Compensation" in the Proxy Statement.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

Information about security ownership of certain beneficial owners and management, as required by Item 403 of Regulation S-K, is incorporated by reference from the discussion under the heading "Other Items-Security Ownership of Certain Beneficial Owners and Management" in the Proxy Statement.

* * * * * *

Equity Compensation Plan and ESPP Information

Nasdaq's Equity Plan provides for the issuance of our equity securities to all employees and directors as part of their compensation plan, though employees in certain of our locations may be ineligible due to local securities laws and regulations.

In addition, in jurisdictions where participation in the ESPP is permitted, all our employees are eligible. Employees may purchase shares of our common stock at a 15% discount to the lesser of the closing price of our common stock on (i) the first trading day of the offering period or (ii) the last trading day of the offering period. Offering periods under the ESPP are six months in duration. As of December 31, 2020, over 99.0% of our employees are eligible to participate.

The Equity Plan and the ESPP have been previously approved by our stockholders. The following table sets forth information regarding outstanding options and shares reserved for future issuance under all of Nasdaq's compensation plans as of December 31, 2020.

Plan Category	Number of shares to be issued upon exercise of outstanding options, warrants and rights(a)[1]	Weighted-average exercise price of outstanding options, warrants and rights(b)	Number of shares remaining available for future issuance under equity compensation plans (excluding shares reflected in column(a))(c)
Equity compensation plans approved by stockholders	293,353	$ 63.22	14,270,858 (2)
Equity compensation plans not approved by stockholders	—	—	—
Total	293,353	$ 63.22	14,270,858 (2)

(1) The amounts in this column include only the number of shares to be issued upon exercise of outstanding options, warrants and rights. As of December 31, 2020, we also had 2,618,588 shares to be issued upon vesting of outstanding restricted stock and PSUs.

(2) This amount includes 9,837,094 shares of common stock that may be awarded pursuant to the Equity Plan and 4,433,764 shares of common stock that may be issued pursuant to the ESPP.

Item 13. Certain Relationships and Related Transactions, and Director Independence

Information about certain relationships and related transactions, as required by Item 404 of Regulation S-K, is incorporated herein by reference from the discussion under the heading "Other Items-Certain Relationships and Related Transactions" in the Proxy Statement. Information about director independence, as required by Item 407(a) of Regulation S-K, is incorporated

herein by reference from the discussion under the heading “Board of Directors-Proposal 1: Election of Directors” in the Proxy Statement.

Item 14. Principal Accounting Fees and Services

Information about principal accounting fees and services, as required by Item 9(e) of Schedule 14A, is incorporated herein by reference from the discussion under the heading “Audit & Risk Committee Matters-Annual Evaluation and 2021 Selection of Independent Auditors” in the Proxy Statement.

PART IV

Item 15. Exhibits, Financial Statement Schedules

(a)(1) Financial Statements

See “Index to Consolidated Financial Statements.”

(a)(2) Financial Statement Schedules

All schedules are omitted because they are not applicable or the required information is included in the consolidated financial statements or notes.

(a)(3) Exhibits

Exhibit Index

Exhibit Number	
2.1	Purchase Agreement, dated as of April 1, 2013, among Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.), BGC Partners, Inc., BGC Holdings, L.P., BGC Partners, L.P., and, solely for purposes of certain sections thereof, Cantor Fitzgerald, L.P. (incorporated herein by reference to Exhibit 2.1 to the Quarterly Report on Form 10-Q for the quarter ended June 30, 2013 filed on August 8, 2013).
2.2	Share Purchase Agreement, dated as of November 18, 2020, by and among Osprey Acquisition Corporation, a wholly owned subsidiary of Nasdaq, Verafin Holdings Inc., certain shareholders of Verafin (the “Sellers”), and Shareholder Representative Services LLC, solely in its capacity as the representative of the Sellers.†
2.3	Amendment to Share Purchase Agreement, dated as of February 11, 2021, by and among Osprey Acquisition Corporation, a wholly owned subsidiary of Nasdaq, Verafin Holdings Inc., certain shareholders of Verafin (the “Sellers”), and Shareholder Representative Services LLC, solely in its capacity as the representative of the Sellers
3.1	Amended and Restated Certificate of Incorporation of Nasdaq (incorporated herein by reference to Exhibit 3.1 to the Current Report on Form 8-K filed on January 28, 2014).
3.1.1	Certificate of Elimination of Nasdaq’s Series A Convertible Preferred Stock (incorporated herein by reference to Exhibit 3.1.1 to the Current Report on Form 8-K filed on January 28, 2014).
3.1.2	Certificate of Amendment of Nasdaq’s Amended and Restated Certificate of Incorporation (incorporated herein by reference to Exhibit 3.1 to the Current Report on Form 8-K filed on November 19, 2014).
3.1.3	Certificate of Amendment of Nasdaq’s Amended and Restated Certificate of Incorporation (incorporated herein by reference to Exhibit 3.1 to the Current Report on Form 8-K filed on September 8, 2015).
3.2	Nasdaq’s By-Laws (incorporated herein by reference to Exhibit 3.2 to the Current Report on Form 8-K filed on November 21, 2016).
4.1	Form of Common Stock certificate (incorporated herein by reference to Exhibit 4.1 to the Quarterly Report on Form 10-Q for the quarter ended September 30, 2015 filed on November 4, 2015).
4.2	Stockholders’ Agreement, dated as of February 27, 2008, between Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.) and Borse Dubai Limited (incorporated herein by reference to Exhibit 10.2 to the Current Report on Form 8-K filed on March 3, 2008).
4.2.1	First Amendment to Stockholders’ Agreement, dated as of February 19, 2009, between Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.) and Borse Dubai Limited (incorporated herein by reference to Exhibit 4.10.1 to the Annual Report on Form 10-K for the year ended December 31, 2008 filed on February 27, 2009).
4.3	Registration Rights Agreement, dated as of February 27, 2008, among Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.), Borse Dubai Limited and Borse Dubai Nasdaq Share Trust (incorporated herein by reference to Exhibit 10.3 to the Current Report on Form 8-K filed on March 3, 2008).

4.3.1	First Amendment to Registration Rights Agreement, dated as of February 19, 2009, among Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.), Borse Dubai Limited and Borse Dubai Nasdaq Share Trust (incorporated herein by reference to Exhibit 4.11.1 to the Annual Report on Form 10-K for the year ended December 31, 2008 filed on February 27, 2009).
4.4	Stockholders' Agreement, dated as of December 16, 2010, between Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.) and Investor AB (incorporated herein by reference to Exhibit 4.12 to the Annual Report on Form 10-K for the year ended December 31, 2010 filed on February 24, 2011).
4.5	Indenture, dated as of June 7, 2013, between Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.) and Wells Fargo Bank, National Association, as Trustee (incorporated herein by reference to Exhibit 4.1 to the Current Report on Form 8-K filed on June 10, 2013).
4.6	First Supplemental Indenture, dated as of June 7, 2013, among Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.), Wells Fargo Bank, National Association, as Trustee, Deutsche Bank AG, London Branch, as paying agent, and Deutsche Bank Luxembourg S.A., as registrar and transfer agent (incorporated herein by reference to Exhibit 4.2 to the Current Report on Form 8-K filed on June 10, 2013).
4.7	Second Supplemental Indenture, dated as of May 29, 2014, among Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.) and Wells Fargo Bank, National Association, as Trustee (incorporated herein by reference to Exhibit 4.1 to the Current Report on Form 8-K filed on May 30, 2014).
4.8	Third Supplemental Indenture, dated as of May 20, 2016, among Nasdaq, Inc., Wells Fargo Bank, National Association, as Trustee, and HSBC Bank USA, National Association, as paying agent and as registrar and transfer agent (incorporated herein by reference to the Current Report on Form 8-K filed on May 23, 2016).
4.9	Fifth Supplemental Indenture, dated as of September 22, 2017, among Nasdaq, Inc. and Wells Fargo Bank, National Association, as Trustee (incorporated herein by reference to Exhibit 4.1 to the Current Report on Form 8-K filed on September 22, 2017).
4.10	Sixth Supplemental Indenture, dated as of April 1, 2019, among Nasdaq, Inc., Wells Fargo Bank, National Association, as Trustee, and HSBC Bank USA, National Association, as paying agent and as registrar and transfer agent (incorporated by reference to Exhibit 4.2 to the Form 8-A filed on April 1, 2019).
4.11	Seventh Supplemental Indenture, dated February 13, 2020, among Nasdaq, Inc., Wells Fargo Bank, National Association, as Trustee, and HSBC Bank USA, National Association, as paying agent and as registrar and transfer agent (incorporated herein by reference to Exhibit 4.2 to the Company's Form 8-A filed on February 13, 2020).
4.12	Eighth Supplemental Indenture, dated April 28, 2020, by and between Nasdaq, Inc. and Wells Fargo Bank, National Association, as Trustee (incorporated herein by reference to Exhibit 4.2 to the Current Report on Form 8-K filed on April 28, 2020).
4.13	Ninth Supplemental Indenture, dated December 21, 2020, by and between Nasdaq, Inc. and Wells Fargo Bank, National Association, as Trustee (incorporated herein by reference to Exhibit 4.2 to the Current Report on Form 8-K filed on December 21, 2020).
4.14	Tenth Supplemental Indenture, dated December 21, 2020, by and between Nasdaq, Inc. and Wells Fargo Bank, National Association, as Trustee (incorporated herein by reference to Exhibit 4.3 to the Current Report on Form 8-K filed on December 21, 2020).
4.15	Eleventh Supplemental Indenture, dated December 21, 2020, by and between Nasdaq, Inc. and Wells Fargo Bank, National Association, as Trustee (incorporated herein by reference to Exhibit 4.4 to the Current Report on Form 8-K filed on December 21, 2020).
4.16	Registration Rights Agreement, dated as of June 28, 2013, by and among Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.), BGC Partners, Inc., BGC Holdings, L.P. and BGC Partners, L.P. (incorporated herein by reference to Exhibit 10.1 to the Current Report on Form 8-K filed on July 1, 2013).
4.17	Description of Securities.
10.1	Amended and Restated Board Compensation Policy, effective on May 19, 2020 (incorporated herein by reference to Exhibit 10.1 to the Quarterly Report on Form 10-Q for the quarter ended June 30, 2020 filed on August 5, 2020).*
10.2	Nasdaq Executive Corporate Incentive Plan, effective as of January 1, 2015 (incorporated herein by reference to Exhibit 10.1 to the Current Report on Form 8-K filed on May 11, 2015).*
10.3	Nasdaq, Inc. Equity Incentive Plan (as amended and restated as of April 24, 2018) (incorporated herein by reference to Exhibit 10.1 to the Form S-8 filed on May 25, 2018).*
10.4	Form of Nasdaq Non-Qualified Stock Option Award Certificate (incorporated herein by reference to Exhibit 10.3 to the Annual Report on Form 10-K for the year ended December 31, 2010 filed on February 24, 2011).*

10.5	Form of Nasdaq Restricted Stock Unit Award Certificate (employees) (incorporated herein by reference to Exhibit 10.2 to the Quarterly Report on Form 10-Q for the quarter ended June 30, 2020 filed on August 5, 2020).*
10.6	Form of Nasdaq Restricted Stock Unit Award Certificate (directors) (incorporated herein by reference to Exhibit 10.3 to the Quarterly Report on Form 10-Q for the quarter ended June 30, 2020 filed on August 5, 2020).*
10.7	Form of Nasdaq One-Year Performance Share Unit Agreement (incorporated herein by reference to Exhibit 10.4 to the Quarterly Report on Form 10-Q for the quarter ended June 30, 2019 filed on August 5, 2019).*
10.8	Form of Nasdaq Three-Year Performance Share Unit Agreement (incorporated herein by reference to Exhibit 10.4 to the Quarterly Report on Form 10-Q for the quarter ended June 30, 2020 filed on August 5, 2020).*
10.9	Form of Nasdaq Continuing Obligations Agreement (incorporated herein by reference to Exhibit 10.1 to the Quarterly Report on Form 10-Q for the quarter ended March 31, 2017 filed on May 10, 2017).*
10.10	Amended and Restated Supplemental Executive Retirement Plan, dated as of December 17, 2008 (incorporated herein by reference to Exhibit 10.6 to the Annual Report on Form 10-K for the year ended December 31, 2008 filed on February 27, 2009).*
10.10.1	Amendment No. 1 to Amended and Restated Supplemental Executive Retirement Plan, effective as of December 31, 2008 (incorporated herein by reference to Exhibit 10.6.1 to the Annual Report on Form 10-K for the year ended December 31, 2008 filed on February 27, 2009).*
10.11	Nasdaq Supplemental Employer Retirement Contribution Plan, dated as of December 17, 2008 (incorporated herein by reference to Exhibit 10.7 to the Annual Report on Form 10-K for the year ended December 31, 2008 filed on February 27, 2009).*
10.12	Employment Agreement between Nasdaq and Adena Friedman, made and entered into on November 14, 2016 and effective as of January 1, 2017 (incorporated herein by reference to Exhibit 10.10 to the Annual Report on Form 10-K for the year ended December 31, 2016 filed on March 1, 2017).*
10.13	Nonqualified Stock Option Award Certificate to Adena T. Friedman from Nasdaq, Inc. in connection with grant made on January 3, 2017 (incorporated herein by reference to Exhibit 10.1 to the Quarterly Report on Form 10-Q for the quarter ended September 30, 2017 filed on November 7, 2017).*
10.14	Employment Offer Letter, dated as of May 10, 2016, between Nasdaq, Inc. and Michael Ptasznik (incorporated herein by reference to Exhibit 10.2 to the Quarterly Report on Form 10-Q for the quarter ended March 31, 2017 filed on May 10, 2017).*
10.15	Retirement Agreement and General Release of Claims by and between Nasdaq, Inc. and Michael Ptasznik, dated October 21, 2020.*
10.16	Employment Agreement between Nasdaq and Bradley J. Peterson, dated August 1, 2016 (incorporated herein by reference to Exhibit 10.1 to the Quarterly Report on Form 10-Q for the quarter ended September 30, 2016 filed on November 8, 2016).*
10.17	Employment Agreement by and between Nasdaq, Inc. and Bradley J. Peterson, dated October 1, 2020.*
10.18	Employment Offer Letter, dated as of April 30, 2019, between Nasdaq, Inc. and Lauren B. Dillard (incorporated herein by reference to Exhibit 10.6 to the Quarterly Report on Form 10-Q for the quarter ended June 30, 2019 filed on August 5, 2019).*
10.19	Nasdaq Change in Control Severance Plan for Executive Vice Presidents and Senior Vice Presidents, effective November 26, 2013 (incorporated herein by reference to Exhibit 10.1 to the Current Report on Form 8-K filed on November 29, 2013).*
10.20	Credit Agreement, dated as of April 25, 2017, among Nasdaq, Inc., the various lenders from time to time party thereto, Bank of America, N.A., as administrative agent and an issuing bank, and the other financial institutions party thereto (incorporated herein by reference to Exhibit 10.1 to the Current Report on Form 8-K filed on April 26, 2017).
10.21	Amendment No. 1 to Credit Agreement, dated as of December 1, 2020, by and among Nasdaq, Inc., the lenders party thereto, and Bank of America, N.A., as administrative agent (incorporated herein by reference to Exhibit 10.1 to the Current Report on Form 8-K filed on December 3, 2020).
10.22	Credit Agreement, dated as of December 21, 2020, among Nasdaq, Inc., the various lenders from time to time party thereto and, Bank of America, N.A., as administrative agent and issuing bank (incorporated herein by reference to Exhibit 10.1 to the Current Report on Form 8-K filed on December 21, 2020).
10.23	Form of Commercial Paper Dealer Agreement between Nasdaq, Inc., as Issuer, and the Dealer party thereto (incorporated herein by reference to Exhibit 10.3 to the Current Report on Form 8-K filed on April 26, 2017).

11	Statement regarding computation of per share earnings (incorporated herein by reference from Note 13 to the consolidated financial statements under Part II, Item 8 of this Form 10-K).
21.1	List of all subsidiaries.
23.1	Consent of Ernst & Young LLP.
24.1	Powers of Attorney.
31.1	Certification of President and Chief Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (“Sarbanes-Oxley”).
31.2	Certification of Executive Vice President, Corporate Strategy and Chief Financial Officer pursuant to Section 302 of Sarbanes-Oxley.
32.1	Certifications Pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of Sarbanes-Oxley.
101	The following materials from the Nasdaq, Inc. Annual Report on Form 10-K for the year ended December 31, 2020, formatted in iXBRL (Inline eXtensible Business Reporting Language): (i) Consolidated Balance Sheets as of December 31, 2020 and December 31, 2019; (ii) Consolidated Statements of Income for the years ended December 31, 2020, 2019 and 2018; (iii) Consolidated Statements of Comprehensive Income for the years ended December 31, 2020, 2019 and 2018; (iv) Consolidated Statements of Changes in Stockholders' Equity for the years ended December 31, 2020, 2019 and 2018; (v) Consolidated Statements of Cash Flows for the years ended December 31, 2020, 2019 and 2018; and (vi) notes to consolidated financial statements.
104	Cover Page Interactive Data File, formatted in iXBRL and contained in Exhibit 101.

* Management contract or compensatory plan or arrangement.

† Schedules have been omitted pursuant to Item 601(b)(2) of Regulation S-K.

(b) Exhibits:

See Item 15(a)(3) above.

(c) Financial Statement Schedules:

All schedules are omitted because they are not applicable or the required information is included in the consolidated financial statements or notes.

Item 16. Form 10-K Summary

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized, on February 23, 2021.

Nasdaq, Inc.
(Registrant)

By:	/s/ Adena T. Friedman
Name:	**Adena T. Friedman**
Title:	**President and Chief Executive Officer**

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities indicated as of February 23, 2021.

Name	Title
/s/ Adena T. Friedman	President and Chief Executive Officer
Adena T. Friedman	(Principal Executive Officer)
/s/ Michael Ptasznik	Executive Vice President, Corporate Strategy and Chief Financial Officer
Michael Ptasznik	(Principal Financial Officer)
/s/ Ann M. Dennison	Senior Vice President and Controller
Ann M. Dennison	(Principal Accounting Officer)
*	Chairman of the Board
Michael R. Splinter	
*	Director
Melissa M. Arnoldi	
*	Director
Charlene T. Begley	
*	Director
Steven D. Black	
*	Director
Essa Kazim	
*	Director
Thomas A. Kloet	
*	Director
John D. Rainey	
*	Director
Jacob Wallenberg	
*	Director
Alfred W. Zollar	

* Pursuant to Power of Attorney

By: /s/ John A. Zecca

John A. Zecca
Attorney-in-Fact

Nasdaq, Inc.

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

The following consolidated financial statements of Nasdaq, Inc. and its subsidiaries are presented herein on the page indicated:

Report of Independent Registered Public Accounting Firm

To the Shareholders and the Board of Directors of Nasdaq, Inc.

Opinion on the Financial Statements
We have audited the accompanying consolidated balance sheets of Nasdaq, Inc. (the Company) as of December 31, 2020 and 2019, the related consolidated statements of income, comprehensive income, changes in stockholders' equity and cash flows for each of the three years in the period ended December 31, 2020, and the related notes (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2020 and 2019, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2020, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2020, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), and our report dated February 23, 2021 expressed an unqualified opinion thereon.

Adoption of ASU No. 2016-02
As discussed in Note 2 to the consolidated financial statements, the Company changed its method of accounting for leases in 2019 due to the adoption of ASU No. 2016-02, Leases (Topic 842).

Basis for Opinion
These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matter
The critical audit matter communicated below is a matter arising from the current period audit of the financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective or complex judgments. The communication of the critical audit matter does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Market Technology Revenue Recognition

Description of the Matter

As described in Notes 2, 3 and 8 to the consolidated financial statements, the Company enters into long-term market technology contracts with customers to develop customized technology solutions, license the right to use software, and provide support and other services which results in these contracts containing multiple performance obligations. The Company recorded market technology deferred revenue of $53 million as of December 31, 2020 and recognized $357 million in revenue for the year then ended. The Company allocates the contract transaction price to each performance obligation using their best estimate of the standalone selling price of each distinct good or service in the respective market technology contract. In instances where standalone selling price is not directly observable, such as when a product or service is not sold separately, the Company determines the standalone selling price predominantly through an expected cost plus a margin approach. The Company recognizes revenue over time using costs incurred to date relative to total estimated costs at completion to measure progress toward satisfying the performance obligation.

Auditing the Company's calculation of the standalone selling price and timing of revenue recognition was complex and involved a high degree of subjective auditor judgment because of the significant management judgment required to develop the estimates. The standalone selling price is based on an estimate of total project costs, ongoing monitoring of completion of performance obligations and establishing margins for goods or services where a standalone selling price is not directly observable.

How We Addressed the Matter in Our Audit

We obtained an understanding, evaluated the design and tested the operating effectiveness of controls over the Company's processes with respect to estimates that impact the timing and measurement of revenue recognition. For example, we tested controls over the allocation of contract transaction price to performance obligations, including management's review of the estimated margin used when applying the cost plus an estimated margin to determine the standalone selling price. We also evaluated the design and tested the operating effectiveness of controls over the completeness and accuracy of the data utilized to measure the estimate and recognize the revenue in the appropriate period.

We performed substantive audit procedures that included, among other things, evaluating the significant assumptions and the accuracy and completeness of the underlying data used in management's calculation. Specifically, we inspected certain customer contracts, including contract modifications, and tested management's determination of the standalone selling price and its allocation to performance obligations in accordance with the cost plus a margin approach, including comparing the margin assumptions to actual margins earned on completed contracts. We also tested the accuracy of the revenue recognized in the current period by inspecting reports relating to the hours recorded on a project. We evaluated the adequacy of the Company's disclosures in Notes 2, 3 and 8 to the consolidated financial statements related to market technology revenue recognition.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 1986.

New York, New York
February 23, 2021

Nasdaq, Inc.
Consolidated Balance Sheets
(in millions, except share and par value amounts)

	December 31, 2020	December 31, 2019
Assets		
Current assets:		
Cash and cash equivalents	$ 2,745	$ 332
Restricted cash and cash equivalents	37	30
Financial investments	195	291
Receivables, net	566	422
Default funds and margin deposits	3,942	2,996
Other current assets	175	219
Total current assets	7,660	4,290
Property and equipment, net	475	384
Goodwill	6,850	6,366
Intangible assets, net	2,255	2,249
Operating lease assets	381	346
Other non-current assets	358	289
Total assets	$ 17,979	$ 13,924
Liabilities		
Current liabilities:		
Accounts payable and accrued expenses	$ 175	$ 148
Section 31 fees payable to SEC	224	132
Accrued personnel costs	227	188
Deferred revenue	235	211
Other current liabilities	121	161
Default funds and margin deposits	3,942	2,996
Short-term debt	—	391
Total current liabilities	4,924	4,227
Long-term debt	5,541	2,996
Deferred tax liabilities, net	502	552
Operating lease liabilities	389	331
Other non-current liabilities	187	179
Total liabilities	11,543	8,285
Commitments and contingencies		
Equity		
Nasdaq stockholders' equity:		
Common stock, $0.01 par value, 300,000,000 shares authorized, shares issued: 171,278,761 at December 31, 2020 and 171,075,011 at December 31, 2019; shares outstanding: 164,933,678 at December 31, 2020 and 165,094,440 at December 31, 2019	2	2
Additional paid-in capital	2,547	2,632
Common stock in treasury, at cost: 6,345,083 shares at December 31, 2020 and 5,980,571 shares at December 31, 2019	(376)	(336)
Accumulated other comprehensive loss	(1,368)	(1,686)
Retained earnings	5,628	5,027
Total Nasdaq stockholders' equity	6,433	5,639
Noncontrolling interests	3	—
Total equity	6,436	5,639
Total liabilities and equity	$ 17,979	$ 13,924

See accompanying notes to consolidated financial statements.

Nasdaq, Inc.
Consolidated Statements of Income
(in millions, except per share amounts)

	Year Ended December 31,		
	2020	2019	2018
Revenues:			
Market Services	$ 3,832	$ 2,639	$ 2,709
Corporate Platforms	530	496	487
Investment Intelligence	908	779	714
Market Technology	357	338	270
Other revenues	—	10	97
Total revenues	5,627	4,262	4,277
Transaction-based expenses:			
Transaction rebates	(2,029)	(1,327)	(1,344)
Brokerage, clearance and exchange fees	(695)	(400)	(407)
Revenues less transaction-based expenses	2,903	2,535	2,526
Operating expenses:			
Compensation and benefits	786	707	712
Professional and contract services	137	127	144
Computer operations and data communications	151	133	127
Occupancy	107	97	95
General, administrative and other	142	125	120
Marketing and advertising	39	39	37
Depreciation and amortization	202	190	210
Regulatory	24	31	32
Merger and strategic initiatives	33	30	21
Restructuring charges	48	39	—
Total operating expenses	1,669	1,518	1,498
Operating income	1,234	1,017	1,028
Interest income	4	10	10
Interest expense	(101)	(124)	(150)
Gain on sale of investment security	—	—	118
Net gain on divestiture of businesses	—	27	33
Other income	5	5	7
Net income from unconsolidated investees	70	84	18
Income before income taxes	1,212	1,019	1,064
Income tax provision	279	245	606
Net income attributable to Nasdaq	$ 933	$ 774	$ 458
Per share information:			
Basic earnings per share	$ 5.67	$ 4.69	$ 2.77
Diluted earnings per share	$ 5.59	$ 4.63	$ 2.73
Cash dividends declared per common share	$ 1.94	$ 1.85	$ 1.70

See accompanying notes to consolidated financial statements.

Nasdaq, Inc.
Consolidated Statements of Comprehensive Income
(in millions)

	Year Ended December 31,		
	2020	2019	2018
Net income	$ 933	$ 774	$ 458
Other comprehensive income (loss):			
Foreign currency translation gains (losses)	269	(122)	(240)
Income tax benefit (expense)[1]	49	(31)	(11)
Foreign currency translation, net	318	(153)	(251)
Employee benefit plan adjustment gains (losses)	—	(4)	9
Employee benefit plan income tax (benefit) expense	—	1	(9)
Employee benefit plan, net	—	(3)	—
Total other comprehensive income (loss), net of tax[2]	318	(156)	(251)
Comprehensive income attributable to Nasdaq	$ 1,251	$ 618	$ 207

[1] Primarily relates to the tax effect of unrealized gains and losses on Euro denominated notes.
[2] For 2018, excludes a reclassification impact of $417 million from accumulated other comprehensive income to retained earnings within stockholders' equity in the Consolidated Statements of Changes in Stockholders' Equity for stranded tax effects related to the Tax Cuts and Jobs Act.

See accompanying notes to consolidated financial statements.

Nasdaq, Inc.
Consolidated Statements of Changes in Stockholders' Equity
(in millions)

	Year Ended December 31,					
	2020		2019		2018	
	Shares	$	Shares	$	Shares	$
Common stock	165	2	165	2	167	2
Additional paid-in capital						
Beginning balance		2,632		2,716		3,024
Share repurchase program	(2)	(222)	(2)	(200)	(5)	(394)
Share-based compensation	1	87	1	79	2	69
Stock option exercises, net	—	2	—	2	—	3
Other issuances of common stock, net	1	48	1	35	1	14
Ending balance		2,547		2,632		2,716
Common stock in treasury, at cost						
Beginning balance		(336)		(297)		(247)
Other employee stock activity	—	(40)	—	(39)	—	(50)
Ending balance		(376)		(336)		(297)
Accumulated other comprehensive loss						
Beginning balance		(1,686)		(1,530)		(862)
Other comprehensive income (loss)		318		(156)		(251)
Reclassification impact of Tax Reform		—		—		(417)
Ending balance		(1,368)		(1,686)		(1,530)
Retained earnings						
Beginning balance		5,027		4,558		3,963
Impact of adoption of ASU 2016-13		(12)		—		
Net income		933		774		458
Reclassification impact of Tax Reform		—		—		417
Cash dividends declared per common share		(320)		(305)		(280)
Ending balance		5,628		5,027		4,558
Total Nasdaq stockholders' equity		6,433		5,639		5,449
Noncontrolling interests						
Beginning balance		—		—		—
Net activity related to noncontrolling interests		3		—		—
Ending balance		3		—		—
Total Equity	165	$ 6,436	165	$ 5,639	165	$ 5,449

See accompanying notes to consolidated financial statements.

Nasdaq, Inc.
Consolidated Statements of Cash Flows
(in millions)

	Year Ended December 31,		
	2020	2019	2018
Cash flows from operating activities:			
Net income	$ 933	$ 774	$ 458
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	202	190	210
Share-based compensation	87	79	69
Deferred income taxes	41	35	301
Reversal of certain Swedish tax benefits	—	—	41
Extinguishment of debt	36	11	—
Net gain on divestiture of businesses	—	(27)	(33)
Gain on sale of investment security	—	—	(118)
Non-cash restructuring charges	14	25	—
Net income from unconsolidated investees	(70)	(84)	(18)
Other reconciling items included in net income	18	8	15
Net change in operating assets and liabilities, net of effects of divestiture and acquisitions:			
Receivables, net	(167)	(42)	(35)
Other assets	26	(173)	(40)
Accounts payable and accrued expenses	5	(49)	33
Section 31 fees payable to SEC	92	23	(19)
Accrued personnel costs	32	(9)	37
Deferred revenue	15	(15)	7
Other liabilities	(12)	217	120
Net cash provided by operating activities	1,252	963	1,028
Cash flows from investing activities:			
Purchases of securities	(283)	(579)	(421)
Proceeds from sales and redemptions of securities	402	543	374
Proceeds from divestiture of businesses	—	132	286
Proceeds from sale of investment securities	22	11	169
Acquisition of businesses, net of cash and cash equivalents acquired	(157)	(206)	(75)
Purchases of property and equipment	(188)	(127)	(111)
Other investing activities	(27)	(14)	(26)
Net cash provided by (used in) investing activities	(231)	(240)	196
Cash flows from financing activities:			
Proceeds from (repayments of) commercial paper, net	(391)	116	(205)
Repayments of borrowings under our credit commitment and debt obligations	(1,468)	(1,215)	(115)
Payment of debt extinguishment cost	(36)	(11)	—
Proceeds from issuances of long-term debt, net of issuance costs and utilization of credit commitment	3,807	680	—
Repurchases of common stock	(222)	(200)	(394)
Dividends paid	(320)	(305)	(280)
Proceeds received from employee stock activity and other issuances	50	37	17
Payments related to employee shares withheld for taxes	(40)	(39)	(50)
Other financing activities	3	—	—
Net cash provided by (used in) financing activities	1,383	(937)	(1,027)
Effect of exchange rate changes on cash and cash equivalents and restricted cash and cash equivalents	16	(10)	(10)
Net increase (decrease) in cash and cash equivalents and restricted cash and cash equivalents	2,420	(224)	187
Cash and cash equivalents and restricted cash and cash equivalents at beginning of period	362	586	399
Cash and cash equivalents and restricted cash and cash equivalents at end of period	$ 2,782	$ 362	$ 586
Supplemental Disclosure Cash Flow Information			
Cash paid for:			
Interest	$ 97	$ 120	$ 148
Income taxes, net of refund	$ 290	$ 205	$ 221

See accompanying notes to consolidated financial statements.

Nasdaq, Inc.

Notes to Consolidated Financial Statements

1. Organization and Nature of Operations

Nasdaq is a global technology company serving the capital markets and other industries. Our diverse offerings of data, analytics, software and services enables clients to optimize and execute their business vision with confidence.

We manage, operate and provide our products and services in four business segments: Market Services, Corporate Platforms, Investment Intelligence and Market Technology. In the fourth quarter of 2020, we renamed the segment that was formerly known as the Corporate Services segment to the Corporate Platforms segment and renamed the business that was formerly known as the Corporate Solutions business to the IR & ESG Services business. We also renamed the segment that was formerly known as the Information Services segment to the Investment Intelligence segment and renamed the business that was formerly known as the Investment Data and Analytics business to the Analytics business. There was no impact to current or prior years' operating results as a result of these changes.

Market Services

Our Market Services segment includes our Equity Derivative Trading and Clearing, Cash Equity Trading, FICC and Trade Management Services businesses. We operate multiple exchanges and other marketplace facilities across several asset classes, including derivatives, commodities, cash equity, debt, structured products and ETPs. In addition, in certain countries where we operate exchanges, we also provide broker services, clearing, settlement and central depository services. In November 2019, we sold NFX's futures exchange business to a third party which acquired the core assets of NFX, including the portfolio of open interest in NFX contracts. During 2020, all open interest was migrated to other exchanges. In January 2020, we commenced an orderly wind-down of our Nordic broker services operations business. We expect this wind-down to continue through 2021. Also, in February 2021, we announced that we entered into a Purchase Agreement to sell NFI. See "Sale of U.S. Fixed Income Business," of Note 21, "Subsequent Events," for further discussion of this transaction.

Our transaction-based platforms provide market participants with the ability to access, process, display and integrate orders and quotes. The platforms allow the routing and execution of buy and sell orders as well as the reporting of transactions, providing fee-based revenues.

For further discussion of our Market Services businesses, see "Products and Services - Market Services," of "Item 1. Business."

Corporate Platforms

Our Corporate Platforms segment includes our Listing Services and IR & ESG Services businesses. These businesses deliver critical capital market and governance solutions across the lifecycle of public and private companies.

Our Listing Services business includes our U.S. and European Listing Services businesses. We operate a variety of listing platforms around the world to provide multiple global capital raising solutions for private and public companies. Our main listing markets are The Nasdaq Stock Market and the Nasdaq Nordic and Nasdaq Baltic exchanges. Through Nasdaq First North, our Nordic and Baltic operations also offer alternative marketplaces for smaller companies and growth companies. Our Listing Services business also includes NPM, which provides liquidity solutions for private companies.

We are continuing to grow our U.S. Corporate Bond exchange for the listing of corporate bonds. This exchange operates pursuant to The Nasdaq Stock Market exchange license and is powered by NFF. As of December 31, 2020, 86 corporate bonds were listed on the Corporate Bond exchange. We also continue to grow the Nasdaq Sustainable Bond Network, a platform for increased transparency in the global sustainable bond markets.

As of December 31, 2020, there were 3,392 total listings on The Nasdaq Stock Market, including 412 ETPs. The combined market capitalization was approximately $22.0 trillion. In Europe, the Nasdaq Nordic and Nasdaq Baltic exchanges, together with Nasdaq First North, were home to 1,071 listed companies with a combined market capitalization of approximately $2.1 trillion.

Our IR & ESG Services business includes our Investor Relations Intelligence and Governance Solutions businesses, which serve both public and private companies and organizations. Our public company clients can be companies listed on our exchanges or other U.S. and global exchanges. We help organizations enhance their ability to understand and expand their global shareholder base, improve corporate governance, and navigate the evolving ESG landscape through our suite of advanced technology, analytics, and consultative services. We provide clients with counsel on a range of governance and sustainability-related issues. Our acquisition of OneReport in January 2020 broadened our offerings which also include our ESG Advisory service and our board assessment and collaboration technology.

For further discussion of our Corporate Platforms businesses, see "Products and Services - Corporate Platforms," of "Item 1. Business."

Investment Intelligence

Our Investment Intelligence segment includes our Market Data, Index and Analytics businesses.

Our Market Data business sells and distributes historical and real-time market data to the sell-side, the institutional investing community, retail online brokers, proprietary trading shops, other venues, internet portals and data distributors. Our market data products enhance transparency

of market activity within our exchanges and provide critical information to professional and non-professional investors globally.

Our Index business develops and licenses Nasdaq-branded indexes and financial products. We also license cash-settled options, futures and options on futures on our indexes. As of December 31, 2020, 339 ETPs listed in over 20 countries and exchanges tracked a Nasdaq index and accounted for $359 billion in AUM.

Our Analytics business provides asset managers, investment consultants and institutional asset owners with information and analytics to make data-driven investment decisions and deploy their resources more productively. Through eVestment and Solovis, we provide a suite of cloud-based solutions that help institutional investors and consultants conduct pre-investment due diligence, and monitor their portfolios post-investment. The eVestment platform also enables asset managers to market their institutional products worldwide.

For further discussion of our Investment Intelligence businesses, see "Products and Services - Investment Intelligence," of "Item 1. Business."

Market Technology

Powering over 130 market infrastructure operators and new market clients in more than 50 countries, our Market Technology segment is a leading global technology solutions provider and partner to exchanges, clearing organizations, central securities depositories, regulators, banks, brokers, buy-side firms and corporate businesses. Our Market Technology business is the sales channel for our complete global offering to other marketplaces. Our solutions can handle a wide array of assets, including but not limited to cash equities, equity derivatives, currencies, various interest-bearing securities, commodities, energy products and digital currencies. Our solutions can also be used in the creation of new asset classes, and non-capital markets customers, including those in insurance liabilities securitization, cryptocurrencies and sports wagering. During 2020, we announced the launch of the cloud-deployed Nasdaq Automated Investigator, an automated solution for investigating anti-money laundering for retail and commercial banks and other financial institutions. Additionally, in February 2021, we completed the acquisition of Verafin, a SaaS technology provider specializing in combating fraud and money laundering. See "Acquisition of Verafin," of Note 4, "Acquisitions and Divestiture," for further discussion.

For further discussion of our Market Technology businesses, see "Products and Services - Market Technology," of "Item 1. Business."

2. Summary of Significant Accounting Policies

Basis of Presentation and Principles of Consolidation

The consolidated financial statements are prepared in accordance with U.S. GAAP and include the accounts of Nasdaq, its wholly-owned subsidiaries and other entities in which Nasdaq has a controlling financial interest. When we do not have a controlling interest in an entity but exercise significant influence over the entity's operating and financial policies, such investment is accounted for under the equity method of accounting. We recognize our share of earnings or losses of an equity method investee based on our ownership percentage. See "Equity Method Investments," of Note 6, "Investments," for further discussion of our equity method investments.

The accompanying consolidated financial statements reflect all adjustments which are, in the opinion of management, necessary for a fair statement of the results. These adjustments are of a normal recurring nature. All significant intercompany accounts and transactions have been eliminated in consolidation.

Certain prior year amounts have been reclassified to conform to the current year presentation.

Use of Estimates

In preparing our consolidated financial statements, we make assumptions, judgments and estimates that can have a significant impact on our revenue, operating income and net income, as well as on the value of certain assets and liabilities in our consolidated balance sheets. At least quarterly, we evaluate our assumptions, judgments and estimates, and make changes as deemed necessary.

Nasdaq has considered the impact of COVID-19 on the assumptions and estimates used in evaluating our assets and liabilities, including but not limited to our goodwill, intangible assets, equity method investments, equity securities and allowance for losses on accounts receivable. We determined that there were no material adverse impacts on our results of operations and financial position for the year ended December 31, 2020. In addition, there were no material impairment charges recorded for the year ended December 31, 2020. These estimates may change as new events occur and additional information is obtained. Actual results could differ from these estimates under different assumptions or conditions.

Foreign Currency

Foreign denominated assets and liabilities are remeasured into the functional currency at exchange rates in effect at the balance sheet date and recorded through the income statement. Gains or losses resulting from foreign currency transactions are remeasured using the rates on the dates on which those elements are recognized during the period, and are included in general, administrative and other expense in the Consolidated Statements of Income.

Translation gains or losses resulting from translating our subsidiaries' financial statements from the local functional currency to the reporting currency, net of tax, are included in accumulated other comprehensive loss within stockholders' equity in the Consolidated Balance Sheets. Assets and liabilities are translated at the balance sheet date while

revenues and expenses are translated at the date the transaction occurs or at an applicable average rate.

Cash and Cash Equivalents

Cash and cash equivalents include all non-restricted cash in banks and highly liquid investments with original maturities of 90 days or less at the time of purchase. Such equivalent investments included in cash and cash equivalents in the Consolidated Balance Sheets were $2,509 million as of December 31, 2020 and $135 million as of December 31, 2019. Cash equivalents are carried at cost plus accrued interest, which approximates fair value due to the short maturities of these investments. The increase in cash equivalents in 2020 was primarily due to the investment of net proceeds of $1.9 billion from issuances of long-term debt in the fourth quarter of 2020 for the acquisition of Verafin, which closed in February 2021. See "Acquisition of Verafin," of Note 4, "Acquisitions and Divestiture," for further discussion.

Restricted Cash

Restricted cash and cash equivalents, which was $37 million as of December 31, 2020 and $30 million as of December 31, 2019, is restricted from withdrawal due to a contractual or regulatory requirement or not available for general use and as such is classified as restricted in the Consolidated Balance Sheets. As of December 31, 2020 and 2019, restricted cash and cash equivalents primarily includes funds held for our trading and clearing businesses.

Receivables, net

Our receivables are concentrated with our member firms, market data distributors, listed companies and investor relations and governance and market technology customers. Receivables are shown net of a reserve for uncollectible accounts. On January 1, 2020, we adopted ASU 2016-13. Implementation of this standard is discussed below under "Measurement of Credit Losses on Financial Instruments." The reserve for bad debts is maintained at a level that management believes to be sufficient to absorb expected losses over the life of our accounts receivable portfolio. The reserve is increased by the provision for bad debts which is charged against operating results and decreased by the amount of charge-offs, net of recoveries. The provision for bad debts is included in general, administrative and other expense in the Consolidated Statements of Income. The amount charged against operating results is based on an aging methodology. This method applies loss rates based on historical loss information which is disaggregated by business segment and, as deemed necessary, is adjusted for other factors and considerations that could impact collectibility. In circumstances where a specific customer's inability to meet its financial obligations is known (i.e., bankruptcy filings), we determine whether a specific provision for bad debts is required. Accounts receivable are written-off against the reserve for bad debts when collection efforts cease. Due to changing economic, business and market conditions, we review the reserve for bad debts monthly and make changes to the reserve through the provision for bad debts as appropriate. If circumstances change (i.e., higher than expected defaults or an unexpected material adverse change in a major customer's ability to pay), our estimates of recoverability could be reduced by a material amount. The total reserve netted against receivables in the Consolidated Balance Sheets was $21 million as of December 31, 2020, $9 million as of December 31, 2019 and $13 million as of December 31, 2018. The changes in the balance between periods was immaterial.

Measurement of Credit Losses on Financial Instruments

ASU 2016-13 changed the impairment model for certain financial instruments. The new model is a forward looking expected loss model and applies to financial assets subject to credit losses and measured at amortized cost and certain off-balance sheet credit exposures. This includes loans, held-to-maturity debt securities, loan commitments, financial guarantees and trade receivables. For available-for-sale debt securities with unrealized losses, credit losses are measured in a manner similar to previous accounting, except that the losses are recognized as allowances rather than reductions in the amortized cost of the securities.

We recorded a $12 million non-cash cumulative effect adjustment to retained earnings on our opening Consolidated Balance Sheets as of January 1, 2020 as a result of the adoption of this new standard.

The comparative information has not been restated and continues to be reported under the accounting standards in effect for those periods. We expect the impact of the adoption of the new standard to be immaterial to our net income on an on-going basis.

At the date of adoption, the adjustment impacted by the standard related primarily to an adjustment to trade receivables. We took into consideration all financial instruments held at the date of adoption which were impacted by the standard, including reverse repurchase agreements and commercial paper, and estimated the risk of loss to be immaterial. Therefore, no adjustment was recorded for these instruments.

In accordance with the new standard, Nasdaq must recognize an allowance when a receivable or contract asset is established, regardless of whether there has been an incurred loss.

In order to assess the appropriate allowance as of January 1, 2020, we disaggregated our trade receivables by business segment and the aging of receivables. We concluded that historical loss information is a reasonable starting point on which to determine expected credit losses for trade receivables held at the date of adoption as the composition of our trade receivables at adoption of the standard is materially consistent with that used in developing the historical loss percentages for each business unit. In order to incorporate our expectation of credit losses over the life of our receivables, we considered corporate default rate averages over an extended period as compared to the period covered

by our historical loss data and included an adjustment to historical loss percentages for current conditions and expected future conditions at the date of adoption.

Investments

Purchases and sales of investment securities are recognized on settlement date.

Financial investments

Financial investments are comprised of trading securities. These investments are bought principally to meet regulatory capital requirements mainly for our clearing operations at Nasdaq Clearing. These investments are classified as trading securities as they are generally sold in the near term. Changes in fair value of trading securities are included in other income in the Consolidated Statements of Income.

Fair value is generally obtained from third party pricing sources. When available, quoted market prices are used to determine fair value. If quoted market prices are not available, fair values are estimated using pricing models with observable market inputs. The inputs to the valuation models vary by the type of security being priced but are typically benchmark yields, reported trades, broker-dealer quotes, and prices of similar assets. Pricing models generally do not entail material subjectivity because the methodologies employed use inputs observed from active markets. See "Fair Value Measurements," below for further discussion of fair value measures.

Equity Securities

Investments in equity securities with readily determinable fair values (other than those accounted for under the equity method or those that result in consolidation of the investee) are measured at fair value and any changes in fair value are recognized in other income in the Consolidated Statements of Income.

Equity investments without readily determinable fair values are accounted for under the measurement alternative, under which investments are measured at cost, less any impairment, plus or minus changes resulting from observable price changes in orderly transactions for the identical or a similar investment of the same issuer on a prospective basis. We assess relevant transactions that occur on or before the balance sheet date to identify observable price changes, and we regularly monitor these investments to evaluate whether there is an indication that the investment is impaired, based on the share price from the investee's latest financing round, the performance of the investee in relation to its own operating targets, the investee's liquidity and cash position, and general market conditions. If a qualitative assessment indicates that the security is impaired, Nasdaq will estimate the fair value of the security, and if the fair value is less than the carrying amount of the security, recognize an impairment loss in net income equal to the difference in the period the impairment occurs. See Note 6, "Investments," for further discussion of our equity securities.

For the years ended December 31, 2020, 2019 and 2018, no material adjustments were made to the carrying value of our equity securities.

Our investments in equity securities are included in other non-current assets in the Consolidated Balance Sheets, as we intend to hold these investments for more than one year.

Equity Method Investments

In general, the equity method of accounting is used when we own 20% to 50% of the outstanding voting stock of a company or when we are able to exercise significant influence over the operating and financial policies of a company. We have certain investments in which we have determined that we have significant influence and as such account for the investments under the equity method of accounting. We record our estimated pro-rata share of earnings or losses each reporting period and record any dividends as a reduction in the investment balance. We evaluate our equity method investments for other-than-temporary declines in value by considering a variety of factors such as the earnings capacity of the investment and the fair value of the investment compared to its carrying amount. In addition, for investments where the market value is readily determinable, we consider the underlying stock price. If the estimated fair value of the investment is less than the carrying amount and management considers the decline in value to be other than temporary, the excess of the carrying amount over the estimated fair value is recognized in net income in the period the impairment occurs. See Note 6, "Investments," for further discussion of our equity method investments.

No material impairments were recorded to reduce the carrying value of our equity method investments in 2020, 2019 or 2018.

Default Funds and Margin Deposits

Nasdaq Clearing members' cash contributions are included in default funds and margin deposits in the Consolidated Balance Sheets as both a current asset and a current liability. These balances may fluctuate over time due to changes in the amount of deposits required and whether members choose to provide cash or non-cash contributions. Non-cash contributions include highly rated government debt securities that must meet specific criteria approved by Nasdaq Clearing. Non-cash contributions are pledged assets that are not recorded in the Consolidated Balance Sheets as Nasdaq Clearing does not take legal ownership of these assets and the risks and rewards remain with the clearing members.

Derivative Financial Instruments and Hedging Activities

Non-Designated Derivatives

We use foreign exchange forward contracts to manage foreign currency exposure of intercompany loans, accounts receivable, accounts payable and other balance sheet items. These contracts are not designated as hedges for financial reporting purposes. The change in fair value of these contracts is recognized in general, administrative and other

expense in the Consolidated Statements of Income and offsets the foreign currency exposure.

As of December 31, 2020 and 2019, the fair value amounts of our derivative instruments were immaterial.

Net Investment Hedges

Net assets of our foreign subsidiaries are exposed to volatility in foreign currency exchange rates. We may utilize net investment hedges to offset the translation adjustment arising from re-measuring our investment in foreign subsidiaries.

Our 2023, 2029, and 2030 Notes have been designated as a hedge of our net investment in certain foreign subsidiaries to mitigate the foreign exchange risk associated with certain investments in these subsidiaries. Any increase or decrease related to the remeasurement of the 2023, 2029, and 2030 Notes into U.S. dollars is recorded in accumulated other comprehensive loss within stockholders' equity in the Consolidated Balance Sheets. See "1.75% Senior Unsecured Notes Due 2023," "1.75% Senior Unsecured Notes Due 2029," and "0.875% Senior Unsecured Notes Due 2030," of Note 9, "Debt Obligations," for further discussion.

Property and Equipment, net

Property and equipment, including leasehold improvements, are carried at cost less accumulated depreciation and amortization. Depreciation and amortization are recognized using the straight-line method over the estimated useful lives of the related assets, which range from 10 to 40 years for buildings and improvements, 2 to 5 years for data processing equipment, and 5 to 10 years for furniture and equipment.

We develop systems solutions for both internal and external use. Certain costs incurred in connection with developing or obtaining internal use software are capitalized. In addition, certain costs of computer software to be sold, leased, or otherwise marketed as a separate product or as part of a product or process are capitalized beginning when a product's technological feasibility has been established and ending when a product is available for general release. Technological feasibility is established upon completion of a detailed program design or, in its absence, completion. Prior to reaching technological feasibility, all costs are charged to expense. Unamortized capitalized costs are included in data processing equipment and software, within property and equipment, net in the Consolidated Balance Sheets. Capitalized software costs are amortized on a straight-line basis over the estimated useful lives of the software, generally 5 to 10 years. Amortization of these costs is included in depreciation and amortization expense in the Consolidated Statements of Income.

Leasehold improvements are amortized using the straight-line method over the shorter of their estimated useful lives or the remaining term of the related lease.

See Note 7, "Property and Equipment, net," for further discussion.

Leases

On January 1, 2019, we adopted ASU 2016-02, "Leases," or ASU 2016-02, and elected the optional transition method to initially apply the standard at the January 1, 2019 adoption date. Prior periods continue to be reported under guidance in effect prior to January 1, 2019.

At inception, we determine whether a contract is or contains a lease. We have operating leases which are primarily real estate leases for our U.S. and European headquarters and for general office space. As of December 31, 2020, these leases have varying lease terms with remaining maturities ranging from 1 month to 15 years. Operating lease balances are included in operating lease assets, other current liabilities, and operating lease liabilities in our Consolidated Balance Sheets. We do not have any leases classified as finance leases.

Operating lease assets represent our right to use an underlying asset for the lease term and lease liabilities represent our obligation to make lease payments arising from the lease. Operating lease assets and liabilities are recognized at commencement date based on the present value of lease payments over the lease term. Since our leases do not provide an implicit rate, we use our incremental borrowing rate based on the estimated rate of interest for collateralized borrowing over a similar term of the lease payments at commencement date in determining the present value of lease payments. The operating lease asset also includes any lease payments made and excludes lease incentives. Our lease terms include options to extend or terminate the lease when we are reasonably certain that we will exercise that option. Lease expense for lease payments is recognized on a straight-line basis over the lease term. Certain of our lease agreements include rental payments adjusted periodically for inflation based on an index or rate. These payments are included in the initial measurement of the operating lease liability and operating lease asset. However, rental payments that are based on a change in an index or a rate are considered variable lease payments and are expensed as incurred.

We have lease agreements with lease and non-lease components, which are accounted for as a single performance obligation to the extent that the timing and pattern of transfer are similar for the lease and non-lease components and the lease component qualifies as an operating lease. We do not recognize lease liabilities and operating lease assets for leases with a term of 12 months or less. We recognize these lease payments on a straight-line basis over the lease term.

See Note 16, "Leases," for further discussion.

Goodwill and Indefinite-Lived Intangible Assets

Goodwill represents the excess of purchase price over the value assigned to the net assets, including identifiable intangible assets, of a business acquired. Goodwill is assessed for impairment annually in the fourth quarter of our fiscal year using an October 1 measurement date, or more frequently if conditions exist that indicate that the asset may be impaired, such as changes in the business climate, poor

indicators of operating performance or the sale or disposition of a significant portion of a reporting unit. When testing goodwill for impairment, we have the option of first performing a qualitative assessment to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount as the basis to determine if it is necessary to perform a quantitative goodwill impairment test. When assessing goodwill for impairment, our decision to perform a qualitative impairment assessment for a reporting unit in a given year is influenced by a number of factors, including but not limited to, the size of the reporting unit's goodwill, the significance of the excess of the reporting unit's estimated fair value over its carrying amount at the last quantitative assessment date, and the amount of time in between quantitative fair value assessments.

In performing a qualitative assessment, we consider the extent to which unfavorable events or circumstances identified, such as changes in economic, industry and market conditions or company specific events, could affect the comparison of the reporting unit's fair value with its carrying amount. If we choose not to complete a qualitative assessment for a given reporting unit, or if the initial assessment indicates that it is more likely than not that the carrying amount of a reporting unit exceeds its estimated fair value, a quantitative test is required. When performing a quantitative goodwill impairment test, we compare the fair value of a reporting unit with its carrying amount. If the fair value is less than the carrying amount, an impairment charge is recognized in an amount equal to the difference, limited to the total amount of goodwill allocated to that reporting unit.

We also evaluate indefinite-lived intangible assets for impairment annually in the fourth quarter of our fiscal year using an October 1 measurement date, or more frequently whenever events or changes in circumstances indicate that the fair value of the asset may be less than its carrying amount. Such evaluation includes determining the fair value of the asset and comparing the fair value of the asset with its carrying amount. If the fair value of the indefinite-lived intangible asset is less than its carrying amount, an impairment charge is recognized in an amount equal to the difference.

For indefinite-lived intangible assets impairment testing, we also have the option to first perform a qualitative assessment to determine whether it is more likely than not that the fair value of an indefinite-lived intangible asset is less than the carrying amount. If, after assessing the totality of events or circumstances, we determine that it is more likely than not that the fair value of an indefinite-lived intangible asset is less than its carrying amount, then we must perform additional testing of the asset. Otherwise, we conclude that no impairment is indicated and further testing is not performed.

There was no impairment of goodwill for the years ended December 31, 2020, 2019 and 2018 and there were no indefinite-lived intangible asset impairment charges in 2020, 2019 and 2018. Future disruptions to our business and events, such as prolonged economic weakness or unexpected significant declines in operating results of any of our reporting units or businesses, may result in goodwill or indefinite-lived intangible asset impairment charges in the future.

Valuation of Other Long-Lived Assets

We review our other long-lived assets, such as finite-lived intangible assets and property and equipment, for potential impairment when there is evidence that events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. The carrying amount of an asset is not recoverable if it exceeds the sum of the undiscounted cash flows expected to result from the use and eventual disposition of the asset. Fair value of finite-lived intangible assets and property and equipment is based on various valuation techniques. Any required impairment loss is measured as the amount by which the carrying amount of the asset exceeds its fair value and is recorded as a reduction in the carrying amount of the related asset and a charge to operating results.

We recorded pre-tax, non-cash property and equipment asset impairment charges of $4 million in 2020 and $24 million in 2019. For the year ended December 31, 2018, no material adjustments were made to the carrying amounts of finite-lived intangible assets or property and equipment.

Revenue Recognition and Transaction-Based Expenses

Revenue From Contracts With Customers

Our revenue recognition policies under ASU 2014-09, "Revenue from Contracts with Customers (Topic 606)," are described in the following paragraphs.

Contract Balances

Substantially all of our revenues are considered to be revenues from contracts with customers. The related accounts receivable balances are recorded in our Consolidated Balance Sheets as receivables which is net of allowance for doubtful accounts of $21 million as of December 31, 2020 and $9 million as of December 31, 2019. The changes in the balance between periods were immaterial. We do not have obligations for warranties, returns or refunds to customers.

For the majority of our contracts with customers, except for our market technology and listings services contracts, our performance obligations are short-term in nature and there is no significant variable consideration.

We do not have a material amount of revenues recognized from performance obligations that were satisfied in prior periods. We do not provide disclosures about transaction price allocated to unsatisfied performance obligations if contract durations are less than one year. Excluding our market technology contracts, for contract durations that are one-year or greater, materially all of the transaction price allocated to unsatisfied performance obligations is included in deferred revenue. For our market technology contracts, for the portion of transaction price allocated to unsatisfied performance obligations, see Note 3, "Revenue From

Contracts With Customers." Deferred revenue primarily represents our contract liabilities related to our fees for annual and initial listings, market technology, IR & ESG services and investment intelligence contracts. Deferred revenue is the only significant contract asset or liability as of December 31, 2020. See Note 8, "Deferred Revenue," for our discussion of deferred revenue balances, activity, and expected timing of recognition. See "Revenue Recognition" below for further descriptions of our revenue contracts.

Sales commissions earned by our sales force are considered incremental and recoverable costs of obtaining a contract with a customer. These costs are deferred and amortized on a straight-line basis over the period of benefit that we have determined to be the contract term or estimated service period. Sales commissions for renewal contracts are deferred and amortized on a straight-line basis over the related contractual renewal period. Amortization expense is included in compensation and benefits expense in the Consolidated Statements of Income. The balance of deferred costs and related amortization expense are not material to our consolidated financial statements. Sales commissions are expensed when incurred if contract durations are one year or less. Sales taxes are excluded from transaction prices.

Certain judgments and estimates were used in the identification and timing of satisfaction of performance obligations and the related allocation of transaction price and are discussed below. We believe that these represent a faithful depiction of the transfer of services to our customers.

Revenue Recognition

Our primary revenue contract classifications are described below. Although we may discuss additional revenue details in our "Management's Discussion and Analysis of Financial Condition and Results of Operations," the categories below best represent those that depict similar economic characteristics of the nature, amount, timing and uncertainty of our revenues and cash flows.

Market Services

Transaction-Based Trading and Clearing

Transaction-based trading and clearing includes equity derivative trading and clearing, cash equity trading and FICC revenues. Nasdaq charges transaction fees for trades executed on our exchanges, as well as on orders that are routed to and executed on other market venues. Nasdaq charges clearing fees for contracts cleared with Nasdaq Clearing.

In the U.S., transaction fees are based on trading volumes for trades executed on our U.S. exchanges and in Europe, transaction fees are based on the volume and value of traded and cleared contracts. In Canada, transaction fees are based on trading volumes for trades executed on our Canadian exchange.

Nasdaq satisfies its performance obligation for trading services upon the execution of a customer trade and clearing services when a contract is cleared, as trading and clearing transactions are substantially complete when they are executed and we have no further obligation to the customer at that time. Transaction-based trading and clearing fees can be variable and are based on trade volume tiered discounts. Transaction revenues, as well as any tiered volume discounts, are calculated and billed monthly in accordance with our published fee schedules. In the U.S., we also pay liquidity payments to customers based on our published fee schedules. We use these payments to improve the liquidity on our markets and therefore recognize those payments as a cost of revenue.

The majority of our FICC trading and clearing customers are charged transaction fees, as discussed above, which are based on the volume and value of traded and cleared contracts. We also enter into annual fixed contracts with customers trading U.S. Treasury securities. The customers are charged an annual fixed fee which is billed per the agreement, on a monthly or quarterly basis. Revenues earned on fixed contracts are recognized over time on a ratable basis over the contract period beginning on the date that our service is made available to the customer since the customer receives and consumes the benefit as Nasdaq provides the service.

For U.S. equity derivative trading, we credit a portion of the per share execution charge to the market participant that provides the liquidity. For U.S. cash equity trading, for The Nasdaq Stock Market, Nasdaq PSX and Nasdaq CXC, we credit a portion of the per share execution charge to the market participant that provides the liquidity, and for Nasdaq BX and Nasdaq CX2, we credit a portion of the per share execution charge to the market participant that takes the liquidity. We record these credits as transaction rebates that are included in transaction-based expenses in the Consolidated Statements of Income. These transaction rebates are paid on a monthly basis and the amounts due are included in accounts payable and accrued expenses in the Consolidated Balance Sheets.

In the U.S., we pay Section 31 fees to the SEC for supervision and regulation of securities markets. We pass these costs along to our customers through our equity derivative trading and clearing fees and our cash equity trading fees. We collect the fees as a pass-through charge from organizations executing eligible trades on our options exchanges and our cash equity platforms and we recognize these amounts in transaction-based expenses when incurred. Section 31 fees received are included in cash and cash equivalents in the Consolidated Balance Sheets at the time of receipt and, as required by law, the amount due to the SEC is remitted semiannually and recorded as Section 31 fees payable to the SEC in the Consolidated Balance Sheets until paid. Since the amount recorded as revenues is equal to the amount recorded as transaction-based expenses, there is no impact on our revenues less transaction-based expenses. As we hold the cash received until payment to the SEC, we earn interest income on the related cash balances.

Under our Limitation of Liability Rule and procedures, we may, subject to certain caps, provide compensation for losses directly resulting from our systems' actual failure to correctly

process an order, quote, message or other data into our platform. We do not record a liability for any potential claims that may be submitted under the Limitation of Liability Rule unless they meet the provisions required in accordance with U.S. GAAP. As such, losses arising as a result of the rule are accrued and charged to expense only if the loss is probable and estimable.

Trade Management Services

We provide market participants with a wide variety of alternatives for connecting to and accessing our markets for a fee. We also offer market participants colocation services, whereby we charge firms for cabinet space and power to house their own equipment and servers within our data centers. These participants are charged monthly fees for cabinet space, connectivity and support in accordance with our published fee schedules. These fees are recognized on a monthly basis when the performance obligation is met. We also earn revenues from annual and monthly exchange membership and registration fees. Revenues for monthly exchange membership and registration fees are recognized on a monthly basis as the service is provided. Revenues from annual fees for exchange membership and registration fees are recognized ratably over the following 12-month period since the customer receives and consumes the benefit as Nasdaq provides the service. We also offer broker services to financial participants in the Nordic market primarily offering technology and customized securities administration solutions. Revenues from broker services are based on a fixed basic fee for administration or licensing, maintenance and operations, and an incremental fee depending on the number of transactions completed. Broker services revenues are generally billed and recognized monthly. As previously noted, in January 2020, we commenced an orderly wind-down of this broker services operations business. We expect this wind-down to continue through 2021.

Corporate Platforms

Listing Services

Listing services revenues primarily include initial listing fees and annual renewal fees. Under Topic 606, the initial listing fee is allocated to multiple performance obligations including initial and subsequent listing services and IR & ESG services (when a company qualifies to receive these services under the applicable Nasdaq rule), as well as a customer's material right to renew the option to list on our exchanges. In performing this allocation, the standalone selling price of the performance obligations is based on the initial and annual listing fees and the standalone selling price of the IR & ESG services is based on its market value. All listing fees are billed upfront and the identified performance obligations are satisfied over time since the customer receives and consumes the benefit as Nasdaq provides the listing service. The amount of revenue related to the IR & ESG services performance obligation is recognized ratably over a two-year period, which is based on contract terms, with the remaining revenue recognized ratably over six years which is based on our historical listing experience and projected future listing duration.

In the U.S., annual renewal fees are charged to listed companies based on their number of outstanding shares at the end of the prior year and are recognized ratably over the following 12-month period since the customer receives and consumes the benefit as Nasdaq provides the service. Annual fees are charged to newly listed companies on a pro-rata basis, based on outstanding shares at the time of listing and recognized over the remainder of the year. European annual renewal fees, which are received from companies listed on our Nasdaq Nordic and Nasdaq Baltic exchanges and Nasdaq First North, are directly related to the listed companies' market capitalization on a trailing 12-month basis and are recognized ratably over the following 12-month period since the customer receives and consumes the benefit as Nasdaq provides the service.

IR & ESG Services

Our IR & ESG Services business includes our Investor Relations Intelligence and Governance Solutions businesses, which serve both public and private companies and organizations.

IR & ESG Services revenues primarily include subscription and transaction-based income from our investor relations intelligence and governance solutions products and services. Subscription-based revenues earned are recognized over time on a ratable basis over the contract period beginning on the date that our service is made available to the customer since the customer receives and consumes the benefit as Nasdaq provides the service. Generally, fees are billed in advance and the contract provides for automatic renewal. As part of subscription agreements, customers can also be charged usage fees based upon actual usage of the services provided. Revenues from usage fees are recognized at a point in time when the service is provided.

Investment Intelligence

Market Data

Market data revenues are earned from U.S. and European proprietary market data products. In the U.S., we also earn revenues from U.S. shared tape plans.

We earn revenues primarily based on the number of data subscribers and distributors of our data. Market data revenues are subscription-based and are recognized on a monthly basis.

For U.S. tape plans, revenues are collected monthly based on published fee schedules and distributed quarterly to the U.S. exchanges based on a formula required by Regulation NMS that takes into account both trading and quoting activity. Revenues are presented on a net basis as we are acting as an agent in this arrangement.

Market Data Revenue Sharing

The most significant component of market data revenues recorded on a net basis is the UTP Plan revenue sharing in

the U.S. All indicators of principal versus agent reporting under U.S. GAAP have been considered in analyzing the appropriate presentation of the revenue sharing. However, the following are the primary indicators of net reporting:

- We are the administrator for the plan, in addition to being a participant in the plan. In our unique role as administrator, we facilitate the collection and dissemination of revenues on behalf of the plan participants. As a participant, we share in the net distribution of revenues according to the plan on the same terms as all other plan participants.
- The operating committee of the plan, which is comprised of representatives from each of the participants, including us solely in our capacity as a plan participant, is responsible for setting the level of fees to be paid by distributors and subscribers and taking action in accordance with the provisions of the plan, subject to SEC approval.
- Risk of loss on the revenue is shared equally among plan participants according to the plan.

The exchanges that comprise Nasdaq Nordic and Nasdaq Baltic do not have any material market data revenue sharing agreements.

Index

We develop and license Nasdaq branded indexes and financial products as part of our Global Index Family. We also provide index data products and custom calculation services for third-party clients. Revenues primarily include license fees from these branded indexes and financial products in the U.S. and abroad. We primarily have two types of license agreements: transaction-based licenses and asset-based licenses. Transaction-based licenses are generally renewable agreements. Customers are charged based on transaction volume or a minimum contract amount, or both. If a customer is charged based on transaction volume, we recognize revenue when the transaction occurs. If a customer is charged based on a minimum contract amount, we recognize revenue on a pro-rata basis over the licensing term since the customer receives and consumes the benefit as Nasdaq provides the service. Asset-based licenses are also generally renewable agreements. Customers are charged based on a percentage of AUM for licensed products, per the agreement, on a monthly or quarterly basis. These revenues are recognized over the term of the license agreement since the customer receives and consumes the benefit as Nasdaq provides the service. Revenue from index data subscriptions are recognized on a monthly basis.

Analytics

Analytics revenues are earned from investment content and analytics products. We earn revenues primarily based on the number of content and analytics subscribers and distributors.

Subscription agreements are generally annual in term, payable in advance, and provide for automatic renewal. Subscription-based revenues are recognized over time on a ratable basis over the contract period beginning on the date that our service is made available to the customer since the customer receives and consumes the benefit as Nasdaq provides the service.

Market Technology

Market Technology revenues primarily consist of software, license and support revenues, change request revenues, and SaaS revenues.

In our Market Technology business, we enter into long-term contracts with customers to develop customized technology solutions, license the right to use software, and provide support and other services to our customers. We also enter into agreements to modify the system solutions sold by Nasdaq after delivery has occurred. In addition, we enter into subscription agreements which allow customers to connect to our servers to access our software.

Our long-term contracts with customers to develop customized technology solutions, license the right to use software and provide support and other services to our customers have multiple performance obligations. The performance obligations are generally: (i) software license and installation service and (ii) software support. We have determined that the software license and installation service are not distinct as the license and the customized installation service are inputs to produce the combined output, a functional and integrated software system.

For contracts with multiple performance obligations, we allocate the contract transaction price to each performance obligation using our best estimate of the standalone selling price of each distinct good or service in the contract. In instances where standalone selling price is not directly observable, such as when we do not sell the product or service separately, we determine the standalone selling price predominantly through an expected cost plus a margin approach.

Contract modifications are routine in the performance of our contracts. Contracts are often modified to account for changes in contract specifications or requirements. In most instances, contract modifications are for goods and services that are not distinct, and, therefore, are accounted for as part of the existing contract.

For our long-term contracts, payments are generally made throughout the contract life and can be dependent on either reaching certain milestones or paid upfront in advance of the service period depending on the stage of the contract. For subscription agreements, contract payment terms can be quarterly, annually or monthly, in advance. For all other contracts, payment terms vary.

We generally recognize revenue over time as our customers simultaneously receive and consume the benefits provided by our performance because our customer controls the asset for which we are creating, our performance does not create an asset with alternative use, and we have a right to payment for performance completed to date. For these services, we recognize revenue over time using costs incurred to date

relative to total estimated costs at completion to measure progress toward satisfying our performance obligation. Incurred costs represent work performed, which corresponds with, and thereby depicts, the transfer of control to the customer. Contract costs generally include labor and direct overhead. For software support and update services, and for subscription agreements which allow customers to connect to our servers to access our software, we generally recognize revenue ratably over the service period beginning on the date our service is made available to the customer since the customer receives and consumes the benefit consistently over the period as Nasdaq provides the services.

Accounting for our long-term contracts requires judgment relative to assessing risks and their impact on the estimate of revenues and costs. Our estimates are impacted by factors such as the potential for schedule and technical issues, productivity, and the complexity of work performed. When adjustments in estimated total contract costs are required, any changes in the estimated revenues from prior estimates are recognized in the current period for the effect of such change. If estimates of total costs to be incurred on a contract exceed estimates of total revenues, a provision for the entire estimated loss on the contract is recorded in the period in which the loss is determined. During the fourth quarter, as part of our regular review of significant implementation projects, we refined and revised our plans relating to a large-scale post-trade clearing implementation project for a specific client. At that point it became probable that we would incur a loss over the remainder of that particular project, in part due to the logistical implications of COVID-19. As a result, we recorded a $25 million provision for the estimated loss in general, administrative and other expense in our Consolidated Statements of Income and is included in other current and other non-current liabilities in our Consolidated Balance Sheets.

Other Revenues

For the year ended December 31, 2019 and 2018, other revenues include the revenues from the BWise enterprise governance, risk and compliance software platform, which was sold in March 2019, and for the year ended December 31, 2018, other revenues also include revenues from the Public Relations Solutions and Digital Media Services businesses which were sold in April 2018. Prior to the sale dates, these revenues were included in our IR & ESG Services business within our Corporate Platforms segment and were both subscription and transaction-based revenues.

Earnings Per Share

We present both basic and diluted earnings per share. Basic earnings per share is computed by dividing net income attributable to Nasdaq by the weighted-average number of common shares outstanding for the period. Diluted earnings per share is computed by dividing net income attributable to Nasdaq by the weighted-average number of common shares and common share equivalents outstanding during the period and reflects the assumed conversion of all dilutive securities, which primarily consist of restricted stock, PSUs, and employee stock options. Common share equivalents are excluded from the computation in periods for which they have an anti-dilutive effect. Stock options for which the exercise price exceeds the average market price over the period are anti-dilutive and, accordingly, are excluded from the calculation. Shares which are considered contingently issuable are included in the computation of dilutive earnings per share on a weighted average basis when management determines the applicable performance criteria would have been met if the performance period ended as of the date of the relevant computation. See Note 13, “Earnings Per Share,” for further discussion.

Pension and Post-Retirement Benefits

Pension and other post-retirement benefit plan information for financial reporting purposes is developed using actuarial valuations. We assess our pension and other post-retirement benefit plan assumptions on a regular basis. In evaluating these assumptions, we consider many factors, including evaluation of the discount rate, expected rate of return on plan assets, mortality rate, healthcare cost trend rate, retirement age assumption, our historical assumptions compared with actual results and analysis of current market conditions and asset allocations. See Note 10, “Retirement Plans,” for further discussion.

Discount rates used for pension and other post-retirement benefit plan calculations are evaluated annually and modified to reflect the prevailing market rates at the measurement date of a high-quality fixed-income debt instrument portfolio that would provide the future cash flows needed to pay the benefits included in the benefit obligations as they come due. Actuarial assumptions are based upon management’s best estimates and judgment.

The expected rate of return on plan assets for our U.S. pension plans represents our long-term assessment of return expectations which may change based on significant shifts in economic and financial market conditions. The long-term rate of return on plan assets is derived from return assumptions based on targeted allocations for various asset classes. While we consider the pension plans’ recent performance and other economic growth and inflation factors, which are supported by long-term historical data, the return expectations for the targeted asset categories represent a long-term prospective return.

Share-Based Compensation

Nasdaq uses the fair value method of accounting for share-based awards. Share-based awards, or equity awards, include restricted stock, PSUs, and stock options. The fair value of restricted stock awards and PSUs, other than PSUs granted with market conditions, is determined based on the grant date closing stock price less the present value of future cash dividends. We estimate the fair value of PSUs granted with market conditions using a Monte Carlo simulation model at the date of grant. The fair value of stock options are estimated using the Black-Scholes option-pricing model.

We generally recognize compensation expense for equity awards on a straight-line basis over the requisite service period of the award, taking into account an estimated forfeiture rate. Granted but unvested shares are generally forfeited upon termination of employment.

Excess tax benefits or expense related to employee share-based payments, if any, are recognized as income tax benefit or expense in the Consolidated Statements of Income when the awards vest or are settled.

Nasdaq also has an ESPP that allows eligible employees to purchase a limited number of shares of our common stock at six-month intervals, called offering periods, at 85.0% of the lower of the fair market value on the first or the last day of each offering period. The 15.0% discount given to our employees is included in compensation and benefits expense in the Consolidated Statements of Income.

See Note 11, "Share-Based Compensation," for further discussion of our share-based compensation plans.

Merger and Strategic Initiatives

We incur incremental direct merger and strategic initiative costs relating to various completed and potential acquisitions, divestitures, and other strategic opportunities. These costs generally include integration costs, as well as legal, due diligence and other third party transaction costs. As of December 31, 2020, all planned integrations for our 2018 and 2017 acquisitions have been completed.

Fair Value Measurements

Fair value is defined as the price that would be received from selling an asset or paid to transfer a liability, or the exit price, in an orderly transaction between market participants at the measurement date. When determining the fair value measurements for assets and liabilities required or permitted to be either recorded or disclosed at fair value, we consider the principal or most advantageous market in which we would transact, and we also consider assumptions that market participants would use when pricing the asset or liability. Fair value measurement establishes a hierarchy of valuation techniques based on whether the inputs to those valuation techniques are observable or unobservable. Observable inputs reflect market data obtained from independent sources, while unobservable inputs reflect Nasdaq's market assumptions. These two types of inputs create the following fair value hierarchy:

- Level 1-Quoted prices for identical instruments in active markets.
- Level 2-Quoted prices for similar instruments in active markets; quoted prices for identical or similar instruments in markets that are not active; and model-derived valuations whose inputs are observable or whose significant value drivers are observable.
- Level 3-Instruments whose significant value drivers are unobservable.

This hierarchy requires the use of observable market data when available.

See Note 14, "Fair Value of Financial Instruments," for further discussion.

Tax Matters

We use the asset and liability method to determine income taxes on all transactions recorded in the consolidated financial statements. Deferred tax assets (net of valuation allowances) and deferred tax liabilities are presented net by jurisdiction as either a non-current asset or liability in our Consolidated Balance Sheets, as appropriate. Deferred tax assets and liabilities are determined based on differences between the financial statement carrying amounts and the tax basis of existing assets and liabilities (i.e., temporary differences) and are measured at the enacted rates that will be in effect when these differences are realized. If necessary, a valuation allowance is established to reduce deferred tax assets to the amount that is more likely than not to be realized.

In order to recognize and measure our unrecognized tax benefits, management determines whether a tax position is more likely than not to be sustained upon examination, including resolution of any related appeals or litigation processes, based on the technical merits of the position. Once it is determined that a position meets the recognition thresholds, the position is measured to determine the amount of benefit to be recognized in the consolidated financial statements. Interest and/or penalties related to income tax matters are recognized in income tax expense.

Subsequent Events

We have evaluated subsequent events through the issuance date of this Annual Report on Form 10-K. See Note 21, "Subsequent Events," for further discussion.

3. Revenue From Contracts With Customers

Disaggregation of Revenue

The following tables summarize the disaggregation of revenue by major product and service and by segment for the years ended December 31, 2020, 2019 and 2018:

	Year Ended December 31, 2020				
	Market Services	Corporate Platforms	Investment Intelligence	Market Technology	Consolidated
	(in millions)				
Transaction-based trading and clearing, net	$ 809	$ —	$ —	$ —	$ 809
Trade management services	299	—	—	—	299
Listing services	—	316	—	—	316
IR & ESG Services	—	214	—	—	214
Market data	—	—	409	—	409
Index	—	—	324	—	324
Analytics	—	—	175	—	175
Market technology	—	—	—	357	357
Revenues less transaction-based expenses	$ 1,108	$ 530	$ 908	$ 357	$ 2,903

	Year End December 31, 2019					
	Market Services	Corporate Platforms	Investment Intelligence	Market Technology	Other Revenues	Consolidated
	(in millions)					
Transaction-based trading and clearing, net	$ 621	$ —	$ —	$ —	$ —	$ 621
Trade management services	291	—	—	—	—	291
Listing services	—	296	—	—	—	296
IR & ESG Services	—	200	—	—	—	200
Market data	—	—	398	—	—	398
Index	—	—	223	—	—	223
Analytics	—	—	158	—	—	158
Market technology	—	—	—	338	—	338
Other revenues	—	—	—	—	10	10
Revenues less transaction-based expenses	$ 912	$ 496	$ 779	$ 338	$ 10	$ 2,535

	Year End December 31, 2018					
	Market Services	Corporate Platforms	Investment Intelligence	Market Technology	Other Revenues	Consolidated
	(in millions)					
Transaction-based trading and clearing, net	$ 666	$ —	$ —	$ —	$ —	$ 666
Trade management services	292	—	—	—	—	292
Listing services	—	290	—	—	—	290
IR & ESG Services	—	197	—	—	—	197
Market data	—	—	390	—	—	390
Index	—	—	206	—	—	206
Analytics	—	—	118	—	—	118
Market technology	—	—	—	270	—	270
Other revenues	—	—	—	—	97	97
Revenues less transaction-based expenses	$ 958	$ 487	$ 714	$ 270	$ 97	$ 2,526

For the year ended December 31, 2020, approximately 69.8% of Market Services revenues were recognized at a point in time and 30.2% were recognized over time. For the year ended December 31, 2019, approximately 65.1% of Market Services revenues were recognized at a point in time and 34.9% were recognized over time. For the year ended December 31, 2018, approximately 63.6% of Market Services revenues were recognized at a point in time and 36.4% were recognized over time. The increase in Market Services revenues recognized at a point in time for the year ended December 31, 2020 compared with 2019 and 2018 was primarily due to higher U.S. industry trading volumes in our equity derivative trading and clearing business and higher U.S. industry trading volumes and higher European value traded in our cash equity trading business. Substantially all revenues from the Corporate Platforms, Investment Intelligence and Market Technology segments were recognized over time for the years ended December 31, 2020, 2019 and 2018.

As discussed in "Revenue From Contracts with Customers - Contract Balances," of Note 2, "Summary of Significant Accounting Policies," for contract durations that are one-year or greater, we do not have a material portion of transaction price allocated to unsatisfied performance obligations that are not included in deferred revenue other than for our market technology contracts.

For our market technology contracts, the following table summarizes the amount of the transaction price allocated to performance obligations that are unsatisfied as of December 31, 2020:

	(in millions)
2021	$ 287
2022	174
2023	93
2024	68
2025	51
2026 and thereafter	112
Total	$ 785

Market technology deferred revenue, as discussed in Note 8, "Deferred Revenue," represents consideration received that is yet to be recognized as revenue for unsatisfied performance obligations.

4. Acquisitions and Divestiture

The financial results of the below transactions are included in our consolidated financial statements from the date of each acquisition or divestiture.

2021 Acquisition

Acquisition of Verafin

In February 2021, we completed the acquisition of Verafin, a SaaS technology provider specializing in combating fraud and money laundering, for an aggregate purchase price of $2.75 billion, subject to certain adjustments. Verafin is part of our Market Technology segment.

Nasdaq used the net proceeds from our offering of new senior notes in December 2020, commercial paper issuances, and cash on hand to fund this acquisition. See "Commercial Paper Program," and "Senior Unsecured Notes Due 2022, 2031 and 2040," of Note 9, "Debt Obligations," for further discussion.

We are currently reviewing the impact of this acquisition under FASB Accounting Standards Codification Topic 805, "Business Combinations." Any additional disclosures would not be practicable for the year ended December 31, 2020. Such disclosures will be included in our Quarterly Report on Form 10-Q for the quarter ending March 31, 2021.

2020 Acquisition

Acquisition of Solovis

In March 2020, we acquired Solovis, a provider of multi-asset class portfolio management, analytics and reporting tools across public and private markets. Solovis is part of our Investment Intelligence segment.

2019 Acquisition and Divestiture

2019 Divestiture

Divestiture of BWise

In March 2019, we sold the BWise enterprise governance, risk and compliance software platform, which was part of our IR & ESG Services business within our Corporate Platforms segment, to SAI Global and recognized a pre-tax gain on the sale of $27 million, net of disposal costs ($20 million after tax). The pre-tax gain is included in net gain on divestiture of businesses in the Consolidated Statements of Income for the year ended December 31, 2019.

2019 Acquisition

Acquisition of Cinnober

	Purchase Consideration	Total Net Assets Acquired	Total Net Deferred Tax Liability	Acquired Intangible Assets	Goodwill
			(in millions)		
Cinnober	$ 219	$ 18	$ (19)	$ 74	$ 146

In January 2019, we acquired Cinnober, a Swedish financial technology provider to brokers, exchanges and clearinghouses worldwide for $219 million. Cinnober is part of our Market Technology segment.

Nasdaq used cash on hand to fund this acquisition.

The amounts in the table above represent the final allocation of the purchase price.

See “Intangible Assets” below for further discussion of intangible assets acquired in the Cinnober acquisition.

Intangible Assets

The following table presents the details of the customer relationships intangible asset at the date of acquisition for Cinnober which was the significant acquired intangible asset for this acquisition. All acquired intangible assets with finite lives are amortized using the straight-line method.

Customer relationships (in millions)	$ 67
Discount rate used	9.5 %
Estimated average useful life	13 years

Customer Relationships

Customer relationships represent the non-contractual and contractual relationships with customers.

Methodology

Customer relationships were valued using the income approach, specifically an excess earnings method. The excess earnings method examines the economic returns contributed by the identified tangible and intangible assets of a company, and then isolates the excess return that is attributable to the intangible asset being valued.

Discount Rate

The discount rate used reflects the amount of risk associated with the hypothetical cash flows for the customer relationships relative to the overall business. In developing a discount rate for the customer relationships, we estimated a weighted-average cost of capital for the overall business and we employed this rate when discounting the cash flows. The resulting discounted cash flows were then tax-effected at the applicable statutory rate.

For our acquisition of Cinnober, a discounted tax amortization benefit was added to the fair value of the assets under the assumption that the customer relationships would be amortized for tax purposes over a period of 5 years.

Estimated Useful Life

We estimate the useful life based on the historical behavior of the customers and a parallel analysis of the customers using the excess earnings method.

Pro Forma Results and Acquisition-Related Costs

The consolidated financial statements for the years ended December 31, 2020 and 2019 include the financial results of the above acquisitions from the dates of these acquisitions. Pro forma financial results have not been presented since these acquisitions both individually and in the aggregate were not material to our financial results.

Acquisition-related costs for the transactions described above were expensed as incurred and are included in merger and strategic initiatives expense in the Consolidated Statements of Income.

* * * * * *

5. Goodwill and Acquired Intangible Assets

Goodwill

The following table presents the changes in goodwill by business segment during the year ended December 31, 2020:

	Market Services	Corporate Platforms	Investment Intelligence	Market Technology	Total
			(in millions)		
Balance at December 31, 2019	$ 3,342	$ 460	$ 2,283	$ 281	$ 6,366
Goodwill acquired	—	—	135	—	135
Foreign currency translation adjustment	177	21	123	28	349
Balance at December 31, 2020	$ 3,519	$ 481	$ 2,541	$ 309	$ 6,850

The goodwill acquired for Investment Intelligence shown above relates to our acquisition of Solovis. See "2020 Acquisition," of Note 4, "Acquisitions and Divestiture," for further discussion of this acquisition.

Goodwill represents the excess of purchase price over the value assigned to the net assets, including identifiable intangible assets, of a business acquired. Goodwill is allocated to our reporting units based on the assignment of the fair values of each reporting unit of the acquired company. We test goodwill for impairment at the reporting unit level annually, or in interim periods if certain events occur indicating that the carrying amount may be impaired, such as changes in the business climate, poor indicators of operating performance or the sale or disposition of a significant portion of a reporting unit. There was no impairment of goodwill for the years ended December 31, 2020 and 2019; however, events such as prolonged economic weakness or unexpected significant declines in operating results of any of our reporting units or businesses, may result in goodwill impairment charges in the future.

* * * * * *

Acquired Intangible Assets

The following table presents details of our total acquired intangible assets, both finite- and indefinite-lived:

	December 31, 2020			December 31, 2019		
	Gross Amount	Accumulated Amortization	Net Amount	Gross Amount	Accumulated Amortization	Net Amount
	(in millions)			(in millions)		
Finite-Lived Intangible Assets						
Technology	$ 76	$ (24)	$ 52	$ 63	$ (19)	$ 44
Customer relationships	1,599	(648)	951	1,596	(532)	1,064
Other	18	(6)	12	18	(5)	13
Foreign currency translation adjustment	(104)	58	(46)	(159)	55	(104)
Total finite-lived intangible assets	$ 1,589	$ (620)	$ 969	$ 1,518	$ (501)	$ 1,017
Indefinite-Lived Intangible Assets						
Exchange and clearing registrations	$ 1,257	$ —	$ 1,257	$ 1,257	$ —	$ 1,257
Trade names	121	—	121	121	—	121
Licenses	52	—	52	52	—	52
Foreign currency translation adjustment	(144)	—	(144)	(198)	—	(198)
Total indefinite-lived intangible assets	$ 1,286	$ —	$ 1,286	$ 1,232	$ —	$ 1,232
Total intangible assets	$ 2,875	$ (620)	$ 2,255	$ 2,750	$ (501)	$ 2,249

Amortization expense for acquired finite-lived intangible assets was $103 million for the year ended December 31, 2020, $101 million for the year ended December 31, 2019 and $109 for the year ended December 31, 2018. These amounts are included in depreciation and amortization expense in the Consolidated Statements of Income.

The estimated future amortization expense (excluding the impact of foreign currency translation adjustments of $46 million as of December 31, 2020) of acquired finite-lived intangible assets as of December 31, 2020 is as follows:

	(in millions)
2021	$ 109
2022	106
2023	103
2024	98
2025	96
2026 and thereafter	503
Total	$ 1,015

6. Investments

The following table presents the details of our investments:

	December 31, 2020	December 31, 2019
	(in millions)	
Financial investments	$ 195	$ 291
Equity method investments	$ 216	$ 156
Equity securities	$ 60	$ 49

Financial Investments

As of December 31, 2020, financial investments are comprised of trading securities, and are primarily comprised of highly rated European government debt securities, of which $175 million are assets primarily utilized to meet regulatory capital requirements, mainly for our clearing operations at Nasdaq Clearing. As of December 31, 2019, financial investments are comprised of trading securities, and are primarily comprised of highly rated European government debt securities, time deposits and highly rated

corporate debt securities, of which $169 million are assets primarily utilized to meet regulatory capital requirements, mainly for our clearing operations at Nasdaq Clearing.

Equity Method Investments

We record our estimated pro-rata share of earnings or losses each reporting period and record any dividends as a reduction in the investment balance. As of December 31, 2020 and 2019, our equity method investments primarily included our 40.0% equity interest in the OCC.

The carrying amounts of our equity method investments are included in other non-current assets in the Consolidated Balance Sheets. No material impairments were recorded for the years end December 31, 2020, 2019 and 2018.

Net income recognized from our equity interest in the earnings and losses of these equity method investments, primarily the OCC, was $70 million for the year ended December 31, 2020, $84 million for the year ended December 31, 2019 and $18 million for the year ended December 31, 2018. For the year ended December 31, 2020, higher equity earnings in the OCC, driven by elevated U.S. industry trading volumes, were partially offset by a rebate to clearing members in the fourth quarter of 2020.

In 2019, the SEC disapproved the OCC capital plan that had been established in 2015. Following the SEC disapproval, the OCC suspended customer rebates and dividends to owners, including the unpaid dividend on 2018 results. We were not able to determine the impact of the disapproval of the OCC capital plan on OCC's 2018 net income until March 2019, when OCC's 2018 financial statements were made available to us. As a result, during the first quarter of 2019, we recognized $36 million of additional income relating to our share of OCC's 2018 net income, which is included in the $84 million for the year ended December 31, 2019.

Equity Securities

The carrying amounts of our equity securities are included in other non-current assets in the Consolidated Balance Sheets. We elected the measurement alternative for primarily all of our equity securities as they do not have a readily determinable fair value. No material adjustments were made to the carrying value of our equity securities for the years ended December 31, 2020, 2019 and 2018. As of December 31, 2020 and December 31, 2019, our equity securities represent various strategic investments made through our corporate venture program as well as investments acquired through various acquisitions.

7. Property and Equipment, net

The following table presents our major categories of property and equipment, net:

	Year Ended December 31,	
	2020	2019
	(in millions)	
Data processing equipment and software	$ 732	$ 565
Furniture, equipment and leasehold improvements	300	305
Total property and equipment	1,032	870
Less: accumulated depreciation and amortization	(557)	(486)
Total property and equipment, net	$ 475	$ 384

Depreciation and amortization expense for property and equipment was $99 million for the year ended December 31, 2020, $89 million for the year ended December 31, 2019, and $101 million for the year ended December 31, 2018. These amounts are included in depreciation and amortization expense in the Consolidated Statements of Income.

We recorded pre-tax, non-cash property and equipment asset impairment charges on capitalized software that was retired and accelerated depreciation expense on certain assets as a result of a decrease in their useful life of $14 million in 2020 and $26 million in 2019. These charges are included in restructuring charges in the Consolidated Statements of Income. See Note 20, “Restructuring Charges,” for a discussion of our 2019 restructuring plan. There were no other material impairments of property and equipment recorded in 2020, 2019 or 2018.

As of December 31, 2020 and 2019, we did not own any real estate properties.

8. Deferred Revenue

Deferred revenue represents consideration received that is yet to be recognized as revenue. The changes in our deferred revenue during the year ended December 31, 2020 are reflected in the following table:

	Initial Listing Revenues	Annual Listings Revenues	IR & ESG Services Revenues	Investment Intelligence Revenues	Market Technology Revenues	Other[1]	Total
				(in millions)			
Balance at December 31, 2019	$ 69	$ 2	$ 41	$ 82	$ 66	$ 14	$ 274
Deferred revenue billed in the current period, net of recognition	50	3	46	80	39	10	228
Revenue recognized that was included in the beginning of the period	(30)	(2)	(41)	(64)	(60)	(10)	(207)
Foreign currency translation adjustment	2	(1)	—	(1)	8	3	11
Balance at December 31, 2020	$ 91	$ 2	$ 46	$ 97	$ 53	$ 17	$ 306

(1) Balance at December 31, 2020 primarily includes deferred revenue from non-U.S. listing of additional shares fees. In the U.S., these fees will run-off in 2021 as a result of the implementation of our all-inclusive annual fee. Listing of additional shares fees are included in our Listing Services business.

As of December 31, 2020, we estimate that our deferred revenue will be recognized in the following years:

	Initial Listing Revenues	Annual Listings Revenues	IR & ESG Services Revenues	Investment Intelligence Revenues	Market Technology Revenues	Other[1]	Total
				(in millions)			
Fiscal year ended:							
2021	$ 35	$ 2	$ 42	$ 95	$ 51	$ 10	$ 235
2022	23	—	4	2	2	2	33
2023	13	—	—	—	—	3	16
2024	10	—	—	—	—	2	12
2025	7	—	—	—	—	—	7
2026 and thereafter	3	—	—	—	—	—	3
Total	$ 91	$ 2	$ 46	$ 97	$ 53	$ 17	$ 306

(1) For composition of "Other" see footnote (1) above.

The timing of recognition of our deferred market technology revenues is primarily dependent upon the completion of customization and any significant modifications made pursuant to existing market technology contracts. As such, as it relates to market technology revenues, the timing represents our best estimate.

9. Debt Obligations

The following table presents the changes in the carrying amount of our debt obligations during the year ended December 31, 2020:

	December 31, 2019	Additions	Payments, Foreign Currency Translation and Accretion	December 31, 2020
		(in millions)		
Short-term debt - commercial paper	$ 391	$ 990	$ (1,381)	$ —
Long-term debt:				
3.875% senior unsecured notes repaid on March 16, 2020	671	—	(671)	—
4.25% senior unsecured notes due June 1, 2024	497	—	1	498
1.75% senior unsecured notes due May 19, 2023	668	—	62	730
3.85% senior unsecured notes due June 30, 2026	497	—	—	497
1.75% senior unsecured notes due March 28, 2029	665	—	61	726
0.875% senior unsecured notes due February 13, 2030	—	644	82	726
3.25% senior unsecured notes due April 28, 2050	—	485	—	485
0.445% senior unsecured notes due December 21, 2022	—	597	—	597
1.650% senior unsecured notes due January 15, 2031	—	643	—	643
2.500% senior unsecured notes due December 21, 2040	—	643	—	643
$1 billion senior unsecured revolving credit facility terminated December 2020	(2)	799	(797)	—
$1.25 billion senior unsecured revolving credit facility due December 22, 2025	—	(4)	—	(4)
Total long-term debt	2,996	3,807	(1,262)	5,541
Total debt obligations	$ 3,387	$ 4,797	$ (2,643)	$ 5,541

Commercial Paper Program

Our U.S. dollar commercial paper program is supported by our 2020 Credit Facility which provides liquidity support for the repayment of commercial paper issued through this program. Prior to the 2020 Credit Facility, the 2017 Credit Facility provided liquidity support for repayment of commercial paper. The 2017 Credit Facility was terminated in December 2020. See "Early Extinguishment of 2017 Credit Facility" below for further discussion of our 2017 Credit Facility. The effective interest rate of commercial paper issuances fluctuates as short term interest rates and demand fluctuate. The fluctuation of these rates due to market conditions may impact our interest expense.

In March 2020, we observed that conditions for Tier 2 commercial paper issuers were deteriorating, impacting both costs and actionable duration of commercial paper issues. To mitigate funding uncertainties and as a precautionary measure to maximize our liquidity and increase our available cash on hand, Nasdaq borrowed $799 million under the revolving credit commitment of the 2017 Credit Facility. In April 2020, Nasdaq issued the 2050 Notes and used the net proceeds to repay a portion of amounts borrowed under the 2017 Credit Facility. In June 2020, the remaining outstanding amount under the 2017 Credit Facility was repaid using cash on hand. For further discussion of the 2050 Notes, see "3.25% Senior Unsecured Notes Due 2050" below and see "Early Extinguishment of 2017 Credit Facility" below for further discussion of our 2017 Credit Facility. As of December 31, 2020, we had no outstanding borrowings under our commercial paper program. In January 2021, we increased the size of our commercial paper program from $1 billion to $1.25 billion. In February 2021, we issued $475 million of commercial paper to partially fund the acquisition of Verafin. For further discussion of the acquisition of Verafin, see "Acquisition of Verafin," of Note 4, "Acquisitions and Divestiture."

Senior Unsecured Notes

Our 2022 and 2040 Notes were issued at par. The remaining senior unsecured notes were issued at a discount. As a result of the discount, the proceeds received from each issuance were less than the aggregate principal amount. As of December 31, 2020, the amounts in the table above reflect the aggregate principal amount, less the unamortized debt discount and the unamortized debt issuance costs which are being accreted through interest expense over the life of the applicable notes. For our Euro denominated notes, the "Payments, Accretion and Other" column also includes the impact of foreign currency translation. Our senior unsecured notes are general unsecured obligations of ours and rank equally with all of our existing and future unsubordinated obligations and they are not guaranteed by any of our subsidiaries. The senior unsecured notes were issued under indentures that, among other things, limit our ability to

consolidate, merge or sell all or substantially all of our assets, create liens, and enter into sale and leaseback transactions.

Upon a change of control triggering event (as defined in the various note indentures), the terms require us to repurchase all or part of each holder's notes for cash equal to 101% of the aggregate principal amount purchased plus accrued and unpaid interest, if any.

Early Extinguishment of 3.875% Senior Unsecured Notes Due 2021

Nasdaq issued the 2021 Notes in June 2013. The 2021 Notes paid interest annually at a rate of 3.875% per annum.

In March 2020, we primarily used the net proceeds from the 2030 Notes to repay in full and terminate our 2021 Notes. For further discussion of the 2030 Notes, see "0.875% Senior Unsecured Notes Due 2030" below. In connection with the early extinguishment of the 2021 Notes, we recorded a charge of $36 million, which primarily included a make-whole redemption price premium. This charge is included in general, administrative and other expense in the Consolidated Statements of Income for the year ended December 31, 2020.

4.25% Senior Unsecured Notes Due 2024

In May 2014, Nasdaq issued the 2024 Notes. The 2024 Notes pay interest semiannually at a rate of 4.25% per annum until June 1, 2024. Such interest rate may vary with Nasdaq's debt rating, to the extent Nasdaq is downgraded below investment grade, up to a rate not to exceed 6.25%.

1.75% Senior Unsecured Notes Due 2023

In May 2016, Nasdaq issued the 2023 Notes. The 2023 Notes pay interest annually at a rate of 1.75% per annum until May 19, 2023. Such interest rate may vary with Nasdaq's debt rating, to the extent Nasdaq is downgraded below investment grade, up to a rate not to exceed 3.75%.

The 2023 Notes have been designated as a hedge of our net investment in certain foreign subsidiaries to mitigate the foreign exchange rate risk associated with certain investments in these subsidiaries. The increase in the carrying amount of $62 million noted in the "Payments, Foreign Currency Translation and Accretion" column in the table above primarily reflects the translation of the 2023 Notes into U.S. dollars and is recorded in accumulated other comprehensive loss within stockholders' equity in the Consolidated Balance Sheets as of December 31, 2020.

3.85% Senior Unsecured Notes Due 2026

In June 2016, Nasdaq issued the 2026 Notes. The 2026 Notes pay interest semi-annually at a rate of 3.85% per annum until June 30, 2026. Such interest rate may vary with Nasdaq's debt rating, to the extent Nasdaq is downgraded below investment grade, up to a rate not to exceed 5.85%.

1.75% Senior Unsecured Notes Due 2029

In April 2019, Nasdaq issued the 2029 Notes. The 2029 Notes pay interest annually at a rate of 1.75% per annum until March 28, 2029. Such interest rate may vary with Nasdaq's debt rating, to the extent Nasdaq is downgraded below investment grade, up to a rate not to exceed 3.75%. The 2029 Notes may be redeemed by Nasdaq at any time, subject to a make-whole amount.

The 2029 Notes have been designated as a hedge of our net investment in certain foreign subsidiaries to mitigate the foreign exchange risk associated with certain investments in these subsidiaries. The increase in the carrying amount of $61 million noted in the "Payments, Foreign Currency Translation and Accretion" column in the table above primarily reflects the translation of the 2029 Notes into U.S. dollars and is recorded in accumulated other comprehensive loss within stockholders' equity in the Consolidated Balance Sheets as of December 31, 2020.

0.875% Senior Unsecured Notes Due 2030

In February 2020, Nasdaq issued the 2030 Notes. The 2030 Notes pay interest annually in arrears, which began on February 13, 2021 and may be redeemed by Nasdaq at any time, subject to a make-whole amount. The interest rate of 0.875% may vary with Nasdaq's debt rating, to the extent Nasdaq is downgraded below investment grade, up to a rate not to exceed 1.875%. The proceeds from the 2030 Notes, approximately $644 million after issuing the notes at a discount and deducting underwriting fees of the offering, were primarily used to redeem the 2021 Notes and for other general corporate purposes. For further discussion of the 2021 Notes, see "Early Extinguishment of 3.875% Senior Unsecured Notes Due 2021" above.

The 2030 Notes were designated as a hedge of our net investment in certain foreign subsidiaries to mitigate the foreign exchange risk associated with certain investments in these subsidiaries. The increase in the carrying amount of $82 million noted in the "Payments, Foreign Currency Translation and Accretion" column in the table above primarily reflects the translation of the 2030 Notes into U.S. dollars and is recorded in accumulated other comprehensive loss within stockholders' equity in the Consolidated Balance Sheets as of December 31, 2020.

3.25% Senior Unsecured Notes Due 2050

In April 2020, Nasdaq issued the 2050 Notes. The 2050 Notes pay interest semi-annually in arrears, which began on October 28, 2020 and may be redeemed by Nasdaq at any time, subject to a make-whole amount. The interest rate of 3.25% may vary with Nasdaq's debt rating, to the extent Nasdaq is downgraded below investment grade, up to a rate not to exceed 5.25%. The net proceeds from the 2050 Notes were approximately $485 million after issuing the notes at a discount and deducting underwriting fees of the offering. In April 2020, we used the net proceeds from the 2050 Notes to repay a portion of amounts previously borrowed under the 2017 Credit Facility. See "Early Extinguishment of 2017 Credit Facility" below for further discussion of our 2017 Credit Facility.

Senior Unsecured Notes Due 2022, 2031 and 2040

In December 2020, Nasdaq issued the 2022, 2031 and 2040 Notes. The net proceeds were used to partially finance the acquisition of Verafin. For further discussion of the acquisition of Verafin, see "Acquisition of Verafin," of Note 4, "Acquisitions and Divestiture."

0.445% Senior Unsecured Notes Due 2022

The 2022 Notes pay interest semi-annually in arrears, beginning on June 21, 2021 and may be redeemed by Nasdaq at any time, subject to a make-whole amount. The proceeds from the 2022 Notes were approximately $597 million after deducting underwriting fees of the offering. The interest rate of 0.445% may vary with Nasdaq's debt rating, to the extent Nasdaq is downgraded below investment grade, up to a rate not to exceed 1.445%.

1.650% Senior Unsecured Notes Due 2031

The 2031 Notes pay interest semi-annually in arrears, which began on January 15, 2021 and may be redeemed by Nasdaq at any time, subject to a make-whole amount. The proceeds from the 2031 Notes were approximately $643 million after issuing the notes at a discount and deducting underwriting fees of the offering. The interest rate of 1.650% may vary with Nasdaq's debt rating, to the extent Nasdaq is downgraded below investment grade, up to a rate not to exceed 2.65%.

2.500% Senior Unsecured Notes Due 2040

The 2040 Notes pay interest semi-annually in arrears, beginning on June 21, 2021 and may be redeemed by Nasdaq at any time, subject to a make-whole amount. The proceeds from the 2040 Notes were approximately $643 million after deducting the underwriting fees of the offering. The interest rate of 2.500% may vary with Nasdaq's debt rating, to the extent Nasdaq is downgraded below investment grade, up to a rate not to exceed 3.50%.

Credit Facilities

Early Extinguishment of 2017 Credit Facility

In April 2017, Nasdaq entered into the 2017 Credit Facility. Under our 2017 Credit Facility, borrowings bore interest on the principal amount outstanding at a variable interest rate based on either the LIBOR or the base rate (or other applicable rate with respect to non-dollar borrowings), plus an applicable margin that varied with Nasdaq's debt rating.

In December 2020 we terminated our 2017 Credit Facility. No amounts were outstanding at the time of termination.

2020 Credit Facility

In December 2020, Nasdaq entered into the 2020 Credit Facility. The 2020 Credit Facility consists of a $1.25 billion five-year revolving credit facility (with sublimits for non-dollar borrowings, swingline borrowings and letters of credit), which replaced the 2017 Credit Facility. Nasdaq intends to use funds available under the 2020 Credit Facility for general corporate purposes and to provide liquidity support for the repayment of commercial paper issued through the commercial paper program. Nasdaq is permitted to repay borrowings under our 2020 Credit Facility at any time in whole or in part, without penalty.

As of December 31, 2020, no amounts were outstanding on the 2020 Credit Facility. The $(4) million balance represents unamortized debt issuance costs which are being accreted through interest expense over the life of the credit facility.

Under our 2020 Credit Facility, borrowings under the revolving credit facility and swingline borrowings bear interest on the principal amount outstanding at a variable interest rate based on either the LIBOR or the base rate (as defined in the credit agreement) (or other applicable rate with respect to non-dollar borrowings), plus an applicable margin that varies with Nasdaq's debt rating. We are charged commitment fees of 0.125% to 0.350%, depending on our credit rating, whether or not amounts have been borrowed. These commitment fees are included in interest expense and were not material for the year ended December 31, 2020.

The 2020 Credit Facility contains financial and operating covenants. Financial covenants include a maximum leverage ratio. Operating covenants include, among other things, limitations on Nasdaq's ability to incur additional indebtedness, grant liens on assets, dispose of assets and make certain restricted payments. The facility also contains customary affirmative covenants, including access to financial statements, notice of defaults and certain other material events, maintenance of properties and insurance, and customary events of default, including cross-defaults to our material indebtedness.

The 2020 Credit Facility includes an option for Nasdaq to increase the available aggregate amount by up to $625 million subject to the consent of the lenders funding the increase and certain other conditions.

Other Credit Facilities

Certain of our European subsidiaries have several other credit facilities, which are available in multiple currencies, primarily to support our Nasdaq Clearing operations in Europe, as well to provide a cash pool credit line for one subsidiary. These credit facilities, in aggregate, totaled $232 million as of December 31, 2020 and $203 million as of December 31, 2019 in available liquidity, none of which was utilized as of December 31, 2020, and of which $15 million was utilized as of December 31, 2019. Generally, these facilities each have a one year term. The amounts borrowed under these various credit facilities bear interest on the principal amount outstanding at a variable interest rate based on a base rate (as defined in the applicable credit agreement), plus an applicable margin. We are charged commitment fees (as defined in the applicable credit agreement), whether or not amounts have been borrowed. These commitment fees are included in interest expense and were not material for the years ended December 31, 2020, 2019 and 2018.

These facilities include customary affirmative and negative operating covenants and events of default.

Debt Covenants

As of December 31, 2020, we were in compliance with the covenants of all of our debt obligations.

Transition from LIBOR

Nasdaq is currently evaluating the impact of the transition from LIBOR as an interest rate benchmark to other potential alternative reference rates. Currently, Nasdaq has debt instruments in place that reference LIBOR-based rates. As of December 31, 2020, we did not have material risk exposure to LIBOR through our outstanding debt instruments or other transactions.

10. Retirement Plans

Defined Contribution Savings Plan

We sponsor a 401(k) Plan for U.S. employees. Employees are immediately eligible to make contributions to the plan and are also eligible for an employer contribution match at an amount equal to 100.0% of the first 6.0% of eligible employee contributions. Savings plan expense included in compensation and benefits expense in the Consolidated Statements of Income was $14 million for the year ended December 31, 2020, $13 million for the year ended December 31, 2019 and $14 million for the year ended December 31, 2018.

Pension and Supplemental Executive Retirement Plans

We maintain non-contributory, defined-benefit pension plans, non-qualified SERPs for certain senior executives and other post-retirement benefit plans for eligible employees in the U.S., collectively referred to as the Nasdaq Benefit Plans. Our pension plans and SERPs are frozen. Future service and salary for all participants do not count toward an accrual of benefits under the pension plans and SERPs. Most employees outside the U.S. are covered by local retirement plans or by applicable social laws. Benefits under social laws are generally expensed in the periods in which the costs are incurred. The total expense for these plans is included in compensation and benefits expense in the Consolidated Statements of Income and was $23 million for the year ended December 31, 2020, $20 million for the year ended December 31, 2019 and $22 million for the year ended December 31, 2018.

Nasdaq recognizes the funded status of the Nasdaq Benefit Plans, measured as the difference between the fair value of the plan assets and the benefit obligation, in the Consolidated Balance Sheets. The fair value of our U.S. defined-benefit pension plans' assets was $119 million as of December 31, 2020 and $110 million as of December 31, 2019 and the benefit obligation was $118 million as of December 31, 2020 and $110 million as of December 31, 2019. As a result, the U.S. defined-benefit pension plans are fully funded as of December 31, 2020 and 2019. During 2020 and 2019, we did not make any contributions to our U.S. defined-benefit pension plans. For our SERP and other post-retirement benefit plans, the net underfunded liability was $30 million as of December 31, 2020 and $33 million as of December 31, 2019. The underfunded liability for the above plans is included in accrued personnel costs and other non-current liabilities in the Consolidated Balance Sheets. The plan assets of the Nasdaq Benefit Plans are invested per target allocations adopted by Nasdaq's Pension and 401(k) Committee and are primarily invested in collective fund investments that have underlying investments in fixed income securities. The collective fund investments are valued at net asset value which is a practical expedient to estimate fair value.

Accumulated Other Comprehensive Loss

As of December 31, 2020, accumulated other comprehensive loss for the Nasdaq Benefit Plans was $25 million reflecting an unrecognized net loss of $32 million, partially offset by an income tax benefit of $7 million, primarily due to our pension plans.

Estimated Future Benefit Payments

We expect to make the following benefit payments to participants in the next ten fiscal years under the Nasdaq Benefit Plans:

Fiscal Year Ended:	Pension	SERP	Total
	(in millions)		
2021	$ 8	$ 7	$ 15
2022	7	2	9
2023	7	2	9
2024	8	2	10
2025	8	2	10
2026 through 2030	40	8	48
	$ 78	$ 23	$ 101

11. Share-Based Compensation

We have a share-based compensation program for employees and non-employee directors. Share-based awards granted under this program include restricted stock (consisting of restricted stock units), PSUs and stock options. For accounting purposes, we consider PSUs to be a form of restricted stock.

Summary of Share-Based Compensation Expense

The following table shows the total share-based compensation expense resulting from equity awards and the 15.0% discount for the ESPP for the years ended December 31, 2020, 2019 and 2018, which is included in compensation and benefits expense in the Consolidated Statements of Income:

	Year Ended December 31,		
	2020	2019	2018
	(in millions)		
Share-based compensation expense before income taxes	$ 87	$ 79	$ 69
Income tax benefit	(23)	(21)	(19)
Share-based compensation expense after income taxes	$ 64	$ 58	$ 50

Common Shares Available Under Our Equity Plan

As of December 31, 2020, we had approximately 9.8 million shares of common stock authorized for future issuance under our Equity Plan.

Restricted Stock

We grant restricted stock to most active employees. The grant date fair value of restricted stock awards is based on the closing stock price at the date of grant less the present value of future cash dividends. Restricted stock awards granted to employees below the manager level generally vest 33.3% on the first anniversary of the grant date, 33.3% on the second anniversary of the grant date, and 33.3% on the third anniversary of the grant date. Restricted stock awards granted to employees at or above the manager level generally vest 33.3% on the second anniversary of the grant date, 33.3% on the third anniversary of the grant date, and 33.3% on the fourth anniversary of the grant date.

Summary of Restricted Stock Activity

The following table summarizes our restricted stock activity for the years ended December 31, 2020, 2019 and 2018:

	Restricted Stock	
	Number of Awards	Weighted-Average Grant Date Fair Value
Unvested at December 31, 2017	1,988,500	$ 57.34
Granted	550,544	81.66
Vested	(702,832)	48.64
Forfeited	(252,837)	63.86
Unvested at December 31, 2018	1,583,375	$ 68.62
Granted	605,033	85.03
Vested	(548,588)	61.45
Forfeited	(153,064)	73.99
Unvested at December 31, 2019	1,486,756	$ 77.38
Granted	743,300	89.93
Vested	(499,357)	72.95
Forfeited	(91,648)	81.17
Unvested at December 31, 2020	1,639,051	$ 84.21

As of December 31, 2020, $70 million of total unrecognized compensation cost related to restricted stock is expected to be recognized over a weighted-average period of 1.8 years.

PSUs

PSUs are based on performance measures that impact the amount of shares that each recipient will receive upon vesting. Prior to April 1, 2020, we had two performance-based PSU programs for certain officers, a one-year performance-based program and a three-year cumulative performance-based program that focuses on TSR. Effective with new equity awards issued on April 1, 2020, to better align the equity programs for eligible officers, the one-year performance-based program was eliminated and all eligible officers will participate in the three-year cumulative performance-based program. While the performance periods are complete for all PSUs granted under the one-year performance-based program, some shares underlying these PSUs have not vested.

One-Year PSU Program

The grant date fair value of PSUs under the one-year performance-based program was based on the closing stock price at the date of grant less the present value of future cash dividends. Under this program, an eligible employee received a target grant of PSUs, but could have received from 0.0% to 150.0% of the target amount granted, depending on the achievement of performance measures. These awards vest ratably on an annual basis over a three-year period commencing with the end of the one-year performance period. Compensation cost is recognized over the performance period and the three-year vesting period based on the probability that such performance measures will be achieved, taking into account an estimated forfeiture rate.

Three-Year PSU Program

Under the three-year performance-based program, each eligible individual receives PSUs, subject to market conditions, with a three-year cumulative performance period that vest at the end of the performance period. Compensation cost is recognized over the three-year performance period, taking into account an estimated forfeiture rate, regardless of whether the market condition is satisfied, provided that the requisite service period has been completed. Performance will be determined by comparing Nasdaq's TSR to two peer groups, each weighted 50.0%. The first peer group consists of exchange companies, and the second peer group consists of all companies in the S&P 500. Nasdaq's relative performance ranking against each of these groups will determine the final number of shares delivered to each individual under the program. The award issuance under this program will be between 0.0% and 200.0% of the number of PSUs granted and will be determined by Nasdaq's overall performance against both peer groups. However, if Nasdaq's TSR is negative for the three-year performance period, regardless of TSR ranking, the award issuance will not exceed 100.0% of the number of PSUs granted. We estimate the fair value of PSUs granted under the three-year PSU program using the Monte Carlo simulation model, as these awards contain a market condition.

Grants of PSUs that were issued in 2018 with a three-year performance period exceeded the applicable performance parameters. As a result, an additional 150,290 units above the original target were granted in the first quarter of 2021 and were fully vested upon issuance.

The following weighted-average assumptions were used to determine the weighted-average fair values of the PSU awards granted under the three-year PSU program for the years ended December 31, 2020 and 2019:

	Year End December 31,	
	2020	2019
Weighted-average risk free interest rate[1]	0.27 %	2.26 %
Expected volatility[2]	27.4 %	16.5 %
Weighted-average grant date share price	$92.34	$89.00
Weighted-average fair value at grant date	$111.50	$97.65

(1) The risk-free interest rate for periods within the expected life of the award is based on the U.S. Treasury yield curve in effect at the time of grant.

(2) We use historic volatility for PSU awards issued under the three-year PSU program, as implied volatility data could not be obtained for all the companies in the peer groups used for relative performance measurement within the program.

In addition, the annual dividend assumption utilized in the Monte Carlo simulation model is based on Nasdaq's dividend yield at the date of grant.

Summary of PSU Activity

The following table summarizes our PSU activity for the years ended December 31, 2020, 2019 and 2018:

	PSUs			
	One-Year Program		Three-Year Program	
	Number of Awards	Weighted-Average Grant Date Fair Value	Number of Awards	Weighted-Average Grant Date Fair Value
Unvested at December 31, 2017	333,004	$ 61.39	1,009,958	$ 78.18
Granted[1]	177,831	80.97	484,075	90.92
Vested	(170,257)	58.49	(655,204)	64.08
Forfeited	(26,347)	61.83	(1,079)	81.57
Unvested at December 31, 2018	314,231	$ 74.01	837,750	$ 96.57
Granted[1]	179,599	83.56	397,553	96.55
Vested	(147,984)	70.64	(431,751)	93.25
Forfeited	(28,595)	75.43	(6,101)	103.29
Unvested at December 31, 2019	317,251	$ 80.87	797,451	$ 98.31
Granted[1]	26,780	84.17	320,328	107.42
Vested	(138,423)	78.09	(300,767)	81.57
Forfeited	(36,060)	82.41	(7,023)	98.26
Unvested at December 31, 2020	169,548	$ 83.33	809,989	$ 108.12

(1) Includes target and additional awards granted based on overachievement of performance parameters. For the one-year PSUs in 2020, only includes overachievement of performance parameters due to the elimination of the program.

As of December 31, 2020, $4 million of total unrecognized compensation cost related to the one-year PSU program is expected to be recognized over a weighted-average period of 1.2 years. For the three-year PSU program, $31 million of total unrecognized compensation cost is expected to be recognized over a weighted-average period of 1.3 years.

Stock Options

There were no stock option awards granted during the years ended December 31, 2020, 2019 and 2018.

Summary of Stock Option Activity

A summary of stock option activity for the years ended December 31, 2020, 2019 and 2018 is as follows:

	Number of Stock Options	Weighted-Average Exercise Price
Outstanding at December 31, 2017	571,380	$ 43.84
Exercised	(118,094)	24.44
Forfeited	(4,320)	26.11
Outstanding at December 31, 2018	448,966	$ 49.25
Exercised	(69,699)	20.84
Forfeited	(165)	25.28
Outstanding at December 31, 2019	379,102	$ 54.32
Exercised	(85,195)	23.91
Forfeited	(554)	20.94
Outstanding and exercisable at December 31, 2020	293,353	$ 63.22

We received net cash proceeds of $2 million from the exercise of 85,195 stock options for the year ended December 31, 2020, received net cash proceeds of $2 million from the exercise of 69,699 stock options for the year ended December 31, 2019, and received net cash proceeds of $3 million from the exercise of 118,094 stock options for the year ended December 31, 2018.

As of December 31, 2020, the aggregate pre-tax intrinsic value of the outstanding and exercisable stock options in the above table was $20 million and represents the difference between our closing stock price on December 31, 2020 of $132.74 and the exercise price, times the number of shares, which would have been received by the option holders had the option holders exercised their stock options on that date. This amount can change based on the fair market value of our common stock. As of December 31, 2020, the weighted-average remaining contractual term of the outstanding and exercisable stock options included in the above table was 5.5 years. As of December 31, 2019, 0.3 million outstanding stock options were exercisable and the weighted-average exercise price was $50.50.

The total pre-tax intrinsic value of stock options exercised was $9 million for the year ended December 31, 2020, $6

million for the year ended December 31, 2019 and $7 million for the year ended December 31, 2018.

ESPP

We have an ESPP under which approximately 4.4 million shares of our common stock were available for future issuance as of December 31, 2020. In May 2020, we increased by 3,000,000 the number of shares authorized for issuance under the ESPP, and extended the term of the ESPP by approximately 10 years. Under our ESPP, employees may purchase shares having a value not exceeding 10.0% of their annual compensation, subject to applicable annual Internal Revenue Service limitations. We record compensation expense related to the 15.0% discount that is given to our employees. The following table summarizes employee activity and expense associated with the ESPP for the years ended December 31, 2020, 2019 and 2018:

	Year Ended December 31,		
	2020	2019	2018
Number of shares purchased	221,123	229,172	205,785
Weighted-average price of shares purchased	$ 95.79	$ 73.79	$ 66.79
Compensation expense (in millions)	$ 5	$ 4	$ 3

12. Nasdaq Stockholders' Equity

Common Stock

As of December 31, 2020, 300,000,000 shares of our common stock were authorized, 171,278,761 shares were issued and 164,933,678 shares were outstanding. As of December 31, 2019, 300,000,000 shares of our common stock were authorized, 171,075,011 shares were issued and 165,094,440 shares were outstanding. The holders of common stock are entitled to one vote per share, except that our certificate of incorporation limits the ability of any shareholder to vote in excess of 5.0% of the then-outstanding shares of Nasdaq common stock.

Common Stock in Treasury, at Cost

We account for the purchase of treasury stock under the cost method with the shares of stock repurchased reflected as a reduction to Nasdaq stockholders' equity and included in common stock in treasury, at cost in the Consolidated Balance Sheets. Shares repurchased under our share repurchase program are currently retired and canceled and are therefore not included in the common stock in treasury balance. If treasury shares are reissued, they are recorded at the average cost of the treasury shares acquired. We held 6,345,083 shares of common stock in treasury as of December 31, 2020 and 5,980,571 shares as of December 31, 2019, most of which are related to shares of our common stock withheld for the settlement of employee tax withholding obligations arising from the vesting of restricted stock and PSUs.

Share Repurchase Program

As of December 31, 2020, the remaining aggregate authorized amount under the existing share repurchase program was $410 million.

These purchases may be made from time to time at prevailing market prices in open market purchases, privately-negotiated transactions, block purchase techniques or otherwise, as determined by our management. The purchases are primarily funded from existing cash balances. The share repurchase program may be suspended, modified or discontinued at any time. The share repurchase program has no defined expiration date.

The following is a summary of our share repurchase activity, reported based on settlement date, for the years ended December 31, 2020 and 2019:

	Year Ended December 31,	
	2020	2019
Number of shares of common stock repurchased[(1)]	2,033,455	2,053,855
Average price paid per share	$ 109.13	$ 97.37
Total purchase price (in millions)	$ 222	$ 200

(1) Excludes shares withheld upon vesting of restricted stock and PSUs of 364,512 for the year ended December 31, 2020 and 436,250 for the year ended December 31, 2019.

As discussed above in "Common Stock in Treasury, at Cost," shares repurchased under our share repurchase program are currently retired and cancelled.

In January 2021, the board of directors authorized an increase to the share repurchase program of an additional $1 billion, subject to the closing of the NFI sale and acceleration of the issuance of Nasdaq common stock related to the sale. See "Sale of U.S. Fixed Income Business," of Note 21, "Subsequent Events," for further discussion of the sale of NFI and acceleration of share issuance.

Preferred Stock

Our certificate of incorporation authorizes the issuance of 30,000,000 shares of preferred stock, par value $0.01 per share, issuable from time to time in one or more series. As of December 31, 2020 and December 31, 2019, no shares of preferred stock were issued or outstanding.

Cash Dividends on Common Stock

During 2020, our board of directors declared the following cash dividends:

Declaration Date	Dividend Per Common Share	Record Date	Total Amount Paid	Payment Date
			(in millions)	
January 28, 2020	$ 0.47	March 13, 2020	$ 78	March 27, 2020
April 22, 2020	0.49	June 12, 2020	80	June 26, 2020
July 22, 2020	0.49	September 11, 2020	81	September 25, 2020
October 21, 2020	0.49	December 4, 2020	81	December 18, 2020
			$ 320	

The total amount paid of $320 million was recorded in retained earnings in the Consolidated Balance Sheets at December 31, 2020.

In January 2021, the board of directors approved a regular quarterly cash dividend of $0.49 per share on our outstanding common stock. The dividend is payable on March 26, 2021 to shareholders of record at the close of business on March 12, 2021. The estimated amount of this dividend is $81 million. Future declarations of quarterly dividends and the establishment of future record and payment dates are subject to approval by the board of directors.

Our board of directors maintains a dividend policy with the intention to provide stockholders with regular and growing dividends over the long term as earnings and cash flow grow.

13. Earnings Per Share

The following table sets forth the computation of basic and diluted earnings per share:

	Year Ended December 31,		
	2020	2019	2018
	(in millions, except share and per share amounts)		
Numerator:			
Net income attributable to common shareholders	$ 933	$ 774	$ 458
Denominator:			
Weighted-average common shares outstanding for basic earnings per share	164,415,191	164,931,628	165,349,471
Weighted-average effect of dilutive securities:			
Employee equity awards[1]	2,135,532	1,679,922	1,988,610
Contingent issuance of common stock[2]	353,218	358,611	353,218
Weighted-average common shares outstanding for diluted earnings per share	166,903,941	166,970,161	167,691,299
Basic and diluted earnings per share:			
Basic earnings per share	$ 5.67	$ 4.69	$ 2.77
Diluted earnings per share	$ 5.59	$ 4.63	$ 2.73

(1) PSUs, which are considered contingently issuable, are included in the computation of dilutive earnings per share on a weighted average basis when management determines that the applicable performance criteria would have been met if the performance period ended as of the date of the relevant computation.

(2) See “Non-Cash Contingent Consideration,” of Note 18, “Commitments, Contingencies and Guarantees,” for further discussion.

Securities that were not included in the computation of diluted earnings per share because their effect was antidilutive were immaterial for the years ended 2020, 2019 and 2018.

14. Fair Value of Financial Instruments

The following tables present our financial assets and financial liabilities that were measured at fair value on a recurring basis as of December 31, 2020 and December 31, 2019.

	December 31, 2020				December 31, 2019			
	Total	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3
	(in millions)				(in millions)			
Assets at Fair Value								
European government debt securities	$ 156	$ 156	$ —	$ —	$ 157	$ 157	$ —	$ —
Corporate debt securities	2	—	2	—	34	—	34	—
State owned enterprises and municipal securities	15	—	15	—	24	—	24	—
Swedish mortgage bonds	22	—	22	—	19	—	19	—
Time deposits	—	—	—	—	57	—	57	—
Total assets at fair value	$ 195	$ 156	$ 39	$ —	$ 291	$ 157	$ 134	$ —

Financial Instruments Not Measured at Fair Value on a Recurring Basis

Some of our financial instruments are not measured at fair value on a recurring basis but are recorded at amounts that approximate fair value due to their liquid or short-term nature. Such financial assets and financial liabilities include: cash and cash equivalents, restricted cash and cash equivalents, receivables, net, certain other current assets, accounts payable and accrued expenses, Section 31 fees payable to SEC, accrued personnel costs, commercial paper and certain other current liabilities.

Our investment in OCC is accounted for under the equity method of accounting. We have elected the measurement alternative for the majority of our equity securities, which primarily represent various strategic investments made through our corporate venture program. See “Equity Method Investments,” and “Equity Securities,” of Note 6, “Investments,” for further discussion.

We also consider our debt obligations to be financial instruments. As of December 31, 2020, the majority of our debt obligations were fixed-rate obligations. We were exposed to changes in interest rates as a result of borrowings under our 2017 Credit Facility and we are exposed to changes in interest rates under our 2020 Credit Facility, as the interest rates on these facility have a variable interest rate. We are also exposed to changes in interest rates as a result of the amounts outstanding from the sale of commercial paper under our commercial paper program. As of December 31, 2020, we had no outstanding borrowings under our 2020 Credit Facility or commercial paper program. The fair value of our debt obligations utilizing prevailing market rates for our fixed rate debt was $5.9 billion as of December 31, 2020 and the fair value of our debt obligations, utilizing discounted cash flow analyses for our floating rate debt and prevailing market rates for our fixed rate debt was $3.6 billion as of December 31, 2019. The discounted cash flow analyses are based on borrowing rates currently available to us for debt with similar terms and maturities. The fair value of our commercial paper as of December 31, 2019 approximated the carrying value since the rates of interest on this short-term debt approximated market rates. Our commercial paper and our fixed rate and floating rate debt are categorized as Level 2 in the fair value hierarchy.

For further discussion of our debt obligations, see Note 9, “Debt Obligations.”

Non-Financial Assets Measured at Fair Value on a Non-Recurring Basis

Our non-financial assets, which include goodwill, intangible assets, and other long-lived assets, are not required to be carried at fair value on a recurring basis. Fair value measures of non-financial assets are primarily used in the impairment analysis of these assets. Any resulting asset impairment would require that the non-financial asset be recorded at its fair value. Nasdaq uses Level 3 inputs to measure the fair value of the above assets on a non-recurring basis. As of December 31, 2020 and December 31, 2019, there were no non-financial assets measured at fair value on a non-recurring basis.

15. Clearing Operations

Nasdaq Clearing

Nasdaq Clearing is authorized and supervised under EMIR as a multi-asset clearinghouse by the SFSA. Such authorization is effective for all member states of the European Union and certain other non-member states that are part of the European Economic Area, including Norway. The clearinghouse acts as the CCP for exchange and OTC trades in equity derivatives, fixed income derivatives, resale and repurchase contracts, power derivatives, emission allowance derivatives, and seafood derivatives.

Through our clearing operations in the financial markets, which include the resale and repurchase market, the commodities markets, and the seafood market, Nasdaq Clearing is the legal counterparty for, and guarantees the fulfillment of, each contract cleared. These contracts are not used by Nasdaq Clearing for the purpose of trading on its own behalf. As the legal counterparty of each transaction,

Nasdaq Clearing bears the counterparty risk between the purchaser and seller in the contract. In its guarantor role, Nasdaq Clearing has precisely equal and offsetting claims to and from clearing members on opposite sides of each contract, standing as the CCP on every contract cleared. In accordance with the rules and regulations of Nasdaq Clearing, default fund and margin collateral requirements are calculated for each clearing member's positions in accounts with the CCP. See "Default Fund Contributions and Margin Deposits" below for further discussion of Nasdaq Clearing's default fund and margin requirements.

Nasdaq Clearing maintains four member sponsored default funds: one related to financial markets, one related to commodities markets, one related to the seafood market, and a mutualized fund. Under this structure, Nasdaq Clearing and its clearing members must contribute to the total regulatory capital related to the clearing operations of Nasdaq Clearing. This structure applies an initial separation of default fund contributions for the financial, commodities and seafood markets in order to create a buffer for each market's counterparty risks. Simultaneously, a mutualized default fund provides capital efficiencies to Nasdaq Clearing's members with regard to total regulatory capital required. See "Default Fund Contributions" below for further discussion of Nasdaq Clearing's default fund. Power of assessment and a liability waterfall also have been implemented. See "Power of Assessment" and "Liability Waterfall" below for further discussion. These requirements align risk between Nasdaq Clearing and its clearing members.

Nasdaq Commodities Clearing Default

In September 2018, a member of the Nasdaq Clearing commodities market defaulted due to inability to post sufficient collateral to cover increased margin requirements for the positions of the relevant member, which had experienced losses due to sharp adverse movements in the Nordic - German power market spread. Nasdaq Clearing followed default procedures and offset the future market risk on the defaulting member's positions. The default resulted in an initial loss of $133 million. In accordance with the liability waterfall, the first $8 million of the loss was allocated to Nasdaq Clearing's junior capital and the remainder was allocated on a pro-rata basis to the commodities clearing members' default funds. In September 2018, these funds were replenished.

Immediately following the event, Nasdaq Clearing launched a comprehensive enhancement program to strengthen the resilience and robustness of the clearinghouse.

In December 2018, we initiated a capital relief program. The capital relief program was a voluntary program open to each commodities default fund participant; each such participant who agreed to the capital relief program received a proportion of the funds made available under the capital relief program as reflected by their proportionate share of the aggregate of the clearing members' default fund replenishments. In 2018, we recorded a charge of $23 million related to this program.

Since the member default in 2018, Nasdaq Clearing has been working to maximize the recovery from the defaulted member. All funds recovered are applied towards the default fund participants on a pro rata basis. As of December 31, 2020, the expected recovery together with the capital relief program amounts to approximately 80% of the initial loss, of which the majority has been paid and the remainder is expected to be paid during 2021.

In December 2018, the SFSA initiated a review of Nasdaq Clearing. On January 27, 2021, the SFSA issued a warning combined with an administrative fine of approximately $36 million (SEK 300 million) to Nasdaq Clearing based on their review. Nasdaq Clearing has assessed the SFSA´s decision and has decided to appeal the decision to the Administrative Court. As of December 31, 2020, no accrual has been recorded related to this matter as the outcome cannot be reasonably estimated.

Default Fund Contributions and Margin Deposits

As of December 31, 2020, clearing member default fund contributions and margin deposits were as follows:

	December 31, 2020		
	Cash Contributions	Non-Cash Contributions	Total Contributions
	(in millions)		
Default fund contributions	$ 529	$ 99	$ 628
Margin deposits	3,413	5,511	8,924
Total	$ 3,942	$ 5,610	$ 9,552

Of the total default fund contributions of $628 million, Nasdaq Clearing can utilize $556 million as capital resources in the event of a counterparty default. The remaining balance of $72 million pertains to member posted surplus balances.

Our clearinghouse holds material amounts of clearing member cash deposits which are held or invested primarily to provide security of capital while minimizing credit, market and liquidity risks. While we seek to achieve a reasonable rate of return, we are primarily concerned with preservation of capital and managing the risks associated with these deposits.

Clearing member cash contributions are maintained in demand deposits held at central banks and large, highly rated financial institutions or secured through direct investments, primarily central bank certificates and highly rated European government debt securities with original maturities of 90 days or less, reverse repurchase agreements and supranational debt securities. Investments in reverse repurchase agreements are secured with highly rated government securities with maturity dates that range from 4 days to 7 days. The carrying value of these securities approximates their fair value due to the short-term nature of the instruments and reverse repurchase agreements.

Nasdaq Clearing has invested the total cash contributions of $3,942 million as of December 31, 2020 and $2,996 million

as of December 31, 2019, in accordance with its investment policy as follows:

	December 31, 2020	December 31, 2019
	(in millions)	
Demand deposits	$ 2,086	$ 1,328
Central bank certificates	1,111	896
European government debt securities	470	508
Reverse repurchase agreements	180	116
Supranational debt securities	95	148
Total	$ 3,942	$ 2,996

In the investment activity related to default fund and margin contributions, we are exposed to counterparty risk related to reverse repurchase agreement transactions, which reflect the risk that the counterparty might become insolvent and, thus, fail to meet its obligations to Nasdaq Clearing. We mitigate this risk by only engaging in transactions with high credit quality reverse repurchase agreement counterparties and by limiting the acceptable collateral under the reverse repurchase agreement to high quality issuers, primarily government securities and other securities explicitly guaranteed by a government. The value of the underlying security is monitored during the lifetime of the contract, and in the event the market value of the underlying security falls below the reverse repurchase amount, our clearinghouse may require additional collateral or a reset of the contract.

Default Fund Contributions

Required contributions to the default funds are proportional to the exposures of each clearing member. When a clearing member is active in more than one market, contributions must be made to all markets' default funds in which the member is active. Clearing members' eligible contributions may include cash and non-cash contributions. Cash contributions received are maintained in demand deposits held at central banks and large, highly rated financial institutions or invested by Nasdaq Clearing, in accordance with its investment policy, either in central bank certificates, highly rated government debt securities, reverse repurchase agreements with highly rated government debt securities as collateral, or supranational debt securities. Nasdaq Clearing maintains and manages all cash deposits related to margin collateral. All risks and rewards of collateral ownership, including interest, belong to Nasdaq Clearing. Clearing members' cash contributions are included in default funds and margin deposits in the Consolidated Balance Sheets as both a current asset and a current liability. Non-cash contributions include highly rated government debt securities that must meet specific criteria approved by Nasdaq Clearing. Non-cash contributions are pledged assets that are not recorded in the Consolidated Balance Sheets as Nasdaq Clearing does not take legal ownership of these assets and the risks and rewards remain with the clearing members. These balances may fluctuate over time due to changes in the amount of deposits required and whether members choose to provide cash or non-cash contributions. Assets pledged are held at a nominee account in Nasdaq Clearing's name for the benefit of the clearing members and are immediately accessible by Nasdaq Clearing in the event of a default. In addition to clearing members' required contributions to the liability waterfall, Nasdaq Clearing is also required to contribute capital to the liability waterfall and overall regulatory capital as specified under its clearinghouse rules. As of December 31, 2020, Nasdaq Clearing committed capital totaling $145 million to the liability waterfall and overall regulatory capital, in the form of government debt securities, which are recorded as financial investments in the Consolidated Balance Sheets. The combined regulatory capital of the clearing members and Nasdaq Clearing is intended to secure the obligations of a clearing member exceeding such member's own margin and default fund deposits and may be used to cover losses sustained by a clearing member in the event of a default.

Margin Deposits

Nasdaq Clearing requires all clearing members to provide collateral, which may consist of cash and non-cash contributions, to guarantee performance on the clearing members' open positions, or initial margin. In addition, clearing members must also provide collateral to cover the daily margin call if needed. See "Default Fund Contributions" above for further discussion of cash and non-cash contributions.

Similar to default fund contributions, Nasdaq Clearing maintains and manages all cash deposits related to margin collateral. All risks and rewards of collateral ownership, including interest, belong to Nasdaq Clearing and are recorded in revenues. These cash deposits are recorded in default funds and margin deposits in the Consolidated Balance Sheets as both a current asset and a current liability. Pledged margin collateral is not recorded in our Consolidated Balance Sheets as all risks and rewards of collateral ownership, including interest, belong to the counterparty. Assets pledged are held at a nominee account in Nasdaq Clearing's name for the benefit of the clearing members and are immediately accessible by Nasdaq Clearing in the event of a default.

Nasdaq Clearing marks to market all outstanding contracts and requires payment from clearing members whose positions have lost value. The mark-to-market process helps identify any clearing members that may not be able to satisfy their financial obligations in a timely manner allowing Nasdaq Clearing the ability to mitigate the risk of a clearing member defaulting due to exceptionally large losses. In the event of a default, Nasdaq Clearing can access the defaulting member's margin and default fund deposits to cover the defaulting member's losses.

Regulatory Capital and Risk Management Calculations

Nasdaq Clearing manages risk through a comprehensive counterparty risk management framework, which is

comprised of policies, procedures, standards and financial resources. The level of regulatory capital is determined in accordance with Nasdaq Clearing's regulatory capital and default fund policy, as approved by the SFSA. Regulatory capital calculations are continuously updated through a proprietary capital-at-risk calculation model that establishes the appropriate level of capital.

As mentioned above, Nasdaq Clearing is the legal counterparty for each contract cleared and thereby guarantees the fulfillment of each contract. Nasdaq Clearing accounts for this guarantee as a performance guarantee. We determine the fair value of the performance guarantee by considering daily settlement of contracts and other margining and default fund requirements, the risk management program, historical evidence of default payments, and the estimated probability of potential default payouts. The calculation is determined using proprietary risk management software that simulates gains and losses based on historical market prices, extreme but plausible market scenarios, volatility and other factors present at that point in time for those particular unsettled contracts. Based on this analysis, excluding any liability related to the Nasdaq commodities clearing default (see discussion above), the estimated liability was nominal and no liability was recorded as of December 31, 2020.

Power of Assessment

To further strengthen the contingent financial resources of the clearinghouse, Nasdaq Clearing has power of assessment that provides the ability to collect additional funds from its clearing members to cover a defaulting member's remaining obligations up to the limits established under the terms of the clearinghouse rules. The power of assessment corresponds to 230.0% of the clearing member's aggregate contribution to the financial, commodities and seafood markets' default funds.

Liability Waterfall

The liability waterfall is the priority order in which the capital resources would be utilized in the event of a default where the defaulting clearing member's collateral would not be sufficient to cover the cost to settle its portfolio. If a default occurs and the defaulting clearing member's collateral, including cash deposits and pledged assets, is depleted, then capital is utilized in the following amount and order:

- junior capital contributed by Nasdaq Clearing, which totaled $39 million as of December 31, 2020;
- a loss sharing pool related only to the financial market that is contributed to by clearing members and only applies if the defaulting member's portfolio includes interest rate swap products;
- specific market default fund where the loss occurred (i.e., the financial, commodities, or seafood market), which includes capital contributions of the clearing members on a pro-rata basis;
- senior capital contributed to each specific market by Nasdaq Clearing, calculated in accordance with clearinghouse rules, which totaled $24 million as of December 31, 2020; and
- mutualized default fund, which includes capital contributions of the clearing members on a pro-rata basis.

If additional funds are needed after utilization of the liability waterfall, then Nasdaq Clearing will utilize its power of assessment and additional capital contributions will be required by non-defaulting members up to the limits established under the terms of the clearinghouse rules.

In addition to the capital held to withstand counterparty defaults described above, Nasdaq Clearing also has committed capital of $82 million to ensure that it can handle an orderly wind-down of its operation, and that it is adequately protected against investment, operational, legal, and business risks.

Market Value of Derivative Contracts Outstanding

The following table includes the market value of derivative contracts outstanding prior to netting:

	December 31, 2020
	(in millions)
Commodity and seafood options, futures and forwards[1][2][3]	$ 122
Fixed-income options and futures[1][2]	773
Stock options and futures[1][2]	175
Index options and futures[1][2]	68
Total	$ 1,138

(1) We determined the fair value of our option contracts using standard valuation models that were based on market-based observable inputs including implied volatility, interest rates and the spot price of the underlying instrument.

(2) We determined the fair value of our futures contracts based upon quoted market prices and average quoted market yields.

(3) We determined the fair value of our forward contracts using standard valuation models that were based on market-based observable inputs including LIBOR rates and the spot price of the underlying instrument.

Derivative Contracts Cleared

The following table includes the total number of derivative contracts cleared through Nasdaq Clearing for the years ended December 31, 2020 and 2019:

	December 31, 2020	December 31, 2019
Commodity and seafood options, futures and forwards[1]	672,219	542,557
Fixed-income options and futures	21,299,713	21,464,522
Stock options and futures	19,757,733	23,777,980
Index options and futures	51,371,391	47,595,114
Total	93,101,056	93,380,173

(1) The total volume in cleared power related to commodity contracts was 956 Terawatt hours (TWh) for the year ended December 31, 2020 and 842 TWh for the year ended December 31, 2019.

The outstanding contract value of resale and repurchase agreements was $0.3 billion as of December 31, 2020 and 2019. The total number of contracts cleared was 4,832,504 for the year ended December 31, 2020 and was 6,627,103 for the year ended December 31, 2019.

16. Leases

We have operating leases which are primarily real estate leases for our U.S. and European headquarters and for general office space. The following table provides supplemental balance sheet information related to Nasdaq's operating leases:

Leases	Balance Sheet Classification	December 31, 2020	December 31, 2019
		(in millions)	
Assets:			
Operating lease assets	Operating lease assets	$ 381	$ 346
Liabilities:			
Current lease liabilities	Other current liabilities	$ 46	$ 61
Non-current lease liabilities	Operating lease liabilities	389	331
Total lease liabilities		$ 435	$ 392

The following table summarizes Nasdaq's lease cost:

	Year Ended December 31,	
	2020	2019
	(in millions)	
Operating lease cost[1]	$ 85	$ 79
Variable lease cost	26	23
Sublease income	(4)	(5)
Total lease cost	$ 107	$ 97

(1) Includes short-term lease cost, which was immaterial.

In 2018, prior to the adoption of ASU 2016-02, rent expense for operating leases was $82 million, which is net of immaterial amounts of sublease income.

The following table reconciles the undiscounted cash flows for each of the first five years and total of the remaining years to the operating lease liabilities recorded in our Consolidated Balance Sheets.

	December 31, 2020
	(in millions)
2021	$ 62
2022	56
2023	52
2024	45
2025	32
2026 and thereafter	311
Total lease payments	558
Less: interest[1]	(123)
Present value of lease liabilities[2]	$ 435

(1) Calculated using the interest rate for each lease.
(2) Includes the current portion of $46 million.

The following table provides information related to Nasdaq's lease term and discount rate:

	December 31, 2020
Weighted-average remaining lease term (in years)	11.5
Weighted-average discount rate	4.2 %

The following table provides supplemental cash flow information related to Nasdaq's operating leases:

	Years End December 31,	
	2020	2019
	(in millions)	
Cash paid for amounts included in the measurement of operating lease liabilities	$ 77	$ 78
Lease assets obtained in exchange for new operating lease liabilities	$ 100	$ 26

17. Income Taxes

The Tax Cuts and Jobs Act was enacted in December 2017 and included a number of changes to previous U.S. tax laws that impacted Nasdaq, most notably a reduction of the U.S. corporate income tax rate from 35 percent to 21 percent for tax years beginning after December 31, 2017. In accordance with Staff Accounting Bulletin No.118, during the fourth quarter of 2018, we completed our accounting for the tax effects of the act, finalizing our analysis of the act and subsequent guidance issued by the U.S. Internal Revenue Service. As a result, we recorded a $290 million non-cash tax

charge, reducing deferred tax assets relating to foreign currency translation.

Income Before Income Tax Provision

The following table presents the domestic and foreign components of income before income tax provision:

	Year Ended December 31,		
	2020	2019	2018
	(in millions)		
Domestic	$ 898	$ 691	$ 636
Foreign	314	328	428
Income before income tax provision	$ 1,212	$ 1,019	$ 1,064

Income Tax Provision

The income tax provision consists of the following amounts:

	Year Ended December 31,		
	2020	2019	2018
	(in millions)		
Current income taxes provision:			
Federal	$ 114	$ 120	$ 103
State	50	40	56
Foreign	74	50	146
Total current income taxes provision	238	210	305
Deferred income taxes provision (benefit):			
Federal	37	27	185
State	6	7	116
Foreign	(2)	1	—
Total deferred income taxes provision	41	35	301
Total income tax provision	$ 279	$ 245	$ 606

We have determined that undistributed earnings of certain non-U.S. subsidiaries will be reinvested for an indefinite period of time. We have both the intent and ability to indefinitely reinvest these earnings. As of December 31, 2020, the cumulative amount of undistributed earnings in these subsidiaries is $280 million. Given our intent to reinvest these earnings for an indefinite period of time, we have not accrued a deferred tax liability on these earnings. A determination of an unrecognized deferred tax liability related to these earnings is not practicable.

A reconciliation of the income tax provision, based on the U.S. federal statutory rate, to our actual income tax provision for the years ended December 31, 2020, 2019 and 2018 is as follows:

	Year Ended December 31,		
	2020	2019	2018
Federal income tax provision at the statutory rate	21.0 %	21.0 %	21.0 %
State income tax provision, net of federal effect	4.2 %	4.1 %	3.7 %
Change in deferred taxes due to U.S. tax law changes	— %	— %	27.0 %
Excess tax benefits related to employee share-based compensation	(0.6)%	(0.5)%	(0.7)%
Non-U.S. subsidiary earnings	0.5 %	1.0 %	0.4 %
Tax credits and deductions	(0.2)%	(0.2)%	(0.2)%
Change in unrecognized tax benefits	(0.6)%	(0.1)%	4.7 %
Other, net	(1.3)%	(1.3)%	1.1 %
Actual income tax provision	23.0 %	24.0 %	57.0 %

The majority of the decrease in our effective tax rate in 2020 compared to 2019 was the result of favorable audit settlements and remeasurement of our deferred inventory, which is included in “Other, net” in the table above. The decrease in our effective tax rate in 2019 compared to 2018 was primarily due to the remeasurement of our U.S. deferred tax inventory in 2018 from the Tax Cuts and Jobs Act. The higher effective tax rate in 2018 was also impacted by the reversal of certain Swedish tax benefits recorded in prior years.

The effective tax rate may vary from period to period depending on, among other factors, the geographic and business mix of earnings and losses. These same and other factors, including history of pre-tax earnings and losses, are taken into account in assessing the ability to realize deferred tax assets.

Deferred Income Taxes

The temporary differences, which give rise to our deferred tax assets and (liabilities), consisted of the following:

	December 31,	
	2020	2019
	(in millions)	
Deferred tax assets:		
Deferred revenues	$ 8	$ 10
U.S. federal net operating loss	3	—
Foreign net operating loss	4	4
State net operating loss	2	2
Compensation and benefits	28	32
Federal benefit of uncertain tax positions	5	6
Operating lease liabilities	97	101
Unrealized losses	54	—
Other	39	20
Gross deferred tax assets	240	175
Less: valuation allowance	(3)	—
Total deferred tax assets, net of valuation allowance	$ 237	$ 175
Deferred tax liabilities:		
Amortization of software development costs and depreciation	$ (55)	$ (42)
Amortization of acquired intangible assets	(499)	(495)
Investments	(77)	(58)
Unrealized gains	—	(31)
Operating lease assets	(86)	(89)
Other	(19)	(11)
Gross deferred tax liabilities	$ (736)	$ (726)
Net deferred tax liabilities	$ (499)	$ (551)
Reported as:		
Non-current deferred tax assets[(1)]	$ 3	$ 1
Deferred tax liabilities, net	(502)	(552)
Net deferred tax liabilities	$ (499)	$ (551)

[(1)] Included in other non-current assets in the Consolidated Balance Sheets.

As of December 31, 2020, we recognized a valuation allowance of $3 million due to recurring operating losses in a foreign jurisdiction. As of December 31, 2019, we did not recognize a valuation allowance against Nasdaq's deferred tax assets. Based on all available positive and negative evidence, we believe the sources of future taxable income are sufficient to realize the remainder of Nasdaq's deferred tax asset inventory.

As of December 31, 2020, Nasdaq has deferred tax assets associated with NOLs in U.S. state and local and non-U.S. jurisdictions with the following expiration dates:

Jurisdiction	Amount	Expiration Date
	(in millions)	
Foreign NOL	$ 4	No expiration
Federal NOL	3	No expiration
State NOL	2	2025-2036

Unrecognized Tax Benefits

A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows:

	Year Ended December 31,		
	2020	2019	2018
	(in millions)		
Beginning balance	$ 48	$ 52	$ 45
Additions as a result of tax positions taken in prior periods	9	10	28
Additions as a result of tax positions taken in the current period	2	1	6
Reductions related to settlements with taxing authorities	(6)	(10)	(23)
Reductions as a result of lapses of the applicable statute of limitations	(11)	(5)	(4)
Ending balance	$ 42	$ 48	$ 52

We had $42 million of unrecognized tax benefits as of December 31, 2020, $48 million as of December 31, 2019, and $52 million as of December 31, 2018 which, if recognized in the future, would affect our effective tax rate. Nasdaq does not believe that our unrecognized tax benefits will materially change over the next 12 months.

We recognize interest and/or penalties related to income tax matters in the provision for income taxes in our Consolidated Statements of Income, which was a $2 million tax benefit for the year ended December 31, 2020 and a tax provision of $3 million for the year ended December 31, 2019 and $2 million for 2018. Accrued interest and penalties, net of tax effect were $8 million as of December 31, 2020 and $12 million as of December 31, 2019.

Tax Audits

Nasdaq and its eligible subsidiaries file a consolidated U.S. federal income tax return and applicable state and local income tax returns and non-U.S. income tax returns. We are subject to examination by federal, state and local, and foreign tax authorities. Our Federal income tax return for the years 2017 through 2019 is subject to examination by the Internal Revenue Service. Several state tax returns are currently under examination by the respective tax authorities for the years 2007 through 2018. Non-U.S. tax returns are subject to examination by the respective tax authorities for the years 2014 through 2019. We regularly assess the likelihood of additional assessments by each jurisdiction and have established tax reserves that we believe are adequate in relation to the potential for additional assessments. Examination outcomes and the timing of examination settlements are subject to uncertainty. Although the results of

such examinations may have an impact on our unrecognized tax benefits, we do not anticipate that such impact will be material to our consolidated financial position or results of operations. We do not expect to settle any material tax audits in the next twelve months.

The Swedish Tax Agency disallowed certain interest expense deductions for the years 2013 - 2018. We appealed this decision to the Lower Administrative Court which denied our appeal in 2018. During 2018, we further appealed to the Administrative Court of Appeal, however, we were no longer able to assert that we were more than likely to be successful and, as such, we recorded a related tax expense. In November 2019, the Administrative Court of Appeal upheld the disallowance of these deductions. As we have not recognized any benefits related to the disallowed deductions and we have paid the related assessments from the Swedish Tax Agency, the decision of the Administrative Court of Appeal does not impact our consolidated financial statements.

18. Commitments, Contingencies and Guarantees

Guarantees Issued and Credit Facilities Available

In addition to the default fund contributions and margin collateral pledged by clearing members discussed in Note 15, "Clearing Operations," we have obtained financial guarantees and credit facilities which are guaranteed by us through counter indemnities, to provide further liquidity related to our clearing businesses. Financial guarantees issued to us totaled $5 million as of December 31, 2020 and $11 million as of December 31, 2019. As discussed in "Other Credit Facilities," of Note 9, "Debt Obligations," we also have credit facilities primarily related to our Nasdaq Clearing operations, which are available in multiple currencies, and totaled $232 million as of December 31, 2020 and $203 million as of December 31, 2019 in available liquidity, none of which was utilized as of December 31, 2020, and of which $15 million was utilized as of December 31, 2019.

Execution Access is our introducing broker which operates the trading platform for our Fixed Income business to trade in U.S. Treasury securities. Execution Access has a clearing arrangement with ICBC. As of December 31, 2020, we have contributed $13 million of clearing deposits to ICBC in connection with this clearing arrangement. These deposits are recorded in other current assets in our Consolidated Balance Sheets. Some of the trading activity in Execution Access is cleared by ICBC through the Fixed Income Clearing Corporation, with ICBC acting as agent. Execution Access assumes the counterparty risk of clients that do not clear through the Fixed Income Clearing Corporation. Counterparty risk of clients exists for Execution Access between the trade date and the settlement date of the individual transactions, which is at least one business day (or more, if specified by the U.S. Treasury issuance calendar). Counterparties that do not clear through the Fixed Income Clearing Corporation are subject to a credit due diligence process and may be required to post collateral, provide principal letters, or provide other forms of credit enhancement to Execution Access for the purpose of mitigating counterparty risk. Daily position trading limits are also enforced for such counterparties.

We believe that the potential for us to be required to make payments under these arrangements is mitigated through the pledged collateral and our risk management policies. Accordingly, no contingent liability is recorded in the Consolidated Balance Sheets for these arrangements. However, no guarantee can be provided that these arrangements will at all times be sufficient.

Other Guarantees

Through our clearing operations in the financial markets, Nasdaq Clearing is the legal counterparty for, and guarantees the performance of, its clearing members. See Note 15, "Clearing Operations," for further discussion of Nasdaq Clearing performance guarantees.

We have provided a guarantee related to lease obligations for The Nasdaq Entrepreneurial Center, Inc., which is a not-for-profit organization designed to convene, connect and engage aspiring and current entrepreneurs. This entity is not included in the consolidated financial statements of Nasdaq.

We believe that the potential for us to be required to make payments under these arrangements is unlikely. Accordingly, no contingent liability is recorded in the Consolidated Balance Sheets for the above guarantees.

Non-Cash Contingent Consideration

As part of the purchase price consideration of a prior acquisition, we have agreed to future annual issuances of 992,247 shares of Nasdaq common stock which approximated certain tax benefits associated with the transaction. Such contingent future issuances of Nasdaq common stock will be issued annually through 2027 if Nasdaq's total gross revenues equal or exceed $25 million in each such year. The contingent future issuances of Nasdaq common stock are subject to anti-dilution protections and acceleration upon certain events.

In February 2021, we announced that we entered into a Purchase Agreement to sell NFI. Upon the consummation of this transaction, the aggregate number of Nasdaq shares that remain subject to this contingent obligation is expected to be reduced (pursuant to the discounting adjustment provisions set forth in the original purchase agreement for Nasdaq's acquisition of the business) and accelerated, which would result in an issuance of an aggregate of approximately 6.2 million shares of Nasdaq common stock. See "Sale of U.S. Fixed Income Business," of Note 21, "Subsequent Events," for further discussion of this transaction.

Routing Brokerage Activities

One of our broker-dealer subsidiaries, Nasdaq Execution Services, provides a guarantee to securities clearinghouses and exchanges under its standard membership agreements, which require members to guarantee the performance of other members. If a member becomes unable to satisfy its obligations to a clearinghouse or exchange, other members

would be required to meet its shortfalls. To mitigate these performance risks, the exchanges and clearinghouses often require members to post collateral, as well as meet certain minimum financial standards. Nasdaq Execution Services' maximum potential liability under these arrangements cannot be quantified. However, we believe that the potential for Nasdaq Execution Services to be required to make payments under these arrangements is unlikely. Accordingly, no contingent liability is recorded in the Consolidated Balance Sheets for these arrangements.

Acquisition of Verafin

For further discussion of our acquisition of Verafin, see "Acquisition of Verafin," of Note 4, "Acquisitions and Divestiture."

Legal and Regulatory Matters

Litigation

As previously disclosed, we are named as one of many defendants in City of Providence v. BATS Global Markets, Inc., et al., 14 Civ. 2811 (S.D.N.Y.), which was filed on April 18, 2014 in the United States District Court for the Southern District of New York. The district court appointed lead counsel, who filed an amended complaint on September 2, 2014. The amended complaint names as defendants seven national exchanges, as well as Barclays PLC, which operated a private alternative trading system. On behalf of a putative class of securities traders, the plaintiffs allege that the defendants engaged in a scheme to manipulate the markets through high-frequency trading; the amended complaint asserts claims against us under Section 10(b) of the Exchange Act and Rule 10b-5, as well as under Section 6(b) of the Exchange Act. The plaintiffs seek injunctive and monetary relief of an unspecified amount. We filed a motion to dismiss the amended complaint on November 3, 2014. In response, the plaintiffs filed a second amended complaint on November 24, 2014, which names the same defendants and alleges essentially the same violations. We then filed a motion to dismiss the second amended complaint on January 23, 2015. On August 26, 2015, the district court entered an order dismissing the second amended complaint in its entirety. The plaintiffs appealed the judgment of dismissal to the United States Court of Appeals for the Second Circuit (although opting not to appeal the dismissal with respect to Barclays PLC or the dismissal of claims under Section 6(b) of the Exchange Act). On December 19, 2017, the Second Circuit issued an opinion vacating the district court's judgment of dismissal and remanding to the district court for further proceedings. On May 18, 2018, the exchanges filed a motion to dismiss the amended complaint, raising issues not addressed in the proceedings to date. On May 28, 2019, the district court denied the exchanges' renewed motion to dismiss. The parties are currently engaged in the discovery process. On June 17, 2019, the exchanges filed a motion to certify the district court's order for immediate review by the Second Circuit and on July 16, 2019, the district court denied the motion. Given the preliminary nature of the proceedings, we are unable to estimate what, if any, liability may result from this litigation. However, we believe that the claims are without merit and will continue to litigate vigorously.

Nasdaq Commodities Clearing Default

During September 2018, a clearing member of Nasdaq Clearing's commodities market was declared in default. In December 2018, the SFSA initiated a review of Nasdaq Clearing. We have been cooperating fully with the SFSA in their review. On January 27, 2021, the SFSA issued a warning combined with an administrative fine of approximately $36 million (SEK 300 million) to Nasdaq Clearing relating to its review. Nasdaq Clearing has assessed the SFSA's decision and has decided to appeal the decision to the Administrative Court. See "Nasdaq Commodities Clearing Default," of Note 15, "Clearing Operations," for further information.

Other Matters

Except as disclosed above and in prior reports filed under the Exchange Act, we are not currently a party to any litigation or proceeding that we believe could have a material adverse effect on our business, consolidated financial condition, or operating results. However, from time to time, we have been threatened with, or named as a defendant in, lawsuits or involved in regulatory proceedings.

In the normal course of business, Nasdaq discusses matters with its regulators raised during regulatory examinations or otherwise subject to their inquiries. Management believes that censures, fines, penalties or other sanctions that could result from any ongoing examinations or inquiries will not have a material impact on its consolidated financial position or results of operations. However, we are unable to predict the outcome or the timing of the ultimate resolution of these matters, or the potential fines, penalties or injunctive or other equitable relief, if any, that may result from these matters.

Tax Audits

We are engaged in ongoing discussions and audits with taxing authorities on various tax matters, the resolutions of which are uncertain. Currently, there are matters that may lead to assessments, some of which may not be resolved for several years. Based on currently available information, we believe we have adequately provided for any assessments that could result from those proceedings where it is more likely than not that we will be assessed. We review our positions on these matters as they progress. See "Tax Audits," of Note 17, "Income Taxes," for further discussion.

19. Business Segments

We manage, operate and provide our products and services in four business segments: Market Services, Corporate Platforms, Investment Intelligence and Market Technology. See Note 1, "Organization and Nature of Operations," for further discussion of our reportable segments.

Our management allocates resources, assesses performance and manages these businesses as four separate segments. We

evaluate the performance of our segments based on several factors, of which the primary financial measure is operating income. Results of individual businesses are presented based on our management accounting practices and structure. Our chief operating decision maker does not review total assets or statements of income below operating income by segments as key performance metrics; therefore, such information is not presented below.

The following table presents certain information regarding our business segments for the years ended December 31, 2020, 2019 and 2018:

	Market Services	Corporate Platforms	Investment Intelligence	Market Technology	Corporate Items	Consolidated
			(in millions)			
Year Ended December 31, 2020						
Total revenues	$ 3,832	$ 530	$ 908	$ 357	$ —	$ 5,627
Transaction-based expenses	(2,724)	—	—	—	—	(2,724)
Revenues less transaction-based expenses	1,108	530	908	357	—	2,903
Depreciation and amortization	78	34	57	$ 33	—	202
Operating income (loss)	687	190	580	32	(255)	1,234
Purchase of property and equipment	63	30	52	43	—	188
Year Ended December 31, 2019						
Total revenues	$ 2,639	$ 496	$ 779	$ 338	$ 10	$ 4,262
Transaction-based expenses	(1,727)	—	—	—	—	(1,727)
Revenues less transaction-based expenses	912	496	779	338	10	2,535
Depreciation and amortization	74	34	52	30	—	190
Operating income (loss)	516	178	490	54	(221)	1,017
Purchase of property and equipment	30	27	30	40	—	127
Year Ended December 31, 2018						
Total revenues	$ 2,709	$ 487	$ 714	$ 270	$ 97	$ 4,277
Transaction-based expenses	(1,751)	—	—	—	—	(1,751)
Revenues less transaction-based expenses	958	487	714	270	97	2,526
Depreciation and amortization	95	36	51	21	7	210
Operating income (loss)	544	155	460	34	(165)	1,028
Purchase of property and equipment	28	29	17	37	—	111

Certain amounts are allocated to corporate items in our management reports as we believe they do not contribute to a meaningful evaluation of a particular segment's ongoing operating performance. These items, which are shown in the table below, include the following:

Amortization expense of acquired intangible assets: We amortize intangible assets acquired in connection with various acquisitions. Intangible asset amortization expense can vary from period to period due to episodic acquisitions completed, rather than from our ongoing business operations. As such, if intangible asset amortization is included in performance measures, it is more difficult to assess the day-to-day operating performance of the segments, and the relative operating performance of the segments between periods. Management does not consider intangible asset amortization expense for the purpose of evaluating the performance of our segments or their managers or when making decisions to allocate resources. Therefore, we believe performance measures excluding intangible asset amortization expense provide management with a useful representation of our segments' ongoing activity in each period.

Merger and strategic initiatives expense: We have pursued various strategic initiatives and completed acquisitions and divestitures in recent years that have resulted in expenses which would not have otherwise been incurred. These expenses generally include integration costs, as well as legal, due diligence and other third party transaction costs. The frequency and the amount of such expenses vary significantly based on the size, timing and complexity of the transaction. Management does not consider merger and strategic initiatives expense for the purpose of evaluating the performance of our segments or their managers or when making decisions to allocate resources. Therefore, we believe performance measures excluding merger and strategic initiatives expense provide management with a useful representation of our segments' ongoing activity in each period.

Restructuring charges: We initiated the transition of certain technology platforms to advance our strategic opportunities as a technology and analytics provider and continue the re-alignment of certain business areas. See Note 20, “Restructuring Charges,” for further discussion of our 2019 restructuring plan. We believe performance measures

excluding restructuring charges provide management with a useful representation of our segments' ongoing activity in each period.

2019 and 2018 divestitures: We have included in corporate items the revenues and expenses of BWise and the Public Relations Solutions and Digital Media Services businesses which were part of the IR & ESG Services business within our Corporate Platforms segment as BWise was sold in March 2019 and the Public Relations Solutions and Digital Media Services businesses were sold in April 2018.

Other significant items: We have included certain other charges or gains in corporate items, to the extent we believe they should be excluded when evaluating the ongoing operating performance of each individual segment. Other significant items included:

- for the year ended December 31, 2020, charitable donations made to the Nasdaq Foundation, COVID-19 response and relief efforts, and social justice charities and charges associated with duplicative rent and impairment of leasehold assets related to our global headquarter move;
- for the years ended December 31, 2020 and 2019, a provision for notes receivable associated with the funding of technology development for the CAT, a loss on extinguishment of debt, and a tax reserve for certain prior year examinations;
- for the years ended December 31, 2020, 2019 and 2018, certain litigation costs which are recorded in professional and contract services expense in the Consolidated Statements of Income; and
- for the year ended December 31, 2018, charges related to uncertain positions pertaining to sales and use tax and value added tax and charges associated with the clearing default that occurred in September 2018.

The above charges are recorded in general, administrative and other expense in our Consolidated Statements of Income unless noted otherwise.

Accordingly, we do not allocate these costs for purposes of disclosing segment results because they do not contribute to a meaningful evaluation of a particular segment's ongoing operating performance.

* * * * * *

A summary of our Corporate Items is as follows:

	Year End December 31,		
	2020	2019	2018
	(in millions)		
Revenues - divested business	$ —	$ 10	$ 97
Expenses:			
Amortization expense of acquired intangible assets	103	101	109
Merger and strategic initiatives expense	33	30	21
Restructuring charges	48	39	—
Clearing default loss	—	—	31
Provision for notes receivable	6	20	—
Extinguishment of debt	36	11	—
Charitable donations	17	—	—
Expenses - divested businesses	—	8	83
Other	12	22	18
Total expenses	255	231	262
Operating loss	$ (255)	$ (221)	$ (165)

For further discussion of our segments' results, see "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations-Segment Operating Results."

Geographic Data

The following table presents total revenues and property and equipment, net by geographic area for 2020, 2019 and 2018. Revenues are classified based upon the location of the customer. Property and equipment information is based on the physical location of the assets.

	Total Revenues	Property and Equipment, Net
	(in millions)	
2020:		
United States	$ 4,664	$ 311
All other countries	963	164
Total	$ 5,627	$ 475
2019:		
United States	$ 3,409	$ 250
All other countries	853	134
Total	$ 4,262	$ 384
2018:		
United States	$ 3,379	$ 224
All other countries	898	152
Total	$ 4,277	$ 376

Our property and equipment, net for all other countries primarily includes assets held in Sweden. No single customer accounted for 10.0% or more of our revenues in 2020, 2019 and 2018.

20. Restructuring Charges

In September 2019, we initiated the transition of certain technology platforms to advance the company's strategic opportunities as a technology and analytics provider and continue the re-alignment of certain business areas. In connection with these restructuring efforts, we are retiring certain elements of our marketplace infrastructure and technology product offerings as we implement NFF and other technologies internally and externally. This represents a fundamental shift in our strategy and technology as well as executive re-alignment. As a result of these actions, we expect to incur approximately $100 million in pre-tax charges over a two year period related primarily to third-party consulting costs and non-cash items such as asset impairments and accelerated depreciation. Severance and employee-related charges also will be incurred. Restructuring charges are recorded on restructuring plans that have been committed to by management and are, in part, based upon management's best estimates of future events.

The following table presents a summary of the 2019 restructuring plan charges in the Consolidated Statements of Income for the years ended December 31, 2020 and 2019 which primarily consisted of consulting services, asset impairment charges primarily related to capitalized software that was retired, and accelerated depreciation expense on certain assets as a result of a decrease in their useful life.

	Year End December 31,	
	2020	2019
	(in millions)	
Asset impairment charges and accelerated depreciation expense	$ 14	$ 26
Consulting services	22	2
Contract terminations	3	2
Severance and employee-related costs	3	8
Other	6	1
Total restructuring charges	$ 48	$ 39

21. Subsequent Events

Sale of U.S. Fixed Income Business

On February 2, 2021, we announced that we entered into a Purchase Agreement to sell NFI to an affiliate of Tradeweb Markets Inc., or Tradeweb. Pursuant to the Purchase Agreement, an affiliate of Tradeweb will acquire all of the outstanding equity interests in certain subsidiaries of Nasdaq and certain assets and liabilities related to the transaction. The closing is subject to regulatory approvals and the satisfaction of other customary conditions, and is expected to occur later in 2021.

As discussed in "Non-Cash Contingent Consideration," of Note 18, "Commitments, Contingencies and Guarantees," as part of the purchase price consideration of a prior acquisition, Nasdaq has a contingent obligation to issue 992,247 shares of Nasdaq common stock annually through 2027. Upon the consummation of the transaction with Tradeweb, the aggregate number of Nasdaq shares that remain subject to this contingent obligation is expected to be reduced (pursuant to the discounting adjustment provisions set forth in the original purchase agreement for Nasdaq's acquisition of the business) and accelerated, which would result in an issuance of an aggregate of approximately 6.2 million shares of Nasdaq common stock.

Nasdaq intends to use the proceeds from the sale of NFI, available tax benefits and NFI working and clearing capital, as well as other sources of cash to repurchase shares in order to offset dilution. The proceeds from the sale, the remaining tax benefits related to the 2013 purchase, and the working and clearing capital to be released upon closing of the transaction are estimated to total approximately $700 million.

To facilitate these repurchases, the board of directors has authorized an increase to the share repurchase program of an additional $1 billion, subject to the closing of the NFI sale and the acceleration of the share issuance.

Acquisition of Verafin

For further discussion of our acquisition of Verafin, see "Acquisition of Verafin," of Note 4, "Acquisitions and Divestiture."

Nasdaq Commodities Clearing Default

During September 2018, a clearing member of Nasdaq Clearing's commodities market was declared in default. In December 2018, the SFSA initiated a review of Nasdaq Clearing. We have been cooperating fully with the SFSA in their review. On January 27, 2021, the SFSA issued a warning combined with an administrative fine of approximately $36 million (SEK 300 million) to Nasdaq Clearing relating to its review. Nasdaq Clearing has assessed the SFSA's decision and has decided to appeal the decision to the Administrative Court. See “Nasdaq Commodities Clearing Default,” of Note 15, “Clearing Operations,” for further information.

Exhibit 2.2

SHARE PURCHASE AGREEMENT

by and among

Nasdaq, inc.,

OSPREY ACQUISITION CORPORATION,

VERAFIN HOLDINGS INC.,

THE UNDERSIGNED ENTITIES AND INDIVIDUALS,

and

SHAREHOLDER REPRESENTATIVE SERVICES LLC

(solely in its capacity as the "Representative" of the Sellers)

November 18, 2020

Table of Contents

Page

Page

ANNEXES

INDEX OF EXHIBITS

Index of Defined Terms

SHARE PURCHASE AGREEMENT

This SHARE PURCHASE AGREEMENT (this "Agreement"), dated as of November 18, 2020, is made by and among Nasdaq, Inc., a Delaware corporation ("Parent"), Osprey Acquisition Corporation, a corporation existing under the CBCA and a wholly owned subsidiary of Parent ("Buyer" and collectively with Parent, "Buyer Parties"), Verafin Holdings Inc., a corporation existing under the CBCA (the "Company"), the undersigned Persons listed on Annex C (such Persons, together with (a) any Person holding Common Shares (or that acquires Common Shares pursuant to the exercise of Options after the execution hereof, as contemplated by Section 1.03(e)) that executes a Joinder Agreement after the date hereof agreeing to be bound as a "Seller" by the terms and conditions herein and (b) any Person holding Common Shares on behalf of whom the Company, as attorney-in-fact, executes this Agreement after the date hereof pursuant to Section 2.03, collectively, "Sellers") and Shareholder Representative Services LLC, a Colorado limited liability company, solely in its capacity as the representative, agent and attorney-in-fact of the Sellers (the "Representative"). Buyer Parties, the Company, Sellers, and, solely in its capacity as and solely to the extent applicable, the Representative, shall each be referred to herein from time to time as a "Party" and collectively as the "Parties." Capitalized terms used and not otherwise defined herein shall have the meanings set forth in Article XII below.

RECITALS:

WHEREAS, the Parties desire that: (a) Sellers sell, transfer and convey to Buyer, and Buyer purchase and acquire from Sellers, all of the issued and outstanding Common Shares, for the consideration and on the terms and subject to the conditions set forth herein (the "Acquisition"); and (b) immediately prior to the Closing, all options to acquire Common Shares issued under the Equity Incentive Plan (each, an "Option", and collectively, the "Options"), will be surrendered for consideration from the Company, so that Buyer owns 100% of the equity of the Company on a fully diluted basis after the Acquisition;

WHEREAS, immediately after the Acquisition, the Buyer and the Company will be amalgamated to form an amalgamated corporation under the CBCA ("Newco") with the then-existing shareholders of the Buyer receiving shares in the capital of Newco (the "Amalgamation");

WHEREAS, promptly following the Amalgamation, Newco will apply to continue Newco so that it is organized in British Columbia;

WHEREAS, concurrently with the execution of this Agreement, the Key Employees, Parent and the Company are executing an Escrow and Management Incentive Agreement (the "Escrow and Management Incentive Agreement"), pursuant to which (a) each Key Employee agrees that, at the Closing, it shall place into escrow fifteen percent (15%) of the aggregate proceeds, net of taxes, that such Key Employee receives from the sale of the Common Shares held by such Key Employee pursuant to the Acquisition, with the amount placed into such escrow to be released over a three-year period on the terms and conditions set forth in the Escrow and Management Incentive Agreement; and (b) each Key Employee shall have an opportunity to earn additional amount from the Company depending on performance-based milestones set forth in the Escrow and Management Incentive Agreement;

WHEREAS, the Parent has obtained an insurance policy that provides coverage for the benefit of the Parent or its designee as named insured for breaches of any of the representations and warranties of the Company and the Sellers set forth herein (the "R&W Insurance Policy").

NOW, THEREFORE, in consideration of the mutual agreements and covenants contained herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties, intending to be legally bound, hereby agree as follows:

Article 1

PURCHASE AND SALE

1.01 Purchase and Sale of Common Shares. On the terms and subject to the conditions set forth herein, at the Closing, the Sellers shall each sell, assign, transfer and convey to the Buyer, and the Buyer shall purchase and acquire from Sellers, all outstanding Common Shares, free and clear of any Liens.

1.02 Consideration. The consideration for each Common Share to be acquired in the Acquisition shall be an amount in cash in U.S. dollars equal to the sum of (i) the applicable Per Share Closing Consideration for such Common Share, and (ii) the Per Share Additional Consideration, if any (such sum, the "Per Share Consideration").

1.03 Effect on Options.

a. Upon the terms and subject to the conditions of this Agreement, immediately prior to the Closing, the Company shall (i) accelerate the vesting of all outstanding unvested Options, (ii) pay to each holder of In-the-Money Options that has elected to surrender his or her Options to the Company in accordance with Section 1.03(c) a cash payment in exchange therefor equal to the Closing Option Consideration (it being understood that any remaining Option Consideration shall be payable in accordance with Sections 1.06 and 1.07), and (iii) cancel and extinguish each Option that is not an In-the-Money Option, without any payment of any consideration therefor. The Company shall, prior to the Closing, take all actions necessary in order to effectuate the actions contemplated by this Section 1.03 and to ensure that no holder of Options shall have any rights on or after the Closing with respect to any Options, except as expressly provided in this Section 1.03; *provided* that such actions shall expressly be conditioned upon the consummation of the Acquisition and each of the other Transactions and shall be of no force or effect if this Agreement is terminated.

b. The Closing Option Consideration payable by the Company to the holders of In-the-Money Options pursuant to Section 1.03(a) above shall be paid through the Company's payroll system within ten days following the Closing. Any remaining portion of the Option Consideration payable to the holders of In-the-Money Options shall be paid by the Company through the Company's

payroll system promptly following each such time as any such remaining portion of the Option Consideration becomes payable to such holder, if any.

c. Not less than ten (10) Business Days prior to the Closing Date, the Company shall (i) notify all holders of outstanding Options that such Options will terminate on the Closing without any payment of any consideration therefor other than any payment due in respect of In-the-Money Options in accordance with Section 1.03(a) and (ii) provide each holder of In-the-Money Options with the right to surrender his or her options to the Company in exchange for a cash payment pursuant to this Section 1.03 by executing and delivering to the Company notices (in a form reasonably satisfactory to Parent) of surrender of their Options no later than five (5) Business Days prior to the Closing Date (the "Option Surrender Notices"). The Company shall promptly deliver to Buyer, and in any case not less than three (3) Business Days prior to the Closing Date, copies of all Option Surrender Notices.

d. The Company shall, and Buyer shall cause the Company to, make an election under subsection 110(1.1) of the *Income Tax Act* (Canada), as amended (the "ITA") in connection with the surrender of Options in accordance with this Section 1.03 and provide evidence in writing of such election in accordance with the prescribed requirements of the ITA.

e. No Person who is not a Seller may exercise any Option after the execution of this Agreement unless such Person executes a Joinder Agreement concurrently with such exercise.

1.04 Closing Calculations. Not less than five (5) Business Days prior to the anticipated Closing Date, the Company shall deliver to the Parent a statement setting forth (a) an estimated consolidated balance sheet of the Group Companies as of the Reference Time, (b) a good-faith calculation of the Company's estimate of Cash (the "Estimated Cash"), Closing Indebtedness (the "Estimated Indebtedness"), Net Working Capital (the "Estimated Net Working Capital"), Transaction Expenses (the "Estimated Transaction Expenses"), Company Transaction Expenses (the "Estimated Company Transaction Expenses"), Sellers Transaction Expenses (the "Estimated Sellers Transaction Expenses") and (c) the Closing Consideration, the Closing Payment Amount (including the 111(4)(e) Amount and Reorganization Tax Liability) and the aggregate Closing Option Consideration (the "Estimated Closing Statement"), in each case with any amounts in Canadian dollars converted to U.S. dollars at the Applicable Spot Rate as of the fifth (5th) Business Day prior to the anticipated Closing Date. The Company shall make its accountants and other representatives available during the five (5) Business Days prior to the anticipated Closing Date to cooperate in good faith with the Parent and respond to any questions or requests that Parent may have with respect to the Estimated Closing Statement. After delivery of the Estimated Closing Statement, the Parent and its accountants and other representatives shall be permitted full access at reasonable times to review the Company's and its Subsidiaries' books and records and any work papers (subject to the Parent and its representatives entering into any reasonable undertakings required by the Company's accountants in connection therewith) related to the preparation of the Estimated Closing Statement. The Parent and its accountants and other representatives may make reasonable inquiries of the Company, its Subsidiaries and their respective accountants and employees regarding questions concerning or disagreements with the Estimated Closing Statement arising in the course of their review thereof, and the Company shall use its, and shall cause its Subsidiaries to use their, commercially reasonable efforts to cause any such accountants and employees to cooperate with and respond to such inquiries. Parent may object to any

amounts set forth on the Estimated Closing Statement prior to the Business Day prior to the anticipated Closing Date, and the Company will consider in good faith any such objections and cooperate in good faith with the Parent to resolve any such objections and, if applicable, revise the Estimated Closing Statement to reflect any such resolutions. The Estimated Closing Statement and the determinations contained therein shall be prepared in accordance with this Agreement and the Accounting Principles. From the Reference Time until the Closing, the Company shall not, and shall not permit any other Group Company to, make any dividend or distribution of Cash or incur any Indebtedness or Transaction Expenses or use any Cash to pay any Transaction Expenses or any amount to any Seller Related Party or to repay any Indebtedness. If, as a result of a breach of the preceding sentence, Cash, Transaction Expenses or Indebtedness shall change between the Reference Time and the Closing, such changes shall be reflected in the calculation of Cash, Transaction Expenses and/or Closing Indebtedness (as the case may be) for purposes of the Estimated Closing Statement and the Closing Statement. Exhibit A sets forth an illustrative statement (the "Reference Statement") prepared in good faith by the Company in cooperation with the Parent setting forth the various line items used (or to be used) in, and illustrating as if the Closing Date was the date set forth therein, the calculation of Cash, Closing Indebtedness and Net Working Capital prepared and calculated in accordance with this Agreement. The Reference Statement shall be for illustrative purposes only and only be used to govern format.

1.05 Final Closing Calculation. As promptly as reasonably possible, but in any event within sixty (60) days after the Closing Date, the Parent shall deliver to the Representative a statement showing the Cash, Closing Indebtedness, Net Working Capital, Transaction Expenses, Company Transaction Expenses, Sellers Transaction Expenses (the "Closing Statement"), in each case with any amounts in Canadian dollars converted to U.S. dollars at the Applicable Spot Rate as of the fifth (5^{th}) Business Day prior to the anticipated Closing Date. Cash, Closing Indebtedness, Net Working Capital, Transaction Expenses, Company Transaction Expenses and Sellers Transaction Expenses shall be determined in accordance with this Agreement and the Accounting Principles. The calculations of Cash, Closing Indebtedness and Net Working Capital in the Closing Statement will disregard any effects on the Group Companies (including the assets and liabilities of the Group Companies) as a result of any financing or refinancing arrangements entered into by the Parent or its Affiliates or any other transaction entered into by the Parent or its Affiliates in connection with the consummation of the Transactions. For the avoidance of doubt, the 111(4)(e) Amount and the Reorganization Tax Liability shall not be adjusted in the Closing Statement. After delivery of the Closing Statement, the Representative and its accountants and other representatives shall be permitted full access at reasonable times to review the Company's and its Subsidiaries' books and records and any work papers (subject to the Representative and its representatives entering into any undertakings required by Parent's accountants in connection therewith) related to the preparation of the Closing Statement. The Representative and its accountants and other representatives may make reasonable inquiries of the Parent, the Company, its Subsidiaries and their respective accountants and employees regarding questions concerning or disagreements with the Closing Statement arising in the course of their review thereof, and the Parent shall use its, and shall cause the Company and its Subsidiaries to use their, commercially reasonable efforts to cause any such accountants and employees to cooperate with and respond to such inquiries. If the Representative has any objections to the Closing Statement, the Representative shall deliver to the Parent a written statement (an "Objections Statement") stating that the Representative believes the Closing Statement contains mathematical errors or was not prepared in

accordance with this Agreement or the Accounting Principles and specifying in reasonable detail each item that the Representative disputes (each, a "Disputed Item") and the amount in dispute for each Disputed Item and the reasons supporting the Representative's positions. The Representative shall not challenge the Closing Statement on any other basis, and the Representative shall be deemed to have agreed with all other items and amounts contained in the Closing Statement delivered pursuant to the preceding sentence. If an Objections Statement is not delivered to the Parent within forty-five (45) days following the date of delivery of the Closing Statement, the Closing Statement shall be final, binding and non-appealable by the Parties. The Representative and the Parent shall negotiate in good faith to resolve any Disputed Items, but if they do not reach a final resolution within fifteen (15) days after the delivery of the Objections Statement, the Representative and the Parent shall submit such dispute to a nationally recognized independent accounting firm reasonably acceptable to the Parent and the Representative (the "Dispute Resolution Firm"). Any further submissions to the Dispute Resolution Firm must be written and delivered to each party to the dispute. The Dispute Resolution Firm shall consider only those items and amounts that are identified in the Objections Statement as being Disputed Items and that the Representative and the Parent were unable to resolve. The Dispute Resolution Firm's determination shall be based solely on the definitions of Cash, Closing Indebtedness, Net Working Capital, Transaction Expenses, Company Transaction Expenses and Sellers Transaction Expenses contained herein and the provisions of this Agreement, including this Section 1.05 and the Accounting Principles. The Representative and the Parent shall use their commercially reasonable efforts to cause the Dispute Resolution Firm to resolve all disagreements as soon as practicable. With respect to each Disputed Item, such determination, if not in accordance with the position of either the Parent or the Representative, shall not be in excess of the higher, nor less than the lower, of the disputed amounts set forth in the Closing Statement and the Objections Statement. Further, the Dispute Resolution Firm's determination shall be based solely on the presentations by the Parent and the Representative that are in accordance with the terms and procedures set forth in this Agreement (*i.e.*, not on the basis of an independent review). The resolution of the dispute by the Dispute Resolution Firm shall be final and binding on and non-appealable by the Parties hereto. The costs and expenses of the Dispute Resolution Firm shall be allocated by the Dispute Resolution Firm between the Parent, on the one hand, and the Representative (on behalf of the Sellers), on the other hand, based upon the percentage that the portion of the contested amount not awarded to each Party bears to the amount actually contested by such Party. For example, if the Representative claims Closing Consideration is $1,000 greater than the amount determined by the Parent, and the Parent contests only $500 of the amount claimed by the Representative, and if the Dispute Resolution Firm ultimately resolves the dispute by awarding the Representative (for the benefit of the Sellers) $300 of the $500 contested, then the costs and expenses of arbitration shall be allocated sixty percent (60%) (*i.e.*, 300 ÷ 500) to the Parent and forty percent (40%) (*i.e.*, 200 ÷ 500) to the Representative (for the benefit of the Sellers). The date on which the Representative is deemed to have agreed to, the Representative and Parent agree to, or the Dispute Resolution Firm determines, the Final Consideration, shall be the "Determination Date".

1.06 Post-Closing Adjustment Payment.

a. If the Final Consideration exceeds the Closing Consideration (the lesser of such excess and the Escrow Amount, the "Difference"), the Parent shall promptly (but in any event within

two (2) Business Days) following the Determination Date deliver to (i) the Paying Agent (for distribution to the Company Shareholders) the Company Shareholder Percentage of the Difference by wire transfer of immediately available funds to an account designated in writing by the Representative to the Parent and (ii) the Company (for distribution to the holders of the In-the-Money Options pursuant to Section 1.03(b)) the Optionholder Percentage of the Difference by wire transfer of immediately available funds to an account designated in writing by the Company. Without limiting release of any Remaining Escrow Amount in accordance with Section 1.07(b), in no event shall the amount delivered by the Parent pursuant to this Section 1.06(a) exceed a cash amount equal to the Escrow Amount.

b. If the Final Consideration is less than the Closing Consideration, the Parent and the Representative (on behalf of the Sellers) shall promptly (but in any event within two (2) Business Days) following the Determination Date deliver a joint written instruction to the Escrow Agent to pay to the Parent the absolute value of such difference by wire transfer of immediately available funds from the Escrow Account to an account designated in writing by the Parent to the Representative and the Escrow Agent. Absent fraud or willful misconduct, the liability of the Sellers for any amounts due to Parent pursuant to this Section 1.06(b) shall not exceed the Escrow Amount.

1.07 Escrow Account

a. At the Closing, pursuant to Section 2.02(c), the Parent shall deposit $5,000,000 (such amount, the "Escrow Amount") in immediately available funds into an escrow account (the "Escrow Account") to be established and maintained by the Escrow Agent pursuant to the terms and conditions of an escrow agreement, in a customary form to be agreed to between the Escrow Agent, Parent, the Company and the Representative, in each case, acting reasonably, to be entered into on the Closing Date by the Parent, the Representative and the Escrow Agent (the "Escrow Agreement"). Absent fraud or willful misconduct, the Escrow Account shall serve as security for, and the sole source of payment of, the Parent's right to payment pursuant to Section 1.06(b). All fees, costs and expenses of the Escrow Agent pursuant to the Escrow Agreement shall be paid from the Escrow Account.

b. Promptly following the Determination Date, if there are any amounts remaining in the Escrow Account after the payment of the amounts required pursuant to Section 1.06(b) (the "Remaining Escrow Amount"), the Parent and the Representative shall promptly (but in any event within two (2) Business Days) following the Determination Date deliver a joint written instruction to the Escrow Agent instructing the Escrow Agent to deliver to (i) the Paying Agent (for distribution to the Company Shareholders) the Company Shareholder Percentage of the Remaining Escrow Amount by wire transfer of immediately available funds to an account designated in writing by the Representative to the Parent and (ii) the Company (for distribution to the holders of the In-the-Money Options pursuant to Section 1.03(b)) the Optionholder Percentage of the Remaining Escrow Amount by wire transfer of immediately available funds to an account designated in writing by the Company.

1.08 Withholding. Each Party acknowledges and agrees that under the ITA and any other provision of applicable Tax Law, assuming that the representations and warranties in this Agreement are true and correct, other than with respect to the payment of the Closing Option Consideration, no consideration payable, issuable or otherwise deliverable pursuant to this Agreement will be subject to withholding Taxes. Except with respect to the Closing Option Consideration, to the extent that a Party becomes aware that any consideration payable under this Agreement may be subject to withholding

Taxes, it shall promptly notify the other Party and the Parties shall cooperate in good faith to minimize or eliminate the amount of such withholding Taxes. Notwithstanding the foregoing, each of the Parent, the Buyer, the Escrow Agent, the Company and the Paying Agent shall be entitled to deduct and withhold from any amounts otherwise payable to any Person pursuant to this Agreement such amounts as are required to be deducted or withheld with respect to the making of such payment under the ITA, the Code or any other applicable Tax Law. To the extent that any amounts are so deducted or withheld and timely paid over to the applicable Tax authority, such deducted and withheld amounts shall be treated for all purposes of this Agreement as having been paid to the Person in respect of which such deduction or withholding was made. The Parent, the Buyer, the Escrow Agent, the Company or the Paying Agent shall remit or cause to be remitted, such withheld amounts to the appropriate Governmental Entity.

ARTICLE II

THE CLOSING

2.01 The Closing. The closing of the Transactions (the "Closing") shall take place by electronic delivery or release of documents, at 10:00 a.m. New York City time on the third (3rd) Business Day following satisfaction or due waiver of all of the closing conditions set forth in Article VIII hereof (other than those to be satisfied at the Closing itself, but subject to the satisfaction or waiver of such conditions) or on such other date and/or time as is mutually agreed in writing by the Parent and the Company. The date and time of the Closing are referred to herein as the "Closing Date."

2.02 The Closing Transactions. Subject to the terms and conditions set forth in this Agreement, the Parties shall consummate the following transactions at or prior to the Closing:

a. the Parent shall cause Buyer to deliver to the Paying Agent a cash amount by wire transfer of immediately available funds into an account designated by the Representative equal to the Closing Payment Amount payable to the Company Shareholders at the Closing for distribution to such Company Shareholders in accordance with Section 1.02(a) (*provided* that any Option Loans shall be automatically repaid to the Company at the Closing out of the portion of the Closing Payment Amount otherwise payable to the applicable Sellers);

b. in accordance with Section 1.03, the Parent shall cause Buyer to advance the Closing Option Consideration set forth in the Estimated Closing Statement by wire transfer of immediately available funds to the account designated in writing by the Company, and the Company shall use such funds to pay the Closing Option Consideration in accordance with Section 1.03(a);

c. the Parent shall cause Buyer to deposit the Escrow Amount into the Escrow Account in accordance with the Escrow Agreement;

d. in accordance with Section 11.01(e), the Parent shall cause the Buyer to deposit the Expense Fund to an account designated by the Representative;

e. the Parent shall cause Buyer to advance amounts as one or more loans to the applicable Group Company and, at their direction and on their behalf, use such funds to repay, or

cause to be repaid, on behalf of the Group Companies, the Payoff Amount by wire transfer of immediately available funds to the account(s) designated in the Payoff Letter;

f. the Parent and the Company shall make such other deliveries as are required by Article VIII hereof;

g. the Parent shall cause Buyer to advance amounts as one or more loans to the applicable Group Company and, at their direction and on their behalf, use such funds to pay, or cause to be paid, on behalf of the Company, the Company Transaction Expenses by wire transfer of immediately available funds as directed by the Company, as such amounts are set forth in the pay-off, termination and discharge letters delivered to the Parent by the Company setting forth the Company Transaction Expenses at least three (3) Business Days prior to the Closing Date, which letters shall be in form and substance reasonably satisfactory to the Parent; and

h. the Parent shall cause Buyer to pay, on behalf of the applicable Sellers, the Sellers Transaction Expenses by wire transfer of immediately available funds as directed by the Company, as such amounts are set forth in the pay-off, termination and discharge letters delivered to the Parent by the Company setting forth the Sellers Transaction Expenses at least three (3) Business Days prior to the Closing Date, which letters shall be in form and substance reasonably satisfactory to the Parent (it being understood that the amounts paid on behalf of the applicable Sellers pursuant to this Section 2.02(h) constitute additional consideration for such Sellers' Common Shares).

2.03 Drag Along Notice. As promptly as practicable and in any event within seven (7) Business Days following the date hereof, the Company shall, on behalf of the Sellers, prepare and deliver a letter (a "Drag Along Notice")) to each holder of Common Shares, providing such Persons with a brief information statement regarding the Company and the Transactions. The Company shall afford the Buyer a reasonable opportunity to review and comment upon such letter prior to such delivery and shall consider in good faith the Buyer's comments with respect to the Drag Along Notice. The Drag Along Notice shall expressly require such holder to sell his, her or its Common Shares pursuant to the terms herein. If, within ten (10) Business Days following the delivery of the Drag-Along Notice, any such holder has not voluntarily executed a Joinder Agreement, then (i) the Company shall execute such Joinder Agreement and any other required documentation on behalf of such holder and as such holder's attorney-in-fact in accordance with the terms of the Prior Shareholders' Agreement and (ii) such holder shall be deemed a "Seller" hereunder and shall be bound by the terms and conditions herein with respect to his, her or its Common Shares.

ARTICLE III

REPRESENTATIONS AND WARRANTIES OF THE COMPANY

Except as set forth in writing in the corresponding section of Article III of the Company Disclosure Schedules, or in another section of Article III of the Company Disclosure Schedules to the extent that the relevance thereof would be reasonably apparent on its face that such disclosure is applicable to such section of Article III of the Company Disclosure Schedules, the Company represents and warrants to the Parent and the Buyer, as of the date hereof and as of the Closing, as follows:

3.01 Organization and Power. The Company is a corporation duly organized, validly existing and in good standing under the Laws of Canada. The Company has all requisite corporate power and authority and all authorizations, licenses and permits necessary to own, lease and operate its properties and assets as they are now being owned, leased and operated and to carry on its businesses as now conducted. The Company is qualified to do business and is in good standing (where such concept is recognized) in every jurisdiction where it is required to qualify, except where the failure to be so qualified or in good standing would not reasonably be expected, individually or in the aggregate, to have a Material Adverse Effect. The Company has delivered to the Parent true and complete copies of the Organizational Documents, and the Company is not in violation of any provision of such Organizational Documents.

3.02 Subsidiaries. Schedule 3.02 accurately sets forth each Subsidiary of the Company, its name, place of incorporation or formation, and if not wholly owned directly or indirectly by the Company, the record ownership as of the date of this Agreement of all of the shares in the capital of each such Subsidiary or other equity interests issued thereby. Each Subsidiary is duly organized, validly existing and in good standing under the Laws of the jurisdiction of its incorporation or organization. Each Subsidiary has all requisite corporate, or other legal entity, as the case may be, power and authority and all authorizations, licenses and permits to own, lease and operate its properties and assets as they are now being owned, leased and operated and to carry on its businesses as now conducted. Each Subsidiary is qualified to do business and is in good standing (where such concept is recognized) in every jurisdiction in which it is required to qualify, except in each such case where the failure to hold such power and authority, authorizations, licenses and permits or to be so qualified and in good standing would not reasonably be expected, individually or in the aggregate, to have a Material Adverse Effect. The Company has delivered to the Parent true and complete copies of the organizational documents of each of the Company's Subsidiaries as currently in effect, and none of such Subsidiaries is in violation of any provision of such organizational documents. Neither the Company nor any of its Subsidiaries owns or holds the right (or is, or may under any existing Contract become, subject to any obligation) to acquire any shares, partnership interest or joint venture interest or other equity ownership interest in any corporation, organization or entity that is not a Group Company.

3.03 Authorization; No Breach; Valid and Binding Agreement

a. The execution, delivery and performance of this Agreement by the Company and the consummation of the Transactions, including the Acquisition, have been duly and validly authorized by all requisite corporate action and action by the holders of Common Shares, Options or any other interests in the Company, and no other corporate proceedings on its part or on the part of any such holder, whether under the Organizational Documents, the Prior Shareholders' Agreement or otherwise, are necessary to authorize the execution, delivery or performance of this Agreement by the Company and the Sellers. Upon consummation of the Acquisition, the Buyer will own 100% of the equity of the Company on a fully diluted basis free and clear of any Liens and no other Person will own any equity interests in the Company or any options or other rights in respect thereof.

b. Except for compliance with and filings under the Investment Canada Act, and the HSR Act, the execution, delivery, performance and compliance with the terms and conditions of

this Agreement by the Company and the consummation of the Transactions do not and shall not (i) violate, conflict with, result in any breach of, or constitute a default under any of the provisions of the certificates of incorporation or bylaws (or equivalent organizational documents) of any Group Company, (ii) except as disclosed on Schedule 3.03(b), require any consent of or other action by any Person or the Company or any of its Subsidiaries under, constitute a default or an event that, with or without notice or lapse of time or both, would constitute a default under, or cause or permit termination, cancellation, acceleration or other change of any right or obligation or the loss of any benefit under, any provision of any Contract, (iii) violate any Law or Order to which any of the Group Companies is subject or by which any of their respective properties or assets are bound or affected, (iv) result in the creation or imposition of any Lien other than Permitted Liens on any properties or assets of the Group Companies, except where the failure of any of the representations and warranties contained in clause (ii) or (iv) above to be true would not reasonably be expected, individually or in the aggregate, to have a Material Adverse Effect.

c. Assuming that this Agreement is a valid and binding obligation of the Parent and the Buyer, this Agreement constitutes a valid and binding obligation of the Company, enforceable in accordance with its terms, except as enforceability may be limited by bankruptcy Laws, other similar Laws affecting creditors' rights and general principles of equity affecting the availability of specific performance and other equitable remedies.

3.04 Capitalization

a. The authorized capital of the Company consists of an unlimited number of Common Shares, of which an unlimited number are designated as Series A Voting Common Shares, an unlimited number are designated as Series B Voting Common Shares, an unlimited number are designated as Series C Voting Common Shares and an unlimited number are designated as Non-Voting Common Shares. Of the authorized capital of the Company, as of the date hereof, (i) 4,549,664 Series A Voting Common Shares are issued and outstanding, (ii) 2,004,416 Series B Voting Common Shares are issued and outstanding, (iii) 4,939,321 Series C Voting Common Shares are issued and outstanding, and (iv) 212,815 Non-Voting Common Shares are issued and outstanding. All the issued and outstanding Common Shares have been and are duly authorized and validly issued and are fully paid and non-assessable, and were issued in accordance with the registration or qualification requirements of applicable securities laws or pursuant to valid exemptions therefrom. Except for the exercise or conversion rights that attach to the Options that are listed on Schedule 3.04(b), on the date hereof there are no Common Shares or any other equity security of the Company issuable upon conversion or exchange of any issued and outstanding security of the Company nor are there any rights, options outstanding or other agreements to acquire Common Shares or any other equity security of the Company nor is the Company contractually obligated to purchase, redeem or otherwise acquire any of its outstanding shares or securities. No Seller is entitled to, nor were any securities issued in violation of, any preemptive rights, purchase option, call option, right of first refusal or similar rights to subscribe for Common Shares under any provision of the CBCA, the Organizational Documents or any agreement to which any Group Company is party or otherwise bound. No Subsidiary owns any Common Shares or any other equity security of the Company.

b. Schedule 3.04(b) sets forth, as of the date hereof, a true and complete list of (1) each holder of Common Shares, including the address of and the number of Common Shares held by

such holder, (2) each holder of Options outstanding as of November 18, 2020, specifying, on a holder-by-holder basis (i) the name of each holder, (ii) the number of shares subject to the Options held by such holder, (iii) the grant date of such Options, (iv) the vesting schedule of such Options, (v) the exercise price for such Options, (vi) the expiration date of such Options, (vii) whether any Option is intended to qualify as an "incentive stock option" under Section 422 of the Code and (viii) the plan under which such Option was granted. Schedule 3.04(b) contains a true and complete copy, as of November 18, 2020, of the historical ledger of Options, including the names of the grantees, the date of grant, the number of Common Shares that were subject to the grant of such Options, vesting schedule, exercise price, and the number of shares, exercise date and exercise price, as applicable, of Common Shares exercised or forfeited upon expiration, termination or exercise of such Options. The exercise price of each Option equals or exceeds the fair market value as of the applicable grant date of a Common Share underlying such Option.

c. Except as set forth in Schedule 3.04(c), there are no (i) voting trusts, proxies or other similar agreements or understandings to which the Company or any of its Subsidiaries is a party or by which the Company or any of its Subsidiaries is bound with respect to the voting of any shares in the capital of the Company or any of its Subsidiaries or other voting or equity interests in the Company or any of its Subsidiaries, (ii) contractual obligations or commitments of any character restricting the transfer of, or requiring the registration for sale of, any shares in the capital of the Company or any of its Subsidiaries or other voting or equity interests in the Company or any of its Subsidiaries, (iii) (x) outstanding or authorized appreciation rights, rights of first offer, performance shares or "phantom" share rights or (y) other agreements or obligations of any character (contingent or otherwise), in each case, pursuant to which any Person is or may be entitled to receive any payment or other value based on the revenues, earnings or financial performance, or share price performance or other attribute of the Company or any of its Subsidiaries or any of their businesses or assets or calculated in accordance therewith or (iv) outstanding bonds, debentures, notes or other securities, the holders of which have the right to vote (or which are convertible into or exercisable for securities having the right to vote) with the shareholders of the Company on any matter. There are no outstanding obligations of the Company or any of its Subsidiaries to repurchase, redeem or otherwise acquire any Common Shares.

d. Schedule 3.04(d) sets forth the outstanding Indebtedness of the Company and its Subsidiaries, and there are no outstanding guarantees by the Company or any of its Subsidiaries of Indebtedness of any other Person.

e. Neither the Company nor any of its Subsidiaries owns any shares in the capital of, or other voting or equity interests in (including any securities exercisable or exchangeable for or convertible into shares in the capital of, or other voting or equity interests in), any Person other than wholly owned Subsidiaries of the Company (collectively, "Third-Party Interests"). Neither the Company nor any of its Subsidiaries has any rights to, or is bound by any commitment or obligation to, acquire by any means, directly or indirectly, any Third-Party Interests or to make any investment in, or equity contribution or similar advance to, any Person.

3.05 Financial Statements

a. Verafin Inc.'s unaudited consolidated balance sheet as of September 30, 2020 (the "Latest Balance Sheet") and the related statement of income for the nine-month period then ended and the Verafin Inc.'s audited consolidated balance sheet and statements of operations, shareholders'

equity and cash flows for the fiscal years ended December 31, 2019, 2018 and 2017 (the foregoing audited and unaudited financial statements, collectively, the "Financial Statements") (i) have been prepared in accordance with ASPE, consistently applied, (ii) have been prepared from and are in accordance with the books and records of Verafin Inc. and its Subsidiaries and (iii) present fairly in all material respects the consolidated financial condition and results of operations of Verafin Inc. and its Subsidiaries (taken as a whole) as of the times and for the periods referred to therein, subject in the case of the unaudited financial statements to (i) the absence of footnote disclosures and other presentation items (neither of which, if presented, would differ materially from those presented in the Audited Financial Statements) and (ii) changes resulting from normal year-end adjustments (none of which would be material individually or in the aggregate). The Company has provided the Parent with true and complete copies of the Financial Statements in Schedule 3.05(a).

b. The Company and its Subsidiaries have devised and maintained systems of internal accounting controls with respect to their businesses sufficient to provide reasonable assurances that (i) all transactions are executed in accordance with the general and specific authorization of the management of the Company and (ii) all transactions are recorded as necessary to permit the preparation of financial statements in conformity with ASPE and to maintain proper accountability for items.

c. The Company and its Subsidiaries have maintained all deposits and balances as required by the terms and conditions of all applicable Contracts.

3.06 Absence of Certain Developments; Undisclosed Liabilities

a. During the period from December 31, 2019 to the date of this Agreement, (i) the businesses of the Company and its Subsidiaries have been conducted in the Ordinary Course of Business, (ii) there has not been any change, effect, event, circumstance, condition, occurrence, state of facts or development that has had, or would reasonably be expected to have, either individually or in the aggregate, a Material Adverse Effect, and (iii) none of the Group Companies has:

i. made a commitment, taken, authorized or agreed to take, any action or event that, if made, taken, authorized or agreed, in each case, after the date hereof, would constitute a breach of Section 6.01(d), (o), (s), (t) or (u);

ii. effected any recapitalization, reclassification, distribution, equity split or like change in its capitalization;

iii. subjected any material portion of its properties or assets to any Lien, except for Permitted Liens;

iv. sold, assigned or transferred any material portion of its assets, except for sales of obsolete assets or assets with *de minimis* or no book value;

v. sold, assigned or transferred any material Intellectual Property Rights;

vi. made any material capital investment in, or any material loan to, any other Person, except in the Ordinary Course of Business;

vii. amended or authorized the amendment of its organizational documents; or

viii. suffered any material damage, destruction or other casualty loss with respect to material property owned by any Group Company that is not covered by insurance.

b. No Group Company has any Liability except for Liabilities (i) accrued or specifically reserved against in the Latest Balance Sheet, (ii) incurred in the Ordinary Course of Business since the date of the Latest Balance Sheet consistent with the type reflected or reserved for in the Financial Statements (and none of which is a Liability resulting from breach of contract, breach of warranty, tort, infringement or misappropriation), or (iii) incurred in connection with this Agreement or the Transactions.

3.07 Title to Assets; Sufficiency

a. Each of the Group Companies has good, valid and marketable title to, or a valid leasehold interest in or valid license to, each of its assets and properties reflected in the Financial Statements or that are used or held for use in connection with, necessary for the conduct of, or otherwise material to its business (the "Assets"), in each case, free and clear of any Lien, except for Permitted Liens and Liens as disclosed in Schedule 3.07(a). Any Permitted Liens and Liens as disclosed in Schedule 3.07(a), in each case, on the Assets, individually or in the aggregate, do not materially interfere with the current use of any such Asset by any of the Group Companies or materially detract from the value of any such Asset.

b. The Assets constitute all of the material properties and assets used or held for use for the conduct of the business of the Company and its Subsidiaries and as of the Closing the Assets will constitute all of the assets necessary and sufficient to conduct the business, activities and operations of the Company and its Subsidiaries in all material respects as currently conducted and as conducted during the past six months by the Company. To the knowledge of the Company, there are no facts or conditions affecting any Assets that, with or without notice or the lapse of time, or both, would reasonably be expected, individually or in the aggregate, to interfere in any material respect with the use, occupancy or operation of such Assets.

3.08 Real Property

a. Schedule 3.08(a) sets forth a list of all real property to which any Group Company has a valid and existing leasehold interest (collectively, the "Leased Realty"). The Company has provided the Parent with true and complete copies of all Leases as currently in effect.

b. The Company or one of its Subsidiaries possesses valid and existing leasehold interests in the Leased Realty pursuant to the leases set forth on Schedule 3.08(a) (the "Leases"), free and clear of any Liens except Permitted Liens.

c. There is no, and has never been, any Owned Real Property.

3.09 Tax Matters

a. Each of the Group Companies has filed all material Tax Returns that are required to be filed by them (taking into account any extensions of time to file validly obtained), and all such Tax Returns are true and complete in all material respects. All Taxes shown as owing by the Group Companies on all such Tax Returns have been fully paid and all other material Taxes otherwise due from a Group Company have been paid.

b. The Latest Balance Sheet reflects adequate accruals and reserves for all material Taxes payable by the Group Companies for all taxable periods (and portions thereof) through the date of the Latest Balance Sheet, and the unpaid Taxes of the Group Companies do not exceed those accruals or reserves as adjusted for the passage of time through the Closing Date in accordance with the past custom and practice of the Group Companies in filing their Tax Returns. Since the date of the Latest Balance Sheet, none of the Group Companies has incurred any liability for Taxes arising from extraordinary gains or losses, as that term is used in ASPE, outside the Ordinary Course of Business.

c. All material deficiencies for Taxes asserted or assessed in writing against any Group Company have been fully and timely paid, settled or properly accrued in accordance with ASPE in the Latest Balance Sheet.

d. No Group Company is the subject of a Tax audit, examination or other proceeding with respect to any material Taxes of any such Group Company and to the knowledge of the Company, no such audit, examination or other proceeding has been threatened in writing.

e. No Group Company (i) is a party to, bound by, or obligated under any Tax sharing, allocation or similar agreement (other than an agreement entered into in the Ordinary Course of Business that is not primarily related to Taxes), (ii) is or was a member of any affiliated, consolidated, combined, unitary or other group for Tax purposes (other than any such group the common parent of which is a Group Company), (iii) has any material liability for Taxes of any Person (other than a Group Company) under Treasury Regulations Section 1.1502-6 (or any similar provision of state, local or foreign Law), as a transferee or successor, by Contract or otherwise, or (iv) is subject to any "closing agreement" within the meaning of Section 7121 of the Code (or any similar provision of state, local or non-U.S. Tax Law), private letter ruling, or other written agreement with a Governmental Entity regarding Taxes or Tax matters.

f. There are no outstanding agreements or consents extending or waiving (or having the effect of extending or waiving) the statutory period of limitations applicable to any claim for, or the period for the collection or assessment or reassessment of, material Taxes due from any

Group Company for any taxable period and no request for any such waiver or extension is currently pending.

g. No U.S. Group Company has participated in a "listed transaction," as such term is defined in Treasury Regulations Section 1.6011-4(b)(2).

h. Since January 1, 2015, no claim that remains pending has been made by any Tax authority in writing, in a jurisdiction where any Group Company has not filed a Tax Return, that it is or may be subject to Tax by such jurisdiction.

i. No Group Company has distributed stock of another Person, or has had its stock distributed by another Person, in a transaction that was purported or intended to be governed in whole or in part by Section 355 or Section 361 of the Code.

j. No Group Company will be required to include any material item of income in, or exclude any material item of deduction from, taxable income for any taxable period (or portion thereof) that begins after the Closing Date as a result of (i) any change in method of accounting for a taxable period ending on or before the Closing Date, (ii) installment sale or open transaction disposition, intercompany transaction or intercompany account made or existing on or before the Closing Date, (iii) prepaid amount received on or prior to the Closing Date, (iv) reserve or credit claimed in respect of any taxable period ending on or before the Closing, or (v) any "closing agreement" within the meaning of Section 7121 of the Code (or any corresponding or similar provision of state, local or non-U.S. Tax Law) executed on or before the Closing Date.

k. Each of the Group Companies have withheld and paid all Taxes required to have been withheld and paid in connection with any amounts paid or owing to any employee, creditor, shareholder, non-resident or other third party.

l. There are no Liens for material Taxes upon the assets or properties of any Group Company, other than Permitted Liens.

m. Each of the Group Companies is in material compliance with all applicable Tax Laws relating to transfer pricing.

n. No Group Company is a "controlled foreign corporation" as defined in Section 957 of the Code.

o. There are no transactions or events that have resulted in, and no circumstances existing, which could result in the application to any Group Company of sections 80, 80.01, 80.02, 80.03, 80.04 of the ITA or any analogous provision of any comparable Tax Law.

p. No Group Company has incurred any deductible outlay or expense owing to a Person not dealing at arm's length (for purposes of the ITA) with such Group Company the amount of which would, in the absence of an agreement filed under paragraph 78(1)(b) of the ITA, be included in the Group Company's income for Canadian income tax purposes for any taxation year or fiscal period beginning on or after the Closing Date under paragraph 78(1)(a) of the ITA or any analogous provision of any comparable Law of any province or territory of Canada.

q. No Group Company has acquired property from a Person not dealing at arm's length (for purposes of the ITA) with it in circumstances that would result in the Group Company

becoming liable to pay Taxes of such Person under subsection 160(1) of the ITA or any analogous provision of any comparable Law of any province or territory of Canada.

r. Each Group Company has charged, collected, withheld, deducted and remitted on a timely basis all Taxes as required under any applicable Law on any sale, supply or delivery whatsoever, made by it, and each such corporation is validly registered as a vendor with the relevant Governmental Entities for the collection of such Taxes. All input tax credits, refunds, rebates and similar adjustments of Taxes claimed by each Group Company has been validly claimed and correctly calculated as required by Law, and each such corporation has retained all documentation prescribed by applicable Law to support such claims. Where applicable, each Group Company (i) has obtained all required information and documentation to support any zero-rating treatment of its supplies, and (ii) has been furnished with valid exemption certificates or their equivalent and has retained all such records and supporting documents in the manner required by applicable Law.

3.10 Contracts and Commitments

a. Except as set forth in Schedule 3.10(a) and agreements entered into by any Group Company after the date hereof in accordance with Section 6.01, no Group Company is party to or bound by, nor are any of the Assets subject to, any:

i. Contract or indenture relating to Indebtedness (including Indebtedness of the Group Companies or in respect of which any Group Company is an obligee) or any letters of credit or similar instruments issued for the account of any Group Company or to mortgaging, pledging or otherwise placing a Lien on any portion of the assets of the Group Companies;

ii. lease or Contract under which it is lessee, or holds or operates any personal property or real property owned by any other party;

iii. lease or Contract under which it is lessor of or permits any third party to hold or operate any personal property or real property;

iv. Contract or group of related Contracts, excluding one-time purchase orders that are not automatically renewable by their terms, with the same party for the purchase of products or services that provide for annual payments by the Group Companies in excess of $1.5 million or requiring payments in excess of $3 million over the life of the Contract or group of related Contracts;

v. Contract or group of related Contracts with a customer that provides annual net revenues to the Group Companies in excess of $1.5 million or requiring payments in excess of $3 million over the life of the Contract or group of related Contracts;

vi. Contract relating to any business acquisition, or material acquisition of the shares or assets of another Person, completed or terminated by any Group Company within the last five (5) years or that is currently pending;

vii. (A) Contract pursuant to which a Group Company licenses or is otherwise permitted by a third party to use or register any material Intellectual Property Rights (other than any “shrink wrap,” “commercially available software package,” “click through” license or off-the-shelf Software licenses commercially available on standard terms), or (B)

Contract pursuant to which a third party licenses or is permitted to use or register any Company-Owned IP Rights (other than licenses granted in the Ordinary Course of Business, including in connection with the sale or licensing of any products or services), in each case of clauses (A) and (B) that involved aggregate payments by or to the Group Companies in excess of $1.5 million during the trailing twelve (12) month period ending on the date of the Latest Balance Sheet or in excess of $3 million over the life of the Contract;

viii. Contract with a Specified Reseller or that contains any revenue sharing or profit sharing provision;

ix. other than purchase and sale orders received by the Group Companies in the Ordinary Course of Business, any contractual obligation (or group of related contractual obligations) for the purchase or sale of inventory, raw materials, commodities, supplies, goods, products, equipment or other personal property, in each case, with any Specified Customer or Specified Vendor;

x. Contract that (A) restricts the Company or a Subsidiary from engaging in any line of business, developing, marketing or distributing products or services or obligates the Company or a Subsidiary not to compete with another Person or in any geographic area or during any period of time or that would otherwise limit the freedom of Parent or its Affiliates (including the Company) from engaging in any line of business after the Closing, (B) contains exclusivity obligations or restrictions binding on the Company or any of its Subsidiaries or that would be binding on Parent or any of its Affiliates (including the Company) after the Closing, (C) contains any "most favored nation" provision or grants to any Person a right of first refusal, a right of first refusal, right of first offer or an option to purchase, acquire, sell or dispose of any Assets (other than inventory in the Ordinary Course of Business) or (D) prohibits the Company or any of its Subsidiaries, or that would prohibit Parent or any of its Affiliates

(including the Company) after the Closing, from hiring or soliciting for hire any group of employees or customers;

xi. collective bargaining agreement with respect to its employees;

xii. Contract relating to any interest rate, foreign exchange, derivatives or hedging transaction;

xiii. Contract that contains any indemnification rights or obligations, or credit support relating to such indemnification rights or obligations, other than any of such indemnification rights or obligations incurred in the Ordinary Course of Business;

xiv. Contract with any Governmental Entity, or Order or consent of a Governmental Entity to which the Company or any of its Subsidiaries is subject;

xv. Contract pursuant to which the Company or any of its Subsidiaries has an obligation to make an investment in or loan to any other Person;

xvi. partnership, joint venture, limited liability company or other similar agreements or arrangements (including any agreement providing for joint research, development or marketing);

xvii. settlement agreements entered into within the past three (3) years; or

xviii. Contract for the provision of services by a Group Company where the potential indemnification liability of such Group Company (A) exceeds four (4) times the annual amount of fees payable to such Group Company under such Contract, or (B) may be uncapped (other than with respect to claims relating to infringement of Intellectual Property Rights of any other Person or acts of gross negligence, willful misconduct or fraud by such Group Company).

b. The Parent has been supplied with true and complete copies of all written Contracts that are referred to on Schedule 3.10(a) (collectively, the "Material Contracts"). Each Material Contract is in full force and effect and is a valid and binding obligation of, and enforceable against, the Group Company that is a party thereto and, to the knowledge of the Company, is a valid and binding obligation of, and enforceable against, each other party thereto.

c. No Group Company has in any material respect, violated or breached, or committed any default under (or is alleged to be in default or breach in any material respect under), any Material Contract. To the knowledge of the Company, no other Person has, in any material respect violated or breached, or committed any default under (or is alleged to be in default or breach in any material respect under), any Material Contract. No event or circumstance has occurred and is continuing through any Group Company's actions or inactions that would result in a material violation or breach of any of the provisions of any Material Contract.

d. The Company has delivered a true and complete copy of the Group Companies' form of master services agreement to Parent. Schedule 3.10(d) sets forth a summary of each Contract entered into by any Group Company pursuant to which such Group Company provides services and

which contains terms that deviate from the terms set forth in the Group Companies' form of master services agreement. Each such summary is accurate in all material respects.

3.11 Intellectual Property; Information Technology; Privacy

a. Schedule 3.11(a) sets forth a list as of the date hereof of all Patents, registered Marks, registered Copyrights and domain name registrations included in the Company-Owned IP Rights (the "Company Registered IP") as well as any Intellectual Property Rights that have a security interest registered against them. Schedule 3.11(a) includes the status of all Company Registered IP, including any due dates and deadlines for fees, payments or steps that must be taken with respect to the Company Registered IP in the next twelve (12) months.

b. Except as disclosed in Schedule 3.11(b), the Company and its Subsidiaries, as the case may be, exclusively own all Company-Owned IP Rights free and clear of all Liens (other than Permitted Liens). The Company Registered IP is subsisting and, to the knowledge of the Company, not invalid or unenforceable. The Company and its Subsidiaries are current in the payment of all registration, maintenance and renewal fees with respect to the Company Registered IP, except in each case as the Company or its Subsidiaries has elected in its reasonable business judgment to abandon or permit to lapse a registration or application.

c. None of the Company Registered IP is subject to any Order adversely affecting the use thereof or rights thereto by the Company or its Subsidiaries. There is no opposition or cancellation Action pending against the Company or its Subsidiaries concerning the ownership, validity or enforceability of any Company Registered IP (other than ordinary course proceedings related to the application for any item of Company-Owned IP Rights).

d. The Company and its Subsidiaries own, license, sublicense, or otherwise possess legally enforceable and sufficient rights to all Intellectual Property Rights and other intangible assets necessary to conduct the business of the Company and its Subsidiaries immediately following the Closing in all material respects in substantially the same manner as such businesses are conducted as of the date hereof. The Company and its Subsidiaries may exercise, transfer, or license the Company IP Rights and such other intangible assets owned, or purported to be owned, by, or licensed to, the Company or any of its Subsidiaries (other than any "shrink wrap", "commercially available software package," "click through" license or off-the-shelf Software licenses commercially available on standard terms), without restriction or payment to any Person. Neither this Agreement nor any of the Transactions will restrict or impair the right of the Company or its Subsidiaries to transfer, alienate, enforce or license any Company-Owned IP Rights or other such intangible asset owned, or purported to be owned, by the Company or any of its Subsidiaries as such right exists as of the date hereof.

e. The consummation of the Transactions will not cause (i) the forfeiture or termination of, or give rise to a right of forfeiture or termination of any Company IP Rights, (ii) the grant of any rights or licenses to any Company-Owned IP Right or Intellectual Property Rights owned by Parent, or (iii) additional payment obligations by the Company or its Subsidiaries in order to use or exploit any Company IP Rights to the same extent as Company and its Subsidiaries were permitted before the date of this Agreement.

f. To the knowledge of the Company, since the date that is six (6) years prior to the date of this Agreement, there has been, and as of the date hereof, there is, no infringement or

misappropriation, or other violation by a third party, or written allegation made by the Company or any of its Subsidiaries, of any Company-Owned IP Rights.

g. The operation of the business of the Company or any of its Subsidiaries as currently conducted as of the date hereof, and as will be conducted immediately following the Closing, and the operation of the business of the Company or any of its Subsidiaries as conducted since the date that is six (6) years prior to the date of this Agreement, does not infringe, misappropriate or otherwise violate, and has not infringed, misappropriated or otherwise violated, the Intellectual Property Rights of any other Person. Neither the Company nor any of its Subsidiaries has received any written notice since the date that is six (6) years prior to the date of this Agreement alleging that the operation of the business of the Company or any of its Subsidiaries infringes, misappropriates, violates or otherwise conflicts with the Intellectual Property Rights of any other Person.

h. The Company and its Subsidiaries have secured from all founders, consultants, advisors, employees and independent contractors who independently or jointly contributed to or participated in the conception, reduction to practice, creation or development of any Intellectual Property Rights for the Company (each, a "Contributor"), unencumbered and unrestricted exclusive ownership of, all of the Contributors' Intellectual Property Rights that can be assigned. No Contributor owns or, to the knowledge of the Company, claims any rights, licenses, claims or interest whatsoever with respect to any Company-Owned IP Rights developed by the Contributor for the Company or its Subsidiaries. Without limiting the foregoing, the Company has obtained, and maintained copies of, written and enforceable proprietary information and invention disclosure and Intellectual Property Rights assignments, and waivers of such rights that cannot be assigned, from all current and former Contributors.

i. The Company and its Subsidiaries have taken commercially reasonable steps to protect and maintain any Trade Secrets included in the Company IP Rights (except for any Company IP Rights whose value would not reasonably be expected to be impaired in any material respect by disclosure), and to the knowledge of the Company, there have been no material unauthorized uses or disclosures of any such Trade Secrets.

j. Neither the Company nor its Subsidiaries has combined Open Source Software with any Software, the copyright in which is owned by the Company or its Subsidiaries (the "Business Software"), and distributed such combined Software such that such Business Software would become subject to the terms of the license under which such Open Source Software is licensed that require the disclosure or distribution to any Person or the public of any portion of the source code for such Business Software. The Company and its Subsidiaries are in material compliance with the terms and conditions of all relevant licenses for Open Source Software used in the business of the Company or any of its Subsidiaries, including notice and attribution obligations. Neither the Company nor its Subsidiaries has delivered, licensed or made available, or is under a duty or obligation (whether present, contingent, or otherwise) to deliver, license or make available, the source code for any Business Software to any escrow agent or other Person who is not an employee or consultant and acting on behalf of the Company or its Subsidiaries.

k. Except as disclosed in Schedule 3.11(k), there has been no disclosure of any Business Software other than through licensing of object code versions in the ordinary course of business. Each copy so distributed is the subject of an existing and enforceable license agreement. Each Person having received source code or data relating to any Software distributed by the Company is bound by an appropriate confidentiality and non-disclosure agreement with respect to such Software

and, to the Company's knowledge, there are no breaches of any such agreements or any threatened disputes or disagreements with respect to them.

l. Schedule 3.11(l) sets forth a list of Software owned by, and material Software licensed to or used by, the Company or its Subsidiaries for which the Company or its Subsidiaries have in their possession copies of the source code. Except for Open Source Software, the Company or its Subsidiaries have treated such Software as confidential and proprietary business information, and have taken all reasonable steps to protect the same as their Trade Secrets. Such Software does not contain any undisclosed program routine, device or other feature, including viruses, worms, bugs, time locks, Trojan horses or back doors, in each case that is designed to delete, disable, deactivate, interfere with or otherwise harm such Software, or any virus or other intentionally created, undocumented contaminant that may, or may be used to, access, modify, delete, damage or disable any hardware, system or data, *provided* that, in respect of any Software not owned by the Company, the foregoing representation and warranty is made to the knowledge of the Company.

m. The information technology systems function, operate, process and compute in accordance with all applicable laws, industry standards and trade practices, in all material respects. The information technology systems operate and perform in all material respects in accordance with their documentation and functional specifications. The information technology systems have not materially malfunctioned or failed within the past three (3) years.

n. Except as disclosed in Schedule 3.11(n), since the date that is three (3) years prior to the date of this Agreement, (i) there have been no material breaches of security safeguards (including but not limited to any loss of, unauthorized access to or unauthorized disclosure of data, encryption event or the unauthorized deployment of viruses or malware) in the information technology systems used in the business of the Company or any of its Subsidiaries, (ii) there have been no material disruptions in any such information technology systems that adversely affected the operations of the business of the Company or any of its Subsidiaries, and (iii) there have been no threatened or actual claims against the Company or any of its Subsidiaries resulting from any such breach of security safeguards or disruptions. The Company and its Subsidiaries have a written information security program in place, consistent with current industry standards and practices, in all material respects, to ensure that (i) Personal Data, and all information technology systems are adequately safeguarded and (ii) all information technology systems will be continuously available and functioning normally in the event of any malfunction of, any suspension or cessation in the operation of, or other form of disaster affecting, the information technology systems. Such program includes, at minimum, policies, procedures and systems addressing information security, cybersecurity risk management, vendor management, employee training, business continuity and disaster recovery, data and system backup and data breach response, including the recording and reporting of data breaches.

o. The Company and its Subsidiaries have at all times complied, and presently comply, with applicable Privacy Requirements, in all material respects. Neither the Company nor its Subsidiaries have, since the date that is three (3) years prior to the date of this Agreement, (i) received any notice (written or otherwise) from any applicable Governmental Entity alleging a violation of any Privacy Requirements by the Company or its Subsidiaries, nor has the Company or its Subsidiaries been threatened (in writing or otherwise) to be charged with any such violation by any Governmental Entity; (ii) to the knowledge of the Company, been subject of an investigation, audit or other inquiry from a Governmental Entity regarding non-compliance with Privacy Requirements, (iii) received any notice (written or otherwise) from any third-party alleging non-compliance with Privacy Requirements or the Company or its Subsidiaries privacy policies. All information furnished to customers,

prospective customers, insurers or other third parties regarding the Company and its Subsidiaries compliance and compliance programs related to the Privacy Requirements have been complete and accurate in all material respects.

p. The Company and its Subsidiaries have (x) taken appropriate actions (including implementing reasonable technical, physical or administrative safeguards) to protect Personal Data in their possession or under their control against any unauthorized use, access or disclosure and (y) entered into written agreements with all third-party service providers, outsourcers, processors or other third parties who process, store or otherwise handle Personal Data for or on behalf of the business that obligate such persons to comply, in all material respects, with all applicable Privacy Requirements and to take steps to protect and secure Personal Data from loss, theft, misuse or unauthorized use, access, modification or disclosure. To the knowledge of the Company, except as disclosed in Schedule 3.11(p), since the date that is three (3) years prior to the date of this Agreement, there has been no unauthorized use, access, disclosure, or other security incident of or involving Personal Data collected, used in connection with or under the control of the business of the Company or any of its Subsidiaries. Since the date that is three (3) years prior to the date of this Agreement, the Company and its Subsidiaries have had, and presently have, in place a privacy policy or policies governing the collection, use, disclosure and protection of Personal Data by the Company and its Subsidiaries, and have collected, used, disclosed and protected Personal Data in accordance with such policy or policies, in all material respects.

q. In carrying on the business the Company and its Subsidiaries have, in all material respects, complied at all times with the applicable requirements under CASL.

r. The Computer Systems adequately meet the data processing and other computing needs of the business and operations of the Company and its Subsidiaries as presently conducted. The Computer Systems function, operate, process and compute in accordance with all applicable laws, and consistent with industry standards and practices, in all material respects.

s. The Company and its Subsidiaries have measures in place, consistent with current industry standards and practices, to ensure that the Computer Systems contain appropriate virus protection and security measures to safeguard against the unauthorized use, copying, disclosure, modification, theft or destruction of and access to, system programs and data files comprised by the Computer Systems. The Company and its Subsidiaries have and maintain an accurate and confidential listing of all applicable accounts, passwords, encryption algorithms and programs or other access keys required to ensure secure and proper access by the Company, its Subsidiaries and their respective employees to the system programs and data files comprised by the Computer Systems. The data processing and data storage facilities used by the Company and its Subsidiaries in connection with the operation of the business of the Company or any of its Subsidiaries are adequately and properly protected consistent with current industry standards and practices.

t. The Company and its Subsidiaries have and maintain back-up systems and disaster recovery and business continuity plans, consistent with current industry standards, to adequately and properly ensure the continuing availability of the functionality provided by the Computer Systems in the event of the malfunction of, or other form of disaster affecting, the Computer Systems.

3.12 Litigation. There is no material charge, claim, cross-claim or third-party claim, complaint, legal action, suit, arbitration, prosecution, investigation, inquiry, hearing or proceeding (whether civil, criminal, regulatory or otherwise or federal, provincial, state, local or foreign) ("Action") pending, at Law or in equity, or before or by any Governmental Entity, court or quasi-

judicial or administrative agency or official of any federal, provincial, state, local or foreign jurisdiction, arbitrator or mediator, or, to the knowledge of the Company, threatened in writing against or affecting any Group Company or their respective properties, employees, Assets or business. No Group Company is subject to any material settlement, stipulation, order, writ, judgment, injunction, decree, ruling, determination or award of any court or of any Governmental Entity ("Order") affecting any of the Company, its Subsidiaries or the Assets.

3.13 Governmental Consents, etc. Except for compliance with and filings under the Investment Canada Act, and the Hart-Scott-Rodino Antitrust Improvements Act of 1976 (the "HSR Act"), (a) the Company is not required to submit any material notice, report or other filing with any Governmental Entity in connection with the execution, delivery or performance by it of this Agreement or the consummation of the Transactions and (b) no material consent, approval or authorization of any Governmental Entity is required to be obtained by the Company in connection with its execution, delivery or performance of this Agreement or the consummation by the Company of any transaction contemplated hereby.

3.14 Employee Benefit Plans

a. Schedule 3.14(a) sets forth, as of the date hereof, each Company Plan. With respect to each Company Plan, the Company has provided or made available to the Parent or its representatives prior to the date hereof true and complete copies, as applicable, of: (i) the plan and trust documents and the most recent summary plan description, (ii) the most recent annual report (Form 5500 series) or other annual regulatory filing, (iii) the most recent financial statements and actuarial reports and (iv) the most recent favorable determination or opinion letter from the Internal Revenue Service with respect to each Company Plan intended to qualify under Section 401(a) of the Code.

b. No Company Plan is a Multiemployer Plan, Multiple Employer Plan or a plan that is subject to Title IV of ERISA. No Company Plan is a "registered pension plan" as that term is defined in Section 248(1) of the ITA. No Company Plan provides health or other welfare benefits to former employees of the Group Companies other than health continuation coverage pursuant to COBRA or other applicable Law.

c. Each Company Plan has been maintained and administered in compliance in all material respects with its terms and the applicable requirements of ERISA, the Code and any other applicable Laws. All amounts due and owing under any Company Plan have been paid in full or accrued up to the Closing Date. Each Company Plan that is intended to be qualified within the meaning of Section 401(a) of the Code has received a favorable determination letter or is the subject of a favorable opinion letter from the Internal Revenue Service on the form of such Company Plan on which the Company can rely and nothing has occurred, whether by action or failure to act, that would reasonably be expected to affect the qualified status of any such Company Plan.

d. There are no actions, suits, claims or disputes pending, or, to the knowledge of the Company, threatened, anticipated or expected to be asserted against or with respect to any Company Plan or the assets of any such plan (other than routine claims for benefits and appeals of denied routine claims).

e. No material liability under Title IV of ERISA has been or, to the knowledge of the Company, is reasonably expected to be incurred by the Group Companies. Without limiting the

generality of the foregoing, none of the Group Companies or any of their respective ERISA Affiliates has ever maintained or contributed to an employee benefit plan that is subject to Title IV of ERISA.

f. The Group Companies have not engaged in any transaction with respect to any Company Plan that would be reasonably likely to subject the Group Companies to any material Tax or penalty (civil or otherwise) imposed by ERISA, the Code or other applicable Law.

g. Except as may be set forth in the terms of the Options provided prior to the date hereof to Parent, neither the execution and delivery of this Agreement nor the consummation of the Transactions would (either alone or in conjunction with any other event) (i) cause the accelerated vesting, funding or delivery of, increase the amount or value of, or result in, any payment or benefit to any employee, officer or director of the Group Companies, or (ii) result in any limitation on the right of any of the Group Companies to amend, merge, terminate or receive a reversion of assets from any Company Plan or related trust. Without limiting the generality of the foregoing, no amount paid or payable in connection with the Transactions (either solely as a result thereof or as a result of such transactions in conjunction with any other event) will be an "excess parachute payment" within the meaning of Section 280G of the Code.

h. Each Company Plan that is a "nonqualified deferred compensation plan" (as defined for purposes of Section 409A(d)(1) of the Code) that is subject to Section 409A of the Code has, in all material respects, been maintained and operated in documentary and operational compliance with Section 409A of the Code and the regulations thereunder.

3.15 Insurance. Schedule 3.15 lists each material insurance policy maintained by the Group Companies as of the date hereof. The Company has provided true and complete copies of all such policies. All of the insurance policies of the Group Companies are in full force and effect, no notice of cancellation or non-renewal of such policies has been received, and there is no existing breach, default or event which, with or without notice or the lapse of time or both, would constitute a material breach or default or permit termination or modification of any such policies. Since January 1, 2018, the Company and its Subsidiaries have complied in all material respects with the terms and conditions of such policies. There is no material claim by or with respect to the Company or any of its Subsidiaries pending under any of such policies as to which coverage has been questioned, denied or disputed by the underwriters of such policies or in respect of which such underwriters have reserved their rights. All premiums payable under such policies have been timely paid, and the Company and its Subsidiaries have otherwise materially complied with the terms and conditions of such policies. To the knowledge of the Company, since the time any such policies were last renewed or issued, there has not been any threatened termination of, premium increase with respect to or alteration of coverage under any of such policies.

3.16 Compliance with Laws

a. Each of the Group Companies is, and during the five (5)-year period prior to the date of this Agreement, has been, in compliance with all applicable Laws of applicable Governmental Entities, in each case, in all material respects.

b. The Group Companies have implemented and maintain a corporate ethics and compliance program consistent with established guidelines for such programs the OECD Good Practice Guidance on Internal Controls, Ethics, and Compliance. No Group Company has been informed by any Governmental Entity that it or any director, officer, employee, agent, Affiliate or

representative of any Group Company is under investigation related to the violation of any applicable Laws (regardless of whether such violation would constitute a criminal, civil, administrative or other violation). During the five (5)-year period prior to the date of this Agreement, no Group Company has received any allegation by any Person or has reasonable cause to believe that the Group Company or any director, officer, employee, agent, Affiliate or representative has violated applicable Laws or company compliance policies, in any material respects, or which violations were not remediated in a timely and proper manner, in the performance of its business.

c. Without limiting the other provisions of this Section 3.16, the Company and its Subsidiaries are and, during the five (5)-year period prior to the date of this Agreement, have been, in compliance with the U.S. Foreign Corrupt Practices Act of 1977, as amended, the Corruption of Foreign Public Officials Act (Canada) and other federal, foreign, or state anti-corruption or anti-bribery Laws or requirements applicable to the Company or its Subsidiaries (the "Anti-Bribery Laws"). During the five (5)-year period prior to the date of this Agreement, neither the Company nor any of its Subsidiaries has received any written communication, or to the knowledge of the Company, oral communication, from any Governmental Entity or from any third Person that alleges that the Company, any of its Subsidiaries or any employee or agent thereof is in violation of any Anti-Bribery Laws.

d. All approvals, filings, permits, franchises, consents, exemptions, licenses and similar authorizations of Governmental Entities (collectively, "Permits") required to conduct the business of the Group Companies are in the possession of the Group Companies, are in full force and effect and have been and are being complied with in all respects material to such Permit.

e. Each Group Company is, and during the five (5)-year period prior to the date of this Agreement has been, in compliance with all Trade Control Laws, and all applicable anti-money laundering and counter-terrorism financing provisions of the Bank Secrecy Act and all regulations issued pursuant to it. No Group Company, any director, officer, employee, agent, Affiliate or representative of any Group Company (i) is a Restricted Party, (ii) is a Person who is otherwise the subject of Trade Control Laws or (iii) is owned or controlled by (including by virtue of such Person being a director or owning voting shares or interests), or acts, directly or indirectly, for or on behalf of, any Restricted Party or Restricted Parties or that is the target of Trade Control Laws.

f. Each Group Company has complied with the National Research Council of Canada Industrial Research Assistance Program and no Group Company has been notified of any potential claims, callbacks, disputes or any other adverse actions by any Governmental Authority in connection therewith.

3.17 Environmental Matter

a. The Company and its Subsidiaries are and, during the five (5)-year period prior to the date of this Agreement, have been, in compliance with all applicable Environmental Laws (which compliance includes, but is not limited to, the possession by the Group Companies of all permits and other governmental authorizations required under applicable Environmental Laws, and compliance with the terms and conditions thereof), in all material respects.

b. There is no Environmental Claim pending or, to the knowledge of the Company, threatened against the Company.

c. The Company has delivered for inspection to the Parent true and complete copies of material studies, audits, assessments, memoranda and investigations regarding the Company's compliance with applicable Environmental Laws that are in the possession of the Company and that have been prepared in the last three (3) years.

3.18 Related Party Transactions

. Except as set out in Schedule 3.18, none of any Seller, the Representative, any officer or member of the board of directors or similar governing body of any Seller, the Representative or any Group Company, or any Related Party (as defined in the Escrow and Management Incentive Agreement) of any of the foregoing (other than the Group Companies) (the foregoing, collectively, "Seller Related Parties"), is a party to any Contract or transaction with any Group Company or has any interest in any property used by any Group Company (collectively, whether or not disclosed on Schedule 3.18, "Related Party Transactions or Interests").

3.19 Employees

a. Schedule 3.19(a) sets out a true and complete list, as of the Closing Date, of (i) employees of each Group Company and the position, status (full time, part-time, fixed-term or temporary), length of service, employer, location of employment, compensation (including annual base salary, annual incentive targets and five most recent year award history, and other variable compensation), annual vacation and other paid time off entitlements and accruals, material perquisites and benefits of each employee, and (ii) all other Persons who are providing services to each Group Company as an independent or dependent contractor, agency employee, or otherwise and a description of the services provided, length of engagement, location of engagement, and annual fees. Except as set out in Schedule 3.19(a), no employee of any Group Company or other Person providing services to any Group Company is on a leave of absence or otherwise inactive or providing services for the Group Company pursuant to any work permit, visa or similar authorization.

b. No employees of any Group Company are currently on temporary layoff and the Group Companies have not made any changes to the terms and conditions of employment of any employee or terminated the employment of any former employee, in any case as a result of COVID-19.

c. The Company has furnished to the Buyer true, correct, up-to-date and complete copies of all (i) Contracts with employees of any Group Company who is serving at the level of Vice President or above, (ii) template Contracts used in respect of other employees of the Group Companies, and (iii) template Contracts with any Person who is providing services to any Group Company as an independent or dependent contractor or agency employee (or, where oral, written summaries of the material terms thereof). Except as set out on Schedule 3.19(c), no Group Company is a party to or bound by any Contract in respect of any employee, which provides such employee with termination or severance entitlements in excess of those required by applicable Law.

d. Each Group Company is in compliance in all material respects with all applicable Laws relating to employment, labor relations and wage and hour matters, including, without limitation, employment standards, occupational health and safety, human rights, pay equity, accessibility, workers' compensation, immigration laws and worker classification as employees or independent contractors. No Group Company is a party to any collective bargaining agreement or other Contract with any labor organization or other representative of any employees of a Group Company, nor is any such Contract presently being negotiated, nor, to the knowledge of the Company, are there any union organizing activities involving the employees of any Group Company to authorize representation by any labor organization. No Group Company has engaged in any unfair labor practice, nor to the knowledge of the Company are there any pending or threatened complaints regarding unfair labor practice. There are no (nor have there, since January 1, 2018, been any) material strikes, work stoppages, slowdowns, lockouts, arbitrations or grievances, or other material labor disputes, pending or, to the knowledge of the Company, threatened against or involving any employees of the Group Companies or the Group Companies.

e. There are no collective bargaining agreements, works council agreements or other similar contracts or agreements that govern any terms or conditions of employment of any employees of any Group Company who is primarily based outside of the United States.

3.20 Brokerage. Except for fees and expenses of Persons listed on Schedule 3.20, there are no claims for brokerage commissions, finders' fees or similar compensation in connection with the Transactions based on any agreement made by or on behalf of the Company for which the Parent or the Company would be liable following the Closing.

3.21 Investment Canada Act. Neither the Company nor its Subsidiaries carry on a Cultural Business.

3.22 Customers and Vendors. Schedule 3.22 sets forth a list of the Group Companies' top twenty (20) customers, top five (5) vendors and top five (5) resellers ("Specified Customers," "Specified Vendors" and "Specified Resellers," respectively) for the twelve months ended September 30, 2020 (determined on a consolidated basis based on, in the case of customers, annual contract value and, in the case of vendors, the dollar amount of payments made by the Group Companies). As of the date hereof, none of the Specified Customers, Specified Vendors or Specified Resellers has terminated its relationship with the Company or its Subsidiaries. As of the date hereof, neither the Company nor any of its Subsidiaries has received any written or, to the Company's knowledge, oral notice that any Specified Customer, Specified Vendor of Specified Reseller has (a) in the case of Specified Customers, ceased or will cease to use the products, equipment, goods or services of the Company or any of its Subsidiaries on terms and conditions similar in all material respects to those imposed on current sales by the Company and its Subsidiaries, or has significantly reduced or downgraded, or will significantly reduce or downgrade, the use of such products, equipment, goods or services, (b) in the case of Specified Vendors, has ceased or will cease to supply materials, supplies, services and other goods to the Company or any of its Subsidiaries after the date hereof on terms and conditions similar in all material respects to those imposed on current sales to the Company and its Subsidiaries or (c) in the case of Specified Resellers, ceased or will cease to resell or distribute the products, equipment, goods or services of the Company or any of its Subsidiaries on terms and conditions similar in material respects to those imposed on current resales or distributions by the Specified Resellers, or has

significantly reduced, or will significantly reduce the resale or distribution of such products, equipment, goods or services.

3.23 No Other Representations or Warranties. NOTWITHSTANDING ANY PROVISION OF THIS AGREEMENT TO THE CONTRARY, except for the representations and warranties made by THE COMPANY in this ARTICLE III, OR THE CERTIFICATES TO BE DELIVERED TO THE PARENT PURSUANT TO SECTION 8.01(g), NO GROUP COMPANY makes any representation or warranty with respect to the group companies or their respective businesses, operations, assets, liabilities, condition (financial or otherwise) or prospects, notwithstanding the delivery or disclosure to THE PARENT, THE BUYER or any of THEIR RESPECTIVE Affiliates or representatives of any documentation, forecasts, projections or other information with respect to any one or more of the foregoing.

ARTICLE IV

REPRESENTATIONS AND WARRANTIES OF SELLERS

Each Seller, severally and not jointly, represents and warrants to the Parent and the Buyer solely with respect to such Seller, as of the date hereof and as of the Closing, as follows:

4.01 Organization and Power. With respect to any Seller that is not an individual, such Seller (a) is duly organized, validly existing and in good standing under the Laws of its respective jurisdiction of incorporation, formation or organization, (b) has all requisite corporate power and authority and all authorizations, licenses and permits necessary to own, lease and operate its properties and assets as they are now being owned, leased and operated and to carry on its businesses as now conducted, and (c) is qualified to do business in every jurisdiction where it is required to qualify except, in the case of clause (c), where the failure to be so qualified would not reasonably be expected, individually or in the aggregate, to prevent, materially delay or materially impede the consummation of the Transactions.

4.02 Ownership of Common Shares and Options. Schedule 4.02 sets forth all of the Common Shares and Options held by such Seller. Such Seller holds of record and owns beneficially the Common Shares and Options held by such Seller, free and clear of any Liens. Except for this Agreement, the Organizational Documents, the Equity Incentive Plan, or any agreements or rights waived or terminated by the Company or the Sellers in accordance with this Agreement, such Seller is not a party to (a) any option, warrant, right, contract, call, put or other agreement or commitment providing for the disposition or acquisition of any Common Shares, or (b) any voting trust, proxy or other agreement or understanding with respect to the voting of any Common Shares.

4.03 Authorization; No Breach; Valid and Binding Agreement.

a. The execution, delivery and performance of this Agreement by such Seller and the consummation of the Transactions, including the Acquisition, have been duly and validly

authorized by all requisite action on the part of such Seller, and no other corporate proceedings on its part are necessary to authorize the execution, delivery or performance of this Agreement.

b. The execution, delivery, performance and compliance with the terms and conditions of this Agreement by such Seller and the consummation of the Transactions thereby do not and shall not (i) violate, conflict with, result in any breach of, or constitute a default under any of the provisions of the certificates of incorporation or bylaws (or equivalent organizational documents) of such Seller (in the case of a Seller that is not an individual), (ii) except as set forth on Schedule 4.03(b), require any consent of or other action by any Person or the Company or any of its Subsidiaries under, constitute a default or an event that, with or without notice or lapse of time or both, would constitute a default under, or cause or permit termination, cancellation, acceleration or other change of any right or obligation or the loss of any benefit under, any provision of any Contract, (iii) violate any Law or Order to which such Seller is subject or by which any of their respective properties or assets are bound or affected, or (iv) result in the creation or imposition of any Lien other than Permitted Liens on any properties or assets of such Seller, except where the failure of any of the representations and warranties contained in clause (ii) or (iv) above to be true would not reasonably be expected, individually or in the aggregate, to prevent, materially delay or materially impede the consummation of the Transactions.

c. Assuming that this Agreement is a valid and binding obligation of the Parent and the Buyer, this Agreement constitutes a valid and binding obligation of such Seller, enforceable in accordance with its terms, except as enforceability may be limited by bankruptcy Laws, other similar Laws affecting creditors' rights and general principles of equity affecting the availability of specific performance and other equitable remedies.

4.04 Governmental Consents, etc. Assuming the accuracy of the representations made by the Parent and the Buyer in Article V of this Agreement, and except for compliance with and filings under the Investment Canada Act and the HSR Act, such Seller is not required to submit any notice, report or other filing with any Governmental Entity in connection with the execution, delivery or performance by it of this Agreement or the consummation of the Transactions. No consent, approval or authorization of any Governmental Entity or any other party or Person is required to be obtained by such Seller in connection with its execution, delivery and performance of this Agreement or the consummation of the Transactions.

4.05 Shareholders' Agreement. Each Seller who is party to that certain Second Amended and Restated Unanimous Shareholders' Agreement dated as of September 13, 2019 (the "Prior Shareholders' Agreement") hereby acknowledges and agrees that (a) such Seller has consented to the amendment of the Prior Shareholders' Agreement set forth in Schedule 4.05 (the "Amendment") or is bound by the Amendment in accordance with the terms of the Prior Shareholders' Agreement, (b) the Amendment has been duly and validly authorized by all requisite action on the part of such Seller, if any, and (c) the Amendment constitutes a valid and binding obligation of such Seller, enforceable in accordance with its terms.

4.06 Litigation. As of the date hereof, there is no Action pending or, to such Seller's knowledge, threatened (in writing or otherwise) against such Seller at Law or in equity, or before or by

any Governmental Entity, that would reasonably be expected, individually or in the aggregate, to prevent, materially delay or materially impede the consummation of the Transactions.

4.07 Brokerage. Except for any fees that will be paid solely by such Seller, there are no claims for brokerage commissions, finders' fees or similar compensation in connection with the Transactions based on any agreement made by or on behalf of such Seller.

4.08 Tax Status. Each Seller, other than Sellers listed on Schedule 4.08, is not a non-resident of Canada for purposes of the ITA. The Shares sold by each Seller listed on Schedule 4.08 are not "taxable Canadian property" for purposes of the ITA.

4.09 No Other Representations or Warranties. NOTWITHSTANDING ANY PROVISION OF THIS AGREEMENT TO THE CONTRARY, except for the representations and warranties made by EACH SELLER in this Article IV, OR THE CERTIFICATES TO BE DELIVERED TO THE PARENT PURSUANT TO SECTION 8.01(h), NO seller makes any representation or warranty with respect to such seller or its respective businesses, operations, assets, liabilities, condition (financial or otherwise) or prospects, notwithstanding the delivery or disclosure to THE PARENT, THE BUYER or any of THEIR RESPECTIVE Affiliates or representatives of any documentation, forecasts, projections or other information with respect to any one or more of the foregoing.

ARTICLE V

REPRESENTATIONS AND WARRANTIES OF THE PARENT AND THE BUYER

The Parent and the Buyer, jointly and severally, represent and warrant to the Company and each Seller, as of the date hereof and as of the Closing, as follows:

5.01 Organization and Power. The Parent is a corporation duly organized, validly existing and in good standing under the Laws of the State of Delaware, with full corporate power and authority to enter into this Agreement and perform its obligations hereunder. The Buyer is a corporation duly organized, validly existing and in good standing under the Laws of Canada, with full corporate power and authority to enter into this Agreement and perform its obligations hereunder. There are no pending, or to the knowledge of the Parent, threatened, actions for the dissolution, liquidation or insolvency of either the Parent or the Buyer.

5.02. Authorization. The execution, delivery and performance of this Agreement by the Parent and the Buyer and the consummation of the Transactions have been duly and validly authorized by all requisite corporate action, and no other proceedings on the part of the Parent or the Buyer are necessary to authorize the execution, delivery or performance of this Agreement. This Agreement has been duly executed and delivered by the Parent and the Buyer and, assuming that this Agreement is a valid and binding obligation of the other parties hereto, this Agreement constitutes a valid and binding obligation of the Parent and the Buyer, enforceable in accordance with its terms, except as enforceability may be limited by bankruptcy Laws, other similar Laws affecting creditors' rights and general principles of equity affecting the availability of specific performance and other equitable remedies.

5.03 No Violation. Neither the Parent nor the Buyer is subject to or obligated under its certificate or articles of incorporation, its bylaws (or similar organizational documents), any applicable Law, or any material Contract, or any Permit, or subject to any Order, in each case which would be breached or violated by the Parent's or the Buyer's execution, delivery or performance of this Agreement or the consummation of the Transactions and such breach or violation would be reasonably expected to have a Parent Material Adverse Effect.

5.04 Governmental Consents, etc. Except for compliance with and filings under the Investment Canada Act and the HSR Act, neither the Parent nor the Buyer is required to submit any notice, report or other filing with any Governmental Entity in connection with the execution, delivery or performance by it of this Agreement or the consummation of the Transactions. No consent, approval or authorization of any Governmental Entity or any other party or Person is required to be obtained by the Parent or the Buyer in connection with its execution, delivery and performance of this Agreement or the consummation of the Transactions.

5.05 Litigation. As of the date hereof, there is no Action pending or, to the Parent's knowledge, threatened (in writing or otherwise) against the Parent or the Buyer at Law or in equity, or before or by any Governmental Entity, that would have a Parent Material Adverse Effect.

5.06 Brokerage. Except for any fees that will be paid solely by the Parent or its Subsidiaries, there are no claims for brokerage commissions, finders' fees or similar compensation in connection with the Transactions based on any agreement made by or on behalf of the Parent or the Buyer.

5.07 Parent Financial Resources. The Parent will have available on the Closing Date sufficient immediately available funds, in cash, to make payment of all amounts to be paid by it hereunder on the Closing Date and all of the Parent's fees and expenses required to be paid at the Closing in order to consummate the Transactions. The obligations of the Parent and the Buyer under this Agreement are not subject to any conditions regarding the Parent's, Buyer's, their respective Affiliates' or any other Person's ability to obtain any financing for the consummation of the Transactions.

5.08 Purpose. The Buyer is a newly organized corporation, formed solely for the purpose of engaging in the Transactions. The Buyer has not engaged in any business activities or conducted any operations other than in connection with the Transactions. The Buyer is a wholly owned Subsidiary of the Parent.

5.09 Parent Entity. As of the date hereof, and at all times prior to the Closing, the Parent is and shall be the "ultimate parent entity" (as determined in accordance with the HSR Act and the rules promulgated thereunder) of the Parent and the Buyer.

5.10 Canadian Tax Status. Buyer is a taxable Canadian corporation within the meaning of the ITA.

5.11 No Reliance. Each of the Buyer Parties acknowledges and agrees that it has not relied and is not relying on any representations, warranties, or other statements whatsoever, whether written

or oral, by the Company, the Sellers or any Person acting on their respective behalf, other than those expressly set forth in Article III and Article IV of this Agreement or in any other Transaction Document or any document or instrument pursuant hereto or thereto.

5.12 Competition Act. The aggregate book value of the assets in Canada of the Parent and its Affiliates does not exceed C$200,000,000, and the aggregate gross revenues from sales in, from or into Canada of the Parent and its Affiliates does not exceed $200,000,000, calculated in each case in accordance with the *Competition Act* (Canada) and the regulations enacted thereunder.

5.13 No Other Representation. NOTWITHSTANDING ANY PROVISION OF THIS AGREEMENT TO THE CONTRARY, EXCEPT FOR THE REPRESENTATIONS AND WARRANTIES MADE BY THE PARENT AND BUYER IN THIS ARTICLE V, OR THE CERTIFICATES TO BE DELIVERED TO THE COMPANY AND SELLERS PURSUANT TO SECTION 8.02(F), NEITHER THE PARENT NOR THE BUYER MAKES ANY REPRESENTATION OR WARRANTY WITH RESPECT TO THE PARENT OR THE BUYER OR THEIR RESPECTIVE BUSINESSES, OPERATIONS, ASSETS, LIABILITIES, CONDITION (FINANCIAL OR OTHERWISE) OR PROSPECTS, NOTWITHSTANDING THE DELIVERY OR DISCLOSURE TO THE COMPANY AND SELLERS OR ANY OF THEIR RESPECTIVE AFFILIATES OR REPRESENTATIVES OF ANY DOCUMENTATION, FORECASTS, PROJECTIONS OR OTHER INFORMATION WITH RESPECT TO ANY ONE OR MORE OF THE FOREGOING.

ARTICLE VI

COVENANTS OF THE COMPANY AND SELLERS

6.01 Conduct of the Business of the Company. From the date hereof until the earlier of the termination of this Agreement and the Closing Date, except (i) as set forth on Schedule 6.01 of the Disclosure Schedules, (ii) if the Parent shall have consented in writing, where such consent shall not be unreasonably withheld, conditioned or delayed, (iii) as required by applicable Laws, (iv) any transactions expressly contemplated by the Pre-Closing Reorganization or (v) as otherwise expressly contemplated by this Agreement, (1) the Company shall conduct its business and the businesses of its Subsidiaries in the Ordinary Course of Business (except as required to comply with any quarantine, "stay at home", social distancing, travel restrictions or any other similar directives issued by a Governmental Entity or any Law in response to the COVID-19 pandemic (collectively, "COVID-19 Measures"), (2) the Company shall, and shall cause its Subsidiaries to, use commercially reasonable efforts to preserve intact their businesses, their assets and their relationships with customers, suppliers and others having business dealings with them in all material respects, and keep available the services of their present officers and employees (except as required to comply with any COVID-19 Measures), and (3) the Company shall not, and shall not permit any of its Subsidiaries to:

a. except for issuances as may result from the exercise of Options that are outstanding as of the date hereof, issue, sell, grant or deliver any of its, or any of its Subsidiaries', equity securities or issue, sell or grant any securities convertible into, or options with respect to, or warrants to purchase or rights to subscribe for, or other securities with their value derived from the profits or equity returns of, any of its or any of its Subsidiaries' equity securities;

b. effect any recapitalization, reclassification, distribution, equity split or like change in its capitalization;

c. amend its Organizational Documents or any of the Company's Subsidiaries' organizational documents;

d. make any redemption or purchase of its, or any of its Subsidiaries', equity interests (other than with respect to the repurchase of Common Shares (including any Options) from former employees of a Group Company pursuant to existing agreements or any Company Plan) or declare, make or pay any dividend or distribution other than dividends declared, made or paid in the Ordinary Course of Business;

e. sell, assign or transfer any material portion of its assets, except for sales of obsolete assets or assets with *de minimis* or no book value;

f. except non-exclusive licenses of any Company IP Rights in the Ordinary Course of Business, sell, assign, transfer, or license any material Intellectual Property Rights;

g. fail to maintain or allow to go abandoned any Company-Owned IP Rights;

h. enter into (excluding extensions at the end of a term or upgrades in the Ordinary Course of Business), transfer, terminate (other than an expiration in accordance with its existing terms), modify, amend, waive any rights under, or discharge any other party of any obligation under any Specified Material Contract;

i. make any capital investment in, or any loan to, any other Person, except (i) pursuant to any existing agreement as of the date of this Agreement or (ii) any loans made to holders of Options (whether made before, on or after the date hereof, "Option Loans") in the Ordinary Course of Business for the sole purpose of exercising such Options;

j. fail to make capital expenditures in accordance with the capital expenditures budget existing as of the date of this Agreement;

k. make any commitment to make any capital expenditures in excess of $1.5 million annually, except for such capital commitments that are reflected in the Company's current budget;

l. enter into any Related Party Transactions or Interests;

m. make any loan to any of its directors, officers or employees other than (i) the advancement of business and travel expenses in the Ordinary Course of Business or to any of its other Affiliates or (ii) any Option Loans made to holders of Options in the Ordinary Course of Business for the sole purpose of exercising such Options;

n. except as required under the terms of any Company Plan or applicable Law: (i) grant any incentive awards or make any increase in the salaries, bonuses or other compensation and benefits payable by a Group Company to any of its employees, officers or directors, (ii) terminate or materially amend any Company Plan, (iii) adopt or enter into any plan, policy or arrangement for the current or future benefit of any officer or director of any Group Company that would be a Company

Plan if it were in existence as of the date hereof, (iv) accelerate the time of payment or vesting of any compensation and benefits of any employee or director of any Group Company (or pay to any such individual any amount not otherwise due), (v) fund any rabbi trust or similar arrangement, (vi) hire or terminate any employee at the level of Vice President or above (other than a termination of employment for cause), or (vii) enter into any Contract, or take any other action, or modify the terms of employment of any employee at the level of Vice President or above outside of ordinary course salary adjustments;

o. (i) commence any Action (other than customer collection matters in the Ordinary Course of Business), or (ii) compromise or settle any Action if (x) the amount payable by any Group Company in connection therewith would exceed $1 million, (y) such settlement would be reasonably likely to have a material and adverse effect on the post-Closing operations of the business of any Group Company or (z) such settlement, compromise or release contemplates or involves any admission of wrongdoing or misconduct or provides for any relief or settlement other than the payment of money; or

p. incur any Indebtedness or assume, grant, guarantee or endorse, or otherwise as an accommodation become responsible for, the obligations of any Person, except for Indebtedness (other than debt securities) in an aggregate amount not to exceed $5 million at any time outstanding that will be repaid at or prior to the Closing Date (any such Indebtedness incurred after the date of this Agreement, "Additional Indebtedness"); *provided* that, in no event shall the Company or any of its Subsidiaries issue any debt or equity securities (except for any issuance of Common Shares pursuant to an Option);

q. create or incur any Lien on any asset, other than (i) Permitted Liens or (ii) any Lien securing Additional Indebtedness that will be discharged at or prior to the Closing Date;

r. acquire any real property or any direct or indirect interest in any real property;

s. acquire any equity or assets of another Person or merge or consolidate with any other Person or acquire an amount of shares or assets of any other Person or effect any business combination, recapitalization or similar transaction (other than the Acquisition);

t. make any material change to its accounting methods, policies or practices or practices with respect to the maintenance of books of account and records, except as required by ASPE or applicable Law;

u. make, change or revoke any material Tax election, change any material Tax accounting method, file any material amended Tax Return, settle or compromise any audit or other proceeding relating to a material amount of Tax, enter into any "closing agreement" within the meaning of Section 7121 of the Code (or any similar provision of state, local or non-U.S. Law), apply for or request any Tax ruling, or surrender any right to claim a material Tax refund;

v. (i) fail to manage working capital in the Ordinary Course of Business, including with respect to payment of accounts payables and collection of accounts receivables (including in each case, the timing of any such payments or collections) or (ii) make any changes to working capital policies, including with respect to revenue recognition, payment of accounts payables, collection of accounts receivables;

w. forgive, cancel or compromise any material debt or claim, or waive, release or assign any right or claim of material value, other than in the Ordinary Course of Business;

x. make, provide or agree to any material payments, or any other consideration to customers or suppliers, other than in the Ordinary Course of Business or (ii) change the management of working capital or timing of invoicing, billing or collection from customers outside of the Ordinary Course of Business;

y. adopt or enter into a plan or agreement of complete or partial liquidation or dissolution, merger, consolidation, restructuring, recapitalization or other reorganization of the Company or any of its Subsidiaries;

z. enter into, or amend or waive in a manner that could impose additional material liability on or is materially adverse to the Group Companies, (i) any Contract requiring payments in excess of $1.5 million annually or requiring payments in excess of $3 million over the life of the Contract, (ii) any joint venture, strategic alliance, partnership or similar agreement, (iii) any Contract with a non-competition or exclusivity provision or (iv) any Contract for the provision of services by a Group Company where the potential indemnification liability of such Group Company (A) exceeds four (4) times the annual amount of fees payable to such Group Company under such Contract, or (B) may be uncapped (other than with respect to claims relating to infringement of Intellectual Property Rights of any other Person or acts of gross negligence, willful misconduct or fraud by such Group Company); or

aa. authorize any of, or agree or commit to do any of, the foregoing actions.

6.02 Conduct of Business of the Sellers. From the date hereof until the earlier of the termination of this Agreement and the Closing Date, no Seller (nor any spouse, legal representative or agent of a Seller) shall directly or indirectly, Transfer any Common Shares held by such Seller to any other Person (other than another Seller, such that such Transferred Common Shares would be sold to the Buyer in accordance with the terms and conditions herein).

6.03 Access to Books and Records.

a. From the date hereof until the earlier of the termination of this Agreement and the Closing Date, the Company shall, and shall cause its Subsidiaries to provide the Parent and the Buyer and their authorized representatives (the "Parent's Representatives") with full access during normal business hours, and upon reasonable notice, to the offices, properties, senior personnel, and all financial books and records of the Group Companies in order for the Parent to have the opportunity to make such investigation as it shall reasonably desire; *provided*, *however*, that in exercising access rights under this Section 6.03, the Parent and the Parent's Representatives shall (i) not be permitted to interfere unreasonably with the conduct of the business of any Group Company and (ii) only access personal information relating to employees, providers or customers of any Group Company to the extent necessary for, and only for the purposes of, the completion of the Transactions. Notwithstanding anything herein to the contrary, no such access or examination shall be permitted to the extent that it would require any Group Company to disclose information subject to attorney-client privilege or attorney work product privilege, conflict with any third party confidentiality obligations to which any Group Company is bound, or violate any applicable Law; *provided* that the Company shall, or cause its Subsidiary to, use commercially reasonable efforts to cause the third party to which the

confidentiality obligation is owed to consent to the disclosure. The Parent acknowledges that the Parent is and remains bound by the Mutual Confidentiality and Non-Disclosure Agreement between Parent and Verafin Inc., dated October 7, 2020 (the "Confidentiality Agreement"). Notwithstanding anything contained herein to the contrary, no access or examination provided pursuant to this Section 6.03 shall qualify or limit any representation or warranty set forth herein or the conditions to Closing set forth in Section 8.01(a).

b. At the Closing, the Company shall, and shall cause its Subsidiaries to, provide the Parent with the minute books and records and organizational documents of the Group Companies.

6.04 Efforts to Consummate. Subject to the terms and conditions herein provided, from the date hereof until the earlier of the termination of this Agreement and the Closing Date, the Company shall use reasonable best efforts to take, or cause to be taken, all action and to do, or cause to be done, all things reasonably necessary, proper or advisable to consummate and make effective as promptly as practicable the Transactions; *provided,* that such efforts shall not require agreeing to any obligations or accommodations (financial or otherwise) binding on a Group Company in the event the Closing does not occur. The Company shall cooperate with the Parent and use reasonable best efforts to deliver such notices, or to obtain such third party consents or approvals, as may be required by any Lease or Material Contract in connection with the completion of the Transactions; *provided* that in no event shall any Group Company be required to undertake any material expenses or obligations in connection therewith other than (a) expenses that are funded or reimbursed by the Parent or (b) obligations that are not effective prior to the Closing.

6.05 Exclusive Dealing. During the period from the date of this Agreement through the Closing or the earlier termination of this Agreement, the Company and the Sellers shall not, and shall cause their respective officers, directors, employees, agents, partners, Affiliates and other representatives not to, take any action to initiate, solicit or engage in discussions or negotiations with, or provide any information to, or enter into any agreement with any Person (other than the Parent and the Parent's Representatives) concerning (a) any liquidation, dissolution or recapitalization, (b) except in connection with any issuance of Common Shares pursuant to an Option, any purchase of any of the outstanding Common Shares or (c) any merger, sale of all or a significant portion of the assets of the Group Companies or similar transactions involving the Group Companies (each such transaction, an "Acquisition Transaction"). The Company and the Sellers shall, and shall cause their respective officers, directors, employees, agents, partners, Affiliates and other representatives to, cease and cause to be terminated any existing discussions, communications or negotiations with any Person (other than the Parent and Buyer and their representatives) conducted heretofore with respect to any Acquisition Transaction. As soon as reasonably practicable after the date hereof, the Company shall instruct each Person (other than Parent and Buyer and their representatives) in possession of confidential information about the Company that was furnished pursuant to a confidentiality agreement within the prior twelve (12) months in connection with any actual or potential proposal by such person to acquire the Company (or any portion thereof) to promptly return or destroy all such information.

6.06 Payoff Letters and Lien Releases. The Company shall, or shall have caused its applicable Subsidiaries to, deliver all notices and take other actions required to facilitate the termination of commitments in respect of the Credit Agreement and any Additional Indebtedness, repayment in full of all obligations in respect of such Credit Agreement and any Additional Indebtedness and release of any Liens and guarantees in connection therewith on the Closing Date. No later than three (3) Business Days prior to the Closing Date, the Company shall, or shall have caused the applicable Subsidiaries to, furnish to Parent a customary payoff letter with respect to each of the Credit Agreement and any Additional Indebtedness (each, a "Payoff Letter") in substantially final form and in form and substance reasonably satisfactory to Parent from all financial institutions and other Persons to which the Indebtedness under the Credit Agreement or such Additional Indebtedness, as applicable, is owed, or the applicable agent, trustee or other representative on behalf of such Persons, each of which Payoff Letter shall (x) indicate the total amount required to be paid to fully satisfy all principal, interest, prepayment premiums, penalties, breakage costs or other outstanding and unpaid obligations related to the Credit Agreement or such Additional Indebtedness, as applicable, as of the Closing Date (the "Payoff Amount") and (y) state that all obligations (including guarantees) in respect thereof and Liens in connection therewith on the assets of any of the Group Companies and the Common Shares shall be, substantially concurrently with the receipt of the applicable Payoff Amount on the Closing Date by the Persons holding such Indebtedness, released or arrangements reasonably satisfactory to Parent for such release shall have been made by such time, subject, in the case of the Credit Agreement as applicable, to the replacement (or cash collateralization or backstopping) of any then outstanding letters of credit under the Credit Agreement.

6.07 Notification. From the date hereof until the earlier of the termination of this Agreement and the Closing Date, if the Company becomes aware of, or there occurs after the date of this Agreement, any fact or condition that constitutes a breach of any representation or warranty made by the Company in Article III, or of any covenant that, in either case, would cause the conditions set forth in Section 8.01(a) or Section 8.01(c), as applicable, not to be satisfied as of the Closing Date, the Company shall disclose to the Parent such breach. No information provided pursuant to this Section 6.07 shall be deemed to cure any breach of any representation, warranty or covenant made in this Agreement. From the date hereof until the Closing, promptly following the end of each calendar month, and in any event within fifteen (15) days after the end of each calendar month, the Company shall deliver to the Parent monthly financial statements of the Group Companies, prepared in a manner consistent with the monthly financial statements delivered to Parent prior to the date hereof.

6.08 Termination of Related Party Transactions or Interests. Except as set forth on Schedule 6.08, prior to the Closing, the Group Companies shall cause all Related Party Transactions or Interests to be terminated with no Liability or further obligation following the Closing of any Group Company. The Sellers constituting the Series B/C Majority Holders (as defined in the Prior Shareholders' Agreement) hereby consent to the Transactions pursuant to Section 3.10 of the Prior Shareholders' Agreement. Immediately prior to, and contingent on completion of, the Closing, (a) the Sellers constituting the Supermajority Holders (as defined in the Prior Shareholders' Agreement) hereby terminate the Prior Shareholders' Agreement pursuant to Section 8.5(a) of the Prior Shareholders' Agreement; and (b) the applicable Sellers hereby terminate the Amended and Restated Investor Rights Agreement between the Company and certain Sellers dated September 13, 2019.

6.09 Cooperation with Financing

a. The Company shall, and shall cause its Subsidiaries to and shall use its reasonable best efforts to cause its and their respective officers, directors, managers, employees, shareholders, members, partners, controlling persons, agents, consultants, advisors, and other representatives, including legal counsel, accountants and financial advisors ("Company Representatives") to, on a timely basis, upon the reasonable request of Parent or any of its Subsidiaries, provide cooperation in connection with the Financing, including the following:

i. furnishing, or causing to be furnished, to Parent or any of its Subsidiaries audited consolidated balance sheets and related consolidated statements of earnings, deficit and cash flows for Verafin Inc. for each of the three (3) most recently completed fiscal years of Verafin Inc. ended at least one hundred and fifty (150) days prior to the Closing Date prepared in accordance with ASPE applied on a basis consistent with that of the most recent fiscal year and unaudited condensed consolidated balance sheets and related condensed consolidated statements of earnings, deficit and cash flows (in each case, subject to normal year-end adjustments and absence of footnotes) for Verafin Inc. for the fiscal quarter ended September 30, 2019 and each subsequent fiscal quarter ended on a date that is at least forty (40) days before the Closing Date;

ii. (A) providing to Parent or any of its Subsidiaries financial statements, financial data and other financial information regarding the Group Companies reasonably necessary for Parent's or any of its Subsidiaries' preparation of any pro forma financial information of the type required by Regulation S-X and Regulation S-K under the Securities Act for a registered public offering of debt and/or equity securities and (B) using reasonable best efforts to provide such other financial and other information relating to the Group Companies customary or reasonably necessary for the completion of such Financing to the extent reasonably requested by Parent or any of its Subsidiaries; *provided* that, in each case, none of the Group Companies shall be required to provide or prepare any pro forma financial information, which shall be the sole responsibility of Parent;

iii. using reasonable best efforts to obtain and deliver the consent of the independent accountants of the Company to use their audit reports with respect to the financial statements furnished pursuant to Section 6.09(a)(i) in any registration statement of Parent or any of its Subsidiaries filed with the SEC relating to such Financing or otherwise in connection with any such Financing consisting of an offering of securities;

iv. using reasonable best efforts to cause the Company's independent accountants to (A) participate in a manner consistent with their customary practice in drafting sessions and accounting due diligence sessions in connection with such Financing and (B) provide customary comfort letters (including "negative assurance" comfort) with respect to financial information related to the Company, to the extent such comfort letters are required to be delivered to the applicable underwriters, initial purchasers or placement agents in connection with any issuance of securities in a capital markets transaction comprising part of such Financing;

v. using reasonable best efforts to assist Parent or any of its Subsidiaries in (including by providing information relating to the Group Companies required in connection with) its preparation of rating agency presentations, road show materials, bank information memoranda, projections, prospectuses, bank syndication materials, credit agreements, offering memoranda, private placement memoranda, definitive financing documents (as well as customary certificates) and similar or related documents to be prepared by Parent or its Subsidiaries in connection with such Financings;

vi. using reasonable best efforts to cooperate with customary marketing efforts of Parent or any of its Subsidiaries for the Financing, including using reasonable best efforts to cause its management team, with appropriate seniority and expertise, to assist in preparation for and to participate in a reasonable number of meetings, presentations, due diligence sessions (including accounting due diligence sessions), drafting sessions, and sessions with rating agencies, in each case, upon reasonable notice and at mutually agreeable dates and times;

vii. delivering to Parent, no later than four (4) Business Days prior to the Closing Date, any materials and documentation about the Group Companies required under applicable "know your customer" and anti-money laundering Laws (including the Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism (USA PATRIOT ACT) Act of 2001 and the Proceeds of Crime (Money Laundering) and Terrorist Financing Act (Canada)), to the extent requested by any Financing Party or Parent or any of its Subsidiaries no less than eight (8) Business Days prior to the Closing Date;

viii. informing Parent promptly in writing if any executive officer or director of any Group Company (A) concludes that any previously issued financial statement of the Company included or intended to be used in connection with the Financing should no longer be relied upon or (B) shall have knowledge of any facts as a result of which a restatement of any of the Company's financial statements is required or reasonably likely; and

ix. providing customary authorization letters to the Financing Parties, authorizing the distribution of information to prospective lenders or investors and containing a representation that the public side versions of such documents, if any, do not include material non-public information about the Group Companies (only to the extent such authorization letters contain customary disclaimers for the Group Companies and their respective Company Representatives with respect to responsibility for the use or misuse of the contents thereof).

b. All non-public information regarding the Group Companies obtained by Parent or the Company Representatives, in each case pursuant to Section 6.09(a) shall be kept confidential in accordance with the Confidentiality Agreement; *provided* that such information may be disclosed (i) to prospective lenders, underwriters, initial purchasers, placement agents, dealer managers, solicitation agents, information agents and depositary or other agents during syndication and marketing of the Financing that enter into confidentiality arrangements customary for financing transactions of the same type as such Financing (including customary "click-through" confidentiality undertakings), (ii) on a confidential basis to rating agencies and (iii) in any SEC filings to the extent Parent determines reasonably necessary or advisable in connection with any such Financing. The Company hereby consents to the reasonable use of the trademarks, service marks and logos of the

Group Companies solely in connection with the Financing; *provided* that such trademarks, service marks and logos are used solely in a manner that is not intended to or reasonably likely to harm or disparage Sellers or the Group Companies or their reputation or goodwill.

c. In connection with Section 6.09(a),

i. subject to Section 6.09(d), none of the Group Companies shall be required to pay any commitment or other similar fee or incur any liability or expenses in connection with any Financing, except such expenses for which Parent or one of its Subsidiaries is obligated to reimburse the Group Companies or, if reasonably requested by the Company, for which funds that are actually necessary to pay such expenses are provided in advance by Parent or one of its Subsidiaries to the Group Companies;

ii. no director or officer of any Group Company shall be required to execute any agreement, certificate, document or instrument with respect to such Financing that would be effective prior to the Closing (other than customary authorization letters);

iii. any required cooperation shall not unreasonably interfere with the ongoing operations of the Group Companies; and

iv. none of the Group Companies nor any of their respective Company Representatives shall be required to take or cause to be taken any action pursuant to Section 6.09(a) that would (1) cause any representation or warranty in this Agreement to be breached by any Party; (2) conflict with (A) the organizational documents of Sellers or the Group Companies or any material Laws or (B) obligations of confidentiality to a third party (not created in contemplation hereof) binding on the Group Companies (*provided* that in the event that the Group Companies do not provide information in reliance on the exclusion in this clause (B), the Group Companies shall provide notice to Buyer promptly that such information is being withheld (but solely if providing such notice would not violate such obligation of confidentiality) and use reasonable best efforts to allow for such access or disclosure to the maximum extent that would not violate such obligation of confidentiality); (3) require providing access to or disclosing information that would jeopardize any attorney-client privilege of the Group Companies (*provided* that the Group Companies shall use reasonable best efforts to allow for such access or disclosure to the maximum extent that does not result in a waiver of attorney-client privilege) or (4) require the Group Companies to prepare any projections.

d. The Group Companies and their respective Company Representatives will be indemnified and held harmless by Parent from and against any and all liabilities, losses, damages, claims, costs, expenses (including reasonable attorney's fees), interest, awards, judgments, penalties and amounts paid in settlement suffered or incurred by them in connection with their cooperation in arranging the Financing pursuant to this Agreement, the provision of information utilized in connection therewith (other than written information provided by or on behalf of any Group Company) and the cooperation contemplated by this Section 6.09, other than to the extent any such liabilities, losses, damages, claims, costs, expenses, interest, awards, judgments or penalties are the result of the gross negligence, bad faith or willful misconduct of any Group Company or their respective Company Representatives, or any such Person's material breach of this Agreement, or with respect to any material misstatement or omission in information provided in writing hereunder by any

of the foregoing Persons for use in connection herewith or with the Financing. This indemnification shall survive the termination of this Agreement.

6.10 Tax Matters.

a. On the Closing Date but prior to the Closing, the Company shall undertake the transactions set forth on Schedule 6.10(a) (the "Pre-Closing Reorganization"). A reasonable period of time prior to the execution or completion of the Pre-Closing Reorganization, the Company shall make available to the Buyer and Fund Holders all documentation that are prepared to effectuate the Pre-Closing Reorganization for review and the Company shall incorporate any reasonable comments of Buyer and Fund Holders may have thereon; provided, that none of the Sellers, Buyer, Fund Holders or the Company may require (or cause) the Company to change the steps contemplated by the Pre-Closing Reorganization.

b. The Company shall, in its Tax Return for the taxation year ending as a consequence of the acquisition of control of it by Buyer, make a designation pursuant to paragraph 111(4)(e) of the ITA to deem a disposition of certain of its property for proceeds of disposition equal to the paragraph 111(4)(e) Amount, which amount shall not exceed the lesser of the amounts described in clauses 111(4)(e)(i)(A) and (B) of the ITA. None of the Company or any of its Subsidiaries shall make an election pursuant to subsection 256(9) of the ITA in respect its taxation year ending as a consequence of the acquisition of control of it by Buyer.

c. The Parties agree that the entire Base Consideration is consideration for the Common Shares and that no part of the Base Consideration relates to a restrictive covenant for purposes of the ITA or for other Tax purposes, including any of the covenants contained in this Agreement which are intended to maintain or preserve the fair market value of the Common Shares to the Buyer. It is the Parties' intention that subsection 56.4(7) of the ITA and any equivalent provision of the Tax legislation of any province or any other jurisdiction apply with respect to the sale of the Common Shares pursuant to this Agreement.

d. Buyer may, in its sole discretion, cause a timely and irrevocable election under Section 338(g) of the Code (and any corresponding provisions of U.S. state or U.S. local Tax law) to be made with respect to the direct or indirect acquisition of any Group Company that is a corporation for U.S. federal income tax purposes pursuant to this Agreement. Buyer agrees to notify the Representative if any election under Section 338(g) of the Code (and any corresponding provisions of U.S. state or U.S. local Tax law) is made with respect to the direct or indirect acquisition of any Group Company. Sellers shall reasonably cooperate with and provide Buyer with such assistance as is reasonably requested by Buyer to enable Buyer to comply with the requirements of Treasury Regulations Section 1.338-2(e)(4), if applicable. The Company shall reasonably cooperate with and provide Buyer with such assistance as is reasonably requested by Buyer to enable Buyer to minimize the Tax cost of any election under Section 338(g) of the Code (and any corresponding provisions of U.S. state or U.S. local Tax law); *provided* that the Company shall not be obligated to cooperate or provide assistance if such cooperation or assistance would result in adverse consequences to any Group Company or any Seller (or its direct or indirect owners).

e. Without the prior written consent of the Representative, Parent and Buyer shall not, and shall not cause or permit Company or any of its Subsidiaries to, take any position on any Tax Return inconsistent with the position that none of the Group Company is a "controlled foreign corporation", as defined in Section 957 of the Code, for any period (or portion thereof) ending on the Closing Date, except as otherwise required pursuant to a "determination" within the meaning of Section 1313(a) of the Code (or any similar provision of U.S. state or U.S. local law).

6.10 No Tax Changes. Except as otherwise contemplated by this Agreement (including, for the avoidance of doubt, any action in connection with any election under Section 338(g) of the Code (and any corresponding provisions of U.S. state or U.S. local Tax law)), prior to the determination of the Final Consideration, the Buyer Parties shall not, and shall not cause the Company and its Subsidiaries to, make, change or revoke any material Tax election, change any material Tax accounting method, file any material amended Tax Return, settle or compromise any audit or other proceeding relating to material amount of Tax, enter into any "closing agreement" within the meaning of Section 7121 of the Code (or any similar provision of state, local or non-U.S. Law), apply for or request any Tax ruling, or surrender any right to claim a material Tax refund; *provided* that this Section 6.11 shall only apply to an action that would directly (and solely) result in a decrease to the Final Consideration prior to the Determination Date.

ARTICLE VII

COVENANTS OF THE PARENT AND THE BUYER

7.01 Access to Books and Records. From and after the Closing until the six (6)-year anniversary of the Closing Date, the Parent shall, and shall cause the Company to, provide the Representative and its authorized representatives with access (for the purpose of examining and copying information reasonably requested by the Representative), during normal business hours, upon reasonable notice, to the books and records of the Group Companies with respect to periods (or portions thereof) ending prior to or on the Closing Date with respect to any Tax audits, Tax Returns or governmental investigations. Parent further agrees, upon reasonable request, to use reasonable best efforts to provide (or to cause the Company to provide) the Representative with all information in its possession that a Seller (and its direct or indirect owners) requires in order to comply with such Seller's (or its direct or indirect owners') U.S. federal or state Tax Return filing obligations with respect to the Group Companies, including pursuant to Sections 6038 and 6038B of the Code and the Treasury Regulations promulgated thereunder, and/or in connection with any Tax audit, examination or proceeding of such Seller (or its direct or indirect owners) with respect to periods (or portions thereof) ending prior to or on the Closing Date.

7.02 Indemnification of Officers and Directors of the Company.

a. For a period of six (6) years after the Closing and at all times subject to applicable Law, the Parent shall cause the Company to indemnify, defend and hold harmless, and provide advancement of expenses to, each Person who is now, or has been at any time prior to the date hereof or who becomes prior to the Closing, an officer or director of a Group Company (each, a "D&O Indemnified Party"), against all Losses in connection with any claim, Action, suit, proceeding or

investigation based in whole or in part on or arising in whole or in part out of the fact that such Person is or was an officer or director of a Group Company, and pertaining to any matter existing or occurring, or any acts or omissions occurring, at or prior to the Closing, whether asserted or claimed prior to, or at or after, the Closing (including matters, acts or omissions occurring in connection with the approval of this Agreement and the consummation of the Transactions) to the same extent that such Persons are indemnified or have the right to advancement of expenses as of the date hereof by the Group Companies pursuant to their respective organizational documents and indemnification agreements of the Company, if any, in existence on the date hereof with any D&O Indemnified Party.

b. For a period of six (6) years after the Closing and at all times subject to applicable Law, (i) the Parent shall not (and shall not cause or permit any Group Company or any of the Parent's other Subsidiaries or Affiliates to) amend or modify in any way adverse to the D&O Indemnified Parties, or to the beneficiaries thereof, the exculpation and indemnification provisions set forth in the organizational documents of the Group Companies (except (x) as required by applicable Law or (y) unless the provisions as so amended, repealed or modified in connection with a restructuring in which the governing documents of the surviving company include substantially equivalent exculpation or indemnification provisions with respect to such acts for the benefit of such persons), and (ii) the Parent shall (unless a "tail" policy is obtained by Parent or the Company pursuant to the next sentence) cause to be maintained in effect the current policies of directors' and officers' liability insurance maintained by or on behalf of the Company as of the date hereof (the "Current Policies") (*provided* that the Parent may substitute such policies with a substantially comparable insurer of at least the same coverage and amounts containing terms and conditions that are no less advantageous to the insured) with respect to claims arising from facts or events that occurred at or prior to the Closing; *provided, however*, that the Parent shall not be obligated to make annual premium payments for such insurance to the extent that such premiums exceed two hundred percent (200%) of the annual premiums paid as of the date hereof by or on behalf of the Company for the Current Policies (the "Premium Amount"), and if such premiums for such insurance would at any time exceed the Premium Amount, then the Parent shall cause to be maintained policies of insurance that provide the maximum coverage available at an annual premium equal to the Premium Amount. Notwithstanding the foregoing, prior to the Closing and in satisfaction of the Parent's obligations under clause (ii) of the preceding sentence of this Section 7.02, the Parent may obtain, and if the Parent does not obtain, the Company shall obtain (at the Parent's expense, and without duplication) a six (6) year "tail" prepaid directors' and officers' liability insurance policy (the "D&O Tail"), effective as of the Closing, providing, for a period of six (6) years after the Closing, the coverage and amounts, and terms and conditions, contemplated by the foregoing sentence of this Section 7.02(b); *provided* that the Company shall not pay an aggregate amount for such D&O Tail in excess of the Premium Amount. If such premiums for such D&O Tail would require an expenditure that exceeds the Premium Amount, then the Parent or the Company may obtain, in satisfaction of the foregoing, a policy with the greatest coverage available for a cost not exceeding such amount. From and after the Closing, the Parent shall (and/or shall cause the Group Companies or its other subsidiaries or Affiliates, as applicable, to) continue to honor its obligations under any such insurance procured pursuant to this Section 7.02(b), and shall not cancel (or permit to be canceled) or take (or cause to be taken) any action or omission that would reasonably be expected to result in the cancellation thereof.

c. If the Company or any of its successors or assigns proposes to (i) consolidate with or merge into any other Person and the Company shall not be the continuing or surviving corporation or entity in such consolidation or merger or (ii) transfer all or substantially all of its properties and assets to any Person, then, and in each case, proper provision shall be made prior to or concurrently with the consummation of such transaction so that the successors and assigns of the Company shall, from and after the consummation of such transaction, honor the indemnification and other obligations set forth in this Section 7.02.

d. The provisions of this Section 7.02 shall survive the consummation of the Acquisition and the Closing and (i) are intended to be for the benefit of, and shall be enforceable by, each D&O Indemnified Party, and his or her successors, heirs and representatives and shall be binding on all successors and assigns of the Company and (ii) are in addition to, and not in substitution for, any other rights to indemnification or contribution that any such Person may have by Contract or otherwise.

7.03 Efforts to Consummate. Subject to the terms and conditions herein provided, from the date hereof until the earlier of the termination of this Agreement and the Closing Date, each of the Parent and Buyer shall use its reasonable best efforts to take, or cause to be taken, all actions and to do, or cause to be done, all things reasonably necessary, proper or advisable to consummate and make effective as promptly as practicable the Transactions; *provided* that such efforts shall not require agreeing to any obligations or accommodations (financial or otherwise) binding on the Parent or the Buyer in the event the Closing does not occur.

ARTICLE VIII

CONDITIONS TO CLOSING

8.01 Conditions to the Parent's and Buyer's Obligations. The obligations of the Parent and the Buyer to consummate the Transactions are subject to the satisfaction (or, if permitted by applicable Law, waiver by the Parent and the Buyer in writing) of the following conditions as of the Closing Date:

a. (i) The Company Fundamental Representations shall be true and correct in all respects as of the date hereof and at and as of the Closing Date as though made at and as of the Closing Date (except to the extent expressly made only as of an earlier date, in which case only as of such date), (ii) the representations and warranties set forth in Section 3.04(a) and Section 3.04(c) (other than Section 3.04(c)(iii)(x)) shall be true and correct in all respects, except for *de minimis* inaccuracies, as of the date hereof and at and as of the Closing Date as though made at and as of the Closing Date (except to the extent expressly made only as of an earlier date, in which case only as of such date); (iii) the representations and warranties set forth in Sections 3.02, 3.03(b) and 3.07 shall be true and correct (without giving effect to any limitation as to "materiality" or "Material Adverse Effect" set forth therein) in all material respects as of the date hereof and at and as of the Closing Date as though made at and as of the Closing Date (except to the extent expressly made only as of an earlier date, in which case only as of such date), and (iv) all other representations and warranties of the Company contained

in Article III of this Agreement shall be true and correct (without giving effect to any limitation as to "materiality" or "Material Adverse Effect" set forth therein) as of the date hereof and at and as of the Closing Date as though made at and as of the Closing Date (except to the extent expressly made only as of an earlier date, in which case only as of such date), except, in the case of this clause (iv), where the failure of such representations and warranties to be so true does not constitute a Material Adverse Effect;

b. (i) The Sellers Fundamental Representations shall be true and correct in all respects as of the date hereof and at and as of the Closing Date as though made at and as of the Closing Date (except to the extent expressly made only as of an earlier date, in which case only as of such date), (ii) the representations and warranties set forth in Section 4.02 shall be true and correct in all respects, except for *de minimis* inaccuracies, as of the date hereof and at and as of the Closing Date as though made at and as of the Closing Date (except to the extent expressly made only as of an earlier date, in which case only as of such date), and (iii) all other representations and warranties of the Sellers contained in Article IV shall be true and correct as of the date hereof and at and as of the Closing Date as though made at and as of the Closing Date (except to the extent expressly made only as of an earlier date, in which case only as of such date), except, in the case of this clause (iii), where the failure of such representations and warranties to be so true and correct would not reasonably be expected to prevent, materially delay or materially impede the consummation of the Transactions;

c. The Company and each Seller shall have performed and complied with in all material respects each of the covenants and agreements required to be performed by it under this Agreement at or prior to the Closing;

d. The receipt of Investment Canada Act Approval;

e. The waiting period under the HSR Act applicable to the Transactions, and any extension thereof, shall have expired or been terminated;

f. There shall be no Law, and no Governmental Entity having competent jurisdiction shall have issued an Order or taken any other action, in each case that would restrain, enjoin or otherwise prohibit the performance of this Agreement or the consummation of any of the Transactions, declare unlawful the Transactions or cause such transactions to be rescinded;

g. The Company shall have delivered to the Parent duly executed counterparts to each of the following:

i. a certificate of an authorized officer of the Company in his or her capacity as such, dated as of the Closing Date, stating that the conditions specified in Sections 8.01(a) and 8.01(c) have been satisfied;

ii. certified copies of resolutions duly adopted by the Company's board of directors authorizing the execution, delivery and performance of this Agreement and the other agreements contemplated hereby, and the consummation of all Transactions and thereby; and

iii. the Certificate of Incorporation of the Company certified by Corporations Canada and a certificate of compliance for the Company issued by Corporations Canada.

h. The Company, on behalf of the Sellers, shall have delivered to the Parent duly executed counterparts to each of the following:

i. the Escrow Agreement, duly executed by the Representative;

ii. the escrow agreement contemplated by Section 2.1 of the Escrow and Management Incentive Agreement, duly executed by the Key Employees; and

iii. a certificate executed by the Company on behalf of the Sellers, dated as of the Closing Date, stating that the conditions specified in Sections 8.01(b) and 8.01(c) have been satisfied;

i. The Pre-Closing Reorganization shall have occurred; and

j. There shall not have been a Material Adverse Effect since the date hereof.

8.02 Conditions to the Company's and Sellers' Obligations. The obligation of the Company and Sellers to consummate the Transactions is subject to the satisfaction (or, if permitted by applicable Law, waiver by the Company in writing) of the following conditions as of the Closing Date:

a. (i) The Buyer Parties Fundamental Representations shall be true and correct in all material respects as of the date hereof and at and as of the Closing Date as though made at and as of the Closing Date and (ii) all other representations and warranties contained in Article V of this Agreement shall be true and correct (without giving effect to any limitation as to "materiality" or "Parent Material Adverse Effect" set forth therein) as of the date hereof and at and as of the Closing Date as though made at and as of the Closing Date (except to the extent expressly made only as of an earlier date, in which case only as of such date), except, in the case of this clause (ii), where the failure of such representations and warranties to be so true and correct (without giving effect to any limitation to "materiality" or "Parent Material Adverse Effect" set forth therein) has not had, and would not have, a Parent Material Adverse Effect;

b. The Parent and the Buyer shall have performed and complied with in all material respects each the covenants and agreements required to be performed by them under this Agreement at or prior to the Closing;

c. The receipt of Investment Canada Act Approval;

d. The waiting period under the HSR Act applicable to the Transactions, and extension thereof, shall have expired or been terminated;

e. There shall be no decree or order entered into by any Governmental Entity that would prevent the performance of this Agreement or the consummation of any of the Transactions, declare unlawful the Transactions or cause such transactions to be rescinded; and

f. The Parent shall have delivered to the Company each of the following:

i. the Escrow Agreement, duly executed by the Buyer Parties;

ii. the Plan (as defined in the Escrow and Management Incentive Agreement), duly adopted by the Buyer, and the delivery of award agreements to the Key Employees pursuant to the Plan; and

iii. a certificate of an authorized officer of the Parent and the Buyer in his or her capacity as such, dated as of the Closing Date, stating that the conditions specified in Sections 8.02(a) and 8.02(b) have been satisfied.

ARTICLE IX

SURVIVAL

9.01 Survival. None of the representations and warranties of any party contained in this Agreement shall survive the Closing. Notwithstanding the foregoing, nothing in this Section 9.01 shall affect or limit the ability of Buyer Parties to recover under the R&W Insurance Policy. The covenants and agreements set forth in this Agreement that by their terms are required to be performed before the Closing shall terminate on the Closing, and, except in the case of fraud or willful misconduct by such Party, no Party shall have any liability from and after Closing for any breach by the Buyer Parties, the Sellers, the Company or any of the other Group Companies of any of the covenants or agreements contained herein that by their terms are required to be performed before the Closing. Unless otherwise indicated, the covenants and agreements set forth in this Agreement that by their terms are required to be performed in whole or in part after the Closing, shall survive the Closing until they have been fully performed or satisfied.

ARTICLE X

TERMINATION

10.01 Termination. This Agreement may be terminated at any time prior to the Closing:

a. by the mutual written consent of the Parent, on the one hand, and the Company and the Sellers, on the other hand;

b. by the Parent, if any of the representations or warranties of the Company set forth in Article III or if any of the representations or warranties of Sellers set forth in Article IV shall not be true and correct, or if the Company or Sellers has failed to perform any covenant or agreement on the part of the Company set forth in this Agreement, such that the conditions to Closing set forth in either Section 8.01(a), Section 8.01(b) or Section 8.01(c) would not be satisfied and, in the case of any breach capable of being cured by the Outside Date, the breach or breaches causing such representations or warranties not to be true and correct, or the failures to perform any covenant or agreement, as applicable, are not cured within twenty (20) Business Days after written notice thereof is delivered to the Company; *provided* that neither the Parent nor the Buyer is then in breach of this Agreement such that the conditions to Closing set forth in either Section 8.02(a) or Section 8.02(b) would not be satisfied;

c. by the Company, if any of the representations or warranties of the Parent or the Buyer set forth in Article V shall not be true and correct, or if the Parent or the Buyer has failed to perform any covenant or agreement on the part of the Parent or the Buyer, respectively, set forth in this Agreement, such that the conditions to Closing set forth in either Section 8.02(a) or Section 8.02(b) would not be satisfied and, in the case of any breach capable of being cured by the Outside Date, the breach or breaches causing such representations or warranties not to be true and correct, or the failures to perform any covenant or agreement, as applicable, are not cured within twenty (20) Business Days after written notice thereof is delivered to the Parent or the Buyer; *provided* that the Company is not then in breach of this Agreement such that the conditions to Closing set forth in either Section 8.01(a), Section 8.01(b) or Section 8.01(c) would not be satisfied;

d. by the Parent, on the one hand, or the Company, on the other hand, if the Transactions shall not have been consummated on or prior to the date that is nine (9) months from the date of this Agreement (as it may be extended pursuant to the next proviso, the "Outside Date"); *provided,* that if on such date, any of the conditions to the Closing set forth in Section 8.01(d), Section 8.01(e), Section 8.01(f) (if the Order or any other action relates to the matters referenced in Section 8.01(d) or Section 8.01(e)), Section 8.02(c), Section 8.02(d) or Section 8.02(e) (if the Order or any other action relates to the matters referenced in Section 8.02(c) or Section 8.02(d)) shall not have been satisfied, but all other conditions to the Closing shall have been satisfied (or in the case of conditions that by terms are to be satisfied at the Closing, shall be capable of being satisfied on such date) or waived, then the Outside Date shall be automatically extended for 30 days (it being agreed that there shall be no more than two such extensions); *provided, however*, that the Buyer Parties (if Parent is seeking to terminate this Agreement pursuant to this Section 10.01(d)) or the Company (if the Company is seeking to terminate this Agreement pursuant to this Section 10.01(d)), as applicable, shall not have breached in any material respect their obligations under this Agreement in any manner that shall have proximately caused the failure to consummate the Transactions on or before the Outside Date; or

e. by the Parent, on the one hand, or the Company, on the other hand, if any Governmental Entity having competent jursidiction shall have issued an Order or taken any other action that would permanently restrain, enjoin or otherwise prohibit the performance of this Agreement or the consummation of any of the Transactions, declare unlawful the Transactions or cause such transactions to be rescinded, and such Order or other action shall have become final and nonappealable.

10.2 Effect of Termination. In the event this Agreement is terminated by either the Parent or the Company as provided above, the provisions of this Agreement shall immediately become void and of no further force and effect (other than Section 7.02 this Section 10.02, Section 11.01, and Article XII and Article XIII, which shall survive the termination of this Agreement (other than the provisions of Section 13.16, which shall terminate)), and there shall be no liability on the part of either the Parent, the Buyer, the Company, the Representative or the Sellers to one another, *provided* that no such termination shall relieve any Party hereto from any liability or damages resulting from a willful and material breach prior to such termination. No termination of this Agreement shall affect the obligations contained in the Confidentiality Agreement, all of which obligations shall survive termination of this Agreement in accordance with their terms.

ARTICLE XI

ADDITIONAL COVENANTS

11.01 Representative

a. Appointment. By executing this Agreement or a Joinder Agreement, each Seller irrevocably appoints Shareholder Representative Services LLC as of the Closing as the Representative for all purposes in connection with this Agreement and the agreements ancillary hereto to do any and all things and execute any and all documents that may be necessary, convenient or appropriate to facilitate the consummation of the Transactions, including: (i) execution of the documents and certificates pursuant to this Agreement; (ii) authorize payments under or pursuant to this Agreement and disbursement thereof, as contemplated by this Agreement; (iii) authorize payment of amounts due to the Parent pursuant to Sections 1.06 or 1.07; (iv) receipt and forwarding of notices and communications pursuant to this Agreement; (v) administration of the provisions of this Agreement; (vi) giving or agreeing to, on behalf of all or any of the Sellers, any and all consents, waivers, amendments or modifications deemed by the Representative, in its sole and absolute discretion, to be necessary or appropriate under this Agreement and the execution or delivery of any documents that may be necessary or appropriate in connection therewith; (vii) amending this Agreement or any of the instruments to be delivered to the Parent pursuant to this Agreement; (viii) (A) disputing or refraining from disputing, on behalf of each Seller relative to any amounts to be received by such Sellers under this Agreement or any agreements contemplated hereby, any claim made by the Buyer Parties under this Agreement or other agreements contemplated hereby, (B) negotiating and compromising, on behalf of each such Seller, any dispute that may arise under, and exercising or refraining from exercising any remedies available under, this Agreement or any other agreement contemplated hereby and (C) executing, on behalf of each such Seller, any settlement agreement, release or other document with respect to such dispute or remedy; and (ix) engaging attorneys, accountants, agents or consultants on behalf of the Sellers in connection with this Agreement or any other agreement contemplated hereby and paying any fees on behalf of the Sellers related thereto.

b. Authorization. Notwithstanding Section 11.01(a), in the event that the Representative is of the opinion that it requires further advice from the Sellers who constitute the advisory committee as established under the engagement letter between the Company and the Representative (the "Advisory Committee") on any matters concerning this Agreement, the Representative shall be entitled to seek such further advice from the Advisory Committee prior to acting on their behalf. In such event, any action approved by the Sellers representing a majority of the Common Shares held by the Advisory Committee shall be binding on all of the Sellers and shall constitute the authorization of the Sellers. The appointment of the Representative is coupled with an interest and shall be irrevocable by any Seller in any manner or for any reason. This authority granted to the Representative shall not be affected by the death, illness, dissolution, disability, incapacity or other inability to act of any principal pursuant to any applicable Law. Shareholder Representative Services LLC hereby accepts its appointment as the initial Representative.

c. Actions by the Representative; Resignation; Vacancies. The Representative may resign from its position as Representative at any time by written notice delivered to the Company and the Advisory Committee. If there is a vacancy at any time in the position of the Representative for

any reason, such vacancy shall be filled by a majority vote in accordance with the method set forth in Section 11.01(b).

d. No Liability; Indemnification. All acts of the Representative hereunder in its capacity as such shall be deemed to be acts on behalf of the Sellers and not of the Representative individually. The Representative will incur no liability of any kind with respect to any action or omission by the Representative in connection with the Representative's services pursuant to this Agreement and any agreements ancillary hereto, except in the event of liability directly resulting from the Representative's fraud, gross negligence or willful misconduct. The Representative shall not be liable for any good faith action or omission pursuant to the advice of counsel. The Sellers will, severally and not jointly, in accordance with each Seller's Pro Rata Percentage, indemnify, defend and hold harmless the Representative from and against any and all losses, liabilities, damages, claims, penalties, fines, forfeitures, actions, fees, costs and expenses (including the fees and expenses of counsel and experts and their staffs and all expense of document location, duplication and shipment) (collectively, "Representative Losses") arising out of or in connection with the Representative's execution and performance of this Agreement and any agreements ancillary hereto, in each case as such Representative Loss is suffered or incurred; provided, that in the event that any such Representative Loss is finally adjudicated to have been directly caused by the fraud, gross negligence or willful misconduct of the Representative, the Representative will reimburse the Sellers the amount of such indemnified Representative Loss to the extent attributable to such fraud, gross negligence or willful misconduct. If not paid directly to the Representative by the Sellers, any such Representative Losses may be recovered by the Representative from (i) the funds in the Expense Fund and (ii) any other funds that become payable to the Sellers under this Agreement at such time as such amounts would otherwise be distributable to the Sellers; provided, that while this section allows the Representative to be paid from the aforementioned sources of funds, this does not relieve the Sellers from their obligation to promptly pay such Representative Losses as they are suffered or incurred, nor does it prevent the Representative from seeking any remedies available to it at law or otherwise. In no event will the Representative be required to advance its own funds on behalf of the Sellers or otherwise. Notwithstanding anything in this Agreement to the contrary, any restrictions or limitations on liability or indemnification obligations of, or provisions limiting the recourse against non-parties otherwise applicable to, the Sellers set forth elsewhere in this Agreement are not intended to be applicable to the indemnities provided to the Representative under this section. The foregoing indemnities will survive the Closing, the resignation or removal of the Representative or the termination of this Agreement.

e. Expenses. Upon the Closing, the Buyer will wire $150,000 (the "Expense Fund") to the Representative, which will be used for the purposes of paying directly, or reimbursing the Representative for, any third party expenses pursuant to this Agreement and the agreements ancillary hereto. The Sellers will not receive any interest or earnings on the Expense Fund and irrevocably transfer and assign to the Representative any ownership right that they may otherwise have had in any such interest or earnings. The Representative will not be liable for any loss of principal of the Expense Fund other than as a result of its gross negligence or willful misconduct. The Representative will hold these funds separate from its corporate funds, will not use these funds for its operating expenses or any other corporate purposes and will not voluntarily make these funds available to its creditors in the event of bankruptcy. The Representative shall, within two (2) Business Days following the determination of the Final Consideration pursuant to Section 1.05, deliver to: (i) the

Paying Agent (for distribution to the Company Shareholders) the Company Shareholder Percentage of any remaining balance of the Expense Fund and (ii) the Company (for distribution to the holders of the In-the-Money Options pursuant to Section 1.03(b)) the Optionholder Percentage of any remaining balance of the Expense Fund. For tax purposes, the Expense Fund will be treated as having been received and voluntarily set aside by the Sellers at the time of Closing.

f. Reliance. Any decision, act, consent, approval or instruction of the Representative given or made after Closing pursuant to this Agreement shall constitute a decision, act, consent, approval or instruction of the Sellers, and the Parent, the Buyer and, following the Closing, the Company shall be entitled to conclusively rely upon any representation, instrument or statement of the Representative with respect to any such act, decision, consent, approval or instruction of the Sellers.

11.02 Disclosure Schedules. All references to this Agreement herein or in any of the Disclosure Schedules attached hereto (each, a "Schedule" and, collectively, the "Disclosure Schedules") shall be deemed to refer to this entire Agreement, including all Disclosure Schedules. Any item of information, matter or document disclosed or referenced in, or attached to, the Disclosure Schedules shall not (a) be used as a basis for interpreting the terms "material," "Material Adverse Effect" or other similar terms in this Agreement or to establish a standard of materiality, (b) represent a determination that such item or matter did not arise in the Ordinary Course of Business, (c) except as expressly set forth in this Agreement, be deemed or interpreted to expand the scope of the Company's, the Parent's or the Buyer's respective representations and warranties, obligations, covenants, conditions or agreements contained herein, (d) constitute, or be deemed to constitute, an admission of liability or obligation regarding such matter or (e) constitute, or be deemed to constitute, an admission to any third party concerning such item or matter. No disclosure in the Disclosure Schedules relating to any possible breach or violation of any agreement or Law shall be construed as an admission or indication that any such breach or violation exists or has actually occurred. Capitalized terms used in the Disclosure Schedules and not otherwise defined therein have the meanings given to them in this Agreement.

11.03 Regulatory Approvals

a. Each of the Buyer Parties and the Company agrees to use its reasonable best efforts to take, or cause to be taken, all actions, to file, or cause to be filed, all documents and to do, or cause to be done, all things necessary, proper or advisable to consummate the Acquisition, including preparing and filing as promptly as practicable all documentation to effect all necessary filings, consents, waivers, approvals, authorizations, Permits or Orders from all Governmental Entities. In furtherance and not in limitation of the foregoing,

i. Parent and Buyer, as applicable, shall file an application for review under Part IV of the Investment Canada Act with respect to the Transactions within ten (10) Business Days after the date hereof or such other date as the Buyer Parties and the Company may reasonably agree or as the Buyer Parties and the Company may reasonably agree to waive; provided the Company has supplied all of the information that Parent and Buyer reasonably require in order to prepare its filing;

ii. within twenty (20) Business Days after the submission of the application for review under the Investment Canada Act or such other date as the Buyer Parties and the Company may reasonably agree or as the Buyer Parties and the Company may reasonably agree to waive, Parent and Buyer, as applicable, shall submit to the Director of Investments under the Investment Canada Act written undertakings to the responsible Minister or his designees that are consistent with and substantially similar to the undertakings set out in Exhibit B hereto or otherwise as the Buyer Parties and the Company may reasonably agree. For the avoidance of doubt, the Buyer Parties acknowledge and agree that the undertakings set out in Exhibit B hereto would not, individually or in the aggregate, significantly and adversely affect the business of the Company or the Parent or its other Subsidiaries after the Closing or be reasonably expected to do so;

iii. Parent and Buyer, as applicable shall further promptly take such additional steps as may be required in order to obtain Investment Canada Act Approval without delay, including proposing and agreeing to additional or augmented written undertakings with the responsible Minister, *provided* that notwithstanding anything to the contrary in this Agreement, in seeking to obtain Investment Canada Act Approval, Parent and Buyer shall not be required (x) to take actions that would, individually or in the aggregate, be reasonably be expected to significantly and adversely affect the business of the Company or the Parent or their other Subsidiaries after the Closing, or (y) to undertake any commitment that would remain in effect for more than three (3) years after the Closing; and

iv. (x) each of Parent, Buyer and the Company shall make, or cause their respective Affiliates to make, an appropriate filing of a Notification and Report Form pursuant to the HSR Act with respect to the Transactions as promptly as practicable after the date hereof, and to request early termination of any applicable waiting period under the HSR Act, and (y) each of Parent, Buyer, the Company and the Sellers shall supply, or cause their respective Affiliates to supply, as promptly as reasonably practicable any additional information and documentary material that may be requested by any Governmental Entities pursuant to the Investment Canada Act or the HSR Act.

b. Further, and without limiting the generality of the rest of this Section 11.03, each of the Buyer Parties and the Company shall cooperate in all respects with each other in connection with any filing or submission and in connection with any investigation or other inquiry and shall promptly (i) furnish to the other Party such necessary information and reasonable assistance as the other Party may request in connection with the foregoing, (ii) inform the other Party of any communication from any Governmental Entity regarding any of the Transactions, and (iii) provide counsel for the other Party with copies of all filings made by such Party, and all correspondence between such Party (and its advisors) with any Governmental Entity and any other information supplied by such Party and such Party's Affiliates to a Governmental Entity or received from such a Governmental Entity in connection with the Transactions; *provided*, *however*, that materials may be redacted (A) to remove references concerning the valuation of the Company, (B) as necessary to comply with contractual arrangements and with applicable Law and (C) as necessary to address reasonable privilege concerns. Each of the Buyer Parties and the Company shall, subject to applicable Law, permit counsel for the other Party to review in advance, and consider in good faith the views of the other Party in connection with, any proposed written communication to any Governmental Entity in connection with the Transactions. The Buyer Parties and the Company agree

not to participate, or to permit their Affiliates to participate, in any substantive meeting or discussion, either in person or by telephone, with any Governmental Entity in connection with the Transactions unless it consults with the other Party in advance and, to the extent not prohibited by such Governmental Entity, gives the other Party and their counsel the opportunity to attend and participate. The Sellers shall cooperate, in all reasonable respects, with the Buyer Parties and the Company in connection with the Investment Canada Act Approval and any filings pursuant to the HSR Act by furnishing to the Buyer Parties and the Company such information and reasonable assistance as may be required in connection with the Investment Canada Act Approval and the expiration or early termination of the waiting period pursuant to the HSR Act. The Buyer Parties and the Company shall reasonably cooperate in seeking to obtain Investment Canada Act Approval and any other approvals or consents under any Antitrust Law or other Law, including considering the views of the other Party in good faith, with Parent having ultimate right to determine the strategy and process for seeking the Investment Canada Act Approval and such other approvals or consents after reasonably consulting with the Company.

c. The Parent and the Buyer shall use their reasonable best efforts to avoid or eliminate each and every impediment under any Antitrust Law or other Law that may be asserted by any Governmental Entity or private party with respect to this Agreement so as to make effective as promptly as practicable the Transactions and to avoid any suit or proceeding, which would otherwise have the effect of preventing or delaying the Closing beyond the Outside Date.

11.04 Non-Competition; Non-Solicitation.

a. For a period of five (5)-years after the Closing Date, each Key Seller shall not, directly or indirectly, (i) engage in (including as a director, officer, employee, partner, consultant, agent or advisor), or manage or supervise personnel engaged in, any business that provides software or analytics or data-related services for the detection or prevention of fraud, money laundering or other crime (such business, the "Competing Business"), or own any interest in any Person directly or indirectly engaged in a Competing Business anywhere in the United States or Canada, or (ii) solicit or knowingly encourage or induce any Person who is a then customer, client or counterparty of the Company or any of its Subsidiaries to establish a direct relationship with such Key Seller or any of its Affiliates to provide services in a manner that would constitute a Competing Business; *provided* that such Key Seller shall not be in default of this Section 11.04 by virtue of: (a) holding securities (regardless of percentage) in Nasdaq, Inc.; (b) ownership of not more than two percent (2%) of the issued and outstanding securities (including securities held by any Persons acting jointly or in concert with such Seller) of the issued and outstanding securities of a publicly-listed company (each, an "Interest"), *provided* that such Key Seller holds such Interest solely as a passive investor; (c) performing speaking engagements and receiving honoraria in connection with such engagements; (d) being employed by any government agency, college, university or other non-profit research organization; or (e) owning a passive minority equity interest in a private debt or equity investment fund in which such Key Seller does not have the ability to control or exercise any managerial influence over such fund.

b. For a period of three (3) years after the Closing Date, each Key Seller and each Fund Holder shall not, directly or indirectly, solicit or hire or solicit for employment or other services any individual who is a current employee of the Company or the Parent or any of its Subsidiaries;

provided that this Section 11.04(b) shall not restrict any Key Seller or any Fund Holder from hiring or soliciting for employment or other services any individual (i) who has resigned from employment with the Company or any of its Subsidiaries at least six (6) months prior to any solicitation from any Key Seller or Fund Holder or (ii) is responding to a general solicitation not specifically directed at employees of the Company or any of its Subsidiaries. For purposes of this Section 11.04(b), "solicit" means any direct or indirect communication relating to engaging or seeking to engage the employment or other services of such individual, regardless of who initiates it, that in any way invites, advises, encourages or requests any individual to take or refrain from taking any action with respect to its engagement by the Company or the Parent or any of its Subsidiaries that is adverse to the Company or the Parent or any of its Subsidiaries.

c. With respect to the Fund Holders, the prohibitions set forth in Section 11.04(b) (i) shall only apply to the individuals that are Key Employees and (ii) the prohibitions on the Fund Holder shall not be deemed to apply to any actions of any portfolio company or limited partner of any Fund Holder, *provided* that such portfolio company or limited partner (x) has not received any information relating to any individuals that are Key Employees, or that could reasonably be expected to encourage such portfolio company or limited partner to seek to hire or employ any such individual, from or on behalf of any such Fund Holder and (y) does not act at the direction of or with encouragement from any such Fund Holder with respect to any matters contemplated by Section 11.04(b).

d. Each of the Parties hereto acknowledges that the time, scope, geographic area and other provisions of this Section 11.04 have been specifically negotiated by sophisticated commercial parties and agree that all such provisions are reasonable under the circumstances of the Transactions. Each Key Seller and Fund Holder acknowledges and agrees, that the terms of this Section 11.04 (i) are reasonable in light of all of the circumstances, (ii) are sufficiently limited to protect the legitimate interests of Buyer Parties and their Affiliates, (iii) impose no undue hardship on such Key Seller or Fund Holder, as applicable, and (iv) are not injurious to the public. Each Key Seller and Fund Holder acknowledges and agrees that the restrictive covenants and other agreements contained in this Section 11.04 are an essential part of this Agreement and the Transactions, constitute a material inducement to Buyer Parties and their Affiliates entering into and performing their obligations under this Agreement and are an essential part of Buyer Parties willingness to pay the purchase consideration thereunder. It is the intention of the Parties that if any of the restrictions or covenants contained in this Section 11.04 is held to cover a geographic area or to be for a length of time that is not permitted by Law, or is in any way construed to be too broad or to any extent invalid, such provision shall not be construed to be null, void and of no effect, but to the extent such provision would then be valid or enforceable under law, such provision shall be construed and interpreted or reformed to provide for a restriction or covenant having the maximum enforceable geographic area, time period and other provisions as shall be valid and enforceable under law.

ARTICLE XII

DEFINITIONS

12.01 Definitions. For purposes hereof, the following terms when used herein shall have the respective meanings set forth below:

"111(4)(e) Amount" means the amount, to be more fully detailed in the Estimated Closing Statement, as agreed by the Company and the Parent pursuant to the Pre-Closing Reorganization, and designated by the Company pursuant to paragraph 111(4)(e) of the ITA, that results in the addition of an amount to the Capital Dividend Account (as defined in the ITA) of the Company equal to the portion of the Final Consideration received by Sellers that are resident in Canada for purposes of the ITA not including any Seller that is or holds shares through a partnership less (i) the sum of the Adjusted Cost Base (as defined in the ITA) of each Seller resident in Canada for purposes of the ITA other than any Seller that is or holds shares through a partnership, and less (ii) the Reorganization Tax Liability. For purposes of this definition, any amount required to be determined in computing the Final Consideration that is not known at the time the Estimated Closing Statement is prepared shall be estimated with a view to ensuring the estimate of the Final Consideration used for purposes of this definition does not exceed the Final Consideration as ultimately determined.

"Accounting Principles" means, (a) to the extent consistent with ASPE the same accounting principles, practices, procedures, policies and methods (with consistent classifications and valuation and estimation methodologies) used and applied by the Group Companies in the preparation of the Company's audited consolidated balance sheet and statement of operations, shareholders' equity and cash flows for the fiscal year ended December 31, 2019 and (b) to the extent not addressed by clause (a), ASPE.

"Additional Consideration" means, as of any date of determination, without duplication, the sum of (a) any purchase price adjustment payable to the Sellers pursuant to Section 1.06(a) and (b) any amounts payable to the Sellers pursuant to Section 1.07.

"Affiliate" of any particular Person means any other Person directly or indirectly controlling, controlled by or under common control with such particular Person, where "control" means the possession, directly or indirectly, of the power to direct the management and policies of a Person, whether through the ownership of voting securities, contract or otherwise.

"Antitrust Laws" means any federal, state or foreign Law, regulation or decree designed to (i) prohibit, restrict or regulate actions for the purpose or effect of monopolization or restraint of trade or the significant impediment of effective competition, (ii) regulate foreign investments, or (iii) protect the national security or the national economy of any nation.

"Applicable Spot Rate" means, with respect to the conversion of one currency into another currency as of any date, the average of the closing spot rate of exchange for such conversion as quoted by Reuters as of 11:59 p.m. New York City time for the five (5) Business Day period ending on the Business Day immediately preceding such date.

"ASPE" means the Canadian generally accepted accounting principles as set out in Part II of the CPA Canada Handbook of Accounting Standards for Private Enterprises, as applicable, at the relevant time applied on a consistent basis.

"Base Consideration" means $2,750,000,000.

"Business Day" means a day that is neither a Saturday or Sunday, nor any other day on which banking institutions in New York, New York or St. John's, Newfoundland and Labrador are authorized or obligated by Law to close.

"Buyer Parties Fundamental Representations" means the representations and warranties of the Parent and Buyer set forth in Sections 5.01, 5.02 and 5.06.

"Cash" means, as of the Reference Time, all cash and cash equivalents, minus the aggregate amount of (i) Restricted Cash and (ii) outstanding and unpaid checks issued by or on behalf of the Group Companies as of such time, in each case, as determined in accordance with the Accounting Principles.

"Cash Collateral Agreement" means the Cash Collateral Agreement between Verafin Inc. and Royal Bank of Canada and its affiliates named therein dated September 11, 2019.

"CASL" means *An Act to promote the efficiency and adaptability of the Canadian economy by regulating certain activities that discourage reliance on electronic means of carrying out commercial activities, and to amend the Canadian Radio-television and Telecommunications Commission Act, the Competition Act, the Personal Information Protection and Electronic Documents Act and the Telecommunications Act*, S.C. 2010, c. 23 and the regulations made under the foregoing and any other applicable Laws governing spam or electronic communications, as applicable, and shall be deemed to include (i) all guidance provided by applicable Governmental Entities (including Innovation, Science, and Economic Development Canada, the Canadian Radio-television and Telecommunications Commission, the Competition Bureau and the Office of the Privacy Commissioner of Canada); and (ii) all other applicable legislation in respect of CEMs transmitted, sent, or initiated by or on behalf of the Company or its Subsidiaries, or the installation of computer programs on any other Person's computer systems.

"CBCA" means the Canada Business Corporation Act.

"CEM" means a commercial electronic message, as such term is defined by CASL.

"Certificate of Incorporation" means the Certificate of Incorporation of the Company, as amended from time to time.

"Closing Consideration" means (i) the Base Consideration, minus (ii) the amount of Estimated Indebtedness, plus (iii) the Estimated Net Working Capital minus the Target Net Working Capital Amount (it being understood that the amount set forth in this clause (iii) may be a positive or negative number); provided, that if the absolute value of the amount set forth in this clause (iii) is less than CAD$1,500,000, then such amount shall be deemed to be equal to zero, plus (iv) the amount of Estimated Cash, minus (v) the amount of the Estimated Transaction Expenses.

"Closing Indebtedness" means the Indebtedness as of the Reference Time.

"Closing Option Consideration" means, for each In-the-Money Option surrendered in accordance with Section 1.03, the amount equal to the product obtained by multiplying (A) the amount by which the Per Share Closing Consideration exceeds the exercise price per Common Share underlying such In-the-Money Option and (B) the aggregate number of Common Shares subject to such In-the-Money Option (rounded down to the nearest whole cent).

"Closing Payment Amount" means (i) the Closing Consideration, less (ii) the aggregate amount of the Closing Option Consideration, less (iii) the Escrow Amount, less (iv) an amount equal to the Reorganization Tax Liability, less (v) the Expense Fund.

"COBRA" means Part 6 of Subtitle B of Title I of ERISA, Section 4980B of the Code and any similar state Law.

"Code" means the Internal Revenue Code of 1986, as amended or now in effect or as hereafter amended.

"Common Shares" means the common shares in the capital of the Company, including the Series A Voting Common Shares, the Series B Voting Common Shares, the Series C Voting Common Shares, and the Non-Voting Common Shares.

"Company Fundamental Representations" means the representations and warranties of the Company set forth in Section 3.01, Section 3.03(a), Section 3.03(c), Section 3.04(c)(iii)(x) and Section 3.20.

"Company IP Rights" means (i) all Intellectual Property Rights for which the Company or any of its Subsidiaries holds or purports to hold any license rights; and (ii) all Company-Owned IP Rights.

"Company-Owned IP Rights" means all Intellectual Property Rights that the Company or any of its Subsidiaries owns or purports to own.

"Company Plan" means (i) an "employee benefit plan" within the meaning of Section 3(3) of ERISA (whether or not subject to ERISA), (ii) a share bonus, share purchase, share option, restricted shares, share appreciation right or similar equity-based plan or (iii) any other employment, severance, deferred-compensation, pension, retirement, welfare-benefit, health, dental, disability, life insurance, bonus, incentive or other compensatory, employee benefit plan, policy, program, agreement or arrangement sponsored, maintained, contributed to, or required to be contributed to by any of the Group Companies for the benefit of any current or former employee or individual contractor of the Group Companies.

"Company Shareholder" means a holder of Common Shares (excluding any holders of Options).

"Company Shareholder Percentage" means the amount, expressed as a percentage, equal to one hundred percent (100%) less the Optionholder Percentage.

"Computer Systems" means all computer hardware, peripheral equipment, Software and firmware, processed data, technology infrastructure and other computer systems and services that are used by or accessible to the Company and its Subsidiaries to operate the business of the Company or any of its Subsidiaries and to receive, store, process or transmit data related to the business of the Company or any of its Subsidiaries.

"Company Transaction Expenses" means Transaction Expenses other than Sellers Transaction Expenses.

"Contract" means any agreement, contract, arrangement, lease, loan agreement, security agreement, license, indenture or other similar instrument or obligation to which the party in question is a party, whether oral or written.

"Credit Agreement" means that certain Credit Agreement, dated September 13, 2019 by and among, *inter alios*, Verafin Holdings II Inc., Verafin Inc., Verafin USA Inc., Wells Fargo Capital Finance Corporation Canada, as administrative agent and collateral agent, Wells Fargo Bank, National Association, as lead arranger and bookrunner, and each lender from time to time party thereto, as amended.

"Cultural Business" means a business carried on in Canada that carries on any of the activities identified under section 14.1(6) of the Investment Canada Act as constituting a "cultural business", or a business that falls within a specific type of business activity that, in the opinion of the Governor in Council, is related to Canada's cultural heritage or national identity, as prescribed under the Investment Canada Act.

"Environmental Claim" means any claim, action, cause of action, investigation or written notice by any person or entity alleging potential liability (including, without limitation, potential liability for investigatory costs, cleanup costs, governmental response costs, natural resources damages, property damages, personal injuries, or penalties) arising out of, based on or resulting from (a) the presence, Release or threatened Release of any Hazardous Materials at any location, whether or not owned or operated by the Company, or (b) circumstances forming the basis of any violation or alleged violation of any Environmental Law.

"Environmental Laws" means all federal, provincial, state, local and foreign Laws and regulations relating to pollution or protection of human health or the environment, including, without limitation, laws relating to Releases or threatened Releases of Hazardous Materials or otherwise relating to the manufacture, processing, distribution, use, treatment, storage, transport or handling of Hazardous Materials.

"Equity Incentive Plan" means Verafin Inc. Equity Incentive Plan dated as of September 13, 2019.

"ERISA" means the Employee Retirement Income Security Act of 1974, as amended.

"ERISA Affiliate" means, with respect to any entity, trade or business, any other entity, trade or business that is, or was at the relevant time, a member of a group described in Section 414(b), (c),

(m) or (o) of the Code or Section 4001(b)(1) of ERISA that includes or included the first entity, trade or business, or that is, or was at the relevant time, a member of the same "controlled group" as the first entity, trade or business pursuant to Section 4001(a)(14) of ERISA.

"Escrow Agent" means JPMorgan Chase Bank, N.A.

"Final Consideration" means (i) the Base Consideration, minus (ii) the amount of Closing Indebtedness as finally determined pursuant to Section 1.06, plus (iii) the Net Working Capital as finally determined pursuant to Section 1.06 minus the Target Net Working Capital Amount (it being understood that the amount set forth in this clause (iii) may be a positive or negative number); provided, that if the absolute value of the amount set forth in this clause (iii) is less than CAD$1,500,000, then such amount shall be deemed to be equal to zero, plus (iv) the amount of Cash as finally determined pursuant to Section 1.06, minus (v) the amount of the Transaction Expenses as finally determined pursuant to Section 1.06.

"Financing" means any financing arranged or obtained (or attempted to be arranged or obtained) by Buyer for the purpose of refinancing any Indebtedness of the Company or any of its Subsidiaries or otherwise financing the Contemplated Transactions.

"Financing Entities" means the Financing Parties and their respective Affiliates and their and their respective Affiliates' officers, directors, employees, agents and representatives and their respective successors and assigns; *provided* that neither Parent nor any Affiliate of Parent shall be a Financing Party

"Financing Parties" means the entities that have committed to or commit to provide or have otherwise entered into or enter into agreements in connection with the Financing, or to purchase securities from or place securities or arrange or provide loans for Buyer in connection with the Financing.

"Founders" means Jamie King, Raymond Pretty and Brendan Brothers.

"Fully Diluted Number" means the sum of (i) the aggregate number of Common Shares issued and outstanding immediately prior to the Closing and (ii) the aggregate number of Common Shares underlying all In-the-Money Options outstanding as of immediately prior to the Closing.

"Fund Holders" means those Persons set forth in Schedule 12.01.

"Governmental Entity" means any federal, national, state, foreign, provincial, territorial, local or other government or any governmental, regulatory, administrative or self-regulatory authority, agency, bureau, board, commission, court, judicial or arbitral body, department, political subdivision, tribunal or other instrumentality thereof.

"Group Company(ies)" means the Company and each of its direct and indirect Subsidiaries.

"Hazardous Materials" means all substances defined as Hazardous Substances, Oils, Pollutants or Contaminants in the National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. § 300.5, or defined as such by, or regulated as such under, any Environmental Law.

"Indebtedness" means, as of any particular time with respect to the Group Companies, without duplication, (i) all obligations of the Group Companies for borrowed money, or with respect to deposits or advances of any kind to such Group Company (excluding all intercompany indebtedness between or among wholly-owned Group Companies), (ii) all obligations of any Group Company evidenced by bonds, debentures, notes or similar instruments, (iii) all obligations of the Group Companies under leases required in accordance with the Accounting Principles to be capitalized or treated as a finance lease on a balance sheet of the Group Companies, (iv) all obligations of any Group Company to pay the deferred or unpaid purchase price of property, assets, securities, services or equipment (including "earn-out" payments, seller notes, post-closing true-up obligations and other similar payments contingently or otherwise, calculated as the maximum amount payable under or pursuant to such obligation), (v) the net cash payment obligations of the Group Companies under swaps, options, derivatives and other hedging agreements or arrangements that will be payable upon termination thereof (assuming they were terminated on the date of determination), (vi) all obligations under letters of credit, bank guarantees, performance bonds and other similar contractual obligations entered into by or on behalf of any Group Company (in each case only to the extent drawn), (vii) any accrued interest, fees, premiums, penalties and other obligations of the Group Companies relating to any indebtedness or other obligations of the type referred to in any other clause of this definition payable in connection with the repayment thereof on or prior to the Closing Date, (viii) all guarantees and arrangements having the economic effect of a guarantee provided by any Group Company in respect of the indebtedness or obligations of the type referred to in any other clause of this definition of any other Person, all obligations of another Person in respect of which any Group Company has pledged any of its assets, and all obligations or undertakings of any Group Company to maintain or cause to be maintained the financial position or financial covenants of any other Person or to purchase any other Person's indebtedness or obligations of the type referred to in any other clause of this definition or any security therefor, (ix) all accrued and unpaid interest, fees, expenses and other amounts owing by the Group Companies under any of the foregoing, calculated as of the date of determination, and any prepayment premiums or penalties that would be due if such amounts were prepaid as of such date of determination, and (x) income Tax payables of the Group Companies (net of any income tax receivables (which shall include any accrued receivables of Scientific Research & Experimental Development credits for the period prior to Closing; provided that such accrued amount shall be net of any income Tax payables of the Group Companies with respect to the future receipt or claiming of such credits), it being understood that such net amount may be a positive or negative number). Notwithstanding the foregoing, "Indebtedness" shall not include (A) non-cancellable purchase commitments, surety bonds and performance bonds, (B) customer advances or deposits, (C) obligations under operating leases, (D) future Tax assets and liabilities, (E) any liability reflected in Net Working Capital or Transaction Expenses, (F) the Reorganization Tax Liability, (G) unamortized debt issuance costs, or (H) for the avoidance of doubt, any Taxes resulting from any election under Section 338(g) of the Code (or any corresponding provisions of U.S. state or U.S. local Tax law) made with respect to the acquisition of any Group Company pursuant to this Agreement. For purposes of Article I of this Agreement, Indebtedness shall mean Indebtedness, as defined above, outstanding as of the Reference Time.

"Intellectual Property Rights" means any and all common law or statutory rights anywhere in the world arising under or associated with: (a) patents, patent applications, statutory invention registrations, registered designs, and similar or equivalent rights in inventions and designs, and all

rights therein provided by international treaties and conventions ("Patents"); (b) trademarks, service marks, trade dress, trade names, logos, and other designations of origin, including application therefor ("Marks"); (c) domain names, uniform resource locators, Internet Protocol addresses, social media handles, and other names, identifiers, and locators associated with Internet addresses, sites, and services; (d) copyrights and any other equivalent rights in works of authorship (including rights in software as a work of authorship) and any other related rights of authors ("Copyrights"); (e) trade secrets and industrial secret rights, and rights in know-how, data, and confidential or proprietary business or technical information, in each case, that derives independent economic value, whether actual or potential, from not being known to other Persons ("Trade Secrets"); and (f) other similar or equivalent intellectual property rights anywhere in the world.

"In-the-Money Option" means an Option, whether vested or unvested, with an exercise price per Common Share underlying such Option that is less than the Per Share Closing Consideration, determined as of immediately prior to the Closing.

"Investment Canada Act" means the *Investment Canada Act* (Canada).

"Investment Canada Act Approval" means (a) that the responsible Minister under the Investment Canada Act (the "Minister") shall have sent a notice pursuant to Section 21(1) of the Investment Canada Act to the Buyer stating that the Minister is satisfied that the Transactions are likely to be of net benefit to Canada, or alternatively, the time period provided for such notice under Section 21(1) of the Investment Canada Act shall have expired such that the Minister shall be deemed, pursuant to Section 21(9) of the Investment Canada Act, to be satisfied that the Transactions are of net benefit to Canada, and (b) the Minister has not sent to the Buyer a notice under subsection 25.2(1) of the Investment Canada Act and the Governor in Council has not made an order under subsection 25.3(1) of the Investment Canada Act in relation to the Transactions, or, if either such a notice has been sent or such an order has been made, the Buyer has subsequently received: (i) a notice under paragraph 25.2(4)(a) of the Investment Canada Act indicating that a review of the Transactions on grounds of national security will not be made, (ii) a notice under paragraph 25.3(6)(b) of the Investment Canada Act indicating that no further action will be taken in respect of the Transactions, or (iii) a copy of an order under paragraph 25.4(1)(b) authorizing the Transactions.

"Joinder Agreement" means a joinder agreement substantially in the form of Exhibit C attached hereto.

"Key Employees" means those Persons set forth in Schedule 12.01.

"Key Sellers" means those Persons set forth in Schedule 12.01.

"knowledge of the Company" and "the Company's knowledge" mean the actual or constructive knowledge after reasonable inquiry of those Persons set forth in Schedule 12.01, as of the applicable date.

"Law" means any law, rule, regulation, judgment, injunction, order, decree or other restriction of any Governmental Entity.

"Liabilities" means all indebtedness, debts, claims, obligations and other liabilities of a Person whether known, unknown, accrued, absolute, direct or indirect, contingent or otherwise, whether due or to become due.

"Liens" means liens, licenses, security interests, charges or encumbrances.

"Losses" means any and all damages, penalties, fines, costs, judgments or amounts paid in settlement, Liabilities, Taxes, losses, expenses and fees, including court costs and attorneys' and other professionals' fees and expenses.

"Material Adverse Effect" means any change, effect, event, circumstance, condition, occurrence, state of facts or development that, individually or in the aggregate, has had or would reasonably be expected to have (a) a material adverse effect on the ability of the Company and the Sellers to consummate the Acquisition by the Outside Date or (b) a materially adverse effect on the business, assets, properties, liabilities or condition (financial or otherwise) or results of operations of the Group Companies, taken as a whole; *provided*, *however*, that, in the case of clause (b), none of the following shall be deemed in themselves, either alone or in combination, to constitute, and none of the following shall be taken into account in determining whether there has been or will be, a Material Adverse Effect: (i) the announcement of the Transactions; (ii) general changes in the industry in which the Group Companies operate (*provided* that such change does not affect the Group Companies, taken as a whole, in a disproportionate manner in comparison to other participants in the industry in which the Group Companies participate); (iii) any change in general economic conditions, including changes in the credit, debt or financial or capital markets (including changes in interest or exchange rates), in each case, in the United States, Canada or anywhere else in the world (*provided* that such change does not affect the Group Companies, taken as a whole, in a disproportionate manner in comparison to other participants in the industry in which the Group Companies participate); (iv) changes after the date hereof in ASPE or other accounting requirements or principles or any changes after the date hereof in applicable Laws (*provided* that such change does not affect the Group Companies, taken as a whole, in a disproportionate manner in comparison to other participants in the industry in which the Group Companies participate); (v) the failure of any Group Company to meet or achieve the results set forth in any projection or forecast (*provided* that this clause (v) shall not prevent a determination that any change or effect underlying such failure to meet projections or forecasts has resulted in a Material Adverse Effect); (vi) acts of war (whether declared or undeclared), sabotage or terrorism or military actions or any escalation, worsening or diminution of any such hostilities, acts of war, sabotage or terrorism or military actions existing or underway as of the date hereof (*provided* that the foregoing does not affect the Group Companies, taken as a whole, in a disproportionate manner in comparison to other participants in the industry in which the Group Companies participate); (vii) hurricanes, earthquakes, floods or other natural disasters; (*provided* that the foregoing does not affect the Group Companies, taken as a whole, in a disproportionate manner in comparison to other participants in the industry in which the Group Companies participate); and (viii) any epidemic, plague, pandemic or other outbreak of illness or public health event (including COVID-19), (or any worsening of any of the foregoing) including the response of governmental and non-governmental entities thereto (including any COVID-19 Measures) (*provided* that the foregoing does not affect the Group Companies, taken as a whole, in a disproportionate manner in comparison to other participants in the industry in which the Group Companies participate).

"Minister" has the meaning set out in the definition of Investment Canada Act Approval in this Section 12.01.

"Multiemployer Plan" has the meaning set forth in Section 3(37) of ERISA.

"Multiple Employer Plan" means a plan that has two or more contributing sponsors at least two of whom are not under common control, within the meaning of Section 4063 of ERISA (whether or not the plan is subject to ERISA).

"Net Working Capital" means, without duplication, an amount (it being understood that such amount may be a positive or negative number) equal to the current assets of the Group Companies, as of the Reference Time, minus the current liabilities of the Group Companies, as of the Reference Time. It is agreed that (a) Net Working Capital shall be calculated without taking into consideration and without duplication of (A) the Transactions, (B) the Pre-Closing Reorganization (including the Reorganization Tax Liability), (C) Cash, (D) Transaction Expenses, (E) Closing Indebtedness, (F) deferred revenue, (G) customer advances or deposits, (H) current or future income Tax assets and liabilities (including, for the avoidance of doubt, any amount in respect of Scientific Research & Experimental Development credits not yet received), and (I) Restricted Cash; (b) Net Working Capital shall be calculated taking into consideration and without duplication of any and all accruals and reserves for any current Tax liabilities or assets (in each case, other than income Tax payables) and (c) Net Working Capital shall be prepared and calculated in accordance with the Accounting Principles.

"Non-Voting Common Shares" means the common shares in the capital of the Company designated as Non-Voting Common Shares.

"Open Source Software" means any Software that is licensed under a license that meets the Open Source Definition (www.opensource.org/osd) or that is identified as an open source license by the Open Source Initiative (www.opensource.org).

"Option" means an outstanding and unexercised option to purchase Common Shares under the Equity Incentive Plan.

"Option Consideration" means, for each In-the-Money Option surrendered in accordance with Section 1.03(c), the amount equal to the sum of (a) the Closing Option Consideration applicable to such In-the-Money Option, and (b) the product obtained by multiplying (i) the Per Share Additional Consideration by (ii) the aggregate number of Common Shares subject to such In-the-Money Option (rounded down to the nearest whole cent), less applicable withholding.

"Optionholder Percentage" means the amount, expressed as a percentage, equal to the quotient obtained by dividing (i) the aggregate number of Common Shares underlying all In-the-Money Options surrendered in accordance with Section 1.03(c) by (ii) the Fully Diluted Number.

"Ordinary Course of Business" means the ordinary course of business of the Group Companies, consistent with past practice.

"Organizational Documents" means the Certificate of Incorporation and the Bylaws of the Company, each as amended through the date hereof.

"Owned Real Property" means all land, together with all buildings, structures, improvements and fixtures located thereon, and all easements and other rights and interests appurtenant thereto, owned by any Group Company.

"Parent Material Adverse Effect" means any change, effect, event, occurrence, state of facts or development that, individually or in the aggregate, has had or would have a material adverse effect on the ability of the Parent or the Buyer to consummate the Acquisition by the Outside Date.

"Paying Agent" means Acquiom Financial LLC, a Colorado limited liability company, in its capacity as payments administrator, or such other Person as designated by the Company prior to Closing.

"Per Share Additional Consideration" means the amount equal to the quotient obtained by dividing (i) the Additional Consideration by (ii) the Fully Diluted Number.

"Per Share Closing Consideration" means, with respect to any Common Share, the amount equal to (a) the quotient obtained by dividing (i) an amount equal to (A) the Closing Consideration, plus (B) the aggregate dollar amount of the exercise prices for all In-the-Money Options, less (C) the Escrow Amount, less (D) the Expense Fund by (ii) the Fully Diluted Number, less (b) solely for purposes of calculating the Per Share Closing Consideration of any Non-Voting Common Share or Series A Common Voting Share (and not any Options or other Common Shares), an amount equal to the quotient obtained by dividing (i) an amount equal to the Reorganization Tax Liability by (ii) the aggregate number of Non-Voting Common Shares and Series A Voting Common Shares issued and outstanding immediately prior to the Closing.

"Permitted Liens" means (i) statutory liens for current Taxes or other governmental charges not yet due and payable or the amount or validity of which is being contested in good faith by appropriate proceedings by the Group Companies and for which appropriate reserves have been established in accordance with ASPE in the Latest Balance Sheet; (ii) mechanics', carriers', workers', repairers' and similar statutory liens arising or incurred in the Ordinary Course of Business for amounts that are not delinquent and for which adequate reserves are maintained on the Financial Statements in accordance with ASPE consistently applied; (iii) zoning, entitlement, building and other land use regulations imposed by Governmental Entities having jurisdiction over the Leased Realty that are not violated by the current use and operation of the Leased Realty or affected by the consummation of the Transactions; (iv) covenants, conditions, restrictions and easements to the Leased Realty that do not materially impair the occupancy or use of the Leased Realty for the purposes for which it is currently used or proposed to be used in connection with the Companies' and their Subsidiaries' businesses or affected by the consummation of the Transactions; (v) nonexclusive licenses to Intellectual Property Rights in the ordinary course; (vi) liens arising under worker's compensation, unemployment insurance, social security, retirement and similar legislation; (vii) the Leases and all subleases, licenses and other occupancy agreements for which a Group Company is a party and is disclosed in the Disclosure Letter; (viii) all Liens affecting a landlord's freehold interest or sublandlord's sub-leasehold interest in any Leased Realty; (ix) the Liens which the Leases and/or any Leased Realty are stated to be subject to or bound by pursuant to the terms of the Leases; (x) all instruments which are registered against title to the Leased Realty; and (xi) Liens securing the Company's obligations in respect of its corporate credit card program with Royal Bank of Canada pursuant to the Cash Collateral Agreement

(and not, for the avoidance of doubt, notes, bonds, debentures or other instruments for money borrowed or any borrowed money or any liability under or in respect of any banker's acceptance) in an aggregate amount not to exceed $1.5 million.

"Person" means an individual, a partnership, a corporation, a limited liability company, an association, a joint stock company, a trust, a joint venture, an unincorporated organization or a Governmental Entity or any department, agency or political subdivision thereof, or any other organization or entity of any kind.

"Personal Data" means any information relating to an identified or identifiable natural person, where an identifiable person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that person.

"Privacy Requirement" means all laws, contractual obligations, consents, notices or industry regulatory standards that pertain to privacy, the collection, receipt, storage, compilation, transfer, disposal, security (both technical and physical), disclosure, transfer, privacy, processing, protection, sharing, breach or other use of Personal Data.

"Pro Rata Percentage" means, with respect to any Seller, the quotient (expressed as a percentage) obtained by dividing (a) the sum of (i) the aggregate number of Common Shares held by such Seller immediately prior to the Closing and (ii) the aggregate number of Common Shares underlying any In-the-Money Options held by such Seller as of immediately prior to the Closing by (b) the Fully Diluted Number.

"Reference Time" means 12:01 a.m., New York City time, on the Closing Date.

"Release" means any release, spill, emission, discharge, leaking, pumping, injection, deposit, disposal, dispersal, leaching or migration into the environment (including, without limitation, ambient air, surface water, groundwater and surface or subsurface strata) or into or out of any property, including the movement of Hazardous Materials through or in the air, soil, surface water, groundwater or property.

"Reorganization Tax Liability" means the aggregate liability of the Group Companies for Taxes arising as a consequence of the designation made pursuant to Section 111(4)(e) of the ITA, as contemplated in the Pre-Closing Reorganization.

"Restricted Cash" means, other than Cash that secures the Company's obligations in respect of its corporate credit card program with Royal Bank of Canada pursuant to the Cash Collateral Agreement in an aggregate amount not to exceed $1.5 million, any cash or cash equivalents which are not freely usable by the Parent because they are subject to restrictions, limitations or taxes on use or distribution by law, contract or otherwise, including without limitation, restrictions on dividends and repatriations or any other form of restriction.

"Restricted Party" means persons or entities identified or designated on restricted party lists maintained by the U.S. government, including but not limited to the (i) U.S. Department of Treasury Office of Foreign Assets Control's List of Specially Designated Nationals and Blocked Persons,

Foreign Sanctions Evaders List, and Sectoral Sanctions Identification List and the U.S. Department of Commerce Bureau of Industry and Security's Entity List, Unverified List and Denied Persons List, (ii) Government of Canada, including but not limited to individuals and entities listed under the United Nations Act, Special Economic Measures Act, Freezing Assets of Corrupt Foreign Officials Act, Justice for Victims of Corrupt Foreign Officials Act, and the Criminal Code, as well as (iii) any comparable restricted parties lists maintained by the European Union or any other applicable jurisdiction.

"Securities Act" means the U.S. Securities Act of 1933, as amended from time to time and the rules and regulations promulgated thereunder.

"Sellers Fundamental Representations" means the representations and warranties of the Sellers set forth in Section 4.01, Section 4.03(a), Section 4.03(c), Section 4.05 and Section 4.07.

"Sellers Transaction Expenses" means those Transaction Expenses described in (a) clause (i) of the definition thereof incurred by the Group Companies on behalf of the Sellers, including fees payable to investment bankers and attorneys in connection with the Transactions or (b) clause (ii) of the definition thereof.

"Series A Voting Common Shares" means the common shares in the capital of the Company designated as Series A Voting Common Shares.

"Series B Voting Common Shares" means the common shares in the capital of the Company designated as Series B Voting Common Shares.

"Series C Voting Common Shares" means the common shares in the capital of the Company designated as Series C Voting Common Shares.

"Software" means any computer program, operating system, application, system, firmware or software of any nature, whether operational, active, under development or design, non-operational or inactive, including all object code, source code, comment code, algorithms, processes, formulae, interfaces, navigational devices, menu structures or arrangements, icons, operational instructions, scripts, commands, syntax, screen designs, reports, designs, concepts, visual expressions, technical manuals, test scripts, user manuals and documentation therefore, whether in machine-readable form, programming language or any other language or symbols, and whether stored, encoded, recorded or written on disk, tape, film, memory device, paper or other media of any nature and all databases necessary or appropriate to operate or in the use of any such computer program, operating system, application, system, firmware or software.

"Specified Common Share Value" means an amount equal to the Per Share Consideration *multiplied by* the number of Specified Common Shares.

"Specified Material Contract" means any Contract described in Sections 3.10(a)(ii), (iii), (iv), (viii)-(xiv) or (xviii).

"Subsidiary" means, with respect to any Person, any corporation of which a majority of the total voting power of shares entitled (without regard to the occurrence of any contingency) to vote in the election of directors, managers or trustees thereof is at the time owned or controlled, directly or

indirectly, by such Person or one or more of the other Subsidiaries of such Person or a combination thereof, or any partnership, association or other business entity of which a majority of the partnership or other similar ownership interest is at the time owned or controlled, directly or indirectly, by such Person or one or more Subsidiaries of such Person or a combination thereof. For purposes of this definition, a Person is deemed to have a majority ownership interest in a partnership, association or other business entity if such Person is allocated a majority of the gains or losses of such partnership, association or other business entity or is or controls the managing director or general partner of such partnership, association or other business entity.

"Target Net Working Capital Amount" means CAD$18,964,900.

"Tax" or "Taxes" means any federal, provincial, state, local or foreign income, gross receipts, franchise, estimated, alternative minimum, add-on minimum, sales, use, transfer, real property gains, registration, value added, excise, natural resources, severance, stamp, occupation, premium, windfall profit, environmental, customs, duties, real property, special assessment, personal property, capital shares, social security, unemployment, disability, payroll, license, employee or other withholding, or other tax, levy, fee, impost, duty or assessment of any kind whatsoever, including any interest, penalties or additions to tax or additional amounts in respect of the foregoing, and in each case, whether disputed or not.

"Tax Returns" means any return, report, information return or other document (including schedules or any related or supporting information) filed or required to be filed with any Governmental Entity or other authority in connection with the determination, assessment or collection of any Tax or the administration of any Laws or administrative requirements relating to any Tax.

"Trade Control Laws" means the economic sanctions and export controls laws of all applicable jurisdictions, including but not limited to the economic sanctions programs administered by the U.S. Department of Treasury Office of Foreign Assets Control; the Export Administration Regulations administered by the U.S. Department of Commerce's Bureau of Industry and Security; the sanctions and trade control laws of Canada, including but not limited to the United Nations Act, Special Economic Measures Act, Freezing Assets of Corrupt Foreign Officials Act, Justice for Victims of Corrupt Foreign Officials Act, the Criminal Code and the Export and Import Permits Act; the restrictive measures implemented by the European Union and its member states; and the European Union dual use export controls implemented under Regulation (EC) No. 428/2009.

"Transaction Documents" means this Agreement, the Escrow and Management Incentive Agreement, the Escrow Agreement, and any and all certificates, agreements, documents or other instruments to be executed and delivered by any Person in connection with the Transactions, any exhibits, attachments or schedules to any of the foregoing and any other written agreement that is expressly identified as a Transaction Document, as any of the foregoing may be amended, supplemented or otherwise modified from time to time.

"Transaction Expenses" means, without duplication, (i) all fees and expenses incurred or payable, but not paid, by the Group Companies, prior to the Closing in connection with or arising out of the negotiation, execution and delivery of this Agreement or any other Contracts relating hereto, or relating to or triggered by the planning, structuring, negotiation or consummation of the Transactions,

including those of professionals (including investment bankers, attorneys, accountants and other consultants and advisors) that performed services in connection with the Transactions, (ii) all fees, costs and expenses of the Representative, (iii) any change in control bonus or transaction bonus to be paid to any current or former employee, consultant, director or officer of any of the Group Companies at or after the Closing pursuant to any agreement to which any of the Group Companies is a party prior to the Closing that becomes payable as a result of the execution of this Agreement or the consummation of the Transactions ("Sale Bonuses") and (iv) any payroll, social security, unemployment or other Taxes or other amounts required to be paid by the Company in connection with any payments made to any holder of In-the-Money Options at the Closing or Sale Bonuses ("Payroll Costs").

"Transactions" means the transactions contemplated by this Agreement and the other Transaction Documents.

"Transfer" means selling, transferring, assigning, conveying, exchanging, gifting, bequeathing, mortgaging, charging, pledging or otherwise encumbering or disposing of any economic, voting or other rights in or granting any security interest in, making any arrangement by which possession, legal title or beneficial ownership passes from one Person to another, or to the same Person in a different capacity, whether or not voluntary and whether or not for value, or entering into any agreement to effect any of the foregoing.

ARTICLE XIII

MISCELLANEOUS

13.01 Press Releases and Communications. No press release or public announcement related to this Agreement or the transactions contemplated herein shall be issued or made by the Representative, any Seller or the Company or their respective Affiliates without the prior written approval of the Parent or, prior to the Closing, by the Parent without the prior written approval of the Company, except (a) such release or announcement as may be required by applicable Law or stock exchange rules (subject to the proviso to clause (ii) below), (b) that the Company and the Parent shall each be permitted to make announcements from time to time to their respective employees, customers, suppliers and other business relations (i) as the Company or the Parent may reasonably determine is necessary to comply (or cause any other Group Company or Subsidiary of the Parent, as applicable, to comply) with applicable Law or (ii) in the case of Parent, that is not inconsistent with any release or announcement previously made by the Company or the Parent in accordance with this Agreement as of the time of such release or announcement and does not disclose any material nonpublic information regarding the Company or the Transactions, (c) for such announcements or releases required to be made to comply with Section 11.03 and (d) that nothing contained herein shall limit or restrict the right of the Company, its Affiliates or the Parent in respect of any Action that may arise or be commenced between the Company or any Seller, on the one hand, and the Parent, on the other hand; *provided*, that in the case of clauses (a) through (c) and clause (ii) below, the Parent shall have the right to comment on such press release, announcement or communication prior to issuance, distribution or publication. Notwithstanding anything herein to the contrary, any Seller as of the date hereof that is a private equity or venture capital firm may provide nonpublic information about the subject matter of this Agreement

in connection with (i) fundraising, marketing, informational, transactional or reporting activities at any time if the recipient of such information is obligated to keep such communications confidential, (ii) any disclosure required by applicable Law, regulatory examinations, or similar process or Governmental Entity order (provided that such party shall have, unless prohibited by law, (x) promptly notified Parent of such requirement, (y) reasonably consulted with Parent as to the advisability of taking steps to resist or narrow the scope of the disclosure contemplated thereby and (z) reasonably cooperated with Parent in any efforts it may make to obtain an order or other reliable assurance that confidential treatment will be accorded to the information so disclosed), or (iii) any communication with its Institutional Affiliates if the recipient of such information is obligated to keep such communications confidential. For the avoidance of doubt, from and after the Closing, any Seller that is a private equity or venture capital firm may provide a website posting announcing the sale of the Company to the Buyer Parties (which may include any information contained in any press release or other public announcement previously made by the Parties in accordance with this Agreement as of the time of such posting). As used herein, "Institutional Affiliate" means, with respect to each Seller as of the date hereof that is a private equity or venture capital firm, (i) such Person's directors, officers, employees, members, attorneys, accountants, other advisors and managers, its general partner and/or manager, and (ii) such Person's affiliated investment funds managed or advised by such Person's (or one of its Affiliate's) general partner or manager. Notwithstanding anything in this Agreement to the contrary, after Closing and the public announcement of the Acquisition, the Representative shall be permitted to publicly announce that it has been engaged to serve as the Representative in connection with the Acquisition as long as such announcement does not disclose any of the other terms of the Acquisition or the other transactions contemplated herein or any non-public information.

13.02 Expenses. Except as otherwise expressly provided herein, each of the Company, the Sellers, the Parent, the Buyer and the Representative shall pay all of their own fees and expenses incurred in connection with this Agreement and the Transactions, including the fees and disbursements of counsel, financial advisors and accountants. Buyer shall pay any filing fee required in respect of any filing under any Antitrust Law, including HSR Act.

13.03 Notices. All notices, demands and other communications to be given or delivered under or by reason of the provisions of this Agreement shall be in writing and shall be deemed to have been given (a) when personally delivered, (b) when transmitted (except if not a Business Day then the next Business Day) via telecopy (or other facsimile device) to the number set out below or via email to the address set out below if the sender on the same day sends a confirming copy of such notice by a recognized overnight delivery service (charges prepaid), (c) the day following the day (except if not a Business Day then the next Business Day) on which the same has been delivered prepaid to a reputable national overnight air courier service or (d) the third (3rd) Business Day following the day on which the same is sent by certified or registered mail, postage prepaid. Notices, demands and communications, in each case to the respective Parties, shall be sent to the applicable address set forth below, unless another address has been previously specified in writing by such Party:

Notices to the Parent, Company and/or the Buyer:

NASDAQ, INC.
805 King Farm Boulevard
Rockville, Maryland 20850
Attention: General Counsel
Email: ogc@nasdaq.com

with a copy to (which shall not constitute notice):

WACHTELL, LIPTON, ROSEN & KATZ
51 West 52nd Street
New York, New York 10019
Attention: David K. Lam, Esq. (DKLam@wlrk.com)
Mark F. Veblen, Esq. (MFVeblen@wlrk.com)
Victor Goldfeld, Esq. (VGoldfeld@wlrk.com)
Facsimile: (212) 403-2000

Notices to the Representative, or to the Sellers after Closing:

SHAREHOLDER REPRESENTATIVE SERVICES LLC
950 17th Street, Suite 1400
Denver, CO 80202
Attention: Managing Director
Email: deals@srsacquiom.com
Facsimile: (303) 623-0294
Telephone: (303) 648-4085

Notices to the Company:

VERAFIN HOLDINGS INC.
18 Hebron Way
St. John's, Newfoundland A1A 0L9
Attention: Jamie King (jamie.king@verafin.com)
Chris Hickey (chris.hickey@verafin.com)

with copies to (before the Closing) (which shall not constitute notice):

OSLER, HOSKIN & HARCOURT LLP

100 King Street West
1 First Canadian Place, Suite 6200
P.O. Box 50
Toronto, Ontario M5X 1B8
Attention: Chad Bayne (cbayne@osler.com)
David Jamieson (djamieson@osler.com)

13.04 Assignment. This Agreement and all of the provisions hereof shall be binding upon and inure to the benefit of the Parties and their respective successors and permitted assigns, except that

neither this Agreement nor any of the rights, interests or obligations hereunder may be assigned or delegated by the Company, the Parent, the Buyer or the Representative without the prior written consent of the non-assigning Parties, *provided* that the Parent and the Buyer may assign this Agreement (in whole but not in part) to one or more Affiliates of Parent, but no such assignment shall relieve the Parent or the Buyer of its obligations under this Agreement.

13.05 Severability. Any term or provision of this Agreement that is invalid or unenforceable in any situation in any jurisdiction shall not affect the validity or enforceability of the remaining terms and provisions hereof or the validity or enforceability of the offending term or provision in any other situation or in any other jurisdiction. If the final judgment of a court of competent jurisdiction declares that any term or provision hereof is invalid or unenforceable, the Parties agree that the court making the determination of invalidity or unenforceability shall have the power to reduce the scope, duration or area of the term or provision, to delete specific words or phrases, or to replace any invalid or unenforceable term or provision with a term or provision that is valid and enforceable and that comes closest to expressing the intention of the invalid or unenforceable term or provision, and this Agreement shall be enforceable as so modified after the expiration of the time within which the judgment may be appealed.

13.06. References; Interpretation. The table of contents and the section and other headings and subheadings contained in this Agreement and the exhibits hereto are solely for the purpose of reference, are not part of the agreement of the Parties, and shall not in any way affect the meaning or interpretation of this Agreement or any exhibit hereto. All references to days (excluding Business Days) or months shall be deemed references to calendar days or months. All references to "$" shall be deemed references to U.S. dollars. All references to "CAD$" shall be deemed references to Canadian dollars. The conversion of values from any other currency to U.S. dollars shall be effected based upon the Applicable Spot Rate. Unless the context otherwise requires, any reference to a "Section," "Exhibit," "Disclosure Schedule" or "Schedule" shall be deemed to refer to a section of this Agreement, exhibit to this Agreement or a schedule to this Agreement, as applicable. The words "hereof," "herein" and "hereunder" and words of similar import referring to this Agreement refer to this Agreement as a whole and not to any particular provision of this Agreement. The word "including" or any variation thereof means "including, without limitation" and shall not be construed to limit any general statement that it follows to the specific or similar items or matters immediately following it. Whenever the word "or" is used in this Agreement, it shall not be deemed exclusive. Whenever the context requires, any pronouns used herein shall include the corresponding masculine, feminine or neuter forms. The meanings of defined terms are equally applicable to the singular and plural forms of the defined terms. Any reference to any particular Code section or Law shall be interpreted to include any revision of or successor to that section regardless of how it is numbered or classified. Accounting terms that are not otherwise defined in this Agreement have the meanings given to them under ASPE. To the extent that the definition of an accounting term defined in this Agreement is inconsistent with the meaning of such term under ASPE, the definition set forth in this Agreement shall control.

13.07 Construction. The language used in this Agreement shall be deemed to be the language chosen by the Parties to express their mutual intent, and no rule of strict construction shall be applied against any Person. The information contained in this Agreement and in the Disclosure Schedules and

exhibits hereto is disclosed solely for purposes of this Agreement, and no information contained herein or therein shall be deemed to be an admission by any Party to any third party of any matter whatsoever (including any violation of Law or breach of contract).

13.08 Amendment and Waiver. Any provision of this Agreement or the Disclosure Schedules hereto may be amended or waived only in a writing signed by, (a) in respect of any amendment or waiver on or prior to the Closing Date, the Parent and the Company, and, only if such amendment or waiver is applicable to the Sellers, the Sellers representing the majority of the votes attached to the Common Shares held by them (including each of the Fund Holders), and, only if such amendment or waiver is applicable to the Representative, the Representative; and (b) in respect of any amendment or waiver following the Closing Date, the Parent and the Representative. No waiver of any provision hereunder or any breach or default thereof shall extend to or affect in any way any other provision or prior or subsequent breach or default.

13.09 Complete Agreement. This Agreement and the documents referred to herein (including the Confidentiality Agreement) contain the complete agreement between the Parties and supersede any prior understandings, agreements or representations by or between the Parties, written or oral, that may have related to the subject matter hereof in any way, including any data room agreements, bid letters, term sheets, summary issues lists or other agreements.

13.10 Third Party Beneficiaries. Except as otherwise expressly provided herein, nothing expressed or referred to in this Agreement shall be construed to give any Person other than the Parties to this Agreement any legal or equitable right, remedy or claim under or with respect to this Agreement or any provision of this Agreement.

13.11 Waiver of Trial by Jury. THE PARTIES TO THIS AGREEMENT EACH HEREBY WAIVES, TO THE FULLEST EXTENT PERMITTED BY LAW, ANY RIGHT TO TRIAL BY JURY OF ANY CLAIM, DEMAND, ACTION OR CAUSE OF ACTION (A) ARISING UNDER THIS AGREEMENT OR (B) IN ANY WAY CONNECTED WITH OR RELATED OR INCIDENTAL TO THE DEALINGS OF THE PARTIES HERETO IN RESPECT OF THIS AGREEMENT OR ANY OF THE TRANSACTIONS RELATED HERETO, IN EACH CASE WHETHER NOW EXISTING OR HEREAFTER ARISING, AND WHETHER IN CONTRACT, TORT, EQUITY OR OTHERWISE. THE PARTIES TO THIS AGREEMENT EACH HEREBY AGREES AND CONSENTS THAT ANY SUCH CLAIM, DEMAND, ACTION OR CAUSE OF ACTION SHALL BE DECIDED BY COURT TRIAL WITHOUT A JURY, AND THAT THE PARTIES TO THIS AGREEMENT MAY FILE A COPY OF THIS AGREEMENT WITH ANY COURT AS WRITTEN EVIDENCE OF THE CONSENT OF THE PARTIES HERETO TO THE WAIVER OF THEIR RIGHT TO TRIAL BY JURY.

13.12 Delivery by Facsimile or Email. This Agreement and any signed agreement entered into in connection herewith or contemplated hereby, and any amendments hereto or thereto, to the extent signed and delivered by means of a facsimile machine or via electronic mail, shall be treated in all manner and respects as an original contract and shall be considered to have the same binding legal effects as if it were the original signed version thereof delivered in person. At the request of any Party hereto or to any such contract, each other Party hereto or thereto shall re-execute original forms thereof and deliver them to all other Parties. No Party hereto or to any such contract shall raise the use

of a facsimile machine or email to deliver a signature or the fact that any signature or contract was transmitted or communicated through the use of facsimile machine or email as a defense to the formation of a contract and each such Party forever waives any such defense.

13.13 Counterparts; Electronic Delivery. This Agreement may be executed in multiple counterparts, any one of which need not contain the signature of more than one (1) Party, but all such counterparts taken together shall constitute one and the same instrument. This Agreement shall become effective when each Party hereto shall have received a counterpart hereof signed by all of the other Parties hereto. Signatures to this Agreement transmitted by facsimile transmission, by electronic mail in "portable document format" form, or by any other electronic means intended to preserve the original graphic and pictorial appearance of a document, will have the same effect as physical delivery of the paper document bearing the original signature.

13.14 Governing Law. All issues and questions concerning the construction, validity, interpretation and enforceability of this Agreement and the exhibits and schedules hereto shall be governed by, and construed in accordance with, the Laws of the State of Delaware, without giving effect to any choice of Law or conflict of Law rules or provisions (whether of the State of Delaware or any other jurisdiction) that would cause the application of the Laws of any jurisdiction other than the State of Delaware.

13.15 Jurisdiction. Any suit, Action or proceeding seeking to enforce any provision of, or based on any matter arising out of or in connection with, this Agreement or the Transactions shall be brought before and determined exclusively by the Delaware Court of Chancery of the State of Delaware; *provided* that if the Delaware Court of Chancery does not have jurisdiction, any such suit, Action or proceeding shall be brought exclusively in the United States District Court for the District of Delaware or any other court of the State of Delaware, and each of the Parties hereby consents to the jurisdiction of such courts (and of the appropriate appellate courts therefrom) in any such suit, Action or proceeding and irrevocably waives, to the fullest extent permitted by Law, any objection that it may now or hereafter have to the laying of the venue of any such suit, Action or proceeding in any such court or that any such suit, Action or proceeding that is brought in any such court has been brought in an inconvenient forum. Process in any such suit, Action or proceeding may be served on any Party anywhere in the world, whether within or without the jurisdiction of any such court. Without limiting the foregoing, each Party agrees that service of process on such Party as provided in Section 13.03 shall be deemed effective service of process on such Party.

13.16 Specific Performance. Each of the Parties acknowledges that the rights of each other Party to consummate the Transactions are unique and recognizes and affirms that in the event of a breach of this Agreement by any Party, money damages may be inadequate and the non-breaching Party may have no adequate remedy at Law. Accordingly, the Parties agree that prior to a valid termination of this Agreement in accordance with this Agreement, such non-breaching Party shall have the right, in addition to any other rights and remedies existing in its favor at Law or in equity, to enforce its rights and the other Party's obligations hereunder not only by an Action or Actions for damages but also by an Action or Actions for specific performance, injunctive and/or other equitable relief (without posting of bond or other security). Each of the Parties agrees that it shall not oppose the granting of an injunction, specific performance and other equitable relief when expressly available

pursuant to the terms of this Agreement, and hereby waives (x) any defenses in any Action for an injunction, specific performance or other equitable relief, including the defense that the other parties have an adequate remedy at Law or an award of specific performance is not an appropriate remedy for any reason at Law or equity, and (y) any requirement under Law to post a bond, undertaking or other security as a prerequisite to obtaining equitable relief.

3.17 Financing Entities. Notwithstanding anything in this Agreement to the contrary, the Sellers, on behalf of themselves, the Group Companies and each of their controlled Affiliates hereby: (a) agrees that any Action, whether in law or in equity, whether in contract or in tort or otherwise, involving the Financing Entities, arising out of or relating to, this Agreement, the Financing or any of the agreements entered into in connection with the Financing or any of the Transactions or the performance of any services thereunder shall be subject to the exclusive jurisdiction of any federal or state court in the Borough of Manhattan, New York, New York, so long as such forum is and remains available, and any appellate court thereof and each party hereto irrevocably submits itself and its property with respect to any such Proceeding to the exclusive jurisdiction of such court, (b) agrees that any such Action shall be governed by the laws of the State of New York (without giving effect to any conflicts of law principles that would result in the application of the laws of another state), except as otherwise provided in any applicable agreement or document relating to the Financing, (c) agrees not to bring or support or permit any of the Group Companies or their Affiliates to bring or support any Action of any kind or description, whether in law or in equity, whether in contract or in tort or otherwise, against any Financing Entity in any way arising out of or relating to, this Agreement, the Financing or any of the Transactions or the performance of any services thereunder in any forum other than any federal or state court in the Borough of Manhattan, New York, New York, (d) agrees that service of process upon the Sellers, the Group Companies and their controlled Affiliates in any such Action shall be effective if notice is given in accordance with Section 13.03, (e) irrevocably waives, to the fullest extent that it may effectively do so, the defense of an inconvenient forum to the maintenance of such Action in any such court, (f) **knowingly, intentionally and voluntarily waives to the fullest extent permitted by applicable law trial by jury in any Action brought against the Financing Entities in any way arising out of or relating to, this Agreement, the Financing or any of the Transactions or the performance of any services thereunder**, (g) agrees that none of the Financing Entities will have any liability to the Sellers, the Group Companies or any of their controlled Affiliates (in each case, other than Parent, Buyer or their respective Subsidiaries) relating to or arising out of this Agreement, the Financing or any of the Transactions or the performance of any services thereunder, whether in law or in equity, whether in contract or in tort or otherwise and (h) agrees that the Financing Entities are express third party beneficiaries of, and may enforce, any of the provisions of this Section 13.17, and that such provisions and the definition of "Financing Entities" shall not be amended in any way adverse to the Financing Entities without the prior written consent of the Financing Parties.

* * * *

IN WITNESS WHEREOF, the Parties have executed this Agreement on the day and year first above written.

Company: **VERAFIN HOLDINGS INC.**

/s/ Jamie King
By: Jamie King

/s/ Jamie King

By: Jamie King

Its: Chief Executive Officer

Parent: **NASDAQ, INC.**

/s/ Michael Ptasznik

By: Michael Ptasznik

Its: Executive Vice President, Corporate Strategy and Chief Financial Officer

Buyer: **OSPREY ACQUISITION CORPORATION**

/s/ Michael Ptasznik

By: Michael Ptasznik

Its: President

Representative: **SHAREHOLDER REPRESENTATIVE SERVICES LLC** solely in its capacity as the Representative

/s/ Sam Riffe

By: Sam Riffe

Its: Managing Director

Sellers:

INFORMATION VENTURE PARTNERS SPV I, L.P., by its general partner, IVP SPV GP INC.

By: /s/ David Unsworth

Name: David Unsworth

Title: Secretary

[*Signature Page to Share Purchase Agreement*]

SPECTRUM EQUITY VIII-A, L.P.

By: Spectrum Equity Associates VIII, L.P.,
its General Partner

By: SEA VIII Management, LLC,
its General Partner

By: /s/ Christopher T. Mitchell

Name: Christopher T. Mitchell
Title: Managing Director

[*Signature Page to Share Purchase Agreement*]

SPECTRUM VIII INVESTMENT MANAGERS' FUND, L.P.

By: SEA VIII Management, LLC,
its General Partner

By: /s/ Christopher T. Mitchell

Name: Christopher T. Mitchell
Title: Managing Director

[*Signature Page to Share Purchase Agreement*]

SPECTRUM EQUITY VIII-B, L.P.

By: Spectrum Equity Associates VIII, L.P.,
its General Partner

By: SEA VIII Management, LLC,
its General Partner

By: /s/ Christopher T. Mitchell

Name: Christopher T. Mitchell
Title: Managing Director

[*Signature Page to Share Purchase Agreement*]

SPECTRUM VIII CO-INVESTMENT FUND, L.P.

By: SEA VIII Management, LLC,
its General Partner

By: /s/ Christopher T. Mitchell
Name: Christopher T. Mitchell
Title: Managing Director

[*Signature Page to Share Purchase Agreement*]

SPECTRUM EQUITY VIII-C, L.P.

By: Spectrum Equity Associates VIII, L.P.,
its General Partner

By: SEA VIII Management, LLC,
its General Partner

By: /s/ Christopher T. Mitchell

Name: Christopher T. Mitchell
Title: Managing Director

[*Signature Page to Share Purchase Agreement*]

SPECTRUM DISCRETIONARY OVERAGE PROGRAM I-B, L.P.

By: Spectrum Discretionary Overage Program Associates I, L.P.,
its General Partner

By: SDOP I Management, LLC,
its General Partner

By: /s/ Christopher T. Mitchell

Name: Christopher T. Mitchell
Title: Managing Director

JAMIE KING FAMILY TRUST (2012) #1

By: /s/ Jamie King

Name: Jamie King

Title: Trustee

[*Signature Page to Share Purchase Agreement*]

RAYMOND PRETTY FAMILY TRUST (2012) #1

By: /s/ Raymond Pretty

Name: Raymond Pretty

Title: Trustee

[*Signature Page to Share Purchase Agreement*]

BRENDAN BROTHERS FAMILY TRUST (2012) #1

By: /s/ Brendan Brothers

By:

Name: Brendan Brothers

Title: Trustee

By: /s/ Kevin Baker

By:

Name: Kevin Baker

Title: Trustee

/s/ Brendan Brothers

Brendan Brothers

[*Signature Page to Share Purchase Agreement*]

Exhibit 2.3

AMENDMENT TO SHARE PURCHASE AGREEMENT

This AMENDMENT TO THE SHARE PURCHASE AGREEMENT (this "Agreement"), dated as of February 11, 2021, is made by and among Nasdaq, Inc., a Delaware corporation ("Parent"), Verafin Holdings Inc., a corporation existing under the CBCA (the "Company"), the Persons listed on Annex C to the Share Purchase Agreement (as defined below) (such Persons, together with any Person holding Common Shares on behalf of whom the Company, as attorney-in-fact, executed the Share Purchase Agreement after the date thereof pursuant to Section 2.03 of the Share Purchase Agreement, collectively, "Sellers") and Shareholder Representative Services LLC, a Colorado limited liability company, solely in its capacity as representative of the Sellers (the "Representative"). Parent, the Company, Sellers and the Representative shall each be referred to herein from time to time as a "Party" and collectively as the "Parties." Capitalized terms used and not otherwise defined herein shall have the meanings set forth in the Share Purchase Agreement.

RECITALS:

WHEREAS, the Parties are parties to that certain Share Purchase Agreement dated November 18, 2020 by and among Parent, Osprey Acquisition Corporation, the Company, Sellers and the Representative (the **"**Share Purchase Agreement");

WHEREAS, Section 13.08 of the Share Purchase Agreement provides that the Share Purchase Agreement may be amended only by written agreement signed by, in respect of any amendment or waiver on or prior to the Closing Date, the Parent and the Company, and if such amendment or waiver is applicable to the Sellers, the Sellers representing the majority of the votes attached to the Common Shares held by them (including each of the Fund Holders);

WHEREAS, the Parties wish to amend the Share Purchase Agreement as set forth herein.

NOW, THEREFORE, in consideration of the mutual agreements and covenants contained herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties, intending to be legally bound, hereby agree as follows:

ARTICLE I

AMENDMENTS TO THE SHARE PURCHASE AGREEMENT

1.01 Share Purchase Agreement. Except as expressly amended by this Agreement, the Share Purchase Agreement is not otherwise being amended. The Share Purchase Agreement remains in full force and effect in accordance with its terms and conditions.

1.02 Amendments.

a. From and after the date of this Agreement, Section 3.04(a) of the Share Purchase Agreement is hereby amended by replacing the first sentence with the following text:

Prior to the Pre-Closing Reorganization, the authorized capital of the Company consists of an unlimited number of Common Shares, of which an unlimited number are designated as Series A Voting Common Shares, an unlimited number are designated as Series B Voting Common Shares, an unlimited number are designated as Series C Voting Common Shares and an unlimited number are designated as Non-Voting Common Shares. Following the Pre-Closing Reorganization, the authorized capital of the Company consists of an unlimited number of Class A Common Shares, an unlimited number of Class B Common Shares, an unlimited number of Class C Common Shares, an unlimited number of Class D Common Shares and an unlimited number of Class E Common Shares.

b. The following definitions in Section 12.01 of the Share Purchase Agreement are hereby amended by replacing them with the following text:

"Common Shares" means, (a) prior to the Pre-Closing Reorganization, the common shares in the capital of the Company, including the Series A Voting Common Shares, the Series B Voting Common Shares, the Series C Voting Common Shares, and the Non-Voting Common Shares, and (b) following the Pre-Closing Reorganization, the Class A Common Shares, the Class B Common Shares, the Class C Common Shares, the Class D Common Shares and the Class E Common Shares.

"Per Share Closing Consideration" means, with respect to any Common Share, the amount equal to (a) the quotient obtained by dividing (i) an amount equal to (A) the Closing Consideration, plus (B) the aggregate dollar amount of the exercise prices for all In-the-Money Options, less (C) the Escrow Amount, less (D) the Expense Fund by (ii) the Fully Diluted Number, less (b) solely for purposes of calculating the Per Share Closing Consideration of any Class E Common Share (and not any Options or other Common Shares), an amount per Class E Common Share equal to the amount set forth with respect to the applicable holder thereof on Annex D (it being understood that the aggregate of the amounts deducted in respect of all Class E Common Shares pursuant to this clause (b) shall be equal to the Reorganization Tax Liability).

c The definition of "Specified Common Share Value" in Section 12.01 of the Share Purchase Agreement and the reference thereto in the Index of Defined Terms are hereby deleted.

d. Section 12.01 of the Share Purchase Agreement is hereby amended to add the following definitions:

"Class A Common Shares" means the Class A Common Shares in the capital of the Company.

"Class B Common Shares" means the Class B Common Shares in the capital of the Company.

"Class C Common Shares" means the Class C Common Shares in the capital of the Company.

"Class D Common Shares" means the Class D Common Shares in the capital of the Company.

"Class E Common Shares" means the Class E Common Shares in the capital of the Company.

e. The Share Purchase Agreement is hereby amended by adding Annex D as set forth on Exhibit A attached hereto.

f. Schedule 3.04(b)(2) of the Share Purchase Agreement is hereby amended as set forth on Exhibit B attached hereto.

ARTICLE II

MISCELLANEOUS

2.01 Assignment. This Agreement and all of the provisions hereof shall be binding upon and inure to the benefit of the Parties (as defined in the Share Purchase Agreement for purposes of this Section 2.01) and their respective successors and permitted assigns, except that neither this Agreement nor any of the rights, interests or obligations hereunder may be assigned or delegated by the Company, the Parent or the Buyer without the prior written consent of the non-assigning Parties, *provided* that the Parent and the Buyer may assign this Agreement (in whole but not in part) to one or more Affiliates of Parent, but no such assignment shall relieve the Parent or the Buyer of its obligations under this Agreement.

2.02 Severability. Any term or provision of this Agreement that is invalid or unenforceable in any situation in any jurisdiction shall not affect the validity or enforceability of the remaining terms and provisions hereof or the validity or enforceability of the offending term or provision in any other situation or in any other jurisdiction. If the final judgment of a court of competent jurisdiction declares that any term or provision hereof is invalid or unenforceable, the Parties agree that the court making the determination of invalidity or unenforceability shall have the power to reduce the scope, duration or area of the term or provision, to delete specific words or phrases, or to replace any invalid or unenforceable term or provision with a term or provision that is valid and enforceable and that comes closest to expressing the intention of the invalid or unenforceable term or provision, and this Agreement shall be enforceable as so modified after the expiration of the time within which the judgment may be appealed.

2.03 Construction. The language used in this Agreement shall be deemed to be the language chosen by the Parties to express their mutual intent, and no rule of strict construction shall be applied against any Person. The information contained in this Agreement is disclosed solely for purposes of this Agreement, and no information contained herein or therein shall be deemed to be an admission by any Party to any third party of any matter whatsoever (including any violation of Law or breach of contract).

2.04 Amendment and Waiver. Any provision of this Agreement may be amended or waived only by written agreement signed by, (a) in respect of any amendment or waiver on or prior to the Closing Date, the Parent and the Company, and, only if such amendment or waiver is applicable to the Sellers, the Sellers representing the majority of the votes attached to the Common Shares held by them (including each of the Fund Holders), and, only if such amendment or waiver is applicable to the Representative, the Representative; and (b) in respect of any amendment or waiver following the Closing Date, the Parent and the Representative. No waiver of any provision hereunder or any breach or default thereof shall extend to or affect in any way any other provision or prior or subsequent breach or default.

2.05 Complete Agreement. This Agreement, the Share Purchase Agreement and the documents referred to herein contain the complete agreement between the Parties (as defined in the Share Purchase Agreement for purposes of this Section 2.05) and supersede any prior understandings, agreements or representations by or between the Parties, written or oral, that may have related to the subject matter hereof in any way, including any data room agreements, bid letters, term sheets, summary issues lists or other agreements.

2.06 Third Party Beneficiaries. Nothing expressed or referred to in this Agreement shall be construed to give any Person other than the Parties (as defined in the Share Purchase Agreement for purposes of this Section 2.06) any legal or equitable right, remedy or claim under or with respect to this Agreement or any provision of this Agreement.

2.07 Waiver of Trial by Jury. THE PARTIES TO THIS AGREEMENT EACH HEREBY WAIVES, TO THE FULLEST EXTENT PERMITTED BY LAW, ANY RIGHT TO TRIAL BY JURY OF ANY CLAIM, DEMAND, ACTION OR CAUSE OF ACTION (A) ARISING UNDER THIS AGREEMENT OR (B) IN ANY WAY CONNECTED WITH OR RELATED OR INCIDENTAL TO THE DEALINGS OF THE PARTIES HERETO IN RESPECT OF THIS AGREEMENT OR ANY OF THE TRANSACTIONS RELATED HERETO, IN EACH CASE WHETHER NOW EXISTING OR HEREAFTER ARISING, AND WHETHER IN CONTRACT, TORT, EQUITY OR OTHERWISE. THE PARTIES TO THIS AGREEMENT EACH HEREBY AGREES AND CONSENTS THAT ANY SUCH CLAIM, DEMAND, ACTION OR CAUSE OF ACTION SHALL BE DECIDED BY COURT TRIAL WITHOUT A JURY, AND THAT THE PARTIES TO THIS AGREEMENT MAY FILE A COPY OF THIS AGREEMENT WITH ANY COURT AS WRITTEN EVIDENCE OF THE CONSENT OF THE PARTIES HERETO TO THE WAIVER OF THEIR RIGHT TO TRIAL BY JURY.

2.08 Delivery by Facsimile or Email. This Agreement and any signed agreement entered into in connection herewith or contemplated hereby, and any amendments hereto or thereto, to the extent signed and delivered by means of a facsimile machine or via electronic mail, shall be treated in all manner and respects as an original contract and shall be considered to have the same binding legal effects as if it were the original signed version thereof delivered in person. At the request of any Party hereto or to any such contract, each other Party hereto or thereto shall re-execute original forms thereof and deliver them to all other Parties. No Party hereto or to any such contract shall raise the use of a facsimile machine or email to deliver a signature or the fact that any signature or contract was transmitted or communicated through the

use of facsimile machine or email as a defense to the formation of a contract and each such Party forever waives any such defense.

2.09 Counterparts; Electronic Delivery. This Agreement may be executed in multiple counterparts, any one of which need not contain the signature of more than one (1) Party, but all such counterparts taken together shall constitute one and the same instrument. This Agreement shall become effective when each Party hereto shall have received a counterpart hereof signed by all of the other Parties hereto. Signatures to this Agreement transmitted by facsimile transmission, by electronic mail in "portable document format" form, or by any other electronic means intended to preserve the original graphic and pictorial appearance of a document, will have the same effect as physical delivery of the paper document bearing the original signature.

2.10 Governing Law. All issues and questions concerning the construction, validity, interpretation and enforceability of this Agreement and the exhibits and schedules hereto shall be governed by, and construed in accordance with, the Laws of the State of Delaware, without giving effect to any choice of Law or conflict of Law rules or provisions (whether of the State of Delaware or any other jurisdiction) that would cause the application of the Laws of any jurisdiction other than the State of Delaware.

2.11 Jurisdiction. Any suit, Action or proceeding seeking to enforce any provision of, or based on any matter arising out of or in connection with, this Agreement shall be brought before and determined exclusively by the Delaware Court of Chancery of the State of Delaware; provided that if the Delaware Court of Chancery does not have jurisdiction, any such suit, Action or proceeding shall be brought exclusively in the United States District Court for the District of Delaware or any other court of the State of Delaware, and each of the Parties hereby consents to the jurisdiction of such courts (and of the appropriate appellate courts therefrom) in any such suit, Action or proceeding and irrevocably waives, to the fullest extent permitted by Law, any objection that it may now or hereafter have to the laying of the venue of any such suit, Action or proceeding in any such court or that any such suit, Action or proceeding that is brought in any such court has been brought in an inconvenient forum. Process in any such suit, Action or proceeding may be served on any Party anywhere in the world, whether within or without the jurisdiction of any such court. Without limiting the foregoing, each Party agrees that service of process on such Party as provided in Section 13.03 of the Share Purchase Agreement shall be deemed effective service of process on such Party.

* * * *

IN WITNESS WHEREOF, the Parties have executed this Agreement on the day and year first above written.

Company: **VERAFIN HOLDINGS INC.**

/s/ Christopher Hickey

By: Christopher Hickey

Its: Corporate Secretary

Parent: **NASDAQ, INC.**

/s/ Michael Ptasznik

By: Michael Ptasznik

Its: Executive Vice President, Corporate Strategy and Chief Financial Officer

Representative: **SHAREHOLDER REPRESENTATIVE SERVICES LLC** solely in its capacity as the Representative

/s/ Sam Riffe

By: Sam Riffe

Its: Managing Director

Sellers:

INFORMATION VENTURE PARTNERS SPV I, L.P., by its general partner, IVP SPV GP INC.

By: /s/ David Unsworth

Name: David Unsworth

Title: Secretary

[*Signature Page to Share Purchase Agreement*]

SPECTRUM EQUITY VIII-A, L.P.

By: Spectrum Equity Associates VIII, L.P.,
its General Partner

By: SEA VIII Management, LLC,
its General Partner

By: /s/ Christopher T. Mitchell

Name: Christopher T. Mitchell
Title: Managing Director

[*Signature Page to Share Purchase Agreement*]

SPECTRUM VIII INVESTMENT MANAGERS' FUND, L.P.

By: SEA VIII Management, LLC,
its General Partner

By: /s/ Christopher T. Mitchell

Name: Christopher T. Mitchell
Title: Managing Director

[*Signature Page to Share Purchase Agreement*]

SPECTRUM EQUITY VIII-B, L.P.

By: Spectrum Equity Associates VIII, L.P.,
its General Partner

By: SEA VIII Management, LLC,
its General Partner

By: /s/ Christopher T. Mitchell

Name: Christopher T. Mitchell
Title: Managing Director

[*Signature Page to Share Purchase Agreement*]

SPECTRUM VIII CO-INVESTMENT FUND, L.P.

By: SEA VIII Management, LLC,
its General Partner

By: /s/ Christopher T. Mitchell

Name: Christopher T. Mitchell
Title: Managing Director

[*Signature Page to Share Purchase Agreement*]

SPECTRUM EQUITY VIII-C, L.P.

By: Spectrum Equity Associates VIII, L.P.,
its General Partner

By: SEA VIII Management, LLC,
its General Partner

By: /s/ Christopher T. Mitchell

Name: Christopher T. Mitchell
Title: Managing Director

[*Signature Page to Share Purchase Agreement*]

SPECTRUM DISCRETIONARY OVERAGE PROGRAM I-B, L.P.

By: Spectrum Discretionary Overage Program Associates I, L.P., its General Partner

By: SDOP I Management, LLC, its General Partner

By: /s/ Christopher T. Mitchell

Name: Christopher T. Mitchell

Title: Managing Director

[*Signature Page to Share Purchase Agreement*]

JAMIE KING FAMILY TRUST (2012) #1

By: /s/ Jamie King

Name: Jamie King

Title: Trustee

[*Signature Page to Share Purchase Agreement*]

RAYMOND PRETTY FAMILY TRUST (2012) #1

By: /s/ Raymond Pretty

Name: Raymond Pretty

Title: Trustee

[*Signature Page to Share Purchase Agreement*]

BRENDAN BROTHERS FAMILY TRUST (2012) #1

By: /s/ Brendan Brothers

Name: Brendan Brothers

Title: Trustee

By: /s/ Kevin Baker

Name: Kevin Baker

Title: Trustee

/s/ Brendan Brothers

Brendan Brothers

Exhibit 4.17

DESCRIPTION OF THE REGISTRANT'S SECURITIES REGISTERED PURSUANT TO SECTION 12 OF THE SECURITIES EXCHANGE ACT OF 1934

Nasdaq, Inc. (the "Company") has four classes of securities registered under Section 12 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"):

(1) Common Stock, par value $0.01 per share ("Common Stock");

(2) 0.875% Senior Notes due 2030;

(3) 1.75% Senior Notes due 2029; and

(4) 1.75% Senior Notes due 2023.

As used in this summary, the terms "Nasdaq," "the Company," "we," "our," and "us" refer solely to Nasdaq, Inc. and not its subsidiaries, unless otherwise specified.

Description of Common Stock

The following is a description of the material terms and provisions relating to our common stock. Because it is a summary, the following description is not complete and is subject to and qualified in its entirety by reference to our Amended and Restated Certificate of Incorporation, as amended, or Certificate, and by-laws, and provisions of Delaware law which define the rights of our stockholders.

The holders of our common stock are entitled to one vote per share on all matters to be voted upon by the stockholders except that no person may exercise voting rights in respect of any shares in excess of 5% of the then outstanding shares of our Common Stock. Subject to certain additional conditions, this limitation does not apply to persons exempted from this limitation by our Board of Directors prior to the time such person owns more than 5.0% of the then-outstanding shares of our common stock.

At any meeting of our stockholders, a majority of the votes entitled to be cast will constitute a quorum for such meeting.

Holders of common stock are entitled to receive ratably such dividends, if any, as may be declared from time to time by our board of directors out of funds legally available for them. In the event of our liquidation, dissolution, or winding-up, the holders of our common stock are entitled to share ratably in all assets remaining after payment of liabilities, subject to prior distribution rights of preferred stock, if any, then outstanding. Our common stock has no preemptive or conversion rights or other subscription rights. There are no redemption or sinking fund provisions applicable to our common stock. All outstanding shares of common stock are

fully paid and non-assessable. Future dividends, if any, will be determined by our board of directors.

Certain Provisions of our Certificate and By-Laws

Some provisions of our Certificate and by-laws, which provisions are summarized below, may be deemed to have an anti-takeover effect and may delay, defer, or prevent a tender offer or takeover attempt that a stockholder might consider in its best interest, including those attempts that might result in a premium over the market price for the shares held by stockholders.

Advance Notice Requirements for Stockholder Proposals and Directors Nominations

Our by-laws provide that stockholders seeking to bring business before an annual meeting of stockholders, or to nominate candidates for election as directors at an annual meeting of stockholders, must provide timely notice in writing. To be timely, a stockholder's notice must be delivered to or mailed and received at our principal executive offices not less than 90 nor more than 120 days prior to the anniversary date of the immediately preceding annual meeting of stockholders; provided, that in the event that the annual meeting is called for a date that is not within 30 days before or 70 days after such anniversary date, notice by the shareholder in order to be timely must be received not earlier than 120 days prior to the meeting and not later than the later of 90 days prior to the meeting and the close of business on the 10th day following the date on which notice of the date of the annual meeting was first publicly announced by Nasdaq. In the case of a special meeting of stockholders called for the purpose of electing directors, notice by the stockholder in order to be timely must be received not earlier than 120 days prior to the meeting and not later than the later of 90 days prior to the meeting or the close of business on the 10th day following the day on which public disclosure of the date of the special meeting and our nominees was first made. In addition, our by-laws specify certain requirements as to the form and content of a stockholder's notice. These provisions may preclude stockholders from bringing matters before an annual meeting of stockholders or from making nominations for directors at an annual or special meeting of stockholders.

Proxy Access

Our by-laws include a proxy access provision that permits a stockholder, or a group of stockholders, owning at least three percent of our outstanding shares of common stock continuously for at least three years to nominate and include in the proxy materials for an annual meeting of stockholders director nominees constituting up to the greater of two individuals and 25% of the total number of directors then in office, provided that the stockholder(s) and nominee(s) satisfy the requirements specified in the by-laws.

Stockholder Action

Our Certificate provides that stockholders are not entitled to act by written consent in lieu of a meeting.

Right to Call Special Meeting

Our by-laws provide that stockholders representing 15% or more of our outstanding shares can convene a special meeting of shareholders.

Amendments; Vote Requirements

The General Corporation Law of the State of Delaware provides generally that the affirmative vote of a majority of the shares entitled to vote on any matter is required to amend a corporation's certificate of incorporation, unless a corporation's certificate of incorporation requires a greater percentage. Our Certificate imposes majority voting requirements in connection with stockholder amendments to the by-laws and in connection with the amendment of certain provisions of the Certificate, including those provisions of the Certificate relating to the limitations on voting rights of certain persons, removal of directors and prohibitions on stockholder action by written consent.

Authorized But Unissued Shares

The authorized but unissued shares of our common stock will be available for future issuance without stockholder approval in most cases. These additional shares may be utilized for a variety of corporate purposes, including future public or private offerings to raise additional capital, corporate acquisitions and employee benefit plans. The existence of authorized but unissued shares of our common stock could render more difficult, or discourage, an attempt to obtain control of us by means of a proxy contest, tender offer, merger or otherwise.

Delaware Business Combination Statute

We are organized under Delaware law. Delaware law generally prohibits a publicly-held or widely-held corporation from engaging in a "business combination" with an "interested stockholder" for three years after the stockholder becomes an interested stockholder. An "interested stockholder" is a person who, together with affiliates and associates, owns (or, in some cases, within three years, did own) directly or indirectly 15% or more of the corporation's outstanding voting stock. A "business combination" includes a merger, asset sale or other transaction that results in a financial benefit to the interested stockholder. However, Delaware law does not prohibit these business combinations if:

1. before the stockholder becomes an interested stockholder, the corporation's board approved either the business combination or the transaction that resulted in the stockholder becoming an interested stockholder;

2. after the transaction that results in the stockholder becoming an interested stockholder, the interested stockholder owns at least 85% of the corporation's outstanding voting stock (excluding certain shares); or

3. the corporation's board approves the business combination and the holders of at least two-thirds of the corporation's outstanding voting stock that the interested stockholder does not own authorize the business combination at a meeting of stockholders.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is Computershare. Its address is 480 Washington Boulevard, Jersey City, New Jersey 07310 and its telephone number is (800) 736-3001.

Listing

Our common stock is listed on The Nasdaq Stock Market under the trading symbol "NDAQ."

Description of the 0.875% Senior Notes Due 2030

The 0.875% Senior Notes due 2030 (the "2030 Notes") were issued under an indenture, dated as of June 7, 2013 (the "base indenture") between Nasdaq, Inc. and Wells Fargo Bank, National Association, as trustee (the "Trustee") and a seventh supplemental indenture dated as of February 13, 2020 (the "supplemental indenture" and, together with the base indenture, the "indenture").

We issued €600 million aggregate principal amount of the 2030 Notes on February 13, 2020.

This summary is subject to, and qualified in its entirety by reference to, all the provisions of the 2030 Notes and the indenture, including definitions of certain terms used therein.

General

The 2030 Notes:

- are senior unsecured obligations of ours;
- rank equally in right of payment with all of our other senior unsecured indebtedness from time to time outstanding, commercial paper issuances and indebtedness under our credit facility;
- are structurally subordinated in right of payment to all existing and future obligations of our subsidiaries, including claims with respect to trade payables; and
- are effectively subordinated in right of payment to all of our existing and future secured indebtedness and other secured obligations to the extent of the value of the collateral securing any such indebtedness and other obligations.

The 2030 Notes were issued in minimum denominations of €100,000 and integral multiples of €1,000 in excess thereof.

Principal, Maturity and Interest

The 2030 Notes will bear interest at a rate of 0.875% per year. Interest on the Notes is payable annually in arrears on February 13 of each year, beginning on February 13, 2021, and will be computed on the basis of the actual number of days in the period for which interest is being calculated and the actual number of days from and including the last date on which interest was paid on the 2030 Notes (or the settlement date if no interest has been paid or duly provided for on the 2030 Notes), to but excluding the next date on which interest is paid or duly provided for. This payment convention is referred to as ACTUAL/ACTUAL (ICMA) as defined in the rulebook of the International Capital Market Association. Interest on the 2030 Notes will accrue

from and including the settlement date and will be paid to holders of record on the day immediately prior to the applicable interest payment date.

The 2030 Notes will mature on February 13, 2030. On the maturity date of the 2030 Notes, the holders will be entitled to receive 100% of the principal amount of such 2030 Notes. The 2030 2030 Notes will not have the benefit of any sinking fund.

If any interest payment date, redemption date or maturity date falls on a day that is not a business day, then the relevant payment may be made on the next succeeding business day and no interest will accrue because of such delayed payment. With respect to the 2030 Notes, when we use the term "business day" we mean any day except a Saturday, a Sunday or a day on which banking institutions in the applicable place of payment are authorized or required by law, regulation or executive order to close.

Claims against the Company for payment of principal, interest and additional amounts, if any, on the 2030 Notes will become void unless presentment for payment is made (where so required under the indenture) within, in the case of principal and additional amounts, if any, a period of ten years or, in the case of interest, a period of five years, in each case from the applicable original date of payment therefor.

Euro Notes—Issuance in Euros

Initial holders of the 2030 Notes paid for the 2030 Notes in euros, and principal, premium, if any, and interest payments and additional amounts, if any, in respect of the 2030 Notes will be payable in euros. If, on or after the date of this prospectus supplement, the euro is unavailable to us due to the imposition of exchange controls or other circumstances beyond our control or the euro is no longer used by the then member states of the European Monetary Union that have adopted the euro as their currency or for the settlement of transactions by public institutions within the international banking community, then all payments in respect of the 2030 Notes will be made in U.S. dollars until the euro is again available to us or so used.

The amount payable on any date in euros will be converted to U.S. dollars on the basis of the most recently available market exchange rate for euros as determined by us in our sole discretion. Any payment in respect of the 2030 Notes so made in U.S. dollars will not constitute an event of default under the indenture or the 2030 Notes. Neither the trustee nor the paying agent will be responsible for obtaining exchange rates, effecting conversions or otherwise handling redenominations.

Ranking

The 2030 Notes are general unsecured obligations of ours and will rank equally with all of our existing and future unsubordinated obligations.

Holders of any secured indebtedness and other secured obligations of the Company will have claims that are prior to your claims as holders of the 2030 Notes, to the extent of the value

of the assets securing such indebtedness and other obligations, in the event of any bankruptcy, liquidation or similar proceeding.

Further Issues

The 2030 Notes constituted a separate series of debt securities under the indenture, limited to €600 million. Under the indenture, we may, without the consent of the holders of the 2030 Notes, issue additional 2030 Notes of the same or a different series from time to time in the future in an unlimited aggregate principal amount; *provided* that if any such additional 2030 Notes are not fungible with the 2030 Notes offered hereby (or any other tranche of additional 2030 Notes) for U.S. federal income tax purposes, then such additional 2030 Notes will have different ISIN and/or Common Code numbers than the Notes offered hereby (and any such other tranche of additional 2030 Notes). The 2030 Notes and any additional 2030 Notes of the same series would rank equally and ratably and would be treated as a single class for all purposes under the indenture. This means that, in circumstances where the indenture provides for the holders of debt securities of any series to vote or take any action, any of the outstanding 2030 Notes, as well as any additional 2030 Notes that we may issue by reopening such series, will vote or take action as a single class.

Redemption

Optional Redemption

The 2030 Notes will be redeemable, in whole at any time or in part from time to time, at our option, at a redemption price (the "make-whole redemption price") equal to the greater of (i) 100% of the principal amount of the 2030 Notes and (ii) as determined by the Quotation Agent (as defined below), the sum of the present values of the remaining scheduled payments of principal and interest on the 2030 Notes (exclusive of interest accrued and unpaid as of the date of redemption), discounted to the date of redemption on an annual basis (ACTUAL/ACTUAL (ICMA)) at the Bund Rate (as defined below), plus 20 basis points, plus accrued and unpaid interest thereon to the date of redemption. However, if the redemption date is after a record date and on or prior to a corresponding interest payment date, the interest will be paid on the redemption date to the holder of record on the record date.

Notwithstanding the foregoing, at any time on or after November 13, 2029 (three months before their maturity date), the 2030 Notes will be redeemable, in whole or in part, at our option and at any time or from time to time, at a redemption price equal to 100% of the principal amount of the 2030 Notes to be redeemed plus accrued and unpaid interest thereon to, but excluding, the date of redemption.

Notice of any redemption will be mailed at least 30 days, but not more than 60 days, before the redemption date to each registered holder of 2030 Notes to be redeemed. Once notice of redemption is mailed, the 2030 Notes called for redemption will become due and payable on the redemption date and at the applicable redemption price, plus accrued and unpaid interest to, but not including, the redemption date. Unless we default in payment of the redemption price, on

and after the redemption date, interest will cease to accrue on the 2030 Notes (or portion thereof) to be redeemed on such redemption date.

"Bund Rate" means, with respect to any redemption date, the rate per annum equal to the annual equivalent yield to maturity of the Comparable German Bund Issue, assuming a price for the Comparable German Bund Issue (expressed as a percentage of its principal amount) equal to the Comparable German Bund Price for such redemption date.

"Comparable German Bund Issue" means that German Bundesanleihe security selected by the Quotation Agent as having a maturity comparable to the remaining term of the 2030 Notes to be redeemed that would be utilized, at the time of selection and in accordance with customary
financial practice, in pricing new issues of corporate notes of comparable maturity to the remaining term of the Notes.

"Comparable German Bund Price" means, with respect to any redemption date, (i) the average of four Reference German Bund Dealer Quotations for such redemption date, after excluding the highest and lowest such Reference German Bund Dealer Quotations or (ii) if the Quotation Agent obtains fewer than four such Reference German Bund Dealer Quotations, the average of all such quotations.

"Quotation Agent" means a Reference German Bund Dealer appointed by us.

"Reference German Bund Dealer" means any dealer of German Bundesanleihe securities selected by us in good faith.

"Reference German Bund Dealer Quotations" means, with respect to each Reference German Bund Dealer and any redemption date, the average, as determined by us, of the bid and asked prices for the Comparable German Bund Issue (expressed in each case as a percentage of its principal amount) quoted in writing to the Quotation Agent by such Reference German Bund Dealer at 3:30 p.m., Frankfurt, Germany time, on the third business day preceding such redemption date.

If we elect to redeem less than all of the 2030 Notes, and such 2030 Notes are at the time represented by a global note, then the depositary will select by lot the particular interests to be redeemed. If we elect to redeem less than all of the 2030 Notes, and any of such 2030 Notes are not represented by a global note, then the trustee will select the particular 2030 Notes to be redeemed in a manner it deems appropriate and fair (and the depositary will select by lot the particular interests in any global note to be redeemed).

We may at any time, and from time to time, purchase the 2030 Notes at any price or prices in the open market or otherwise.

Repurchase upon Change of Control Triggering Event

If a Change of Control Triggering Event (as defined below) occurs with respect to the 2030 Notes, unless we have exercised our right to redeem the 2030 Notes, we will be required to make an offer to repurchase all or, at the holder's option, any part (equal to €100,000 or any integral multiple of €1,000 in excess thereof) of each holder's 2030 Notes pursuant to the offer described below (the "Change of Control Offer").

In the Change of Control Offer, we will be required to offer payment in cash equal to 101% of the aggregate principal amount of 2030 Notes repurchased plus accrued and unpaid interest, if any, on the 2030 Notes repurchased to, but not including, the date of purchase (the "Change of Control Payment").

"Change of Control" means the occurrence of any of the following: (1) the direct or indirect sale, transfer, conveyance or other disposition (other than by way of merger or consolidation), in one or a series of related transactions, of all or substantially all of the assets of us and our Subsidiaries taken as a whole to any Person or group of related Persons for purposes of Section 13(d) of the Exchange Act (a "Group") other than us or one of our subsidiaries; (2) the approval by the holders of our common stock of any plan or proposal for our liquidation or dissolution; (3) the consummation of any transaction (including, without limitation, any merger or consolidation) the result of which is that any Person or Group becomes the beneficial owner, directly or indirectly, of more than 50% of the then outstanding number of shares of our Voting Stock; or (4) the first day on which a majority of the members of our board of directors are not Continuing Directors.

Notwithstanding the foregoing, a transaction will not be deemed to involve a Change of Control if (1) we become a direct or indirect wholly owned subsidiary of a holding company and (2)(A) the direct or indirect holders of the Voting Stock of such holding company immediately following that transaction are substantially the same as the holders of our Voting Stock immediately prior to that transaction or (B) immediately following that transaction no Person or Group (other than a holding company satisfying the requirements of this sentence) is the beneficial owner, directly or indirectly of more than 50% of the Voting Stock of such holding company.

"Change of Control Triggering Event" means the occurrence of both a Change of Control and a Below Investment Grade Rating Event (as such term is defined in the indenture) occurring in respect of that Change of Control.

"Continuing Directors" means, as of any date of determination, any member of our board of directors who (1) was a member of our board of directors on the date of the issuance of the 2030 Notes; or (2) was nominated or approved for election, elected or appointed to our board of directors with the approval of a majority of the Continuing Directors who were members of our board of directors at the time of such nomination, approval, election or appointment (either by a specific vote or by approval of the proxy statement issued by us in which such member was named as a nominee for election as a director).

"Person" means any individual, firm, limited liability company, corporation, partnership, association, joint venture, tribunal, trust, government or political subdivision or agency or instrumentality thereof, or any other entity or organization and includes a "person" as used in Section 13(d)(3) of the Exchange Act.

"Voting Stock" of any specified Person as of any date means the capital stock of such Person that is at the time entitled to vote generally in the election of the board of directors of such Person.

The definition of "Change of Control" includes a phrase relating to the sale, transfer, conveyance or other disposition of "all or substantially all" of our consolidated assets. There is no precise, established definition of the phrase "substantially all" under applicable law. Accordingly, your ability to require us to purchase your 2030 Notes as a result of the sale, transfer, conveyance or other disposition of less than all of our assets may be uncertain.

Certain Covenants

The indenture contains, among others, restrictive covenants regarding (i) our ability to consolidate or merge with another entity or to sell, transfer or otherwise convey all or substantially all of our assets to another entity, (ii) create or permit certain significant subsidiaries to create or permit to exist certain liens and (iii) certain sale and lease-back transactions involving certain subsidiaries.

Events of Default

Holders of the 2030 Notes will have specified rights if an Event of Default (as defined below) occurs. The term "Event of Default" in respect of the 2030 Notes means any of the following:

(1) we do not pay interest on any of the 2030 Notes within 30 days of its due date;

(2) we fail to pay the principal (or premium, if any) of any 2030 Note, when such principal becomes due and payable, at maturity, upon acceleration, upon redemption or otherwise;

(3) we fail to comply with certain covenants under the indenture;

(4) we remain in breach of a covenant or warranty in respect of the indenture or 2030 Notes (other than a covenant included in the indenture solely for the benefit of debt securities of another series) for 90 days after we receive a written notice of default, which notice must be sent by either the trustee or holders of at least 25% in principal amount of the outstanding 2030 Notes;

(5) we file for bankruptcy, or other events of bankruptcy, insolvency or reorganization specified in the indenture;

(6) we default on any indebtedness of ours or of a significant subsidiary having an aggregate amount of at least $150,000,000, constituting a default either of payment of principal when due and payable or which results in acceleration of the indebtedness unless the default has been cured or waived or the indebtedness discharged in full within 60 days after we have been notified of the default by the trustee or holders of at least 25% of the outstanding 2030 Notes; or

(7) one or more final judgments for the payment of money in an aggregate amount in excess of $150,000,000 above available insurance or indemnity coverage shall be rendered against us or any significant subsidiary and the same shall remain undischarged for a period of 60 consecutive days during which execution shall not be effectively stayed.

If an Event of Default (other than an Event of Default specified in clause (5) above) with respect to the 2030 Notes has occurred, the trustee or the holders of at least 25% in principal amount of the 2030 Notes may declare the entire unpaid principal amount of (and premium, if any), and all the accrued interest on, the Notes to be due and immediately payable. This is called a declaration of acceleration of maturity. There is no action on the part of the trustee or any holder of the 2030 Notes required for such declaration if the Event of Default is the Company's bankruptcy, insolvency or reorganization. Holders of a majority in principal amount of the 2030 Notes may also waive certain past defaults under the indenture with respect to the 2030 Notes on behalf of all of the holders of the 2030 Notes. A declaration of acceleration of maturity may be canceled, under specified circumstances, by the holders of at least a majority in principal amount of the 2030 Notes and the trustee.

Except in cases of default, where the trustee has special duties, the trustee is not required to take any action under the indenture at the request of holders unless the holders offer the trustee protection from expenses and liability satisfactory to the trustee. If an indemnity satisfactory to the trustee is provided, the holders of a majority in principal amount of 2030 Notes may direct the time, method and place of conducting any lawsuit or other formal legal action seeking any remedy available to the trustee. The trustee may refuse to follow those directions in certain circumstances specified in the indenture. No delay or omission in exercising any right or remedy will be treated as a waiver of the right, remedy or Event of Default.

Modification of the Indenture and Waiver of Rights of Holders

Under certain circumstances, we can make changes to the indenture and the 2030 Notes. Some types of changes require the approval of each holder of 2030 Notes, some require approval by a vote of a majority of the holders of the 2030 Notes, and some changes do not require any approval at all.

Description of the 1.75% Senior Notes Due 2029

The 1.75% Senior Notes due 2029 (the "2029 Notes") were issued under an indenture, dated as of June 7, 2013 (the "base indenture") between Nasdaq, Inc. and Wells Fargo Bank, National Association, as trustee (the "Trustee") and a sixth supplemental indenture dated as of April 1, 2019 (the "supplemental indenture" and, together with the base indenture, the "indenture").

We issued €600 million aggregate principal amount of the 2029 Notes on April 1, 2019.

This summary is subject to, and qualified in its entirety by reference to, all the provisions of the 2029 Notes and the indenture, including definitions of certain terms used therein.

General

The 2029 Notes:

- are senior unsecured obligations;
- rank equally in right of payment with all of our other senior unsecured indebtedness from time to time outstanding, commercial paper issuances and indebtedness under our 2017 credit facility;
- are structurally subordinated in right of payment to all existing and future obligations of our subsidiaries, including claims with respect to trade payables; and
- are effectively subordinated in right of payment to all of our existing and future secured indebtedness and other secured obligations to the extent of the value of the collateral securing any such indebtedness and other obligations.

The 2029 Notes were issued in minimum denominations of €100,000 and integral multiples of €1,000 in excess thereof.

Principal, Maturity and Interest

The 2029 Notes bear interest at a rate of 1.75% per year. Interest on the 2029 Notes is payable annually in arrears on of each year, beginning on March 28, 2020, and is computed on the basis of the actual number of days in the period for which interest is being calculated and the actual number of days from and including the last date on which interest was paid on the 2029 Notes (or the settlement date if no interest has been paid or duly provided for on the 2029 Notes), to but excluding the next date on which interest is paid or duly provided for. This payment convention is referred to as ACTUAL/ACTUAL (ICMA) as defined in the rulebook of the International Capital Market Association. Interest on the 2029 Notes accrues from and including the settlement date and will be paid to holders of record on the day immediately prior to the applicable interest payment date.

The 2029 Notes will mature on March 28, 2029. On the maturity date of the 2029 Notes, the holders will be entitled to receive 100% of the principal amount of such 2029 Notes. The 2029 Notes will not have the benefit of any sinking fund.

If any interest payment date, redemption date or maturity date falls on a day that is not a business day, then the relevant payment may be made on the next succeeding business day and no interest will accrue because of such delayed payment. With respect to the 2029 Notes, when we use the term "business day" we mean any day except a Saturday, a Sunday or a day on which banking institutions in the applicable place of payment are authorized or required by law, regulation or executive order to close.

Claims against the Company for payment of principal, interest and additional amounts, if any, on the 2029 Notes will become void unless presentment for payment is made (where so required under the indenture) within, in the case of principal and additional amounts, if any, a period of ten years or, in the case of interest, a period of five years, in each case from the applicable original date of payment therefor.

Euro Notes—Issuance in Euros

Initial holders of the 2029 Notes paid for the 2029 Notes in euros, and principal, premium, if any, and interest payments and additional amounts, if any, in respect of the Notes will be payable in euros. If the euro is unavailable to us due to the imposition of exchange controls or other circumstances beyond our control or the euro is no longer used by the then member states of the European Monetary Union that have adopted the euro as their currency or for the settlement of transactions by public institutions within the international banking community, then all payments in respect of the 2029 Notes will be made in U.S. dollars until the euro is again available to us or so used.

The amount payable on any date in euros will be converted to U.S. dollars on the basis of the most recently available market exchange rate for euros as determined by us in our sole discretion. Any payment in respect of the 2029 Notes so made in U.S. dollars will not constitute an event of default under the indenture or the 2029 Notes. Neither the trustee nor the paying agent will be responsible for obtaining exchange rates, effecting conversions or otherwise handling redenominations.

Interest Rate Adjustment

The interest rate payable on the 2029 Notes will be subject to adjustment from time to time if either Moody's or S&P, or, in either case, any substitute rating agency downgrades (or subsequently upgrades) the credit rating assigned to the 2029 Notes.

Ranking

The 2029 Notes are general unsecured obligations of ours and rank equally with all of our existing and future unsubordinated obligations.

Holders of any secured indebtedness and other secured obligations of the Company will have claims that are prior to claims as holders of the 2029 Notes, to the extent of the value of the assets securing such indebtedness and other obligations, in the event of any bankruptcy, liquidation or similar proceeding.

Further Issues

The 2029 Notes constituted a separate series of debt securities under the indenture, limited to €600 million. Under the indenture, we may, without the consent of the holders of the 2029 Notes, issue additional 2029 Notes of the same or a different series from time to time in the future in an unlimited aggregate principal amount; provided, that, if any such additional 2029 Notes are not fungible with the 2029 Notes (or any other tranche of additional 2029 Notes) for U.S. federal income tax purposes, then such additional 2029 Notes will have different ISIN and/or Common Code numbers than the 2029 Notes (and any such other tranche of additional 2029 Notes). The 2029 Notes and any additional 2029 Notes of the same series would rank equally and ratably and would be treated as a single class for all purposes under the indenture. This means that, in circumstances where the indenture provides for the holders of debt securities of any series to vote or take any action, any of the outstanding 2029 Notes, as well as any additional 2029 Notes that we may issue by reopening such series, will vote or take action as a single class.

Redemption

Optional Redemption

The 2029 Notes will be redeemable, in whole at any time or in part from time to time, at our option, at a redemption price (the "make-whole redemption price") equal to the greater of (i) 100% of the principal amount of the 2029 Notes, and (ii) as determined by the Quotation Agent (as defined below), the sum of the present values of the remaining scheduled payments of principal and interest on the 2029 Notes (exclusive of interest accrued and unpaid as of the date of redemption), discounted to the date of redemption on an annual basis (ACTUAL/ACTUAL (ICMA)) at the Bund Rate (as defined below), plus 30 basis points, plus accrued and unpaid interest thereon to the date of redemption. However, if the redemption date is after a record date and on or prior to a corresponding interest payment date, the interest will be paid on the redemption date to the holder of record on the record date.

Notwithstanding the foregoing, at any time on or after December 28, 2028 (three months before their maturity date), the 2029 Notes will be redeemable, in whole or in part, at our option and at any time or from time to time, at a redemption price equal to 100% of the principal amount of the 2029 Notes to be redeemed plus accrued and unpaid interest thereon to, but excluding, the date of redemption.

Notice of any redemption will be mailed at least 30 days, but not more than 60 days, before the redemption date to each registered holder of 2029 Notes to be redeemed. Once notice of redemption is mailed, the 2029 Notes called for redemption will become due and payable on the redemption date and at the applicable redemption price, plus accrued and unpaid interest to, but not including, the redemption date. Unless we default in payment of the redemption price, on and after the redemption date, interest will cease to accrue on the 2029 Notes (or portion thereof) to be redeemed on such redemption date.

"Bund Rate" means, with respect to any redemption date, the rate per annum equal to the annual equivalent yield to maturity of the Comparable German Bund Issue, assuming a price for the Comparable German Bund Issue (expressed as a percentage of its principal amount) equal to the Comparable German Bund Price for such redemption date.

"Comparable German Bund Issue" means that German Bundesanleihe security selected by the Quotation Agent as having a maturity comparable to the remaining term of the Notes to be redeemed that would be utilized, at the time of selection and in accordance with customary financial practice, in pricing new issues of corporate notes of comparable maturity to the remaining term of the Notes.

"Comparable German Bund Price" means, with respect to any redemption date, (i) the average of four Reference German Bund Dealer Quotations for such redemption date, after excluding the highest and lowest such Reference German Bund Dealer Quotations, or (ii) if the Quotation Agent obtains fewer than four such Reference German Bund Dealer Quotations, the average of all such quotations.

"Quotation Agent" means a Reference German Bund Dealer appointed by us.

"Reference German Bund Dealer" means any dealer of German Bundesanleihe securities selected by us in good faith.

"Reference German Bund Dealer Quotations" means, with respect to each Reference German Bund Dealer and any redemption date, the average, as determined by us, of the bid and asked prices for the Comparable German Bund Issue (expressed in each case as a percentage of its principal amount) quoted in writing to the Quotation Agent by such Reference German Bund Dealer at 3:30 p.m., Frankfurt, Germany time, on the third business day preceding such redemption date.

If we elect to redeem less than all of the 2029 Notes, and such 2029 Notes are at the time represented by a global note, then the depositary will select by lot the particular interests to be redeemed. If we elect to redeem less than all of the 2029 Notes, and any of such 2029 Notes are not represented by a global note, then the trustee will select the particular 2029 Notes to be redeemed in a manner it deems appropriate and fair (and the depositary will select by lot the particular interests in any global note to be redeemed).

We may at any time, and from time to time, purchase the 2029 Notes at any price or prices in the open market or otherwise.

Repurchase upon Change of Control Triggering Event

If a Change of Control Triggering Event (as defined below) occurs with respect to the 2029 Notes, unless we have exercised our right to redeem the 2029 Notes, we are required to make an offer to repurchase all or, at the holder's option, any part (equal to €100,000 or any integral multiple of €1,000 in excess thereof) of each holder's 2029 Notes pursuant to the offer described below (the "Change of Control Offer").

In the Change of Control Offer, we will be required to offer payment in cash equal to 101% of the aggregate principal amount of 2029 Notes repurchased plus accrued and unpaid interest, if any, on the Notes repurchased to, but not including, the date of purchase (the "Change of Control Payment").

"Change of Control" means the occurrence of any of the following: (1) the direct or indirect sale, transfer, conveyance or other disposition (other than by way of merger or consolidation), in one or a series of related transactions, of all or substantially all of the assets of us and our Subsidiaries taken as a whole to any Person or group of related Persons for purposes of Section 13(d) of the Exchange Act (a "Group") other than us or one of our subsidiaries; (2) the approval by the holders of our common stock of any plan or proposal for our liquidation or dissolution; (3) the consummation of any transaction (including, without limitation, any merger or consolidation) the result of which is that any Person or Group becomes the beneficial owner, directly or indirectly, of more than 50% of the then outstanding number of shares of our Voting Stock; or (4) the first day on which a majority of the members of our board of directors are not Continuing Directors.

Notwithstanding the foregoing, a transaction will not be deemed to involve a Change of Control if (1) we become a direct or indirect wholly owned Subsidiary of a holding company and (2)(A) the direct or indirect holders of the Voting Stock of such holding company immediately following that transaction are substantially the same as the holders of our Voting Stock immediately prior to that transaction or (B) immediately following that transaction no Person or Group (other than a holding company satisfying the requirements of this sentence) is the beneficial owner, directly or indirectly of more than 50% of the Voting Stock of such holding company.

"Change of Control Triggering Event" means the occurrence of both a Change of Control and a Below Investment Grade Rating Event (as such term is defined in the indenture) occurring in respect of that Change of Control.

"Continuing Directors" means, as of any date of determination, any member of our board of directors who (1) was a member of our board of directors on the date of the issuance of the Notes; or (2) was nominated or approved for election, elected or appointed to our board of directors with the approval of a majority of the Continuing Directors who were members of our

board of directors at the time of such nomination, approval, election or appointment (either by a specific vote or by approval of the proxy statement issued by us in which such member was named as a nominee for election as a director).

"Person" means any individual, firm, limited liability company, corporation, partnership, association, joint venture, tribunal, trust, government or political subdivision or agency or instrumentality thereof, or any other entity or organization and includes a "person" as used in Section 13(d)(3) of the Exchange Act.

"Voting Stock" of any specified Person as of any date means the capital stock of such Person that is at the time entitled to vote generally in the election of the board of directors of such Person.

The definition of "Change of Control" includes a phrase relating to the sale, transfer, conveyance or other disposition of "all or substantially all" of our consolidated assets. There is no precise, established definition of the phrase "substantially all" under applicable law. Accordingly, the ability to require us to purchase 2029 Notes as a result of the sale, transfer, conveyance or other disposition of less than all of our assets may be uncertain.

Certain Covenants

The indenture contains, among others, restrictive covenants regarding (i) our ability to consolidate or merge with another entity or to sell, transfer or otherwise convey all or substantially all of our assets to another entity; (ii) create or permit certain significant subsidiaries to create or permit to exist certain liens and (iii) certain sale and lease-back transactions involving certain subsidiaries.

Events of Default

Holders of the 2029 Notes will have specified rights if an Event of Default (as defined below) occurs. The term "Event of Default" in respect of the Notes means any of the following:

(1) we do not pay interest on any of the Notes within 30 days of its due date;

(2) we fail to pay the principal (or premium, if any) of any Note, when such principal becomes due and payable, at maturity, upon acceleration, upon redemption or otherwise;

(3) failure by us to comply with the covenants under the indenture;

(4) we remain in breach of a covenant or warranty in respect of the indenture or 2029 Notes (other than a covenant included in the indenture solely for the benefit of debt securities of another series) for 90 days after we receive a written notice of default, which notice must be sent by either the trustee or holders of at least 25% in principal amount of the outstanding 2029 Notes;

(5) we file for bankruptcy, or other events of bankruptcy, insolvency or reorganization specified in the indenture;

(6) we default on any indebtedness of ours or of a significant subsidiary having an aggregate amount of at least $150,000,000, constituting a default either of payment of principal when due and payable or which results in acceleration of the indebtedness unless the default has been cured or waived or the indebtedness discharged in full within 60 days after we have been notified of the default by the trustee or holders of at least 25% of the outstanding 2029 Notes; or

(7) one or more final judgments for the payment of money in an aggregate amount in excess of $150,000,000 above available insurance or indemnity coverage shall be rendered against us or any significant subsidiary and the same shall remain undischarged for a period of 60 consecutive days during which execution shall not be effectively stayed.

If an Event of Default (other than an Event of Default specified in clause (5) above) with respect to the 2029 Notes has occurred, the Trustee or the holders of at least 25% in principal amount of
the 2029 Notes may declare the entire unpaid principal amount of (and premium, if any), and all the accrued interest on, the Notes to be due and immediately payable. This is called a declaration of acceleration of maturity. There is no action on the part of the trustee or any holder of the 2029 Notes required for such declaration if the Event of Default is the Company's bankruptcy, insolvency or reorganization. Holders of a majority in principal amount of the Notes may also waive certain past defaults under the indenture with respect to the 2029 Notes on behalf of all of the holders of the 2029 Notes. A declaration of acceleration of maturity may be canceled, under specified circumstances, by the holders of at least a majority in principal amount of the 2029 Notes and the trustee.

Except in cases of default, where the trustee has special duties, the trustee is not required to take any action under the indenture at the request of holders unless the holders offer the trustee protection from expenses and liability satisfactory to the trustee. If an indemnity satisfactory to the trustee is provided, the holders of a majority in principal amount of 2029 Notes may direct the time, method and place of conducting any lawsuit or other formal legal action seeking any remedy available to the trustee. The trustee may refuse to follow those directions in certain circumstances specified in the indenture. No delay or omission in exercising any right or remedy will be treated as a waiver of the right, remedy or Event of Default.

Before holders of the 2029 Notes are allowed to bypass the trustee and bring a lawsuit or other formal legal action or take other steps to enforce their rights or protect their interests relating to the 2029 Notes, the following must occur:

- such holders must give the trustee written notice that an Event of Default has occurred and remains uncured;

- holders of at least 25% in principal amount of the 2029 Notes must make a written request that the trustee take action because of the default and must offer the Trustee indemnity satisfactory to the trustee against the cost and other liabilities of taking that action; and

- the trustee must have failed to take action for 60 days after receipt of the notice and offer of indemnity.

Holders are, however, entitled at any time to bring a lawsuit for the payment of money due on the 2029 Notes on or after the due date.

Modification of the Indenture and Waiver of Rights of Holders

Under certain circumstances, we can make changes to the indenture and the 2029 Notes. Some types of changes require the approval of each holder of 2029 Notes, some require approval by a vote of a majority of the holders of the 2029 Notes, and some changes do not require any approval at all.

Description of the 1.75% Senior Notes Due 2023

The 1.750% Senior Notes due 2023 (the "2023 Notes") were issued under an indenture, dated as of June 7, 2013 (the "base indenture") between Nasdaq, Inc. and Wells Fargo Bank, National Association, as trustee (the "Trustee") and a third supplemental indenture dated as of May 20, 2016 (the "supplemental indenture" and, together with the base indenture, the "indenture").

We issued €600 million aggregate principal amount of the 2023 Notes on May 17, 2016.

This summary is subject to, and qualified in its entirety by reference to, all the provisions of the 2023 Notes and the indenture, including definitions of certain terms used therein.

General

The 2023 Notes:

- are senior unsecured obligations of ours;
- rank equally in right of payment with all of our other senior unsecured indebtedness from time to time outstanding, all indebtedness under our senior credit facility and our term loan credit agreement;
- are structurally subordinated to all existing and future obligations of our subsidiaries, including claims with respect to trade payables; and
- are effectively subordinated in right of payment to all of our existing and future secured indebtedness and other secured obligations to the extent of the value of the collateral securing any such indebtedness and other obligations.

The 2023 Notes were issued in minimum denominations of €100,000 and integral multiples of €1,000 in excess thereof.

Principal, Maturity and Interest

The 2023 Notes bear interest at a rate of 1.750% per year. Interest on the 2023 Notes is payable annually in arrears on May 19 of each year, beginning on May 19, 2017, and is computed on the basis of the actual number of days in the period for which interest is being calculated and the actual number of days from and including the last date on which interest was paid on the 2023 Notes (or the settlement date if no interest has been paid or duly provided for on the 2023 Notes), to but excluding the next date on which interest is paid or duly provided for. This payment convention is referred to as ACTUAL/ACTUAL (ICMA) as defined in the rulebook of the International Capital Market Association. Interest on the 2023 Notes accrues from and including the settlement date and will be paid to holders of record on the day immediately prior to the applicable interest payment date.

The 2023 Notes mature on May 19, 2023. On the maturity date of the 2023 Notes, the holders will be entitled to receive 100% of the principal amount of such 2023 Notes. The 2023 Notes will not have the benefit of any sinking fund.

If any interest payment date, redemption date or maturity date falls on a day that is not a business day, then the relevant payment may be made on the next succeeding business day and no interest will accrue because of such delayed payment. With respect to the Notes, when we use the term "business day" we mean any day except a Saturday, a Sunday or a day on which banking institutions in the applicable place of payment are authorized or required by law, regulation or executive order to close.

Claims against the Company for payment of principal, interest and additional amounts, if any, on the 2023 Notes will become void unless presentment for payment is made (where so required under the indenture) within, in the case of principal and additional amounts, if any, a period of ten years or, in the case of interest, a period of five years, in each case from the applicable original date of payment therefor.

Interest Rate Adjustment

The interest rate payable on the 2023 Notes will be subject to adjustment from time to time if either Moody's or S&P, or, in either case, any substitute rating agency downgrades (or subsequently upgrades) the credit rating assigned to the 2023 Notes.

Ranking

The 2023 Notes are general unsecured obligations of ours and rank equally with all of our existing and future unsubordinated obligations.

Holders of any secured indebtedness and other secured obligations of the Company will have claims that are prior to claims as holders of the 2023 Notes, to the extent of the value of the assets securing such indebtedness and other obligations, in the event of any bankruptcy, liquidation or similar proceeding.

Further Issues

The Notes constitute a separate series of debt securities under the indenture, initially limited to €600 million. Under the indenture, we may, without the consent of the holders of the 2023 Notes, issue additional 2023 Notes of the same or a different series from time to time in the future in an unlimited aggregate principal amount; *provided*, that, if any such additional 2023 Notes are not fungible with the 2023 Notes offered hereby (or any other tranche of additional Notes) for U.S. federal income tax purposes, then such additional 2023 Notes will have different ISIN and/or Common Code numbers than the 2023 Notes (and any such other tranche of additional 2023 Notes). The 2023 Notes and any additional 2023 Notes of the same series would rank equally and ratably and would be treated as a single class for all purposes under the

indenture. This means that, in circumstances where the indenture provides for the holders of debt securities of any series to vote or take any action, any of the outstanding 2023 Notes, as well as any additional 2023 Notes that we may issue by reopening such series, will vote or take action as a single class.

Redemption

Optional Redemption

The 2023 Notes will be redeemable, in whole or in part from time to time, at our option, at a redemption price (the "make-whole redemption price") equal to the greater of (i) 100% of the principal amount of the 2023 Notes, and (ii) as determined by the Quotation Agent (as defined below), the sum of the present values of the remaining scheduled payments of principal and interest on the Notes (exclusive of interest accrued and unpaid as of the date of redemption), discounted to the date of redemption on an annual basis (ACTUAL/ACTUAL (ICMA)) at the Bund Rate (as defined below), plus 30 basis points, plus accrued and unpaid interest thereon to the date of redemption. However, if the redemption date is after a record date and on or prior to a corresponding interest payment date, the interest will be paid on the redemption date to the holder of record on the record date.

Notwithstanding the foregoing, at any time on or after February 19, 2023 (three months before their maturity date), the 2023 Notes will be redeemable, as a whole or in part, at our option and at any time or from time to time, at a redemption price equal to 100% of the principal amount of the 2023 Notes to be redeemed plus accrued and unpaid interest thereon to, but excluding, the date of redemption.

Notice of any redemption will be mailed at least 30 days, but not more than 60 days, before the redemption date to each registered holder of 2023 Notes to be redeemed. Once notice of redemption is mailed, the 2023 Notes called for redemption will become due and payable on the redemption date and at the applicable redemption price, plus accrued and unpaid interest to, but not including, the redemption date. Unless we default in payment of the redemption price, on and after the redemption date, interest will cease to accrue on the 2023 Notes (or portion thereof) to be redeemed on such redemption date.

"Bund Rate" means, with respect to any redemption date, the rate per annum equal to the annual equivalent yield to maturity of the Comparable German Bund Issue, assuming a price for the Comparable German Bund Issue (expressed as a percentage of its principal amount) equal to the Comparable German Bund Price for such redemption date.

"Comparable German Bund Issue" means that German Bundesanleihe security selected by the Quotation Agent as having a maturity comparable to the remaining term of the 2023 Notes to be redeemed that would be utilized, at the time of selection and in accordance with customary financial practice, in pricing new issues of corporate notes of comparable maturity to the remaining term of the Notes.

"Comparable German Bund Price" means, with respect to any redemption date, (i) the average of four Reference German Bund Dealer Quotations for such redemption date, after excluding the highest and lowest such Reference German Bund Dealer Quotations, or (ii) if the Quotation Agent obtains fewer than four such Reference German Bund Dealer Quotations, the average of all such quotations.

"Quotation Agent" means a Reference German Bund Dealer appointed by us.

"Reference German Bund Dealer" means any dealer of German Bundesanleihe securities selected by us in good faith.

"Reference German Bund Dealer Quotations" means, with respect to each Reference German Bund Dealer and any redemption date, the average, as determined by us, of the bid and asked prices for the Comparable German Bund Issue (expressed in each case as a percentage of its principal amount) quoted in writing to the Quotation Agent by such Reference German Bund Dealer at 3:30 p.m., Frankfurt, Germany time, on the third business day preceding such redemption date.

If we elect to redeem less than all of the 2023 Notes, and such 2023 Notes are at the time represented by a global note, then the depositary will select by lot the particular interests to be redeemed. If we elect to redeem less than all of the 2023 Notes, and any of such 2023 Notes are not represented by a global note, then the trustee will select the particular 2023 Notes to be redeemed in a manner it deems appropriate and fair (and the depositary will select by lot the particular interests in any global note to be redeemed).

We may at any time, and from time to time, purchase the 2023 Notes at any price or prices in the open market or otherwise.

Repurchase upon Change of Control Triggering Event

If a Change of Control Triggering Event (as defined below) occurs with respect to the 2023 Notes, unless we have exercised our right to redeem the 2023 Notes, we will be required to make an offer to repurchase all or, at the holder's option, any part (equal to €100,000 or any integral multiple of €1,000 in excess thereof) of each holder's 2023 Notes pursuant to the offer described below (the "Change of Control Offer").

In the Change of Control Offer, we will be required to offer payment in cash equal to 101% of the aggregate principal amount of 2023 Notes repurchased plus accrued and unpaid interest, if any, on the 2023 Notes repurchased to, but not including, the date of purchase (the "Change of Control Payment").

"Change of Control" means the occurrence of any of the following: (1) the direct or indirect sale, transfer, conveyance or other disposition (other than by way of merger or consolidation), in one or a series of related transactions, of all or substantially all of the assets of us and our Subsidiaries taken as a whole to any Person or group of related Persons for purposes of

Section 13(d) of the Exchange Act (a "Group") other than us or one of our Subsidiaries; (2) the approval by the holders of our common stock of any plan or proposal for our liquidation or dissolution; (3) the consummation of any transaction (including, without limitation, any merger or consolidation) the result of which is that any Person or Group becomes the beneficial owner, directly or indirectly, of more than 50% of the then outstanding number of shares of our Voting Stock; or (4) the first day on which a majority of the members of our board of directors are not Continuing Directors.

Notwithstanding the foregoing, a transaction will not be deemed to involve a Change of Control if (1) we become a direct or indirect wholly owned Subsidiary of a holding company and (2)(A) the direct or indirect holders of the Voting Stock of such holding company immediately following that transaction are substantially the same as the holders of our Voting Stock immediately prior to that transaction or (B) immediately following that transaction no Person or Group (other than a holding company satisfying the requirements of this sentence) is the beneficial owner, directly or indirectly of more than 50% of the Voting Stock of such holding company.

"Change of Control Triggering Event" means the occurrence of both a Change of Control and a Below Investment Grade Rating (as such term is defined in the indenture) event occurring in respect of that Change of Control.

"Continuing Directors" means, as of any date of determination, any member of our board of directors who (1) was a member of our board of directors on the date of the issuance of the 2023 Notes; or (2) was nominated or approved for election, elected or appointed to our board of directors with the approval of a majority of the Continuing Directors who were members of our board of directors at the time of such nomination, approval, election or appointment (either by a specific vote or by approval of the proxy statement issued by us in which such member was named as a nominee for election as a director).

"Person" means any individual, firm, limited liability company, corporation, partnership, association, joint venture, tribunal, trust, government or political subdivision or agency or instrumentality thereof, or any other entity or organization and includes a "person" as used in Section 13(d)(3) of the Exchange Act.

"Voting Stock" of any specified Person as of any date means the capital stock of such Person that is at the time entitled to vote generally in the election of the board of directors of such Person.

The definition of "Change of Control" includes a phrase relating to the sale, transfer, conveyance or other disposition of "all or substantially all" of our consolidated assets. There is no precise, established definition of the phrase "substantially all" under applicable law. Accordingly, the ability to require us to purchase 2023 Notes as a result of the sale, transfer, conveyance or other disposition of less than all of our assets may be uncertain.

Certain Covenants

The indenture contains, among others, restrictive covenants regarding (i) our ability to consolidate or merge with another entity or to sell, transfer or otherwise convey all or substantially all of our assets to another entity; (ii) create or permit certain significant subsidiaries to create or permit to exist certain liens and (iii) certain sale and lease-back transactions involving certain subsidiaries.

Events of Default

Holders of the 2023 Notes will have specified rights if an Event of Default (as defined below) occurs.

The term "Event of Default" in respect of the 2023 Notes means any of the following:

(1) we do not pay interest on any of the 2023 Notes within 30 days of its due date;

(2) we fail to pay the principal (or premium, if any) of any 2023 Note, when such principal becomes due and payable, at maturity, upon acceleration, upon redemption or otherwise;

(3) failure by us to comply with our covenant obligations;

(4) we remain in breach of a covenant or warranty in respect of the indenture or 2023 Notes (other than a covenant included in the indenture solely for the benefit of debt securities of another series) for 90 days after we receive a written notice of default, which notice must be sent by either the trustee or holders of at least 25% in principal amount of the outstanding 2023 Notes;

(5) we file for bankruptcy, or other events of bankruptcy, insolvency or reorganization specified in the indenture;

(6) we default on any indebtedness of ours or of a significant subsidiary having an aggregate amount of at least $150,000,000, constituting a default either of payment of principal when due and payable or which results in acceleration of the indebtedness unless the default has been cured or waived or the indebtedness discharged in full within 60 days after we have been notified of the default by the trustee or holders of at least 25% of the outstanding 2023 Notes; or

(7) one or more final judgments for the payment of money in an aggregate amount in excess of $150,000,000 above available insurance or indemnity coverage shall be rendered against us or any significant subsidiary and the same shall remain undischarged for a period of 60 consecutive days during which execution shall not be effectively stayed.

If an Event of Default (other than an Event of Default specified in clause (5) above) with respect to the 2023 Notes has occurred, the trustee or the holders of at least 25% in principal amount of the 2023 Notes may declare the entire unpaid principal amount of (and premium, if any), and all the accrued interest on, the Notes to be due and immediately payable. This is called a declaration of acceleration of maturity. There is no action on the part of the trustee or any holder of the 2023 Notes required for such declaration if the Event of Default is the Company's bankruptcy, insolvency or reorganization. Holders of a majority in principal amount of the 2023 Notes may also waive certain past defaults under the indenture with respect to the 2023 Notes on behalf of all of the holders of the Notes. A declaration of acceleration of maturity may be canceled, under specified circumstances, by the holders of at least a majority in principal amount of the 2023 Notes and the trustee.

Except in cases of default, where the trustee has special duties, the trustee is not required to take any action under the indenture at the request of holders unless the holders offer the trustee protection from expenses and liability satisfactory to the trustee. If an indemnity satisfactory to the Trustee is provided, the holders of a majority in principal amount of 2023 Notes may direct the time, method and place of conducting any lawsuit or other formal legal action seeking any remedy available to the trustee. The trustee may refuse to follow those directions in certain circumstances specified in the indenture. No delay or omission in exercising any right or remedy will be treated as a waiver of the right, remedy or Event of Default.

Before holders of the 2023 Notes are allowed to bypass the trustee and bring a lawsuit or other formal legal action or take other steps to enforce their rights or protect their interests relating to the Notes, the following must occur:

- such holders must give the trustee written notice that an Event of Default has occurred and remains uncured;
- holders of at least 25% in principal amount of the 2023 Notes must make a written request that the trustee take action because of the default and must offer the trustee indemnity satisfactory to the trustee against the cost and other liabilities of taking that action; and
- the trustee must have failed to take action for 60 days after receipt of the notice and offer of indemnity.

Holders are, however, entitled at any time to bring a lawsuit for the payment of money due on the 2023 Notes on or after the due date.

Modification of the Indenture and Waiver of Rights of Holders

Under certain circumstances, we can make changes to the indenture and the 2023 Notes. Some types of changes require the approval of each holder of 2023 Notes, some require approval by a vote of a majority of the holders of the 2023 Notes, and some changes do not require any approval at all.

Exhibit 10.15

RETIREMENT AGREEMENT AND GENERAL RELEASE OF CLAIMS

October 21, 2020

Michael Ptasznik
[Address]

Dear Michael:

This General Release and Retirement Agreement ("Agreement"), reflects our mutual agreement and understanding concerning your retirement from Nasdaq, Inc. or any of its subsidiaries or affiliates (the "Company"), as set forth below. Please review the following information and address any questions you may have concerning this notice to the Chief People Officer, Bryan Smith. This Agreement becomes valid upon the Company's receipt of your signed and dated copy.

1. Retirement Date and Transition Period

a. As of February 28, 2021 ("Retirement Date"), you will retire from your service as an employee of the Company. Between October 21, 2020 ("Transition Date") and your Retirement Date (the "Transition Period"), you agree to perform the duties of Executive Vice President, Strategy and Chief Financial Officer as assigned by the President and CEO. During the Transition Period, your regular salary will remain unchanged at $625,000 per annum and you shall remain fully eligible for participation in the Company's benefits plans in which you now participate through the Retirement Date. You will also be paid for all accrued but unused vacation and any unreimbursed business expenses (in accordance with Company policy), after your Retirement Date (or earlier separation).

You will receive a bonus payment under the Executive Incentive Plan for 2020 based upon your performance and target bonus opportunity of $937,500. The 2020 bonus will be paid on or about March 2, 2021. If Nasdaq terminates your employment due to gross misconduct or gross negligence, or you voluntarily resign before December 31, 2020, you will not be entitled to any part of the 2020 CIP bonus. You will receive a bonus payment under the Executive Incentive Plan for 2021 based upon your target bonus opportunity of $937,500, prorated for the period of January 1, 2021 though the Retirement Date. The 2021 bonus will be paid on or about March 2, 2021. All equity grants normally scheduled to vest prior to the Retirement Date shall vest on schedule.

If you do not execute this Agreement, your health benefits provided through the Company will continue through the end of the last month of your employment. Pursuant to federal law, and independent of this Agreement, you and your eligible dependents will be eligible to elect benefits continuation coverage if you timely apply for COBRA benefits. Information regarding your rights under COBRA will be provided to you in a separate mailing. If you choose to accept the offer of separation and

benefits set forth in Paragraph 2 of this Agreement, your group health, vision, and dental benefits will end on the Retirement Date. You will be separately notified of your benefit conversion privileges and COBRA rights.

2. Retirement Benefits

In consideration for signing this Agreement, in full settlement of any compensation and benefits to which you would otherwise be entitled, and in exchange for the promises, covenants, releases, and waivers set forth herein:

a. The Company agrees to continue to pay the employer's share of your medical, dental and vision premiums for 12 months after your Retirement Date. You will still be responsible for paying the employee share of the premium, which will be the same contribution paid as an active employee would pay for this coverage, as specified by the plan administrator.

b. Unless your employment ends any time before February 28, 2021 due to your resignation, gross misconduct, or gross negligence, you will remain eligible for (i) continued vesting and payment of the ThreeYear Performance Share Units ("PSU's") granted on April 1, 2019 ("2019 Grant") and on April 1, 2020 ("2020 Grant"), and (ii) vesting of the RSUs granted on April 1, 2020 ("2020 RSU Grant), with accelerated vesting of any unvested RSUs within 60 days from your Retirement Date. To the extent this Agreement conflicts with all relevant PSU and RSU Agreements, this Agreement will apply, provided that the time and form of settlement of the PSU's shall be governed by the terms of the applicable award agreement and governing plan document. Consistent with the Nasdaq Equity Plan, in the event a change in control event occurs after your Retirement Date, all unvested awards shall vest immediately, at target, prior to the effective time of such change in control. Upon termination of employment due to death, your Estate shall be entitled to receive accelerated vesting of all unvested equity compensation awarded to you as of that date. All other benefits, if any, due to your estate shall be determined in accordance with the plans, policies and practices of the Company in effect at that time.

c. The Company will continue to provide, following your Retirement Date, financial and tax services (currently provided by PWC) for tax years 2020, 2021, 2022 and 2023, and executive physical exams (currently provided by EHE International) for 1 year.

d. The Company will reimburse reasonable and customary expenses to move back to your home country, Canada, up to $10,000.

e. If you accept another position with the Company, or materially violate the terms of any employment restrictions noted herein and such violation remains uncured after written notice from the Company, while you are receiving separation payments and benefits under this paragraph, you will not receive any additional separation payments and benefits following your start date in the new position or date of such material violation.

3. **General Release of Claims.** You, for yourself and your heirs, executors, administrators, assigns, agents and beneficiaries, if any, each in their capacity as such, do hereby agree to execute and be bound by this General Release of Claims. You acknowledge and agree that the Separation Payment provided to you and on your behalf pursuant to this Agreement: (i) is in full discharge of any and all liabilities and obligations of the Company to you, monetarily or with respect to

your employment; and (ii) exceeds any payment, benefit, or other thing of value to which you might otherwise be entitled. You release the Company from all Claims (as defined below) through the date of this Agreement. You agree not to file a lawsuit or arbitration to assert any such Claim. Further, you agree that should any other person, organization or entity file a lawsuit or arbitration to assert any such Claim, you will not seek or accept any personal relief in such action. In exchange for your waiver of Claims, the Company, its subsidiaries, directors and agents acting on behalf of the Company expressly waive and release any and all Claims against you that may be waived and released by law, and agree not to file a lawsuit or arbitration to assert any such Claims.

a. Definition of "Claims." Except as stated below, "Claims" includes without limitation all actions or demands of any kind that you may now have or have had or reasonably known you should have had (although you are not being asked to waive Claims that may arise after the date of this Agreement). More specifically, Claims include rights, causes of action, damages, penalties, losses, attorneys' fees, costs, expenses, obligations, agreements, judgments and all other liabilities of any kind or description whatsoever, either in law or in equity, whether known or unknown, suspected or unsuspected. The nature of Claims covered by this release includes without limitation all actions or demands in any way based on your employment with the Company, the terms and conditions of such employment, or your separation from employment. More specifically, all of the following are among the types of Claims which are waived and barred by this General Release of Claims to the extent allowable under applicable law:

   - Contract Claims, whether express or implied;
   - Tort Claims, such as for defamation or emotional distress;
   - Claims under federal, state and municipal laws, regulations, ordinance or court decisions of any kind;
   - Claims of discrimination, harassment or retaliation, whether based on race, color, religion, gender, sex, age, sexual orientation, handicap and/or disability, genetic information, national origin, or any other legally protected class;
   - Claims under the AGE DISCRIMINATION IN EMPLOYMENT ACT, Title VII of the Civil Rights Act of 1964, as amended, the Americans with Disabilities Act as amended, the Genetic Information Nondiscrimination Act, the Family and Medical Leave Act, and similar state and local statutes, laws and ordinances;
   - Claims under the Employee Retirement Income Security Act, the Occupational Safety and Health Act, the False Claims Act, and similar state and local statutes, laws and ordinances;
   - Claims for wrongful discharge; and
   - Claims for attorneys' fees, including litigation expenses and/or costs.

   The foregoing description of claims is intended to be illustrative and is not exhaustive.

b. Exclusions**:** Notwithstanding any other provision of this release, the following are **not** barred by the release: (a) Claims arising after the date of this Agreement, including Claims relating to the validity of this Agreement; (b) Claims by either party to enforce this Agreement; (c) Claims which are not legally waivable, including SEC whistleblowing claims pursuant to Rule 21F17, Claims to COBRA, workers' compensation, and unemployment insurance; (d) Claims by you for indemnification, contribution, advancement or defense as provided by, and in accordance with the terms of the Company by-laws, articles of incorporation, liability insurance coverage, or applicable law; and (e) Claims by you for accrued vested benefits and compensation under the Company's respective benefits and compensation plans. In addition, this General Release of Claims will not operate to limit or bar your right to file an administrative charge of discrimination with the Equal Employment Opportunity Commission (EEOC) or to testify, assist or participate in an investigation, hearing or proceeding conducted by the EEOC. However, the release does bar your right to recover any personal or monetary relief for Claims, including if you or anyone on your behalf seeks to file a lawsuit or arbitration on the same basis as the charge of discrimination.

4. **Confidentiality**. You agree to keep the terms of this Separation Agreement confidential, except that you may disclose the terms to your immediate family, attorneys, accountants, or tax planners, in response to a subpoena, or as otherwise specifically permitted, required, or ordered by law. Nothing in this Agreement should have a chilling effect on your ability to engage in whistleblowing activity, by prohibiting or restricting you (or your attorney) from initiating communications directly with, or responding to any inquiry from, or providing testimony before, the SEC or FINRA regarding your employment at the Company, and nothing prevents you from reporting to, communicating with, contacting, responding to an inquiry from, providing relevant information to, participating or assisting in an investigation conducted by, or receiving a monetary award from the SEC or any other governmental enforcement agency related to such communication (except as noted in Section 3(b) above).

5. **Cooperation and Legal Representation**. You agree to reasonably cooperate with the Company in transitioning your responsibilities and in relation to any actual or threatened legal proceedings concerning Companyrelated matters about which you have relevant knowledge. The Company's requests pursuant to this Section shall take into consideration your personal and business commitments and the amount of notice provided to you. The Company will also reimburse you, in accordance with the Company's policy, for reasonable out of pocket travel and other incidental expenses that you incur as a result of your cooperation pursuant to this paragraph (including reasonable attorneys' fees if a conflict arises between you and the Company).

6. **Non-Disparagement**. You agree that you will not disparage or defame the reputation, character, image, products, or services of the Company or the Released Parties, provided that you shall respond accurately and fully to any question, inquiry, or request for information when required by legal process. The Company agrees that neither the Company nor its directors and senior executive officers shall disparage or defame you or your reputation, character or image, provided that they will respond accurately and fully to any question, inquiry or request for information when required by legal process.

7. **Non-Admission.** This Agreement does not represent an admission of liability or finding of wrongdoing by you, the Company, or any of Releases.

8. **Return of Company Property**. You agree to promptly return to the Company all property that belongs to the Company, including without limitation all equipment, supplies, documents, files

(electronic and hardcopy), and computer disks in good working order. You agree not to “wipe” or otherwise destroy, erase, or compromise company files, records or information contained on any Companyissued electronic equipment prior to returning these items. You further agree to remove from any personal computer all data files containing Company information. Notwithstanding the foregoing, you may take and retain an electronic copy of your contact list and calendar, and any files or information relating to your employment relationship with the Company or this Agreement, or as may be necessary for preparation of your personal income tax returns. You may retain your Company-provided iPad and iPhone (provided the Company shall have the right to delete all files and emails containing confidential or proprietary information) and the Company will take all action necessary with the carrier to transfer your iPhone number to your personal account.

9. **Continuing Obligations**. You acknowledge your continuing obligations to the Company contained in any proprietary rights or other confidentiality agreements that you signed in favor of the Company during your employment, including the continuing obligations agreement you have previously signed related to confidentiality, nonsolicitation of customers and employees, and intellectual property protection/inventions assignment.

10. Non-Competition. For a period of 12 months from your last date of employment, you shall not, directly or indirectly, without the prior written permission of the Company, anywhere in the world where at the date of such termination the Company is doing business or planning to do business, enter into the employ of or render any services to: InterContinental Exchange, CME Group, CBOE Holdings, Deutsche Borse, London Stock Exchange Group, TMX, MEMX, IEX, MIAX, LTSE, Fenics, Euronext, BCG Partners, Refinative, MSCI, Fidelity National Information Services, Fiserv, SS&C, Marketaxess, Tradeweb, Hong Kong Exchange, Singapore Exchange, Japan Exchange, B3, ASX, S&P Global, Moody's, Thomson-Reuters, IHS Markit, Verisk, Factset, Morningstar, Diligent, and Broadridge. This paragraph supersedes any prior noncompete restriction you signed in your capacity as an employee of the Company. All other restrictions from prior agreements, including nonsolicitation of customers or employees, remain, as noted in Section 9 above.

You acknowledge and agree that the provisions of, and your obligations under, this Agreement are reasonable in scope and necessary for the protection of the Company and its legitimate business interests; that your breach (or threatened breach) of any such provisions or obligations may result in grave and irreparable harm to the Company, inadequately compensable in money damages; and that the Company shall be entitled to seek, in addition to any legal remedies that might be available to it, injunctive relief to prevent and/or remedy such a breach or threatened breach Upon the issuance (or denial) of an injunction, the underlying merits of any dispute shall be resolved in accordance with the arbitration provisions of Section 12 of this Agreement.

11. **Breach.** Should you materially breach this Agreement and such breach continues for a period of at least 30 days after you receive written notice thereof from the Company, then:

a. The Company shall have no further obligations to you under this Agreement (including but not limited to any obligation to make any further payments to you or on your behalf);

b. The Company shall be entitled to recoup the amount of any payment you received pursuant to this Agreement, but only to the extent that you are determined to owe such an amount pursuant to an arbitration proceeding undertaken pursuant to Section 12 hereof;

c. The Company shall have all rights and remedies available to it under this Agreement and any applicable law; and

d. All of your promises, covenants, representations, and warranties under this Agreement shall remain in full force and effect.

Should the Company materially breach this Agreement and such breach continues for a period of at least 30 days after the Company receives written notice thereof from you asserting such breach has occurred, then you shall have no further obligations under this Agreement, you shall have all rights and remedies available to you under this Agreement and any applicable law, and all of the Company's promises, covenants, representations, and warranties under this Agreement shall remain in full force and effect.

12. **Arbitration.** Any dispute arising between the parties under this Agreement (except as provided in Section 3 of this Agreement), under any statute, regulation, or ordinance, and/or in connection with your employment or termination thereof, shall first be submitted to mandatory mediation at the American Arbitration Association ("AAA") for resolution in New York. If the dispute remains unresolved, it shall then be submitted to binding arbitration before the AAA. Such arbitration shall be conducted in New York, New York, and the arbitrator will apply New York law, including federal law as applied in New York courts. The arbitration shall be conducted by a single arbitrator, in accordance with the AAA's Employment Arbitration Rules. The arbitrator's decision shall be final and binding on the parties, and judgment on any award may be confirmed and entered in any state or federal court in the State and City of New York. The arbitration shall be conducted on a strictly confidential basis, and you shall not disclose the existence of a claim, the nature of a claim, any documents, exhibits, or information exchanged or presented in connection with such a claim, or the result of any action (collectively, "Arbitration Materials"), to any third party, with the sole exception of your legal counsel, who also shall be bound by these confidentiality terms. In the event of any court proceeding to challenge or enforce an arbitrator's award, the parties hereby consent to the exclusive jurisdiction of the state and federal courts in New York, New York and agree to venue in that jurisdiction. To the extent allowable by law, the parties agree to take all steps necessary to protect the confidentiality of the Arbitration Materials in connection with any such proceeding, agree to file all Confidential Information (and documents containing Confidential Information) under seal, and agree to the entry of an appropriate protective order encompassing the confidentiality terms of this Agreement. The Company shall bear the costs and expenses of any mediation and/or arbitration. The arbitrator shall have the authority to award attorneys' fees to a party who substantially prevails.

13. **Severability.** You agree that if any provision of this General Release of Claims is or shall be declared invalid or unenforceable by a court of competent jurisdiction, then such provision will be modified only to the extent necessary to cure such invalidity, with a view to enforcing the parties' intention as set forth in this Agreement to the extent permissible. All remaining provisions of this Agreement shall not be affected thereby and shall remain in full force and effect.

14. **Choice of Law.** This Agreement shall be governed by and construed in accordance with the laws of New York, excluding any choice of law principles. It constitutes the parties' entire agreement, arrangement, and understanding regarding the subject matter herein, superseding any prior or contemporaneous agreements, arrangements, or understandings, whether written or oral, between you on one hand and the Company on the other hand regarding the same subject

matter. It may not be modified, amended, discharged, or terminated, nor may any of its provisions be varied or waived, except by a further signed written agreement between the parties. It shall be binding upon the signing parties and their respective heirs, legal representatives, successors, and assigns.

15. **Advice to Consult Legal Representative and Consideration Period.** The Company recommends that you consult with an attorney of your own choosing, at your own expense, with regard to entering into this Agreement. You acknowledge that you have carefully read and understand the provisions of this Agreement. You have been provided with a consideration period consisting of at least twentyone (21) calendar days to consider the terms of the General Release of Claims from the date this Agreement first was presented to you. You understand that any change to this offer, whether material or immaterial, will not restart the running of the consideration period. You understand that you may take the entire consideration period to consider this Agreement and that you may return this Agreement in less than the full consideration period only if your decision to shorten it was knowing and voluntary and was not induced in any way by the Company.

16. **Revocation Period.** You have seven (7) calendar days from the date you sign this General Release of Claims to revoke it if you choose to do so. If you elect to revoke, you must give written notice of such revocation to Employer by emailing it to [ ] within the seven (7) calendar day period. You understand that if you revoke this General Release of Claims, you will not be entitled to the benefits offered as consideration for this Agreement.

17. **Employee Certification - Validity of Agreement.** You certify that you have carefully read this Agreement and have executed it voluntarily and with full knowledge and understanding of its significance, meaning and binding effect. You further declare that you are competent to understand the content and effect of this Agreement and that your decision to enter into this Agreement has not been influenced in any way by fraud, duress, coercion, mistake or misleading information. You have not relied on any information except what is set forth in this Agreement.

18. **Section 409A.** It is the intent of the parties to this Agreement that no payments under this Agreement be subject to the additional tax on deferred compensation imposed by Section 409A of the Internal Revenue Code of 1986, as amended (the “Code”). Each payment made under this Agreement will be treated as a separate payment for purposes of Section 409A of the Code and the right to a series of installment payments under this Agreement is to be treated as a right to a series of separate payments. If any provision of this Agreement (or of any award of compensation due to you under this Agreement) would cause you to incur any additional tax or interest under Section 409A of the Code or any regulations or Treasury guidance promulgated thereunder, the Company shall modify this Agreement to make it compliant with Section 409A and maintain the value of the payments and benefits under this Agreement. Notwithstanding any provision of this Agreement to the contrary, in the event that any payment to you or any benefit hereunder is made upon, or as a result of your termination of employment, and you are a “specified employee” (as that term is defined under Code Section 409A) at the time you become entitled to any such payment or benefit, and provided further that such payment or benefit does not otherwise qualify for an applicable exemption from Code Section 409A, then no such payment or benefit shall be paid or commenced to be paid to you under this Agreement until the date that is the earlier to occur of: (i) your death, or (ii) six (6) months and one (1) day following your termination of employment (the “Delay Period”). Any payments which you would otherwise have received during the Delay Period shall be payable to you in a lump sum on the date that is six (6) months and one (1) day following the effective date of your termination.

19. **Miscellaneous.** This Agreement (i) may be executed in identical counterparts, which together shall constitute a single agreement; and (ii) shall inure to the benefit of and shall be binding upon the parties hereto and their respective heirs, legal representatives, successors, and assigns. For the avoidance of doubt, in the unlikely event that you die prior to receiving all consideration set forth herein, the Company shall provide all such consideration to your estate at the same times as otherwise required to the extent permitted by law.

NOTICE TO EMPLOYEE: YOUR SIGNATURE INDICATES THAT YOU HAVE CAREFULLY READ AND UNDERSTAND THE TERMS OF THIS AGREEMENT, RELEASE AND WAIVER OF CLAIMS AND RIGHTS, THAT YOU WERE ADVISED TO CONSULT AN ATTORNEY ABOUT THIS AGREEMENT, THAT THIS AGREEMENT PROVIDES BENEFITS TO WHICH YOU ARE NOT OTHERWISE ENTITLED AND THAT YOU ARE SIGNING THIS DOCUMENT VOLUNTARILY AND NOT AS A RESULT OF COERCION, DURESS OR UNDUE INFLUENCE.

/s/ Michael Ptasznik October 21, 2020
Signature Date

Michael Ptasznik
Print name

On behalf of Company:

/s/ Bryan Smith October 22, 2020
Signature Date

Bryan Smith
Print Name

EMPLOYMENT AGREEMENT

EMPLOYMENT AGREEMENT (this "*Agreement*"), made and entered into and effective as of October 1, 2020 (the "*Effective Date*"), by and between Nasdaq, Inc. (the "*Company*") and Bradley Peterson (the "*Executive*").

In consideration of the premises and mutual covenants herein and for other good and valuable consideration, the parties hereby agree as follows:

1. *Term of Agreement*. Subject to Section 8 below, the term of this Agreement shall commence on the Effective Date and end on December 31, 2023 (the "Term").

2. *Position.*

(a) *Duties.* The Executive shall serve as the Company's Executive Vice President and Chief Information and Chief Technology Officer and shall have such other duties as agreed to by the Executive, the President and Chief Executive Officer, and the Board of Directors of the Company (the "*Board*"). In such position, the Executive shall have such duties and authority as shall be determined from time to time by the President and Chief Executive Officer and the Board and as shall be consistent with the by-laws of the Company as in effect from time to time. During the Term, the Executive shall devote his full time and best efforts to his duties hereunder. The Executive shall report directly to the President and Chief Executive Officer. The scope, duties and responsibilities of the role will be evaluated at least annually and increased, as appropriate, based on performance in the role.

(b) *Company Code of Ethics.* The Executive shall comply in all respects with the Company's Code of Ethics and all applicable corporate policies referenced in the Code of Ethics, as may be amended from time to time (the "*Code of Ethics*"). The Executive may, in accordance with the Code of Ethics, (i) engage in personal activities involving charitable, community, educational, religious or similar organizations and (ii) manage his personal investments; provided, however, that, in each case, such activities are in all respects consistent with applicable law, the Continuing Obligations Agreement attached as Exhibit A ("*Continuing Obligations Agreement*") and Section 9 below.

3. *Base Salary.* During the Term, the Company shall pay the Executive a base salary (the "*Base Salary*") at an annual rate of not less than $600,000. The Base Salary shall be payable in regular payroll installments in accordance with the Company's payroll practices as in effect from time to time (but no less frequently than monthly). The Management Compensation Committee of the Board (the "*Compensation Committee*") shall review the Base Salary at least annually and may (but shall be under no obligation to) increase (but not decrease) the Base Salary on the basis of such review.

4. *Annual Bonus.*

(a) *Annual Bonus.* For each calendar year during the Term, the Executive shall be eligible to participate in the Executive Incentive Plan of the Company (the "*Bonus Program*") in accordance with the terms and provisions of such Bonus Program as established from time to time by the Compensation Committee and pursuant to which the Executive will be eligible to earn an annual cash bonus (the "*Annual Bonus*"). Pursuant to the terms of the Bonus Program, the Executive shall be eligible to earn, for each full calendar year during the Term, a target Annual Bonus of not less than $900,000 (the "*Target Bonus*") based upon the achievement of one or more performance goals established for such year by the President and Chief Executive Officer and the Compensation Committee. The Executive shall have the opportunity to make suggestions to the President and Chief Executive Officer and the Compensation Committee prior to the determination of the performance goals for the Bonus Program for each performance period, but the Compensation Committee will have final power and authority concerning the establishment of such goals. The President and Chief Executive Officer and the Compensation Committee shall review the Target Bonus at least annually and may (but shall be under no obligation to) increase (but shall not decrease) the Target Bonus on the basis of such review. The Target Bonus for each year during the Term shall never be less than the Target Bonus for the immediately preceding year.

(b) *Timing and Deferral of Annual Bonus.* The Annual Bonus for each year shall be paid to the Executive as soon as reasonably practicable following the end of such year, but in no event later than March 15th following the end of the calendar year to which such Annual Bonus relates.

5. *Equity Compensation.* The Executive shall be eligible for a target equity compensation award of not less than $1,800,000 (the "*Target Equity Incentive*"), in accordance with the terms and provisions of the Company's Equity Incentive Plan (the "*Stock Plan*"), which has been adopted by the Board and may from time to time be amended. The applicable provisions of the Company's Stock Plan or each equity award agreement executed by the Executive and the Company shall govern the treatment of the equity awards.

6. *Employee Benefits.* During the Term, the Company shall provide the Executive with benefits on the same basis as benefits are generally made available to other senior executives of the Company, including, without limitation, medical, dental, vision, disability and life insurance, financial and tax planning services and retirement benefits. The Executive shall be entitled to four weeks of paid vacation to be used in accordance with the Company's then current vacation policy; provided, however, that, in the event the Executive's employment ends for any reason, the Executive shall be paid only for unused vacation that accrued in the calendar year his employment terminated and any unused vacation for any prior year shall be forfeited.

7. *Business and Other Expenses.*

(a) *Business Expenses.* During the Term, the Company shall reimburse the Executive for reasonable business expenses incurred by his in the performance of his duties hereunder in accordance with the policy established by the Company.

8. *Termination.* Notwithstanding any other provision of this Agreement, subject to the further provisions of this Section 8, the Company may terminate the Executive's employment or the Executive may resign such employment for any reason or no stated reason at any time, subject to the notice and other provisions set forth below:

(a) *Generally.* In the event of the termination of the Executive's employment for any reason, the Executive shall receive payment of (i) any unpaid Base Salary through the Date of Termination (as defined below), to be paid in accordance with Section 3 above, (ii) subject to Section 6 above, any accrued but unpaid vacation through the Date of Termination payable within 14 days of the Date of Termination (iii) any earned but unpaid Annual Bonus with respect to the calendar year ended prior to the Date of Termination, payable in accordance with Section 4(b) (the "*Base Obligations*"). In addition, in the event of the Executive's termination of employment, the applicable provisions of the Company's Stock Plan or each equity award agreement executed by the Executive and the Company shall govern the treatment of the equity awards.

For purposes of this Agreement, "*Date of Termination*" means (i) in the event of a termination of the Executive's employment by the Company for Cause or by the Executive for Good Reason, the date specified in a written notice of termination (or, if not specified therein, the date of delivery of such notice), but in no event earlier than the expiration of the cure periods set forth in Section 8(b)(ii) or 8(b)(iii) below, respectively; (ii) in the event of a termination of the Executive's employment by the Company without Cause, the date specified in a written notice of termination (or if not specified therein, the date of delivery of such notice); (iii) in the event of a termination of the Executive's employment by the Executive without Good Reason, the date specified in a written notice of termination, but in no event less than 60 days following the date of delivery of such notice; (iv) in the event of a termination of the Executive's employment due to Permanent Disability (as defined below), the date the Company terminates the Executive's employment following the certification of the Executive's Permanent Disability; or (v) in the event of a termination of employment due to the Executive's death, the date of the Executive's death.

(b) *Termination Without Cause, Termination by the Executive for Good Reason (other than Change in Control), or Retirement at end of Term.*

(i) The Executive's employment hereunder may be terminated by the Company without Cause, by the Executive for Good Reason (other than Change in Control), or by the Executive for Retirement at the end of the Term. Upon the termination of the Executive's employment pursuant to this Section 8(b), the Executive shall, subject to Section 8(h) below, be entitled to receive, in addition to the Base Obligations, the following payments and benefits (the "*Severance Benefits*"):

(A) *Payments.* The Executive shall, subject to Section 8(h), be entitled to receive, in addition to the Base Obligations, a pro-rata Target Bonus with respect to the calendar year in which the Date of Termination occurs, determined in accordance with the Pro Rata Target Bonus Calculation and payable in substantially equal monthly installments for the

twelve month period following the Executive's Date of Termination with the first installment to be paid in the month following the month in with the Release Effective Date occurs (provided that if the 60 day period described in Section 8(h) below begins in one calendar year and ends in another, the pro rata Target Bonus shall be paid not earlier than January 1 of the calendar year following the Date of Termination), the equity awards described in Section 5 and continued vesting of outstanding performance share units, and/or other forms of equity compensation issued prior to the Date of Termination as though the Executive were employed through all applicable performance periods ("Continued Vesting Period"), based on actual performance during the respective performance periods. Any vested stock options shall remain exercisable until the expiration date specified in the applicable award agreement.

The Pro Rata Target Bonus is intended to be a fixed severance payment and not a performance-contingent payment dependent on current year or prior year performance. "*Pro-Rata Target Bonus Calculation"* is determined by multiplying the Target Bonus by a fraction, the numerator of which is the number of days in the fiscal year in which the Date of Termination occurs through the Date of Termination and the denominator of which is three hundred sixty-five.

The Executive acknowledges and agrees that the compensation paid under this Section 8(b) is fair and reasonable, and are his sole and exclusive remedy, in lieu of all other remedies at law or in equity, with respect to the termination of his employment hereunder, and is subject to the Executive complying in all material respects with his obligations under Section 9 or the Continuing Obligations Agreement. All other benefits, if any, due the Executive following termination pursuant to this Section 8(b) shall be determined in accordance with the plans, policies and practices of the Company; provided, however, that the Executive shall not participate in any severance plan, policy or program of the Company.

(B) *Benefits*. The Executive will receive $40,000 to offset the COBRA premiums on the Executive's health benefits. The Executive will receive this amount in one lump sum payment, minus applicable taxes and withholdings, within 60 days of the last day of his employment.

The Company will continue to provide, for a period of 24 months following the Date of Termination, financial and tax services (currently provided by Ayco) and executive physical exams (currently provided by EHE International).

All other benefits, if any, due the Executive following termination pursuant to this Section 8(b) shall be determined in accordance with the plans, policies and practices of the Company; provided, however, that the Executive shall not participate in any severance plan, policy or program of the Company. The Severance Benefits are payments and benefits to which the Executive is not otherwise entitled, are given in consideration for the Release (as described in Section 8(h) below) and are in lieu of any severance plan, policy or program of the Company or any of its subsidiaries that may now or hereafter exist. The payments and benefits to be provided pursuant to this Section 8(b)(i) shall constitute liquidated damages and shall be deemed to satisfy and be in full and final settlement of all obligations of the Company to the Executive under this Agreement. The Executive acknowledges and agrees that such amounts are fair and reasonable,

and are his sole and exclusive remedy, in lieu of all other remedies at law or in equity, with respect to the termination of his employment hereunder. If, during the Continued Vesting Period, the Executive breaches in any material respect any of his obligations under Section 9, or the Continuing Obligations Agreement, the Company may, upon written notice to the Executive terminate the Continued Vesting Period and cease any benefits continuation coverage or payments, except in each case as required by applicable law.

(ii) For purposes of this Agreement, "*Cause*" shall mean (A) the Executive's conviction of, or pleading nolo contendere to, any crime, whether a felony or misdemeanor, involving the purchase or sale of any security, mail or wire fraud, theft, embezzlement, moral turpitude, or Company property (with the exception of minor traffic violations or similar misdemeanors); (B) the Executive's repeated neglect of his duties to the Company; or (C) the Executive's willful misconduct in connection with the performance of his duties or other material breach by the Executive of this Agreement provided that the Company may not terminate the Executive's employment for Cause unless (x) the Company first gives the Executive written notice of its intention to terminate and of the grounds for such termination within 90 days following the date the Board is informed of such grounds at a meeting of the Board and (y) the Executive has not, within 30 days following receipt of such notice, cured such Cause (if capable of cure) in a manner that is reasonably satisfactory to the Board.

(iii) For purposes of this Agreement, "*Good Reason*" shall mean the Company (A) reducing the Executive's position, duties, or authority; (B) failing to secure the agreement of any successor entity to the Company that the Executive shall continue in his position without reduction in position, duties or authority; (C) relocating the Executive’s principal work location, excluding working from home remotely, beyond a 50 mile radius of his work location as of the Effective Date (provided that this Clause (C) shall apply only to a relocation that occurs during the two year period beginning upon a Change of Control, as defined below, and ending two years thereafter); or (D) committing any other material breach of this Agreement; provided, however, that the occurrence of a Change in Control, following which the Company continues to have its common stock publicly traded and the Executive is offered continued employment as an executive officer with substantially the same duties and authority as she has hereunder of such publicly traded entity, shall not be deemed to give rise to an event or condition constituting Good Reason; and provided further that no event or condition shall constitute Good Reason unless (x) the Executive gives the Company a Notice of Termination specifying his objection to such event or condition within 90 days following the occurrence of such event or condition, (y) such event or condition is not corrected, in all material respects, by the Company in a manner that is reasonably satisfactory to the Executive within 30 days following the Company's receipt of such notice and (z) the Executive resigns from his employment with the Company not more than 30 days following the expiration of the 30-day period described in the foregoing clause (y).

(c) *Permanent Disability.*

(i) The Executive's employment hereunder shall terminate upon his Permanent Disability. Upon termination of the Executive's employment due to Permanent Disability, the Executive shall, subject to Section 8(h) below, be entitled to receive, in addition to the Base Obligations, (A) a pro rata Target Bonus with respect to the calendar year in which the Date of Termination occurs, determined in accordance with the Pro Rata Target Bonus Calculation and payable in a lump sum within 30 days following the Release Effective Date (provided that if the 60 day period described in Section 8(h) below begins in one calendar year and ends in another, the pro rata Target Bonus shall be paid not earlier than January 1 of the calendar year following the Date of Termination) and (B) accelerated vesting of all unvested equity compensation awarded to the Executive by the Company as of the Effective Date and, in accordance with Section 5, each equity award agreement executed by the Executive and the Company shall describe the treatment of the equity awards under this Section 8(c). All other benefits, if any, due the Executive following termination pursuant to this Section 8(c) shall be determined in accordance with the plans, policies and practices of the Company; *provided*, *however*, that the Executive shall not participate in any other severance plan, policy or program of the Company.

(ii) For purposes of this Agreement, *"Permanent Disability"* means either (i) the inability of the Executive to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment that can be expected to result in death or can be expected to last for a continuous period of not less than 12 months or (ii) the Executive is, by reason of any medically determinable physical or mental impairment that can be expected to result in death or can be expected to last for a continuous period of not less than 12 months, receiving income replacement benefits for a period of not less than three months under an accident and health plan covering employees of the Company. The Executive shall be deemed Permanently Disabled if she is determined to be (i) totally disabled by the Social Security Administration or (ii) disabled in accordance with a disability insurance program, provided such definition of disabled under the program complies with the definition of Permanent Disability hereunder. Otherwise, such Permanent Disability shall be certified by a physician chosen by the Company and reasonably acceptable to the Executive (unless she is then legally incapacitated, in which case such physician shall be reasonably acceptable to the Executive's authorized legal representative).

(d) *Death.* The Executive's employment hereunder shall terminate due to his death. Upon termination of the Executive's employment hereunder due to death, the Executive's estate shall, subject to Section 8(h) below, be entitled to receive, in addition to the Base Obligations,(A) a pro rata Target Bonus with respect to the calendar year in which the Date of Termination occurs, determined in accordance with the Pro Rata Target Bonus Calculation and payable in a lump sum within 30 days following the Release Effective Date (provided that if the 60 day period described in Section 8(h) below begins in one calendar year and ends in another, the pro rata Target Bonus shall be paid not earlier than January 1 of the calendar year following the Date of Termination) and (B) accelerated vesting of all unvested equity compensation awarded to the Executive by the Company as of the Effective Date and, in accordance with

Section 5, each equity award agreement executed by the Executive and the Company shall describe the treatment of the equity awards under this Section 8(d). All other benefits, if any, due the Executive's estate following termination pursuant to this Section 8(d) shall be determined in accordance with the plans, policies and practices of the Company.

(e) *For Cause by the Company or Resignation, not for Good Reason, by Executive.*

Upon termination of the Executive's employment for Cause or resignation by the Executive, not for Good Reason, pursuant to this Section 8(e), the Executive shall have no further rights to any compensation (including any Annual Bonus) or any other benefits under this Agreement other than the Base Obligations. All other benefits, if any, due the Executive following the Executive's termination of employment pursuant to this Section 8(e) shall be determined in accordance with the plans, policies and practices of the Company; provided, however, that the Executive shall not participate in any severance plan, policy, or program of the Company.

(f) *Termination in Connection with Change in Control by the Company Without Cause or by the Executive for Good Reason.*

(i) If, within the period beginning on a Change in Control (as defined herein below), and ending two (2) years following such Change in Control, the Executive's employment is terminated by the Company without Cause or by the Executive for Good Reason, the Executive shall, subject to Section 8(h) below, be entitled to receive, in addition to the Base Obligations, the following payments and benefits (the "*CIC Severance Benefits*"):

(A) *CIC Severance Payment*. On the first day of the seventh (7th) month following the Executive's Date of Termination, the Company shall pay the Executive a lump sum cash payment equal to the sum of (I) two times the Base Salary paid to the Executive with respect to the calendar year immediately preceding the Executive's Date of Termination, (II) the Target Bonus and (III) a pro rata portion of the Target Bonus for the calendar year in which Executive's Date of Termination occurs and determined in accordance with the Pro Rata Target Bonus Calculation. Target Bonus for severance purposes is defined under the Executive Corporate Incentive Plan for the calendar year which precedes the year in which occurs the Executive's Date of Termination. Target Bonus is intended to be a fixed severance payment equal to the prior year Target Bonus and not a performance-contingent payment dependent on current year or prior year performance. "*Pro-Rata Target Bonus Calculation"* is determined by multiplying the Target Bonus by a fraction, the numerator of which is the number of days in the fiscal year in which the Date of Termination occurs through the Date of Termination and the denominator of which is three hundred sixty-five. Pro-rata Target Bonus with respect to the calendar year in which Executive's Date of Termination occurs shall be paid only in the event the performance goals established under the ECIP for that calendar year with respect to such Target Bonus have been satisfied. Payment of the pro-rata Target Bonus shall be delayed until following the date the Company's Compensation Committee determines that such performance goals have been satisfied, in accordance with the rules under the ECIP (the "Performance Goal Determination Date"). Payment of the pro-rata portion of the Severance Payment shall be paid

in a lump sum on the date described above or, if later, within 30 days of the Performance Goal Determination Date with respect to such Performance-Conditioned Portion.

If (i) any amounts payable to the Executive under this Agreement or otherwise are characterized as excess parachute payments pursuant to Section 4999 of the Internal Revenue Code of 1986, as amended (the "*Section 4999*"), and (ii) the Executive thereby would be subject to any United States federal excise tax due to that characterization, the Executive's termination benefits hereunder will be reduced to an amount so that none of the amounts payable constitute excess parachute amounts payments if this would result, after taking into account the applicable federal, state and local income taxes and the excise tax imposed by Section 4999, in Executive's receipt on an after-tax basis of the greatest amount of termination and other benefits. The determination of any reduction required pursuant to this section (including the determination as to which specific payments shall be reduced) shall be made by a neutral party designated by the Company and such determination shall be conclusive and binding upon the Company or any related corporation for all purposes.

(B) *Health and Welfare Benefits*. The Company shall pay to Executive on a monthly basis during the CIC Coverage Period a taxable monthly cash payment equal to the COBRA premium for the highest level of coverage available under the Company's group health plans, but reduced by the monthly amount that Executive would pay for such coverage if the Executive was an active employee. "*CIC Coverage Period*" shall mean the period (I) commencing on the first day of the month following the Release Effective Date (provided that if the 60 day period described in Section 8(h) below begins in one calendar year and ends in another, the CIC Coverage Period shall commence not earlier than January 1 of the calendar year following the Date of Termination) and (II) ending on the earlier of (x) the expiration of 24 months from the first day of the CIC Coverage Period, and (y) the date that the Executive is eligible for coverage under the health care plans of a subsequent employer. The payments provided by this Section shall be conditioned upon the Executive being covered by the Company's health care plans immediately prior to the Date of Termination. The foregoing payments are not intended to limit or otherwise reduce any entitlements that Executive may have under COBRA. In addition, the Company shall continue to provide the Executive with the same level of accident (AD&D) and life insurance benefits upon substantially the same terms and conditions (including contributions required by the Executive for such benefits) as existed immediately prior to the Executive's Date of Termination (or, if more favorable to the Executive, as such benefits and terms and conditions existed immediately prior to the Change in Control) for the same period for which the Company shall provide the Executive with continued health care coverage payments.

All other benefits, if any, due the Executive following termination pursuant to this Section 8(g) shall be determined in accordance with the plans, policies and practices of the Company; provided, however, that the Executive shall not participate in any severance plan, policy or program of the Company. The payments and other benefits provided for in this Section 8(g) are payments and benefits to which the Executive is not otherwise entitled, are given in consideration for the Release and are in lieu of any severance plan, policy or program of the Company or any of its subsidiaries that may now or hereafter exist. The payments and benefits

to be provided pursuant to this Section 8(g)(i) shall constitute liquidated damages and shall be deemed to satisfy and be in full and final settlement of all obligations of the Company to the Executive under this Agreement. The Executive acknowledges and agrees that such amounts are fair and reasonable, and are his sole and exclusive remedy, in lieu of all other remedies at law or in equity, with respect to the termination of his employment hereunder. If, during the CIC Coverage Period, the Executive breaches in any material respect any of his obligations under Section 9 or the Confidentiality Agreement, the Company may, upon written notice to the Executive, (x) terminate the CIC Coverage Period and cease to make any further payments of the CIC Severance Payment and (y) cease any health and welfare benefits and payments, except in each case as required by applicable law.

(ii) For purposes of this Agreement "Change in Control" means the first to occur of any one of the following events:

(A) any "Person," as such term is used in Sections 13(d) and 14(d) of the Securities Exchange Act of 1934 (the "*Exchange Act*") (other than (1) the Company, (2) any Person who becomes the "beneficial owner" (as defined in Rule 13d-3 under the Exchange Act) of more than 50% of the Company's then outstanding securities eligible to vote in the election of the Board ("*Voting Securities*") as a result of a reduction in the number of Voting Securities outstanding due to the repurchase of Voting Securities by the Company unless and until such Person, after becoming aware that such Person has become the beneficial owner of more than 50% of the then outstanding Voting Securities, acquires beneficial ownership of additional Voting Securities representing 1% or more of the Voting Securities then outstanding, (3) any trustee or other fiduciary holding securities under an employee benefit plan of the Company, and (4) any entity owned, directly or indirectly, by the stockholders of the Company in substantially the same proportions as their ownership of Voting Securities), is or becomes the beneficial owner, directly or indirectly, of more than 50% of the Voting Securities (not including any securities acquired directly (or through an underwriter) from the Company or the Companies);

(B) the date on which, within any twelve (12) month period (beginning on or after the Effective Date), a majority of the directors then serving on the Board are replaced by directors not endorsed by at least two-thirds (2/3) of the members of the Board before the date of appointment or election;

(C) there is consummated a merger or consolidation of the Company with any other corporation or entity or the Company issues Voting Securities in connection with a merger or consolidation of any direct or indirect subsidiary of the Company with any other corporation, other than (1) a merger or consolidation that would result in the Voting Securities outstanding immediately prior thereto continuing to represent (either by remaining outstanding or by being converted into Voting Securities of the surviving or parent entity) more than 50% of the Company's then outstanding Voting Securities or more than 50% of the combined voting power of such surviving or parent entity outstanding immediately after such merger or consolidation or (2) a merger or consolidation effected to implement a recapitalization of the Company (or similar transaction) in which no Person, directly or indirectly, acquired more than 50% of the Company's then outstanding Voting Securities (not including any securities acquired directly (or through an underwriter) from the Company or the Companies); or

(D) the consummation of an agreement for the sale or disposition by the Company of all or substantially all of the Company's assets (or any transaction having a similar

effect), provided that such agreement or transaction of similar effect shall in all events require the disposition, within any twelve (12) month period, of at least 40% of the gross fair market value of all of the Company's then assets; other than a sale or disposition by the Company of all or substantially all of the Company's assets to an entity, at least 50% of the combined voting power of the voting securities of which are owned directly or indirectly by stockholders of the Company in substantially the same proportions as their ownership of the Company immediately prior to such sale.

Notwithstanding the foregoing, in no event shall a Change in Control be deemed to occur hereunder unless such event constitutes a change in ownership of the Company, a change in effective control of the Company or a change in ownership of a substantial portion of the Company's assets within the meaning of Section 409A.

(g) *Mitigation; Offset.* Following the termination of his employment under any of the above clauses of this Section 8, the Executive shall have no obligation or duty to seek subsequent employment or engagement as an employee (including self-employment) or as a consultant or otherwise mitigate the Company's obligations hereunder; nor shall the payments provided by this Section 8 be reduced by the compensation earned by the Executive as an employee or consultant from such subsequent employment or consultancy.

(h) *Release.* Notwithstanding anything to the contrary in this Agreement, receipt of the Severance Benefits and the CIC Severance Benefits or other compensation or benefits under this Section 8 (other than the Base Obligations), if any, by the Executive is subject to the Executive executing and delivering to the Company a general release of claims following the Date of Termination, in substantially the form attached as Exhibit B (the "*Release*"), that, within 60 days following the Executive's Date of Termination, has become irrevocable by the Executive (such date the Release becomes irrevocable being the "*Release Effective Date*"). If the Executive dies or becomes legally incapacitated prior to the Release Effective Date, then the Release requirements described in the preceding sentence shall apply with respect to the Executive's estate and the Release shall be modified as reasonably necessary to allow for execution and delivery by the personal representative of the Executive's estate or the Executive's authorized legal representative, as applicable.

9. *Non-Competition.* The Executive acknowledges and recognizes the highly competitive nature of the businesses of the Company and accordingly agrees as follows:

(a) *Non-Competition.* For a period of two years following the Date of Termination (the "*Restricted Period*"), regardless of the circumstances surrounding such termination of employment, the Executive will not, directly or indirectly (i) engage in any "Competitive Business" (as defined below) for the Executive's own account while she is in self-employment or acting as a sole proprietor, (ii) enter the employ of, or render any services to, any person engaged in a Competitive Business, (iii) acquire a financial interest in, or otherwise become actively involved with, any person engaged in a Competitive Business, directly or indirectly, as an individual, partner, shareholder, officer, director, principal, agent, trustee or consultant, or (iv) interfere with business relationships (whether formed before or after the Effective Date) between the Company and customers or suppliers of the Company. For purposes

of this Agreement, "*Competitive Business*" shall mean (x) any national securities exchange registered with the Securities and Exchange Commission, (y) any alternative trading system that trades listed stocks and other exchange-traded products or (z) any other entity that engages in substantially the same business as the Company, in each case in North America or in any other location in which the Company operates. For purposes of this Agreement, "*person*" shall mean an individual, corporation, partnership, limited partnership, limited liability company, syndicate, person (including, without limitation, a "person" as defined in Section 13(d)(3) of the Securities Exchange Act of 1934, as amended), trust, association or entity or government, political subdivision, agency or instrumentality of a government.

(b) *Securities Ownership.* Notwithstanding anything to the contrary in this Agreement, the Executive may, directly or indirectly, own, solely as an investment, securities of any person engaged in the business of the Company which are publicly traded on a national or regional stock exchange or on the over-the-counter market if the Executive (i) is not a controlling person of, or a member of a group which controls, such person and (ii) does not, directly or indirectly, own five percent or more of any class of securities of such person.

(c) *Severability.* It is expressly understood and agreed that, although the Executive and the Company consider the restrictions contained in this Section 9 to be reasonable, if a final judicial determination is made by a court of competent jurisdiction that the time or territory or any other restriction contained in this Agreement is an unenforceable restriction against the Executive, the provisions of this Agreement shall not be rendered void, but shall be deemed amended to apply as to such maximum time and territory and to such maximum extent as such court may judicially determine or indicate to be enforceable. Alternatively, in the event that any one or more of the provisions of this Agreement shall be or become invalid, illegal or unenforceable in any respect, the validity, legality and enforceability of the remaining provisions of this Agreement shall not be affected thereby.

10. *Specific Performance* The Executive acknowledges and agrees that the Company's remedies at law for a breach or threatened breach of Section 9 above would be inadequate and, in recognition of this fact, the Executive agrees that, in the event of such a breach or threatened breach, in addition to any remedies at law, the Company, without posting any bond, shall be entitled to obtain equitable relief in the form of specific performance, temporary restraining order, temporary or permanent injunction or any other equitable remedy which may then be available.

11. *Disputes.* Except as provided in Section 10 above, any dispute arising between the parties under this Agreement, under any statute, regulation, or ordinance, under any other agreement between the parties, and/or in way relating to the Executive's employment, shall be submitted to binding arbitration before the American Arbitration Association ("*AAA*") for resolution. Such arbitration shall be conducted in New York, New York, and the arbitrator will apply New York law, including federal law as applied in New York courts. The arbitration shall be conducted in accordance with the AAA's Employment Arbitration Rules as modified herein. The arbitration shall be conducted by a panel of three arbitrators that is mutually agreeable to both the Executive and the Company, all in accordance with AAA's Employment Arbitration

Rules then in effect. If the Executive and the Company cannot agree upon the panel of arbitrators, the arbitration shall be settled before a panel of three arbitrators, one to be selected by the Company, one by the Executive, and the third to be selected by the two persons so selected, all in accordance with AAA's Employment Arbitration Rules. With respect to any and all costs and expenses associated with any such arbitration that are not assignable to one of the parties by the arbitrator, each party shall pay their own costs and expenses, including without limitation, attorney's fees and costs, except that the Company shall pay the cost of the arbitrators and the filing fees charged to Executive by the AAA, provided she is the claimant or counter claimant in such arbitration and is the prevailing party. The award of the arbitrators shall be final and binding on the parties, and judgment on the award may be confirmed and entered in any state or federal court in the State and City of New York. The arbitration shall be conducted on a strictly confidential basis, and Executive shall not disclose the existence of a claim, the nature of a claim, any documents, exhibits, or information exchanged or presented in connection with such a claim, or the result of any action (collectively, "*Arbitration Materials"*), to any third party, with the sole exception of the Executive's legal counsel, who also shall be bound by confidentiality obligations no less protective than the provisions set forth in the Confidentiality Agreement. In the event of any court proceeding to challenge or enforce an arbitrators' award, the parties hereby consent to the exclusive jurisdiction of the state and federal courts in New York, New York and agree to venue in that jurisdiction. The parties agree to take all steps necessary to protect the confidentiality of the Arbitration Materials in connection with any such proceeding, agree to file all Confidential Information, as defined in the Confidentiality Agreement (and documents containing Confidential Information) under seal, subject to court order and agree to the entry of an appropriate protective order encompassing the confidentiality terms of this Agreement. Nothing contained in this Section 11 shall be construed to preclude the Company from exercising its rights under Section 10 above.

12. *Miscellaneous.*

(a) *Acceptance.* The Executive hereby represents and warrants, as a material inducement to the Company's agreement to enter into this Agreement, that there are no legal, contractual or other impediments precluding the Executive from entering into this Agreement or from performing the services with the Company contemplated hereby. Any violation of this representation and warranty by the Executive shall render all of the obligations of the Company under this Agreement void *ab initio* and of no force and effect.

(b) *Entire Agreement; Amendments.* This Agreement, together with the equity award agreements between the Executive and the Company contain the entire understanding of the parties with respect to the employment of the Executive by the Company, and shall supersede any and all previous contracts, arrangements or understandings between the Company and the Executive with respect to the subject matter set forth herein. There are no restrictions, agreements, promises, warranties, or covenants by and between the Company and the Executive and undertakings between the parties with respect to the subject matter herein other than those expressly set forth herein. This Agreement may not be altered, modified or amended except by written instrument signed by the parties hereto.

(c) *No Waiver.* The failure of a party to insist upon strict adherence to any term of this Agreement on any occasion shall not be considered a waiver of such party's rights or

deprive such party of the right thereafter to insist upon strict adherence to that term or any other term of this Agreement.

(d) *Successor; Assignment.* This Agreement is confidential and personal and neither of the parties hereto shall, without the consent of the other, assign or transfer this Agreement or any rights or obligations hereunder. Without limiting the foregoing, the Executive's right to receive payments hereunder shall not be assignable or transferable whether by pledge, creation of a security interest or otherwise, other than a transfer by the Executive's will or by the laws of descent and distribution. In the event of any attempted assignment or transfer contrary to this Section 12(d), the Company shall have no liability to pay the assignee or transferee any amount so attempted to be assigned or transferred. The Company shall cause this Agreement to be assumed by any entity that succeeds to all or substantially all of the Company's business or assets and this Agreement shall be binding upon any successor to all or substantially all of the Company's business or assets; provided, however, that no such assumption shall release the Company of its obligations hereunder, to the extent not satisfied by such successor, without the Executive's prior written consent.

(e) *Confidentiality of Tax Treatment and Structure.* Notwithstanding anything herein to the contrary, each party and its representatives may consult any tax advisor regarding the tax treatment and tax structure of this Agreement and may disclose to any person, without limitation of any kind, the tax treatment and tax structure of this Agreement and all materials (including opinions or other tax analyses) that are provided relating to such treatment or structure.

(f) *Notice.* For the purpose of this Agreement, notices and all other communications provided for in this Agreement shall be in writing and shall be deemed to have been duly given when delivered or mailed by United States registered mail, return receipt requested, postage prepaid, addressed to the respective addresses set forth on the execution page of this Agreement, provided that all notices to the Company shall be directed to the attention of the General Counsel or to such other address as either party may have furnished to the other in writing in accordance herewith, except that notice of change of address shall be effective only upon receipt:

if to the Company:

The Office of the General Counsel
Nasdaq, Inc.
151 West 42nd Street
New York, NY 100366

if to the Executive:

his address as shown in the records of the Company

(g) *Withholding Taxes.* The Company may withhold from any amounts payable under this Agreement such federal, state and local taxes as may be required to be withheld pursuant to any applicable law or regulation.

(h) *Section 409A*. Notwithstanding any other provision of this Agreement, any payment, settlement or benefit triggered by termination of the Executive's employment with the Company shall not be made until six months and one day following Date of Termination if such delay is necessary to avoid the imposition of any tax, penalty or interest under Section 409A of the Internal Revenue Code of 1986, as amended (Section "*409A*"). Any installment payments that are delayed pursuant to this Section 12(h) shall be accumulated and paid in a lump sum on the day that is six months and one day following the Date of Termination (or, if earlier, upon the Executive's death) and the remaining installment payments shall begin on such date in accordance with the schedule provided in this Agreement. For purposes of this Agreement, termination or severance of employment will be read to mean a "separation from service" within the meaning of Section 409A where it is reasonably anticipated that no further services would be performed after that date or that the level of services the Executive would perform after that date (whether as an employee or independent contractor) would permanently decrease to no more than 20 percent of the average level of bona fide services performed over the immediately preceding thirty-six (36) month period. Additionally, the amount of expenses eligible for reimbursement or in-kind benefits to be provided during one calendar year may not affect the expenses eligible for reimbursement or any in-kind benefits to be provided in any other calendar year and the right to reimbursement or in-kind benefits is not subject to liquidation or exchange for another benefit. All reimbursements shall be made no later than the last day of the calendar year following the calendar year in which the Executive incurs the reimbursable expense. This Agreement is intended to comply with the requirements of Section 409A (including the exceptions thereto), to the extent applicable, and the Agreement shall be administered and interpreted in accordance with such intent. If any provision contained in the Agreement conflicts with the requirements of Section 409A (or the exemptions intended to apply under the Agreement), the Agreement shall be deemed to be reformed to comply with the requirements of Section 409A (or the applicable exemptions thereto). The Company, after consulting with the Executive, may amend this Agreement or the terms of any award provided for herein in any manner that the Company considers necessary or advisable to ensure that cash compensation, equity awards or other benefits provided for herein are not subject to United States federal income tax, state or local income tax or any equivalent taxes in territories outside the United States prior to payment, exercise, vesting or settlement, as applicable, or any tax, interest or penalties pursuant to Section 409A. Any such amendments shall be made in a manner that preserves to the maximum extent possible the intended benefits to the Executive. This Section 12(h) does not create an obligation on the part of the Company to modify this Agreement and does not guarantee that the amounts or benefits owed under the Agreement will not be subject to interest and penalties under Section 409A. For purposes of this Agreement, all rights to payments and benefits hereunder shall be treated as rights to receive a series of separate payments and benefits to the fullest extent allowed by Section 409A.

(i) *Clawback*. The Executive agrees that compensation and benefits provided by the Company under this Agreement or otherwise will be subject to recoupment or clawback

by the Company under any applicable clawback or recoupment policy of the Company that is generally applicable to the Company's executives, as may be in effect from time-to-time, or as required by applicable law.

(j) *Audit Rights*. Any and all equity compensation of any kind due hereunder to Executive after the Date of Termination shall be accompanied by a detailed statement from the Company showing the calculation for such compensation for the period being measured. Within thirty (30) days after the delivery of such statement, the Executive may notify the Company of any objections or changes thereto, specifying in reasonable detail any such objections or changes. If the Executive does not notify the Company of any objections or changes thereto or if within twenty (20) days of the delivery of an objection notice the Executive and the Company agree on the resolution of all objections or changes, then such statements delivered by the Company, with such changes as are agreed upon, shall be final and binding. If the parties shall fail to reach an agreement with respect to all objections or changes within such twenty (20) day period, then all disputed objections or changes shall, be subject to resolution in accordance with Section 11 above.

(k) *Counterparts.* This Agreement may be signed in counterparts, each of which shall be an original, with the same effect as if the signatures thereto and hereto were upon the same instrument.

(l) *Governing Law.* This Agreement shall be governed by and construed in accordance with the laws of the State of New York.

* * *

IN WITNESS WHEREOF, the parties hereto have duly executed this Agreement as of the day and year first above written.

EXECUTIVE

/s/ Bradley Peterson
Bradley Peterson

Nasdaq, Inc.

By: /s/ Adena T. Friedman

Name: Adena T. Friedman
Title: President and Chief Executive Officer

Exhibit A

NASDAQ CONTINUING OBLIGATIONS AGREEMENT

During the course of my employment or engagement with Nasdaq and/or its subsidiaries and affiliates (collectively, the "***Company***"), I understand that I will have or be given access to, and/or receive, certain non-public, confidential, and proprietary information and or specialized training and trade secrets pertaining to the business of the Company and Company's customers or prospective customers ("***Company Parties***"). Any unauthorized disclosure or use of such information would cause grave harm to the Company Parties. Therefore, to assure the confidentiality and proper use of Confidential Information and other Company Property (each as defined herein), and in consideration of my engagement with the Company, my access to confidential information, training and trade secrets, and the compensation paid or to be paid for my services during that engagement, and the mutual covenants and promises contained herein, I agree to the following:

1. Confidentiality and Company Property.

All Confidential Information and Company Property (as those terms are defined below) is owned by and for the Company Parties exclusively; is intended solely for authorized, work-related purposes on behalf of the Company Parties; and shall not be used for personal or other non-work related purposes. Specifically, without limitation, I shall not, directly or indirectly, at any time during or after engagement with the Company, without prior express written authorization from the Company (i) divulge, disclose, transmit, reproduce, convey, summarize, quote, share, or make accessible to any other person or entity Confidential Information or non-public Company Property; (ii) use any Confidential Information or Company Property for any purpose outside the course of performing the authorized duties of my work with the Company; (iii) remove Company Property or Confidential Information from the Company Parties' premises without obtaining prior express written authorization from the Company; or (iv) review or seek to access any Confidential Information or Company Property except as required in connection with my work for the Company.

2. Non-Solicitation.

I agree that, for a period of six (6) months following my separation from service for any reason, I shall not, directly or indirectly, without express written consent from Company's Office of General Counsel:

a) Interfere with any customer relationship the Company has with any of its current customers or potential customers that I had any involvement with, directly or indirectly, during the last twelve (12) months of my employment; or

b) Solicit, or induce to enter into any business arrangement with, any employee or contractor of the Company with whom I had any contact or a relationship with during the last twelve (12) months of my employment; or

c) Solicit, or induce to enter into any business arrangement with, any employee or contractor of the Company's customers that I knew, or reasonably could be expected to know, was solicited by the

Company for any technology, operations, sales or business role during the last twelve (12) months of my employment with the Company.

Nothing in this Section shall be construed to prohibit me from becoming employed or engaged by another entity after my termination of employment from the Company, as long as I am not engaged in duties that violate the non-solicitation provisions in this Section. Other non-competition provisions in other Company agreements signed by me may apply depending on the law of the applicable jurisdiction.

3. Inventions Assignment.

I will promptly disclose to the Company, or its designee, all Nasdaq Inventions (as defined below). All Nasdaq Inventions shall be the exclusive property of the Company, and I acknowledge that all Nasdaq Inventions shall be considered as "works made for hire" belonging to the Company. To the extent that any Nasdaq Inventions may not be considered works made for hire, I hereby assign to the Company, without any further consideration, all right, title, and interest in and to all such Nasdaq Inventions, including, without limitation, all copyrights, all patents, all patent applications all provisional applications, divisional applications, continuation applications, continuation in-part applications, and all patents that may issue therefrom and all reissues, reexaminations and extensions thereof, all other intellectual property rights, all moral rights, all contract and licensing rights, and all claims and causes of action of any kind with respect to such rights, including, without limitation, the right to sue and recover damages or other compensation and/or obtain equitable relief for any past, present, or future infringement or misappropriation thereof. The assignment to the Company herein of all rights to the Nasdaq Inventions is without additional compensation to me. At the Company's expense, I will assist in every proper way to perfect the Company's rights in the Nasdaq Inventions and to protect the Nasdaq Inventions throughout the world, including, without limitation, (i) executing in favor of the Company or its designee(s) documents confirming patent, copyright, and other applications' assignment to the Company relating to the Nasdaq Inventions and (ii) the filing by the Company of such assignment in the United States Patent and Trademark Office, and any corresponding entities in any applicable foreign countries or multinational authorities, to record the Company or its designee(s) of the Company's patents or patent applications as the assignee and owner of the patents or patent applications. I agree not to challenge the validity of the Nasdaq Inventions or the ownership by the Company or its designee(s) of the Nasdaq Inventions.

4. Non-Disparagement.

I agree that I shall not issue, circulate, publish or utter any false or disparaging, statement, remarks, opinions or rumors about the Company or its shareholders unless giving truthful testimony under subpoena or court order. Notwithstanding, I understand that I may provide truthful information to any governmental agency or self-regulatory organization with or without subpoena or court order. With the exception of communications made in a private corporate communication as an employee or consultant with regard to a listing decision of my employer or my consulting client, I agree that public communications regarding a preference for listing a security on a market other than the Company, that the quality of the Company as a securities market is in any way inferior to any other securities market or exchange, and/or that the regulatory efforts and programs of the Company are or have been lax in any way, are specifically defined as disparaging and will constitute a material breach of this Agreement. Nothing in this paragraph, however, shall prevent me from making good faith, factual and truthful statements related to listing with the Company as long as my statements are not based on proprietary information.

5. Cooperation.

If I receive a subpoena or process from any person or entity (including, but not limited to, any governmental agency) which may or will require me to disclose documents or information or provide

testimony (in a deposition, court proceeding, or otherwise) regarding, in whole or in part, any of the Company Parties or any Confidential Information or Company Property, I shall: (i) to the extent permissible by law, notify Nasdaq's Office of the General Counsel of the subpoena or other process within twenty-four (24) hours of receiving it; and (ii) to the maximum extent possible, not make any disclosure until the Company Parties have had a reasonable opportunity to contest the right of the requesting person or entity to such disclosure, limit the scope or nature of such disclosure, and/or seek to participate in the proceeding or matter in which the disclosure is sought.

6. Definitions.

"***Confidential Information"*** shall mean any non-public, proprietary information regarding the Company Parties, whether in writing or not, whether in digital, hardcopy, or another format, including all personal information, all personnel information, financial data, commercial data, trade secrets, business plans, business models, organizational structures and models, business strategies, pricing and advertising techniques and strategies, research and development activities, software development, market development, exchange registration, studies, market penetration plans, listing retention plans and strategies, marketing plans and strategies, communication and/or public relations products, plans, programs, recruiting strategies, databases, processes, work product or inventions, financial formulas and methods relating to Company Parties' business, computer software programs, accounting policies and practices, and all strategic plans or other matters, strategies, and financial or operating information pertaining to current or potential customers or transactions (including information regarding each Company Party's current or prospective customers, customer names, and customer representatives), templates and agreements, and all other information about or provided by the Company Parties, including information regarding any actual or prospective business opportunities, employment opportunities, finances, investments, and other proprietary information and trade secrets. Notwithstanding the above, Confidential Information shall not include any information that: (i) was known to me prior to my engagement with the Company as evidenced by written records in my possession prior to such disclosure; or (ii) is generally and publicly available and known to all persons in the industries where the Company conducts business, other than because of any unauthorized disclosure by me.

"***Company Property***" shall mean all property and resources of the Company Parties, or any Company Party, including, without limitation, Confidential Information, each Company Party's products, each Company Party's computer systems and all software, E-mail, web pages and databases, telephone and facsimile services, and all other administrative and/or support services provided by the Company Parties. I further agree that "Company Property" shall include processes, data, works of authorship, methods, Inventions (as that term is defined below), developments, and improvements that I conceive, originate, develop, author, or create, solely or jointly with others, during or as a result of my employment with the Company, or using Company Property, and without regard to whether any of the foregoing also may be included within "Confidential Information" as defined under this Agreement.

"Nasdaq Inventions" shall mean all ideas, improvements, trade secrets, know-how, confidential technical or business information, sales and other commercial relationships, potential sales and other commercial relationships, business methods or processes, copyrightable expression, research, marketing plans, computer software (including, without limitation, source code(s)), computer programs, original works of authorship, industrial designs, trade dress, developments, discoveries, trading systems, trading strategies and methodologies, improvements, modifications, technology, algorithms and designs, (regardless of whether any of the foregoing are subject to patent or copyright protection), that are (i) made, conceived, expressed, developed, or reduced to practice by me (solely or jointly with others) during or as a result of my employment with the Company or

using Company Property and (ii) which relate in any manner to the Company, the business of the Company (including without limitation the services the Company provides to any of the Company Parties), or my engagement by the Company.

7. Return Of Confidential Information And Company Property.

Upon my termination of engagement with the Company, for any reason, or if the Company so requests, I shall promptly deliver to the Company all Confidential Information and Company Property, including Nasdaq Inventions in my possession or under my control, as well as all documents, disks, tapes, or other electronic, digital, or computer means of storage, and all copies of such information and property.

8. Injunctive Action.

I acknowledge that the foregoing provisions and restrictions are reasonable and necessary for the protection of the Company Parties and their respective businesses. These obligations are not limited in time to the duration of my engagement and rather shall survive the termination of my engagement by the Company, regardless of the reason for its termination. I agree that my breach of any of the foregoing provisions will result in irreparable injury to the Company Parties, that monetary relief alone will be inadequate to redress such a breach, and further that the Company shall be entitled to obtain an injunction to prevent and/or remedy such a breach (without first having to post a bond).

(a) In any proceeding for an injunction and upon any motion for a temporary or permanent injunction ("Injunctive Action"), the Company's right to receive monetary damages shall not be a bar or interposed as a defense to the granting of such injunction. The Company's right to an injunction is in addition to, and not in lieu of, any other rights and remedies available to the Company under law or in equity, including any remedy the Company may seek in any arbitration brought pursuant to Paragraph 9 of this Agreement.

(b) I hereby irrevocably submit to the jurisdiction of the courts of New York in any Injunctive Action and waive any claim or defense of inconvenient or improper forum or lack of personal jurisdiction under any applicable law or decision. Upon the issuance (or denial) of an injunction, the underlying merits of any such dispute shall be resolved in accordance with Paragraph 9 of this Agreement.

9. Arbitration.

Except as provided in Section 8 of this Agreement, any dispute arising between the Parties under this Agreement, under any statute, regulation, or ordinance, under any other agreement between the Parties, and/or in way relating to my engagement by the Company, shall be submitted to binding arbitration before the American Arbitration Association ("AAA") for resolution. Such arbitration shall be conducted in New York, New York, and the arbitrator will apply New York law, including federal law as applied in New York courts. The arbitration shall be conducted in accordance with the AAA's Employment Arbitration Rules as modified herein. The arbitration shall be conducted by a single arbitrator, who shall be an attorney who specializes in the field of employment law and who shall have prior experience arbitrating employment disputes. The award of the arbitrator shall be final and binding on the Parties, and judgment on the award may be confirmed and entered in any state or federal court in the State of New York and City of New York. In the event of any court proceeding to challenge or enforce an arbitrator's award, the Parties hereby consent to the exclusive jurisdiction of the state and federal courts in New York, New York and agree to venue in that jurisdiction.

The arbitration shall be conducted on a strictly confidential basis, and I shall not disclose the existence of a claim, the nature of a claim, any documents, exhibits, or information exchanged or presented in connection with such a

claim, or the result of any action (collectively, "**Arbitration Materials**"), to any third party, with the sole exception of my legal counsel, who also shall be bound by these confidentiality terms. The Parties agree to take all steps necessary to protect the confidentiality of the Arbitration Materials in connection with any such proceeding, agree to file all Confidential Information (and documents containing Confidential Information) under seal, and agree to the entry of an appropriate protective order encompassing the confidentiality terms of this Agreement.

10. Governing Law; Amendment; Waiver; Severability.

This Agreement shall be construed in accordance with and shall be governed by the laws of the State of New York, excluding any choice of law principles. This Agreement constitutes the entire agreement between the Parties with respect to the subject matter hereof, and may not be amended, discharged, or terminated, nor may any of its provisions be waived, except upon the execution of a valid written instrument executed by me and the Company.

(a) If any term or provision of this Agreement (or any portion thereof) is determined by an arbitrator or a court of competent jurisdiction to be invalid, illegal, or incapable of being enforced, all other terms and provisions of this Agreement shall nevertheless remain in full force and effect.

(b) Upon a determination that any term or provision (or any portion thereof) is invalid, illegal, or incapable of being enforced, the Company and I agree that an arbitrator or reviewing court shall have the authority to amend or modify this Agreement so as to render it enforceable and effect the original intent of the Parties to the fullest extent permitted by applicable law.

11. Miscellaneous.

This Agreement (i) may be executed in identical counterparts, which together shall constitute a single agreement; (ii) shall be fairly interpreted in accordance with its terms and without any strict construction in favor of or against either Party, notwithstanding which Party may have drafted it; and (iii) the headings herein are included for reference only and are not intended to affect the meaning or interpretation of the Agreement. This Agreement is binding upon, and shall inure to the benefit of, me and the Company and our respective heirs, executors, administrators, successors and assigns.

Without limiting the scope or generality of the terms of this Agreement in any way, I acknowledge and agree that the terms of this Agreement and all discussions regarding this Agreement are confidential, and accordingly I agree not to disclose any such information to any third party, except to my attorney(s), or as otherwise may be required by law. Notwithstanding the foregoing, I may disclose to any prospective employer the fact and existence of this Agreement, and provide copies of this Agreement to such entity. The Company also has the right to apprise any prospective employer or other entity or person of the terms of this Agreement and provide copies to any such persons or entities.

12. Other Terms of My Engagement.

Nothing in this Agreement alters the at-will nature of my employment or engagement with the Company. I acknowledge and agree that my employment or engagement is at-will, which means that both I and the Company shall have the right to terminate such engagement at any time, for any reason, with or without cause and with or without prior notice.

To the extent I am signing this Agreement in any capacity other than as an employee (e.g., consultant, independent contractor), the written terms of my engagement supersede the terms of this Paragraph. Moreover, I acknowledge that my engagement with the Company requires undivided attention and effort. Therefore, I will not, during my engagement with the Company, engage in any other employment or business, other than for the Company, or assist in any manner any business that is competitive with the business or the future business plans of the Company, unless I receive prior express written consent from the Company's Global Ethics Team.

I hereby acknowledge and accept the terms of this Agreement as of the Effective Date, by signature below.

/s/ Bradley Peterson **Date:** 10/1/20

Print Name: Bradley Peterson

Exhibit B

Release of Claims

GENERAL RELEASE

WHEREAS, Bradley Peterson (hereinafter referred to as the "*Executive*") and Nasdaq, Inc. (hereinafter referred to as "*Employer*") are parties to an Employment Agreement, dated October 1, 2020 (the "*Employment Agreement*"), which provided for the Executive's employment with Employer on the terms and conditions specified therein; and

WHEREAS, the Executive has agreed to execute a release of the type and nature set forth herein as a condition to his entitlement to certain payments and benefits upon his termination of employment with Employer.

NOW, THEREFORE, in consideration of the premises and mutual promises herein contained and for other good and valuable consideration received or to be received by the Executive in accordance with the terms of the Employment Agreement, it is agreed as follows:

1. Excluding enforcement of the covenants, promises and/or rights reserved herein, the Executive hereby irrevocably and unconditionally releases, acquits and forever discharges Employer and each of Employer's owners, stockholders, predecessors, successors, assigns, directors, officers, employees, divisions, subsidiaries, affiliates (and directors, officers and employees of such companies, divisions, subsidiaries and affiliates) and all persons acting by, through, under or in concert with any of them (collectively "*Releasees*"), or any of them, from any and all charges, complaints, claims, liabilities, obligations, promises, agreements, controversies, damages, actions, causes of action, suits, rights, demands, costs, losses, debts and expenses (including attorneys' fees and costs actually incurred) of any nature whatsoever, known or unknown, suspected or unsuspected, including, but not limited to, rights arising out of alleged violations of any contracts, express or implied, any covenant of good faith and fair dealing, express or implied, or any tort or any legal restrictions on Employer's right to terminate employees, or any Federal, state or other governmental statute, regulation or ordinance, including, without limitation, Title VII of the Civil Rights Act of 1964, as amended, the Federal Age Discrimination In Employment Act of 1967 ("*ADEA*"), as amended, the Employee Retirement Income Security Act ("*ERISA*"), as amended, the Civil Rights Act of 1991, as amended, the Rehabilitation Act of 1973, as amended, the Older Workers Benefit Protection Act ("*OWBPA*"), as amended, the Worker Adjustment Retraining and Notification Act ("*WARN*"), as amended, the Fair Labor Standards Act ("*FLSA*"), as amended, the Occupational Safety and Health Act of 1970 ("*OSHA*"), the New York State Human Rights Law, as amended, the New York Labor Act, as amended, the New York Equal Pay Law, as amended, the New York Civil Rights Law, as amended, the New York Rights of Persons With Disabilities Law, as amended, and the New York Equal Rights Law, as amended, that the Executive now has, or has ever had, or ever will have, against each or any of the Releasees, by reason of any and all acts, omissions, events, circumstances or facts existing or occurring up through the date of the Executive's execution hereof that directly or indirectly arise out of, relate to, or are connected with, the Executive's services to, or employment by Employer (any of the foregoing being a "*Claim*" or,

collectively, the "*Claims*"); *provided*, *however*, that this release shall not apply to any of the obligations of Employer or any other Releasee under the Employment Agreement, or under any agreements, plans, contracts, documents or programs described or referenced in the Employment Agreement; and *provided*, *further*, that this release shall not apply to any rights the Executive may have to obtain contribution or indemnity against Employer or any other Releasee pursuant to contract, Employer's certificate of incorporation and by-laws or otherwise.

2. The Executive expressly waives and relinquishes all rights and benefits afforded by California Civil Code Section 1542 and does so understanding and acknowledging the significance of such specific waiver of Section 1542. Section 1542 states as follows:

> "A GENERAL RELEASE DOES NOT EXTEND TO CLAIMS WHICH THE CREDITOR DOES NOT KNOW OR SUSPECT TO EXIST IN HIS OR HER FAVOR AT THE TIME OF EXECUTING THE RELEASE, WHICH IF KNOWN BY HIM OR HER MUST HAVE MATERIALLY AFFECTED HIS OR HER SETTLEMENT WITH THE DEBTOR."

Thus, notwithstanding the provisions of Section 1542, and for the purpose of implementing a full and complete release and discharge of the Releasees, the Executive expressly acknowledges that this Agreement is intended to include in its effect, without limitation, all Claims that the Executive does not know or suspect to exist in the Executive's favor at the time of execution hereof, and that this Agreement contemplates the extinguishment of any such Claim or Claims.

3. The Executive understands that she has been given a period of 21 days to review and consider this General Release before signing it pursuant to the Age Discrimination In Employment Act of 1967, as amended. The Executive further understands that she may use as much of this 21-day period as the Executive wishes prior to signing.

4. The Executive acknowledges and represents that she understands that she may revoke the waiver of his rights under the Age Discrimination In Employment Act of 1967, as amended, effectuated in this Agreement within 7 days of signing this Agreement. Revocation can be made by delivering a written notice of revocation to Office of the General Counsel, Nasdaq, Inc., 151 West 42nd Street, New York, New York 10036. For this revocation to be effective, written notice must be received by the General Counsel no later than the close of business on the seventh day after the Executive signs this Agreement. If the Executive revokes the waiver of his rights under the Age Discrimination In Employment Act of 1967, as amended, Employer shall have no obligations to the Executive under Section 8 (other than the Base Obligations) of the Employment Agreement.

5. The Executive and Employer respectively represent and acknowledge that in executing this Agreement neither of them is relying upon, and has not relied upon, any representation or statement not set forth herein made by any of the agents, representatives or attorneys of the Releasees with regard to the subject matter, basis or effect of this Agreement or otherwise.

6. This Agreement shall not in any way be construed as an admission by any of the Releasees that any Releasee has acted wrongfully or that the Executive has any rights whatsoever against any of the Releasees except as specifically set forth herein, and each of the Releasees specifically disclaims any liability to any party for any wrongful acts.

7. It is the desire and intent of the parties hereto that the provisions of this Agreement be enforced to the fullest extent permissible under law. Should there be any conflict between any provision hereof and any present or future law, such law will prevail, but the provisions affected thereby will be curtailed and limited only to the extent necessary to bring them within the requirements of law, and the remaining provisions of this Agreement will remain in full force and effect and be fully valid and enforceable.

8. The Executive represents and agrees (a) that the Executive has to the extent she desires discussed all aspects of this Agreement with his attorney, (b) that the Executive has carefully read and fully understands all of the provisions of this Agreement, and (c) that the Executive is voluntarily entering into this Agreement.

9. This General Release shall be governed by, and construed in accordance with, the laws of the State of New York, without giving effect to the conflicts of laws principles thereof or to those of any other jurisdiction which, in either case, could cause the application of the laws of any jurisdiction other than the State of New York. This General Release is binding on the successors and assigns of, and sets forth the entire agreement between, the parties hereto; fully supersedes any and all prior agreements or understandings between the parties hereto pertaining to the subject matter hereof; and may not be changed except by explicit written agreement to that effect subscribed by the parties hereto.

PLEASE READ CAREFULLY. THIS GENERAL RELEASE INCLUDES A RELEASE OF ALL KNOWN AND UNKNOWN CLAIMS.

This General Release is executed by the Executive and Employer as of the ____ day of _____.

_____
Bradley Peterson

Nasdaq, Inc.

By: _____
Name: Adena T. Friedman
Title: President and Chief Executive Officer

Exhibit 21.1

Subsidiaries and Affiliates of Nasdaq, Inc.*

As of February 15, 2021

U.S. Entities

1. A.S.A.P. Advisor Services, Inc (organized in New York)
2. BoardVantage, Inc (organized in Delaware)
3. Boston Stock Exchange Clearing Corporation (organized in Massachusetts)
4. Cinnober Americas Inc. (organized in New York)
5. Consolidated Securities Source LLC (organized in Delaware)
6. Content Services, LLC (organized in Delaware) -
7. Curzon Street Acquisition, LLC (organized in Delaware)
8. Directors Desk, LLC (organized in Delaware)
9. Dorsey, Wright & Associates, LLC (organized in Virginia)
10. ETC Acquisition Corp. (organized in Delaware)
11. eVestment Alliance Holdings, Inc. (organized in Delaware)
12. eVestment Alliance Holdings, LLC (organized in Georgia)
13. eVestment Alliance, LLC (organized in Georgia)
14. eVestment, Inc. (organized in Delaware)
15. ExactEquity, LLC (organized in Delaware)
16. Execution Access, LLC (organized in Delaware)
17. FinQloud LLC (organized in Delaware)
18. FINRA/Nasdaq Trade Reporting Facility LLC (organized in Delaware)
19. FRAMLxchange Inc. (organized in Delaware)
20. FTEN, Inc. (organized in Delaware)
21. Fundspire, Inc. (organized in Delaware)
22. Global Network Content Services, LLC (organized in Florida)
23. GlobeNewswire, Inc. (organized in California)
24. Granite Redux, Inc. (organized in Delaware)
25. GraniteBlock, Inc. (organized in Delaware)
26. Inet Futures Exchange, LLC (organized in Delaware)
27. International Securities Exchange Holdings, Inc. (organized in Delaware)
28. ISE ETF Ventures LLC (organized in Delaware)
29. Kleos Managed Services Holdings, LLC (organized in Delaware)
30. Kleos Managed Services, L.P. (organized in Delaware)
31. Longitude LLC (organized in Delaware)
32. Nasdaq BX, Inc. (organized in Delaware)
33. Nasdaq Capital Markets Advisory LLC (organized in Delaware)
34. Nasdaq Commodities Clearing LLC (organized in Delaware)
35. Nasdaq Corporate Services, LLC (organized in Delaware)
36. Nasdaq Corporate Solutions, LLC (organized in Delaware)
37. NASDAQ Energy Futures, LLC (organized in Delaware)
38. Nasdaq Execution Services, LLC (organized in Delaware)
39. NASDAQ Futures, Inc. (organized in Delaware)
40. Nasdaq GEMX, LLC (organized in Delaware)
41. NASDAQ Global, Inc. (organized in Delaware)
42. Nasdaq Governance Solutions, Inc. (organized in Delaware)
43. Nasdaq Information, LLC (organized in Delaware)
44. Nasdaq International Market Initiatives, Inc. (organized in Delaware)
45. Nasdaq ISE, LLC (organized in Delaware)
46. Nasdaq MRX, LLC (organized in Delaware)

47. NASDAQ OMX (San Francisco) Insurance LLC (organized in Delaware)
48. NASDAQ OMX BX Equities LLC (organized in Delaware)
49. Nasdaq PHLX LLC (organized in Delaware)
50. Nasdaq SPS, LLC (organized in Delaware)
51. Nasdaq Technology Services, LLC (organized in Delaware)
52. Norway Acquisition LLC (organized in Delaware)
53. NPM Securities, LLC (organized in Delaware)
54. OneReport, Inc, (organized in Vermont)
55. Operations & Compliance Network, LLC (organized in Delaware)
56. Public Plan IQ Limited Liability Company (organized in New Jersey)
57. SecondMarket Labs, LLC (organized in Delaware)
58. SecondMarket Solutions, Inc. (organized in Delaware)
59. SMTX, LLC (organized in Delaware)
60. Solovis, Inc.
61. Strategic Financial Solutions, LLC (organized in Nevada)
62. Sybenetix Inc. (organized in Delaware)
63. The Center for Board Evaluations, Inc. (organized in North Carolina)
64. The Nasdaq Options Market LLC (organized in Delaware)
65. The NASDAQ Private Market, LLC (organized in Delaware)
66. The Nasdaq Stock Market LLC (organized in Delaware)
67. The Stock Clearing Corporation of Philadelphia (organized in Pennsylvania)
68. U.S. Exchange Holdings, Inc. (organized in Delaware)
69. Verafin AcquisitionCo LLC (organized in Delaware)
70. Verafin USA Inc. (organized in Delaware)

Non-U.S. Subsidiaries

1. 2157971 Ontario Ltd. (organized in Canada)
2. AB Nasdaq Vilnius (organized in Lithuania) (96.35% owned, directly or indirectly, by Nasdaq, Inc.)
3. AS eCSD Expert (organized in Estonia)
4. AS Pensionikeskus AS (organized in Estonia)
5. BoardVantage (UK) Limited (organized in the United Kingdom)
6. Cinnober Financial Technology AB (organized in Sweden)
7. Curzon Street Holdings Limited (organized in the United Kingdom)
8. Ensoleillement Inc. (organized in Canada)
9. eVestment Alliance (UK) Limited (organized in the United Kingdom)
10. eVestment Alliance Australia Pty Ltd (organized in Australia)
11. eVestment Alliance Hong Kong Limited (organized in Hong Kong)
12. Indxis Ltd (organized in the United Kingdom)
13. LLC "SYBENETIX UKRAINE" (organized in Ukraine)
14. Longitude S.A. (organized in Luxembourg)
15. Marketwire China Holding (HK) Ltd. (organized in Hong Kong)
16. Minium Financial Technology Ltd (organized in the United Kingdom)
17. Nasdaq (Asia Pacific) Pte. Ltd. (organized in Singapore)
18. Nasdaq AB (organized in Sweden)
19. Nasdaq Australia Holding Pty Ltd (organized in Australia)
20. Nasdaq Canada Inc. (organized in Canada)
21. Nasdaq Clearing AB (organized in Sweden)
22. Nasdaq Copenhagen A/S (organized in Denmark)
23. Nasdaq Corporate Solutions (India) Private Limited (organized in India)
24. Nasdaq Corporate Solutions International Limited (organized in the United Kingdom)
25. Nasdaq CSD SE (organized in Latvia)
26. Nasdaq CXC Limited (organized in Canada)
27. Nasdaq Exchange and Clearing Services AB (organized in Sweden)
28. Nasdaq France SAS (organized in France)
29. Nasdaq Germany GmbH (organized in Germany)
30. Nasdaq Helsinki Ltd (organized in Finland)
31. Nasdaq Holding AB (organized in Sweden)
32. Nasdaq Holding Denmark A/S (organized in Denmark)
33. Nasdaq Holding Luxembourg Sárl (organized in Luxembourg)
34. Nasdaq Iceland hf. (organized in Iceland)
35. Nasdaq International Ltd (organized in the United Kingdom)
36. Nasdaq Korea Ltd. (organized in South Korea)
37. Nasdaq Ltd (organized in Hong Kong)
38. Nasdaq NLX Ltd (organized in the United Kingdom)
39. Nasdaq Nordic Ltd (organized in Finland)
40. NASDAQ OMX Europe Ltd (organized in the United Kingdom)
41. Nasdaq Oslo ASA (organized in Norway)
42. Nasdaq Pty Ltd (organized in Australia)
43. Nasdaq Riga, AS (organized in Latvia) (92.98% owned, directly or indirectly, by Nasdaq, Inc.)
44. Nasdaq Spot AB (organized in Sweden)
45. Nasdaq Stockholm AB (organized in Sweden)
46. Nasdaq Tallinn AS (organized in Estonia)
47. Nasdaq Technology (Japan) Ltd (organized in Japan)
48. Nasdaq Technology AB (organized in Sweden)
49. Nasdaq Technology Energy Systems AS (organized in Norway)
50. Nasdaq Technology Italy Srl (organized in Italy)
51. Nasdaq Teknoloji Servisi Limited Sirketi (organized in Turkey)
52. Nasdaq Treasury AB (organized in Sweden)

53. Nasdaq Vilnius Services UAB (organized in Lithuania)
54. Nasdaq Wizer Solutions AB (organized in Sweden)
55. Nasdaq Wizer Vilnius UAB (organized in Lithuania)
56. OMX Netherlands B.V. (organized in the Netherlands)
57. OMX Netherlands Holding B.V. (organized in the Netherlands)
58. OMX Treasury Euro AB (organized in Sweden) (99.9% owned, directly or indirectly, by Nasdaq, Inc.)
59. OMX Treasury Euro Holding AB (organized in Sweden)
60. Osprey Acquisition Corporation (organized in Canada)
61. Quandl, Inc. (organized in Canada, Federal)
62. RF Nordic Express AB (organized in Sweden) (50.1% owned, directly or indirectly, by Nasdaq, Inc.)
63. Shareholder.com B.V. (organized in the Netherlands)
64. Simplitium Ltd (organized in the United Kingdom)
65. SMARTS Broker Compliance Pty Ltd (organized in Australia)
66. SMARTS Market Surveillance Pty Ltd (organized in Australia)
67. Sybenetix Limited (organized in the United Kingdom)
68. TopQ Software Limited (organized in the United Kingdom)
69. Verafin Solutions ULC (organized in Canada)
70. Whittaker & Garnier Limited (organized in the United Kingdom)

* The list of subsidiaries does not include not-for-profit entities or foreign branches of subsidiaries

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the following Registration Statements:

(1) Registration Statement (Form S-3 No. 333-224489) of Nasdaq, Inc.,

(2) Registration Statement (Form S-8 No. 333-239891) pertaining to Nasdaq, Inc. Employee Stock Purchase Plan,

(3) Registration Statement (Form S-8 No. 333-225218) pertaining to Nasdaq, Inc. Equity Incentive Plan,

(4) Registration Statement (Form S-8 No. 333-196838) pertaining to Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.) Equity Incentive Plan,

(5) Registration Statement (Form S-8 No. 333-167724) pertaining to Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.) Employee Stock Purchase Plan,

(6) Registration Statement (Form S-8 No. 333-167723) pertaining to Nasdaq, Inc. (f/k/a The NASDAQ OMX Group, Inc.) Equity Incentive Plan,

(7) Registration Statement (Form S-8 No. 333-110602) pertaining to The Nasdaq Stock Market, Inc. Equity Incentive Plan,

(8) Registration Statement (Form S-8 No. 333-106945) pertaining to the Employment Agreement with Robert Greifeld of The Nasdaq Stock Market, Inc.,

(9) Registration Statement (Form S-8 No. 333-76064) pertaining to The Nasdaq Stock Market, Inc. 2000 Employee Stock Purchase Plan,

(10) Registration Statement (Form S-8 No. 333-72852) pertaining to The Nasdaq Stock Market, Inc. 2000 Employee Stock Purchase Plan, and

(11) Registration Statement (Form S-8 No. 333-70992) pertaining to The Nasdaq Stock Market, Inc. Equity Incentive Plan;

of our reports dated February 23, 2021, with respect to the consolidated financial statements of Nasdaq, Inc. and the effectiveness of internal control over financial reporting of Nasdaq, Inc. included in this Annual Report (Form 10-K) of Nasdaq, Inc. for the year ended December 31, 2020.

/s/ Ernst & Young LLP

New York, New York
February 23, 2021

Exhibit 24.1

POWER OF ATTORNEY
ANNUAL REPORT ON FORM 10-K
NASDAQ, INC.

Know all men by these presents, that the undersigned, a director of Nasdaq, Inc., a Delaware corporation, hereby constitutes and appoints John A. Zecca and Erika Moore, and each of them acting individually, the undersigned's true and lawful attorneys-in-fact and agents, each with full power and substitution and resubstitution, for her and in her name, place, and stead, in any case and all capacities to:

(1) execute for and on behalf of the undersigned, an Annual Report on Form 10-K of Nasdaq, Inc. for the fiscal year ended December 31, 2020, including any and all amendments and additions thereto (collectively, the "Annual Report") in accordance with the Securities Exchange Act of 1934, as amended, and the rules thereunder;

(2) do and perform any and all acts for and on behalf of the undersigned which may be necessary or desirable to file, or cause to be filed, the Annual Report with all exhibits thereto (including this Power of Attorney), and other documents in connection therewith, with the United States Securities and Exchange Commission; and

(3) take any other action or any type whatsoever in connection with the foregoing which, in the opinion of such attorneys-in-fact, may be of benefit to, in the best interest of, or legally required by, the undersigned, it being understood that the documents executed by such attorneys-in-fact on behalf of the undersigned pursuant to this Power of Attorney shall be in such form and shall contain such terms and conditions as such attorneys-in-fact may approve in such attorneys-in-fact's discretion.

The undersigned hereby grants to each attorney-in-fact full power and authority to do and perform any and every act and thing whatsoever requisite, necessary or proper to be done in the exercise of any of the rights and powers herein granted, as fully to all intents and purposes as the undersigned might or could do if personally present, with full power of substitution or revocation, hereby ratifying and confirming all that such shall lawfully do or cause to be done by virtue of this Power of Attorney and the rights and powers herein granted.

IN WITNESS WHEREOF, the undersigned has caused this Power of Attorney to be executed as of February 22, 2021.

/s/ Melissa M. Arnoldi
Signature

POWER OF ATTORNEY
ANNUAL REPORT ON FORM 10-K
NASDAQ, INC.

Know all men by these presents, that the undersigned, a director of Nasdaq, Inc., a Delaware corporation, hereby constitutes and appoints John A. Zecca and Erika Moore, and each of them acting individually, the undersigned's true and lawful attorneys-in-fact and agents, each with full power and substitution and resubstitution, for her and in her name, place, and stead, in any case and all capacities to:

(1) execute for and on behalf of the undersigned, an Annual Report on Form 10-K of Nasdaq, Inc. for the fiscal year ended December 31, 2020, including any and all amendments and additions thereto (collectively, the "Annual Report") in accordance with the Securities Exchange Act of 1934, as amended, and the rules thereunder;

(2) do and perform any and all acts for and on behalf of the undersigned which may be necessary or desirable to file, or cause to be filed, the Annual Report with all exhibits thereto (including this Power of Attorney), and other documents in connection therewith, with the United States Securities and Exchange Commission; and

(3) take any other action or any type whatsoever in connection with the foregoing which, in the opinion of such attorneys-in-fact, may be of benefit to, in the best interest of, or legally required by, the undersigned, it being understood that the documents executed by such attorneys-in-fact on behalf of the undersigned pursuant to this Power of Attorney shall be in such form and shall contain such terms and conditions as such attorneys-in-fact may approve in such attorneys-in-fact's discretion.

The undersigned hereby grants to each attorney-in-fact full power and authority to do and perform any and every act and thing whatsoever requisite, necessary or proper to be done in the exercise of any of the rights and powers herein granted, as fully to all intents and purposes as the undersigned might or could do if personally present, with full power of substitution or revocation, hereby ratifying and confirming all that such shall lawfully do or cause to be done by virtue of this Power of Attorney and the rights and powers herein granted.

IN WITNESS WHEREOF, the undersigned has caused this Power of Attorney to be executed as of February 22, 2021.

/s/ Charlene T. Begley
Signature

POWER OF ATTORNEY
ANNUAL REPORT ON FORM 10-K
NASDAQ, INC.

Know all men by these presents, that the undersigned, a director of Nasdaq, Inc., a Delaware corporation, hereby constitutes and appoints John A. Zecca and Erika Moore, and each of them acting individually, the undersigned's true and lawful attorneys-in-fact and agents, each with full power and substitution and resubstitution, for him and in his name, place, and stead, in any case and all capacities to:

(1) execute for and on behalf of the undersigned, an Annual Report on Form 10-K of Nasdaq, Inc. for the fiscal year ended December 31, 2020, including any and all amendments and additions thereto (collectively, the "Annual Report") in accordance with the Securities Exchange Act of 1934, as amended, and the rules thereunder;

(2) do and perform any and all acts for and on behalf of the undersigned which may be necessary or desirable to file, or cause to be filed, the Annual Report with all exhibits thereto (including this Power of Attorney), and other documents in connection therewith, with the United States Securities and Exchange Commission; and

(3) take any other action or any type whatsoever in connection with the foregoing which, in the opinion of such attorneys-in-fact, may be of benefit to, in the best interest of, or legally required by, the undersigned, it being understood that the documents executed by such attorneys-in-fact on behalf of the undersigned pursuant to this Power of Attorney shall be in such form and shall contain such terms and conditions as such attorneys-in-fact may approve in such attorneys-in-fact's discretion.

The undersigned hereby grants to each attorney-in-fact full power and authority to do and perform any and every act and thing whatsoever requisite, necessary or proper to be done in the exercise of any of the rights and powers herein granted, as fully to all intents and purposes as the undersigned might or could do if personally present, with full power of substitution or revocation, hereby ratifying and confirming all that such shall lawfully do or cause to be done by virtue of this Power of Attorney and the rights and powers herein granted.

IN WITNESS WHEREOF, the undersigned has caused this Power of Attorney to be executed as of February 22, 2021.

/s/ Steven D. Black
Signature

POWER OF ATTORNEY
ANNUAL REPORT ON FORM 10-K
NASDAQ, INC.

Know all men by these presents, that the undersigned, a director of Nasdaq, Inc., a Delaware corporation, hereby constitutes and appoints John A. Zecca and Erika Moore, and each of them acting individually, the undersigned's true and lawful attorneys-in-fact and agents, each with full power and substitution and resubstitution, for him and in his name, place, and stead, in any case and all capacities to:

(1) execute for and on behalf of the undersigned, an Annual Report on Form 10-K of Nasdaq, Inc. for the fiscal year ended December 31, 2020, including any and all amendments and additions thereto (collectively, the "Annual Report") in accordance with the Securities Exchange Act of 1934, as amended, and the rules thereunder;

(2) do and perform any and all acts for and on behalf of the undersigned which may be necessary or desirable to file, or cause to be filed, the Annual Report with all exhibits thereto (including this Power of Attorney), and other documents in connection therewith, with the United States Securities and Exchange Commission; and

(3) take any other action or any type whatsoever in connection with the foregoing which, in the opinion of such attorneys-in-fact, may be of benefit to, in the best interest of, or legally required by, the undersigned, it being understood that the documents executed by such attorneys-in-fact on behalf of the undersigned pursuant to this Power of Attorney shall be in such form and shall contain such terms and conditions as such attorneys-in-fact may approve in such attorneys-in-fact's discretion.

The undersigned hereby grants to each attorney-in-fact full power and authority to do and perform any and every act and thing whatsoever requisite, necessary or proper to be done in the exercise of any of the rights and powers herein granted, as fully to all intents and purposes as the undersigned might or could do if personally present, with full power of substitution or revocation, hereby ratifying and confirming all that such shall lawfully do or cause to be done by virtue of this Power of Attorney and the rights and powers herein granted.

IN WITNESS WHEREOF, the undersigned has caused this Power of Attorney to be executed as of February 22, 2021.

/s/ Essa Kazim
Signature

POWER OF ATTORNEY
ANNUAL REPORT ON FORM 10-K
NASDAQ, INC.

Know all men by these presents, that the undersigned, a director of Nasdaq, Inc., a Delaware corporation, hereby constitutes and appoints John A. Zecca and Erika Moore, and each of them acting individually, the undersigned's true and lawful attorneys-in-fact and agents, each with full power and substitution and resubstitution, for him and in his name, place, and stead, in any case and all capacities to:

(1) execute for and on behalf of the undersigned, an Annual Report on Form 10-K of Nasdaq, Inc. for the fiscal year ended December 31, 2020, including any and all amendments and additions thereto (collectively, the "Annual Report") in accordance with the Securities Exchange Act of 1934, as amended, and the rules thereunder;

(2) do and perform any and all acts for and on behalf of the undersigned which may be necessary or desirable to file, or cause to be filed, the Annual Report with all exhibits thereto (including this Power of Attorney), and other documents in connection therewith, with the United States Securities and Exchange Commission; and

(3) take any other action or any type whatsoever in connection with the foregoing which, in the opinion of such attorneys-in-fact, may be of benefit to, in the best interest of, or legally required by, the undersigned, it being understood that the documents executed by such attorneys-in-fact on behalf of the undersigned pursuant to this Power of Attorney shall be in such form and shall contain such terms and conditions as such attorneys-in-fact may approve in such attorneys-in-fact's discretion.

The undersigned hereby grants to each attorney-in-fact full power and authority to do and perform any and every act and thing whatsoever requisite, necessary or proper to be done in the exercise of any of the rights and powers herein granted, as fully to all intents and purposes as the undersigned might or could do if personally present, with full power of substitution or revocation, hereby ratifying and confirming all that such shall lawfully do or cause to be done by virtue of this Power of Attorney and the rights and powers herein granted.

IN WITNESS WHEREOF, the undersigned has caused this Power of Attorney to be executed as of February 22, 2021.

/s/ Thomas A. Kloet
Signature

POWER OF ATTORNEY
ANNUAL REPORT ON FORM 10-K
NASDAQ, INC.

Know all men by these presents, that the undersigned, a director of Nasdaq, Inc., a Delaware corporation, hereby constitutes and appoints John A. Zecca and Erika Moore, and each of them acting individually, the undersigned's true and lawful attorneys-in-fact and agents, each with full power and substitution and resubstitution, for him and in his name, place, and stead, in any case and all capacities to:

(1) execute for and on behalf of the undersigned, an Annual Report on Form 10-K of Nasdaq, Inc. for the fiscal year ended December 31, 2020, including any and all amendments and additions thereto (collectively, the "Annual Report") in accordance with the Securities Exchange Act of 1934, as amended, and the rules thereunder;

(2) do and perform any and all acts for and on behalf of the undersigned which may be necessary or desirable to file, or cause to be filed, the Annual Report with all exhibits thereto (including this Power of Attorney), and other documents in connection therewith, with the United States Securities and Exchange Commission; and

(3) take any other action or any type whatsoever in connection with the foregoing which, in the opinion of such attorneys-in-fact, may be of benefit to, in the best interest of, or legally required by, the undersigned, it being understood that the documents executed by such attorneys-in-fact on behalf of the undersigned pursuant to this Power of Attorney shall be in such form and shall contain such terms and conditions as such attorneys-in-fact may approve in such attorneys-in-fact's discretion.

The undersigned hereby grants to each attorney-in-fact full power and authority to do and perform any and every act and thing whatsoever requisite, necessary or proper to be done in the exercise of any of the rights and powers herein granted, as fully to all intents and purposes as the undersigned might or could do if personally present, with full power of substitution or revocation, hereby ratifying and confirming all that such shall lawfully do or cause to be done by virtue of this Power of Attorney and the rights and powers herein granted.

IN WITNESS WHEREOF, the undersigned has caused this Power of Attorney to be executed as of February 22, 2021.

/s/ John D. Rainey
Signature

POWER OF ATTORNEY
ANNUAL REPORT ON FORM 10-K
NASDAQ, INC.

Know all men by these presents, that the undersigned, a director of Nasdaq, Inc., a Delaware corporation, hereby constitutes and appoints John A. Zecca and Erika Moore, and each of them acting individually, the undersigned's true and lawful attorneys-in-fact and agents, each with full power and substitution and resubstitution, for him and in his name, place, and stead, in any case and all capacities to:

(1) execute for and on behalf of the undersigned, an Annual Report on Form 10-K of Nasdaq, Inc. for the fiscal year ended December 31, 2020, including any and all amendments and additions thereto (collectively, the "Annual Report") in accordance with the Securities Exchange Act of 1934, as amended, and the rules thereunder;

(2) do and perform any and all acts for and on behalf of the undersigned which may be necessary or desirable to file, or cause to be filed, the Annual Report with all exhibits thereto (including this Power of Attorney), and other documents in connection therewith, with the United States Securities and Exchange Commission; and

(3) take any other action or any type whatsoever in connection with the foregoing which, in the opinion of such attorneys-in-fact, may be of benefit to, in the best interest of, or legally required by, the undersigned, it being understood that the documents executed by such attorneys-in-fact on behalf of the undersigned pursuant to this Power of Attorney shall be in such form and shall contain such terms and conditions as such attorneys-in-fact may approve in such attorneys-in-fact's discretion.

The undersigned hereby grants to each attorney-in-fact full power and authority to do and perform any and every act and thing whatsoever requisite, necessary or proper to be done in the exercise of any of the rights and powers herein granted, as fully to all intents and purposes as the undersigned might or could do if personally present, with full power of substitution or revocation, hereby ratifying and confirming all that such shall lawfully do or cause to be done by virtue of this Power of Attorney and the rights and powers herein granted.

IN WITNESS WHEREOF, the undersigned has caused this Power of Attorney to be executed as of February 22, 2021.

/s/ Michael R. Splinter
Signature

POWER OF ATTORNEY
ANNUAL REPORT ON FORM 10-K
NASDAQ, INC.

Know all men by these presents, that the undersigned, a director of Nasdaq, Inc., a Delaware corporation, hereby constitutes and appoints John A. Zecca and Erika Moore, and each of them acting individually, the undersigned's true and lawful attorneys-in-fact and agents, each with full power and substitution and resubstitution, for him and in his name, place, and stead, in any case and all capacities to:

(1) execute for and on behalf of the undersigned, an Annual Report on Form 10-K of Nasdaq, Inc. for the fiscal year ended December 31, 2020, including any and all amendments and additions thereto (collectively, the "Annual Report") in accordance with the Securities Exchange Act of 1934, as amended, and the rules thereunder;

(2) do and perform any and all acts for and on behalf of the undersigned which may be necessary or desirable to file, or cause to be filed, the Annual Report with all exhibits thereto (including this Power of Attorney), and other documents in connection therewith, with the United States Securities and Exchange Commission; and

(3) take any other action or any type whatsoever in connection with the foregoing which, in the opinion of such attorneys-in-fact, may be of benefit to, in the best interest of, or legally required by, the undersigned, it being understood that the documents executed by such attorneys-in-fact on behalf of the undersigned pursuant to this Power of Attorney shall be in such form and shall contain such terms and conditions as such attorneys-in-fact may approve in such attorneys-in-fact's discretion.

The undersigned hereby grants to each attorney-in-fact full power and authority to do and perform any and every act and thing whatsoever requisite, necessary or proper to be done in the exercise of any of the rights and powers herein granted, as fully to all intents and purposes as the undersigned might or could do if personally present, with full power of substitution or revocation, hereby ratifying and confirming all that such shall lawfully do or cause to be done by virtue of this Power of Attorney and the rights and powers herein granted.

IN WITNESS WHEREOF, the undersigned has caused this Power of Attorney to be executed as of February 22, 2021.

/s/ Jacob Wallenberg
Signature

POWER OF ATTORNEY
ANNUAL REPORT ON FORM 10-K
NASDAQ, INC.

Know all men by these presents, that the undersigned, a director of Nasdaq, Inc., a Delaware corporation, hereby constitutes and appoints John A. Zecca and Erika Moore, and each of them acting individually, the undersigned's true and lawful attorneys-in-fact and agents, each with full power and substitution and resubstitution, for him and in his name, place, and stead, in any case and all capacities to:

(1) execute for and on behalf of the undersigned, an Annual Report on Form 10-K of Nasdaq, Inc. for the fiscal year ended December 31, 2020, including any and all amendments and additions thereto (collectively, the "Annual Report") in accordance with the Securities Exchange Act of 1934, as amended, and the rules thereunder;

(2) do and perform any and all acts for and on behalf of the undersigned which may be necessary or desirable to file, or cause to be filed, the Annual Report with all exhibits thereto (including this Power of Attorney), and other documents in connection therewith, with the United States Securities and Exchange Commission; and

(3) take any other action or any type whatsoever in connection with the foregoing which, in the opinion of such attorneys-in-fact, may be of benefit to, in the best interest of, or legally required by, the undersigned, it being understood that the documents executed by such attorneys-in-fact on behalf of the undersigned pursuant to this Power of Attorney shall be in such form and shall contain such terms and conditions as such attorneys-in-fact may approve in such attorneys-in-fact's discretion.

The undersigned hereby grants to each attorney-in-fact full power and authority to do and perform any and every act and thing whatsoever requisite, necessary or proper to be done in the exercise of any of the rights and powers herein granted, as fully to all intents and purposes as the undersigned might or could do if personally present, with full power of substitution or revocation, hereby ratifying and confirming all that such shall lawfully do or cause to be done by virtue of this Power of Attorney and the rights and powers herein granted.

IN WITNESS WHEREOF, the undersigned has caused this Power of Attorney to be executed as of February 22, 2021.

/s/ Alfred W. Zollar
Signature

Exhibit 31.1

CERTIFICATION

I, Adena T. Friedman, certify that:

1. I have reviewed this Annual Report on Form 10-K of Nasdaq, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

(c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

/s/ Adena T. Friedman

Name: Adena T. Friedman

Title: President and Chief Executive Officer

Date: February 23, 2021

Exhibit 31.2

CERTIFICATION

I, Michael Ptasznik, certify that:

1. I have reviewed this Annual Report on Form 10-K of Nasdaq, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

(c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

/s/ Michael Ptasznik

Name: Michael Ptasznik

Title: Executive Vice President, Corporate Strategy and Chief Financial Officer

Date: February 23, 2021

Exhibit 32.1

Certification of CEO and CFO Pursuant to
18 U.S.C. Section 1350
as Adopted Pursuant to
Section 906 of the Sarbanes-Oxley Act of 2002

In connection with the Annual Report on Form 10-K of Nasdaq, Inc. (the "Company") for the period ended December 31, 2020 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), Adena T. Friedman, as President and Chief Executive Officer of the Company, and Michael Ptasznik, as Executive Vice President, Corporate Strategy and Chief Financial Officer of the Company, each hereby certifies, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that, to the best of her or his knowledge:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of the operations of the Company.

/s/ Adena T. Friedman

Name: Adena T. Friedman
Title: President and Chief Executive Officer
Date: February 23, 2021

/s/ Michael Ptasznik

Name: Michael Ptasznik
Title: Executive Vice President, Corporate Strategy and Chief Financial Officer
Date: February 23, 2021

This certification accompanies the Report pursuant to § 906 of the Sarbanes-Oxley Act of 2002 and shall not, except to the extent required by the Sarbanes-Oxley Act of 2002, be deemed filed by the Company for purposes of § 18 of the Securities Exchange Act of 1934, as amended.