

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

Form 10-K

(Mark One)

☒ ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended October 31, 2022

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: 001-36334

KEYSIGHT TECHNOLOGIES, INC.

(Exact name of registrant as specified in its charter)

Delaware

State or other jurisdiction of
Incorporation or organization

46-4254555

I.R.S. Employer
Identification No.

Address of principal executive offices: 1400 Fountaingrove Parkway, Santa Rosa, CA 95403
Registrant's telephone number, including area code: (800) 829-4444

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

Title of each class	Trading Symbol	Name of each exchange on which registered
Common Stock par value \$0.01 per share	KEYS	New York Stock Exchange

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 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 and post such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting 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	<input checked="" type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input type="checkbox"/>	Smaller reporting company	<input type="checkbox"/>
		Emerging growth company	<input type="checkbox"/>

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 ☒

The aggregate market value of common equity held by non-affiliates as of April 30, 2022 was approximately \$20 billion, based upon the closing price of the Registrant's common stock as quoted on New York Stock Exchange on such date. Shares of stock held by officers, directors and 5 percent or more stockholders have been excluded in that such persons may be deemed to be affiliates. This determination of affiliate status is not necessarily a conclusive determination for other purposes.

As of December 12, 2022, there were 178,795,460 shares of our common stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Document Description

Portions of the Proxy Statement for the Annual Meeting of Stockholders (the "Proxy Statement") to be held on March 16, 2023 and to be filed pursuant to Regulation 14A within 120 days after registrant's fiscal year ended October 31, 2022 are incorporated by reference into Part III of this Report.

10-K Part

III

TABLE OF CONTENTS

	<u>Page</u>
Forward-Looking Statements	3
PART I	
Item 1 Business	3
Item 1A Risk Factors	20
Item 1B Unresolved Staff Comments	33
Item 2 Properties	34
Item 3 Legal Proceedings	35
Item 4 Mine Safety Disclosures	35
PART II	
Item 5 Market for the Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities	36
Item 6 [Reserved]	36
Item 7 Management's Discussion and Analysis of Financial Condition and Results of Operations	37
Item 7A Quantitative and Qualitative Disclosures About Market Risk	52
Item 8 Financial Statements and Supplementary Data	54
Item 9 Changes in and Disagreements with Accountants on Accounting and Financial Disclosure	101
Item 9A Controls and Procedures	101
Item 9B Other Information	101
Item 9C Disclosure Regarding Foreign Jurisdictions that Prevent Inspections	101
PART III	
Item 10 Directors, Executive Officers and Corporate Governance	101
Item 11 Executive Compensation	102
Item 12 Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters	102
Item 13 Certain Relationships and Related Transactions, and Director Independence	103
Item 14 Principal Accounting Fees and Services	103
PART IV	
Item 15 Exhibits, Financial Statement Schedules	103
Item 16 Form 10-K Summary	107
Signatures	108

Forward-Looking Statements

This report contains forward-looking statements including, without limitation, statements regarding trends, seasonality, cyclicalities and growth in, and drivers of, the markets we sell into, our strategic direction, earnings from our foreign subsidiaries, remediation activities, new solution and service introductions, the ability of our solutions to meet market needs, changes to our manufacturing processes, the use of contract manufacturers, the impact of local government regulations on our ability to pay vendors or conduct operations, our liquidity position, our ability to generate cash from operations, growth in our businesses, our investments, the potential impact of adopting new accounting pronouncements, our financial results, our purchase commitments, our contributions to our pension plans, the selection of discount rates and recognition of any gains or losses for our benefit plans, our cost-control activities, savings and headcount reduction recognized from our restructuring programs and other cost saving initiatives, and other regulatory approvals, the integration of our completed acquisitions and other transactions, our transition to lower-cost regions, the existence of political or economic instability, impacts of geopolitical tension and conflict in regions outside of the U.S., including the war between Russia and Ukraine and the risk of increased tensions between China and Taiwan, the impact of increased trade tension and tightening of export control regulations, the impact of compliance with the August 3, 2021 Consent Agreement with the Directorate of Defense Trade Controls, Bureau of Political-Military Affairs, Department of State, the impact of new and ongoing litigation, inflationary pressures, continued impacts to the supply chain, impacts related to endemic and pandemic conditions, impacts related to net zero emissions commitments, the impact of volatile weather caused by environmental conditions such as climate change, increases in attrition and our ability to retain key personnel, and our estimated or anticipated future results of operations, which involve risks and uncertainties. Our actual results could differ materially from the results contemplated by these forward-looking statements due to various factors, including but not limited to those risks and uncertainties discussed in Part 1 Item 1A and elsewhere in this Form 10-K.

PART I

Item 1. *Business*

Overview

Keysight Technologies, Inc. ("we," "us," "Keysight" or the "company"), incorporated in Delaware on December 6, 2013, is a technology company that helps enterprises, service providers and governments accelerate innovation to connect and secure the world by providing electronic design and test solutions that are used in the simulation, design, validation, manufacture, installation, optimization and secure operation of electronics systems in the communications, networking and electronics industries. We also offer customization, consulting and optimization services throughout the customer's product development lifecycle, including start-up assistance, asset management, up-time services, application services and instrument calibration and repair.

We generated \$5.4 billion, \$4.9 billion and \$4.2 billion of revenue in 2022, 2021 and 2020, respectively. Revenue, income from operations and assets by business segment as of and for the fiscal years ended October 31, 2022, 2021, and 2020, are provided in Note 16, "Segment Information," to our consolidated financial statements. We had more than 18,000 direct customers for our solutions and services in 2022 and over 30,000 customers globally, including indirect channels. No single customer represented 10 percent or more of our revenue.

Strategies

With a focus on electronic design, test and optimization, we deliver market-leading solutions across a wide range of industries, including commercial communications; networking; aerospace, defense and government; automotive; energy; semiconductor; general electronics; and education. Our software and hardware solutions support our customers' design and test challenges across the entire product lifecycle and help accelerate their time to market. We provide simulation, prototype development and validation solutions for research and development ("R&D"), high-volume manufacturing test solutions, as well as handheld and other solutions for operational test and optimization, including user experience in the field. Our objective is to increase the productivity of our customers. Keysight's solutions utilize a common portfolio of market-leading software and hardware technologies along with a suite of valued-added services. This broad portfolio of solutions enables our customers to efficiently develop and deploy their products to address the most rapidly evolving new technologies and market opportunities. The following section represents our significant strategies and the key underlying initiatives:

- Keysight Software Solutions - Expanding our software offerings to meet customer needs and increase recurring revenue

Keysight's software solutions can be characterized in the following three categories:

- *Instrument software applications.* Instrument software applications are designed to optimize the value that our customers derive from our instruments by providing faster insight and analytics through a combined hardware and software application solution. This solution includes core software used to run our instruments and related applications that are pre-installed on our instruments.
 - *Software application solutions.* Software applications unify multiple instruments into industry-specific solutions to provide faster time to insight across industries, technologies and lifecycle phases. Examples include solutions for 5G and 6G communications, autonomous and electric vehicles, defense modernization, Internet of Things ("IoT"), Open Radio Access Network ("ORAN") and quantum computing.
 - *Standalone software.* Our standalone software solutions enable customers to accelerate their digital design and test workflows and address their design, simulation, emulation, automation, and quality assurance needs in the R&D lab and beyond. These solutions are built on our open and scalable Pathwave software platform and enable our customers to translate virtual designs into real products. Our software test automation platform uses artificial intelligence and machine learnings ("AI/ML") to accelerate customer productivity in software test creation and execution.
- Providing complete solutions with services
 - The breadth of our service offerings enables Keysight to provide customers with complete solutions that incorporate both leading product capabilities with services and support. We have expanded and deepened our service offerings, beyond a strong foundation of calibration and repair to include customization, consulting and optimization services. Support offerings, such as KeysightCare, asset optimization, technology refresh and other value-added services enable us to provide complete customer solutions across a broad set of communications and electronics markets, technologies and industries.
- Investing early to achieve first-to-market solutions
 - *Wireless communication measurement solutions.*We are investing in the development of new wireless communications design and test solutions to satisfy the commercial communications end market and provide the industry with new capabilities for development of next-generation devices, as well as wireless and wireline networks. Our technical breadth combined with our engagement with market-leading customers has enabled our development of leading-edge and first-to-market solutions in 5G and virtual network applications, such as ORAN. We continue to make strategic investments to support the delivery of a comprehensive, innovative 5G portfolio.
 - *6G solution development.* Keysight has been investing in solutions and technology for the academic, commercial, and government research communities, who are exploring a wide breadth of technologies required to address another new generation of wireless capabilities. The expansion of large-scale commercial wireless technologies into healthcare, transportation, finance, manufacturing, and agriculture is expected to drive investment in new technologies in radio and satellite systems, new networking technologies, and the pervasive use of artificial intelligence. Keysight is well positioned to be a preferred strategic partner with leading innovative solutions driving the long-term path to 6G.
 - *Automotive design and measurement solutions.* We are investing in the development of new automotive test solutions to address the rapidly emerging electric, hybrid electric, connected and autonomous vehicle segments. In recent years, we have introduced new design and test solutions covering vehicle intelligence, radar scene emulation, connectivity, power and security, including the first-to-market integrated vehicle-to-everything ("V2X") solution for 4G/5G networks with integrated traffic scenario testing, Advanced Driver Assistance Systems ("ADAS") and an Autonomous Drive Emulation ("ADE") platform that enables real sensor data streaming to a decision-making computer. The Automotive Cybersecurity Program validates the resiliency of connected components of a vehicle. In addition, Keysight delivers extensive security validations of the 4G/5G radio access network (RAN) infrastructure that connects vehicles with back-end data centers. We also deliver application-optimized, customer-specific test solutions for the development and production of charging technology and infrastructure, energy storage, battery management systems, inverters and DC/DC converters. Keysight's innovative solutions focus on the entire value chain of electric vehicles from battery formation through manufacturing and operations.
 - *Network applications.* Keysight's market-leading network test solutions provide network equipment manufacturers and service providers with critical capability for testing next-generation network technologies. We continue to invest to

provide first-to-market solutions to meet the needs of our customers in this rapidly evolving market as network speeds and complexity increase with virtualization and software control. Our network visibility solutions allow enterprises and service providers to optimize their network operations by efficiently providing network visibility for enhanced performance and security. We are investing to bring this powerful capability to a broad range of increasingly software-driven environments, such as data centers and the cloud. Together, these solutions enable network and data center operators to continuously update their networks to deliver higher levels of performance, improve quality of service, and enhance network security, necessitated by the rapid growth of high-speed, connected devices and applications.

- *Network transformation solutions.* Market drivers are leading to a transformation of both wireless and wired network technologies. In particular, the low-latency and high-bandwidth requirements of 5G are impacting network capabilities. We are making investments to enable the next generation of networks and beyond. We provide both wireless and wired network communications design and test solutions that address all seven layers of the communications stack. In addition, these solutions address customer needs across the entire communications ecosystem, from chipsets to devices to network access and then into the core network, data centers and the cloud.

Strengths

Our electronic measurement business originated in Silicon Valley in 1939. Our legacy encompasses more than 80 years of innovation, measurement science expertise and deep customer relationships. We conduct business annually with over 30,000 customers globally, including many Fortune 1000 companies that are developing new electronic technologies, networks, systems, devices and components. The following strengths are significant:

- *Industry-focused organization structure to support customer success.* Our industry-focused organization structure enables customer alignment and allows us to partner closely with market leaders to enable new technologies and provide first-to-market solutions for emerging applications. Our solution-centric industry groups provide end-to-end design, test and optimization solutions driven by customer specifications and timetables. Keysight is viewed as a trusted adviser and partner across multiple industries.
- *Technology leadership as a competitive differentiator.* Proprietary software and hardware technologies unavailable in the commercial market and developed by our R&D technology centers around the world enable many Keysight products to deliver the best design and measurement solution capability available for our customers’ engineering requirements. Some of Keysight’s hardware technologies are designed and manufactured in our own in-house integrated circuit fabrication facilities, which were purpose-built and optimized to deliver leading-edge performance and capabilities across the broad portfolio of Keysight instruments. This differentiation enables Keysight to be recognized as a leader in seven core measurement platforms: radio-frequency ("RF") and microwave design simulation software, network test, network analyzers, oscilloscopes, signal analyzers, signal sources and network emulation solutions. Keysight’s technology leadership supports our strategy to deliver first-to-market solutions for our customers, which in turn enables them to be first to market with their products and gain a competitive advantage.
- *Broad portfolio of solutions and products to address customer needs.* Keysight has a broad portfolio of electronic design and test solutions and products, which we continue to expand. Our hardware product portfolio spans many technologies and price points. Products are available in various physical form factors, such as benchtop instruments, handheld units, custom or industry-standard modular formats, and others. We address time and frequency domain applications with RF, microwave, high-speed digital and general instrumentation. We also address network test, visibility and security applications. In addition, we have a broad portfolio of software solutions and products to enable our customers' success, including electronic design automation ("EDA") software for RF and high-speed digital design, software tools for programming, automation, and data analysis, and a broad range of application-specific software for our instruments, many of which leverage our open and scalable Pathwave software platform. Finally, we offer an expanding set of services and support delivered under our KeysightCare offering.

Our broad portfolio of solutions and products includes, among others, the following:

Oscilloscopes and Analyzers: Real-time Oscilloscopes Equivalent-Time Sampling Oscilloscopes Handheld, Modular, and USB Oscilloscopes Spectrum Analyzers (Signal Analyzers) Network Analyzers Vector Signal Analyzers EMI Receivers and EMC Analyzers Noise Figure Analyzers Logic Analyzers Protocol Analyzers and Exercisers Bit Error Ratio Testers Optical Modulation Analyzers (OMAs) Audio Analyzers Device Parameter Analyzers and Curve Tracers Device Current Waveform Analyzers Network Test, Visibility, and Security Network Protocol and Load Testers Radio Access and Core Network Test Cloud Test Solutions 5G NR Base Station Test Performance Monitoring and Optimization Network Packet Brokers Network Taps Bypass Switches Network and Application Security Solutions	Meters: Digital Multimeters (DMMs) Phase Noise Measurement Power Meters and Power Sensors Frequency Counters LCR Meters and Impedance Measurement Products Picoammeters, Electrometers Thermal Imagers Power: AC Power Supplies and Analyzers DC Power Supplies and Analyzers Electronic Loads Source/Measure Units (SMUs) EV/HEV Charging Test Solutions Software: Application Software Application Software Testing Electronic Design Automation (EDA) Software Test Automation Software Instrument Control and Connectivity Software Wireless: Wireless Network Emulators Channel Emulators Network Coverage / Drive Test Solutions Wireless Network Performance Monitoring Over-The-Air (OTA) Chambers Wireless Analyzers IoT Regulatory Compliance Solutions Network Digital Twin Solutions	Generators and Sources: Signal Generators (Signal Sources) Arbitrary Waveform Generators (AWGs) Function Generators Pulse Generators Data Generators Noise Sources Additional Products: Autonomous Driving and Advanced Driver Assistance Systems Quantum Computing Solutions In-Circuit Test (ICT) Systems Digitizers and Data Acquisition Systems Semiconductor Parametric Test Solutions Photonic Test and Measurement Products Laser Interferometers and Calibration Systems Materials measurement Microwave and Millimeter Wave Devices Test and Measurement Accessories Custom Test Systems PXI and AXIe Modular Solutions Services: KeysightCare Service and Support Calibration Repair Technology Refresh Consulting and Test as a Service (TaaS)
---	--	---

- Industry-leading commitment to product quality and reliability.* Keysight has a reputation in the industry for high-quality and high-reliability electronic measurement instrumentation and software. Ensuring quality and reliability is an integral part of our new product development processes.
- Global sales channel and reach.* We have a comprehensive global sales channel with experienced management teams and highly technical sales and application engineers, including a strong local presence in emerging markets. As part of our sales channel strategy, we have more than doubled our direct sales force over the past six years. This global direct channel is focused on addressing the needs of our customers by selling Keysight products, systems, solutions and services. A part of this direct sales channel is focused on subscription software and services, which add value to our customers' design workflows and create recurring revenue for Keysight. Approximately 80 percent of our business comes from customer interactions with our direct sales organization. In countries with low sales volumes, sales are made through various representatives and channel and distribution partners. To ensure broad geographic coverage and drive further growth, we maintain a network of over 800 channel partners and an e-commerce platform to complement our direct sales force and extend the digital buying experience for our customers. The combination of our direct and indirect channels contribute to new customer acquisition, resulting in the addition of more than 1,900 new customers in 2022.
- Large installed base.* The breadth of our solutions portfolio and our long history of producing high-performance and high-quality solutions have resulted in our large worldwide installed base of equipment. This installed base enables a strong and growing services solutions portfolio, which provides a wide range of calibration and repair services on both a per-incident and contract basis, as well as technical support through KeysightCare. It also provides additional sales opportunities as loyal customers refresh or upgrade their equipment.
- Centralized order fulfillment.* Our centralized order fulfillment organization allows us to leverage the scale and scope of our business to provide high-quality, market-leading instrument solutions to our customers while generating competitive gross margins. Keysight has a centralized order fulfillment organization that supplies solutions to customers across geographies. Our Penang, Malaysia site is our largest manufacturing facility, with a proven track record of operational excellence, technology capability and quality. We have an established network of suppliers and subcontractors, especially in Asia, that complements our in-house capabilities.
- Flexible business model.* Our operating model incorporates a substantial amount of cost structure flexibility with the intent to be materially profitable across a range of economic and market conditions. Our variable compensation programs, sales channel strategy and the outsourced components of our supply chain have been implemented to improve the flexibility of our cost structure.

The Keysight Leadership Model

The Keysight Leadership Model (“KLM”) is the company's framework to continuously deliver value to our customers, stockholders and employees and provides the structure to execute Keysight's strategy. This model encompasses seven interlinked areas of focus that are centered around our customers and include: Customer Success, Market Insight, Capital Allocation, First-to-Market Solutions, Operational Excellence, Employee Growth and Keysight Values.



- Customer Success is the heart of everything we do, embodying our relentless drive to deeply understand our customers challenges and help them achieve positive, sustained outcomes through the application of new insights and the use of Keysight solutions.
- Market Insight is enabled by our deep customer relationships and focuses our product and solution roadmaps, informs our mergers and acquisitions priorities, and factors into our hiring priorities and talent development plans. Our market insight allows us to move with speed and focus delivering first-to-market solutions that enable customers to address their engineering challenges.
- Capital Allocation is how we direct our financial and human capital to business opportunities, projects and processes that align with our strategy to generate financial returns, which create value for the company, shareholders and employees. The threshold for our capital allocation is an expected return on invested capital that is above our cost to procure that capital.
- First-to-Market Solutions is what we strive to deliver to our customers across the industries we serve. By being first-to-market with the right solutions, we enable our customers to also be first-to-market with their products.
- Operational Excellence across all functions is a relentless focus. It allows us to accelerate R&D by developing common technology platforms, maximize margins through cost reductions and supply optimization, implement LEAN+ processes for continuous improvement, and leverage general and administrative spend as the company grows. We believe this focus drives long-term competitive advantage and growth while building customer loyalty.
- Employee Growth is enabled in a diverse, inclusive and respectful work environment, where employees are offered challenging assignments, development opportunities, competitive salaries and a safe workplace. This environment supports employees throughout their careers with the goal of connecting their passions to business results.
- Keysight Values of Speed and Courage, Uncompromising Integrity, High Performance, Social Responsibility and One Keysight foster a dynamic and inspiring environment conducive to collaboration, innovation and experimentation. Our values help us attract and retain top talent and guide how we work with each other and engage with our customers, suppliers and communities.

More information on the KLM can be found at <https://about.keysight.com/en/companyinfo/leadership.shtml>.

Operating Segments

We have two reportable operating segments, the Communications Solutions Group and the Electronic Industrial Solutions Group.

Communications Solutions Group

The Communications Solutions Group serves customers spanning the worldwide commercial communications and aerospace, defense and government end markets. The group's solutions consist of electronic design and test software, electronic measurement instruments, systems and related services. These solutions are used in the simulation, design, validation, manufacturing, installation and optimization of electronic equipment and networks. This business generated revenue of \$3,803 million in 2022, \$3,523 million in 2021 and \$3,132 million in 2020.

Communications Solutions Group Markets

Our Communications Solutions Group serves the following two markets:

Commercial Communications Market

We market our electronic design and test solutions to chipset providers, network equipment manufacturers (“NEMs”), wireless device providers and component providers within the supply chain for these customers as well as network operators, including communications and hyperscale cloud service providers and enterprises. Growth in mobile data traffic and increasing complexity in semiconductors and components are driving test demand across the communications ecosystem. We provide end-to-end solutions for design and development of mobile chipsets, connected smart sensors/devices (i.e., IoT), wireless base stations, networks, data centers and cloud. Our leading-edge solutions enable and accelerate critical new technology waves, such as 5G and 6G wireless, O-RAN, Wi-Fi 6, 400/800G+ telecom and optical, and PCIe Gen5 high-speed digital. Our ability to design and deliver first-to-market solutions is enabled by our technical expertise, as well as our strategic engagements with market-leading customers across the commercial communications ecosystem.

NEMs and chipset providers design and manufacture products to enable the transmission of voice, data and video traffic. The NEMs’ customers are communications and hyperscale cloud service providers and enterprises that deploy and operate the networks and deliver services, as well as distribute end-user subscriber devices such as wireless smart phones, tablets and other connected devices. To meet their customers’ demands, NEMs require test and measurement instruments, systems and solutions for the development, production and installation of each optical, electrical and wireless network technology. The chipset providers' customers are device makers who design and manufacture network infrastructure equipment, smartphones, tablets, wearables, IoT, etc. They are also module makers who design and manufacture communication modules with cellular, bluetooth and/or wireless LAN connection capabilities for laptop, cars and other devices. To meet their customers' requirements, device makers and module makers need test and measurement solutions for development, validation, production and regulatory confirmation to cover all supported communication technologies.

Wireless device providers require design and test solutions for the design, development, manufacture and repair of a variety of mobile and connected devices, including both smart phones and tablets. These mobile devices are used for voice, data and video delivery to individuals who connect wirelessly to the service provider’s network. The device manufacturers’ customers are large and small service providers, enterprises and consumers who purchase directly from retailers.

Component providers design, develop and manufacture electronic and optical components and modules used in network equipment and mobile devices. The component providers require test and measurement products to verify that the components and modules interoperate properly and that their performance meets the specifications of their customers.

Communications and hyperscale cloud service providers and enterprises require reliable data center and network equipment that enables new service offerings and allows their networks to operate with ever-increasing capacities. To achieve this, enterprises and service providers require a range of sophisticated test instruments and systems to ensure conformance to communication standards and network requirements and to evaluate and optimize network performance. These customers also require solutions to improve management of data centers to preserve resources, save valuable IT time and maximize return on IT investments.

Aerospace, Defense and Government Market

We market our electronic design and test solutions to manufacturers and research laboratories within the aerospace and defense industries. This market includes commercial and government customers and their contracted suppliers. Electromagnetic

spectrum operations, digital transformation and modernization of satellites, radars and surveillance systems worldwide are the drivers of design and test demand within the aerospace, defense and government market.

Government customers include departments or ministries of defense and related agencies around the world. Prime contractors, sub-contractors and component manufacturers support the government customers by providing design and manufacturing capabilities for a variety of programs. Commercial customers include aerospace and satellite equipment manufacturers and related component suppliers.

Customers use our electronic design and test solutions to develop and manufacture a wide variety of electronic components and systems used in aerospace and defense industries, including electromagnetic spectrum operations, radar, signal monitoring, space, satellite, commercial and military aircraft, public safety and emerging applications. Customers test the electrical parameters of a broad spectrum of components and assemblies and final products and often require large systems containing multiple electronic instruments.

We do not manufacture or sell weapons, munitions or components therein. Solutions with industry-specific features or software for our defense customers represented less than 5 percent of total consolidated company revenue in 2022.

Communications Solutions Group Solutions

Our electronic design and test solutions include software design tools, RF, microwave (“uW”) instruments, and digital instruments and various other general purpose test instruments and targeted test solutions. Our technical breadth and expertise enables leading-edge solutions across commercial and government applications.

Electronic Design Automation Software

Our EDA software models, simulates and analyzes product designs at the circuit and system levels across RF/uW, high-speed digital, power electronics and semiconductor applications. R&D engineers use the software to predict the behavior of designs prior to building a physical prototype. They identify and correct issues with the design and optimize performance in a virtual environment, thus reducing the number of design iterations, time to market and cost.

RF and Microwave Solutions

Our software-driven RF and microwave test solutions and related software tools are used mainly in commercial, wireless and aerospace and defense applications. These solutions are required for the design and production of wireless network products, communications links, radars, mobile devices and base stations. RF and microwave test instruments include signal analyzers, signal generators, network analyzers, network emulation tools and power meters. Our measurement application software is an integrated extension of our hardware solutions and enables a wide range of measurement capability used to design and manufacture next-generation electronic components and products.

Digital Solutions

Our software-driven digital test solutions are used by R&D engineers across a broad range of customers to validate the function and performance of their digital product and system designs. These designs include a wide range of products from simple digital control circuits to complex high-speed systems, such as network equipment and computer servers. The test solutions offered include oscilloscopes, logic and serial protocol analyzers, logic-signal sources, arbitrary waveform generators and bit error rate testers. Our customers also use our high-frequency EDA software tools to model signal integrity in digital design applications as digital speeds continue to increase.

Network Applications Solutions

We offer a comprehensive suite of hardware and virtual network test platforms and software applications that provide customers with the ability to perform a broad range of testing for layers 2-7 of the network stack. These solutions measure and analyze the performance, functionality, interoperability, service quality and conformance of network equipment and networks, as well as applications and services that run on these networks. Our technology-specific application test solutions address data center, routing and switching, Software Defined Networking ("SDN"), security and encryption. We also test network applications and services, including voice, video and wireless technologies such as 4G, 5G and Wi-Fi.

Keysight's network visibility solutions provide real-time, end-to-end visibility, insight and security for physical, virtual and cloud-based software defined networks. Our solutions deliver the control, coverage, intelligence and performance customers need to protect and optimize critical networking, data center and cloud business assets. Our comprehensive network visibility platform, proprietary software, and advanced processing technologies enable crucial intelligence and functionality to enhance network efficiency and security.

Other Measurement Solutions and Product Offerings

Our suite of fiber optic test solutions measures and analyzes a wide variety of critical optical and electrical parameters in fiber optic networks and their components. Components that can be tested with our solutions include source lasers, optical amplifiers, filters and other passive components. Our test solutions include optical modulation analyzers, optical component analyzers, optical power meters and optical laser source solutions.

Additionally, we provide resale of refurbished used Keysight equipment, including Keysight Premium Used, which ensures the same high quality as our new equipment.

Communications Solutions Group Customers

Our customers include commercial companies and government agencies around the world. We have customers across the entire communications ecosystem that design, develop, manufacture, install and operate a wide variety of commercial and government communications equipment. Commercial customers include original equipment and contract manufacturers of electronic and optical components, semiconductors, chipsets, wireless devices and network equipment, as well as network and cloud service providers and enterprises that implement, maintain and manage communication networks and services. Other communications customers include defense contractors and sub-contractors. Government customers include departments or ministries of defense, government agencies and related research institutes. Our customers use our solutions to research, design, develop, validate, manufacture, install and securely operate radio frequency, microwave frequency, digital, semiconductor and optical products and systems. These products and systems range from passive components that require basic electrical measurements through complex networks and data centers that require integrated measurement solutions to optimize reliability, performance and security.

No single customer represented 10 percent or more of the group's revenue.

Communications Solutions Group Competition

The market for electronic design and test solutions is highly competitive across our targeted markets. In the commercial communications market, our competitors within various sub-markets include Anritsu Corporation, Fortive Corporation, Gigamon, National Instruments Corporation, Rohde & Schwarz GmbH & Co. KG, Spirent Communications plc, Teledyne Technologies, Teradyne Inc., and VIAVI Solutions Inc. In the aerospace, defense and government market, our competitors include Fortive Corporation, National Instruments Corporation, Rohde & Schwarz GmbH & Co. KG, and VIAVI Solutions Inc.

We offer complete solutions that include a wide range of products, related software and services that compete primarily on the basis of differentiated capability, first-to-market leading-edge technology, product quality and long-term value to our customers.

Electronic Industrial Solutions Group

The Electronic Industrial Solutions Group provides test and measurement solutions and related services across a broad set of electronic industrial end markets, focusing on high-value applications in the automotive and energy industries and measurement solutions for consumer electronics, education, general electronics design and manufacturing, and semiconductor design and manufacturing. The group provides electronic measurement instruments, design and test software and systems, and related services used in the simulation, design, validation, manufacturing, installation and optimization of electronic equipment, as well as automated test software that uses artificial intelligence and machine learning to automate test creation and test execution. This business generated revenue of \$1,617 million in 2022, \$1,418 million in 2021 and \$1,089 million in 2020.

Electronic Industrial Solutions Group Markets

We market our electronic design and test solutions to customers incorporating significant electronic content in their products across a broad set of automotive and energy, general electronics and semiconductor markets. Our customers are electronic component companies, original equipment manufacturers ("OEMs") and contract manufacturers and include their supply chain ecosystem suppliers for printed circuit assemblies, components/ICs, interconnected devices and software applications, including cloud services. These customers design, develop and manufacture a wide range of products, including those produced in high volumes, such as computers, computer peripherals, electronic components, consumer electronics, enterprise servers, storage networks and automotive electronics. Other industrial applications for our electronic industrial solutions include power, energy, automotive, medical, and university research and teaching labs.

Customers use our test solutions in developing, manufacturing and operating a wide variety of electronic components and systems. Customer requirements include testing the electrical parameters of digital, radio frequency, and microwave frequency semiconductors, components and assemblies; testing multiple parameters of the printed circuit boards used in almost every electronic device; testing of the final product; and testing of systems containing multiple electronic devices.

Electronic Industrial Solutions Group Solutions

Our electronic industrial solutions include design and design verification tools, a broad range of electronic test and measurement instruments, comprehensive manufacturing test systems, material analysis and education solutions to teach and train the next generation of engineers and scientists, and solutions to enable scientific discovery in university research labs in a variety of fields.

Design tools include design-for-test software for printed circuit assemblies and automotive radar, and EDA software for the design and simulation of wireless and wired communication links in industrial, automotive and power semiconductor devices.

Design verification tools include physical signal characterization and protocol compliance systems used for testing in industrial, energy and automotive devices and products. Major automotive and battery manufacturers are electrifying transportation and changing how electrical energy is generated, stored and controlled. Examples of verification solutions include those that help design engineers qualify and characterize power semiconductor devices, photo-voltaic/electrical vehicle/storage inverters, AC power analysis, DC battery cells/modules and automotive body/safety/engine electronic modules. High-precision and higher-bandwidth power analysis products address the increased power efficiency required with the proliferation of battery-powered and energy-efficient devices. We also provide the solutions required to test and validate the components in the electrified drive train.

We offer a broad portfolio of general-purpose precision measurement solutions, from handheld test tools to bench measurement instruments and measurement solutions. Many of these products are designed for demanding industrial environments and provide high performance capabilities and include digital multimeters, function generators, frequency counters, data acquisition systems, audio analyzers, LCR meters, thermal imagers, source measure units, ultra-high precision device current analyzers, test executive software platforms and a wide variety of power supplies ranging from bench to highly scalable AC/DC modular supplies and electronically programmable loads. These instruments are increasingly integrated with solution-specific software that enables our customers to dramatically accelerate and improve the effectiveness of their product design, design validation, manufacturing and support activities. Our solutions also support fundamental measurement science for voltage, current, frequency, signal pulse width, sub-nanometer distance and other complex electronic measurements. This enables industry and government customers to measure fundamental electrical parameters.

Comprehensive manufacturing test systems include printed-circuit-board-assembly testers that ensure complex boards and components are assembled properly, integrated circuit parametric testers that ensure semiconductor wafers are processed consistently with high precision, and sub-nano-meter positioning sub-assemblies for semiconductor wafer manufacturing. We provide effective and efficient manufacturing test solutions for complex transportation electronic control/safety systems that include radar, autonomous driving capability, and state-of-the-art wired and wireless components that enable advanced communications capabilities. Our flexible and scalable manufacturing systems enable our manufacturing customers to deliver outstanding yield, quality and productivity resulting in lower overall cost of test.

Our highly regarded test and measurement products and software have a long history of broad adoption and use in universities and research centers that teach the next generation of engineers and scientists and enable basic research to flourish. Increasing global competition in education is driving the need for efficient and timely education solutions, and we are making those available in areas such as IoT, 5G and 6G communications technology and smart devices.

Our market-leading software test automation platform has pioneered the concept of intelligent test automation by integrating AI-powered testing that identifies and builds tests automatically. This has reduced the time-to-market of solutions by

reducing the time taken for test. Our test automation can analyze and control applications and websites through the user interface in the same way a user would interact and this has extended Keysight’s capabilities into the application layer and user experience. Our solutions are agnostic across devices and software platforms and are widely used across various industries, including aerospace and defense, healthcare, automotive, networking, retail, e-commerce and the financial sector.

Electronic Industrial Solutions Group Customers

Our electronic industrial products and services customers include semiconductor and component manufacturers, OEMs and contract manufactures in the automotive, semiconductor and general electronics industry. Our customers use our solutions to perform R&D and to design, manufacture and support their products and services. Customer products include electronic modules and systems that go into a wide range of electronic industrial products, such as electric/autonomous vehicles, connected consumer and industrial devices, digital healthcare devices in the IoT domain, semiconductor equipment and devices, and printed circuit assemblies. Our customers range from the largest multi-national global companies to the smallest start-ups and include universities and government agencies around the world. Our automotive customers use Keysight's solutions to develop, test and manufacture the electrified drive train, battery management systems, e-mobility and advanced vehicle-to-everything ("V2X") communications that will enable electric and hybrid-electric vehicles to be fully autonomous.

In order to address the growing needs of customers involved in the design and development of the latest automotive electronic technologies, we also operate four automotive application centers in Boeblingen, Germany; Michigan, United States; Shanghai, China; and Nagoya, Japan. These centers enable us to collaborate with and serve customers on a local basis and in close proximity to the world’s major automotive development ecosystems. They include electronic test and measurement labs, technical experts, and state-of-the-art design and test software and hardware, as well as a customer training facility for hands-on workshops and seminars. These centers address the next-generation technology needs of our automotive industry customers, including OEMs, electronic components suppliers, semiconductor chipset manufacturers, battery and charging infrastructure providers and compliance labs, where we provide solutions across the entire ecosystem for the connected “smart” vehicle.

No single customer represented 10 percent or more of the group's revenue.

Electronic Industrial Solutions Group Competition

The market for electronic industrial design and test solutions is highly competitive across our targeted markets. In the electronic industrial test market, our competitors within various sub-markets include Fortive Corporation, National Instruments Corporation and Rohde & Schwarz GmbH & Co.

Our electronic industrial design and test solutions offer a wide range of products and related software and compete primarily on the basis of differentiated capability, first-to-market leading edge technology, product quality and long-term value to our customers.

The following discussions of Research and Development, Services, Sales, Manufacturing, Marketing, Human Capital, Backlog, Intellectual Property, Materials, Government Regulations and Acquisition of Material Assets include information common to each of our businesses.

Research and Development

We are committed to investing in R&D and have focused our development efforts on key strategic opportunities that align our business with available markets, and position the company for growth. Our R&D investments focus on the development of first-to-market solutions with differentiated software and hardware, as well as improvements to existing software and hardware products to provide complete customer solutions addressing the evolving requirements of industries that we serve. We conduct R&D in four principal areas: enabling technologies, system design, simulation, and measurement with the aim of building a strong foundation for next-generation and longer-term solutions. Our most significant technology development centers are in California, Colorado and Texas in the United States, and in Romania, Malaysia, India, China, United Kingdom, Spain, Germany and Japan. We anticipate that we will continue to have significant R&D expenditures in order to maintain our competitive position with a continuous flow of innovative, high-quality software and hardware embedded in customer solutions, products and services.

Service Solutions

Our service solutions include product support services, technical support and training and consulting. Customer demand is fulfilled by trained engineers and technicians through regional support and service centers located near customers or through on-site teams. Our global presence with localized service proximity is an important factor in sustaining our customers’ solutions, uptime and utilization requirements. We also provide industry-specific services to deliver complete Keysight

solutions and help customers reduce the total cost of ownership for their design and test equipment. Our service solutions include the following general types of services:

- *Product support services.* Comprehensive support that includes repair, parts, and accredited calibrations of Keysight products and solutions.
- *Technical support for software and hardware.* Customer support for the usage and utilization of our products such as KeysightCare.
- *Professional services.* Installation, training and engineering services to optimize equipment adoption, utilization, and design of test processes.

Sales

The Chief Customer Officer is responsible for developing and executing the company’s customer-centric vision by enhancing the end-to-end customer experience; enabling customer success through the seamless delivery of first-to-market solutions to a diverse, global customer base; and expanding Keysight’s go-to-market strategies across all regions and ecosystems. Our direct sales force focuses on addressing the needs of our global and regional customers by selling Keysight products, systems, solutions, software, and services. Keysight’s direct sales force consists of sales and application engineers who have in-depth knowledge of the customers’ business and technology needs. Our direct sellers concentrate on providing more complex, end-to-end solutions where customers require strategic consultation. Our application engineers bring deep solution and application expertise to provide a combination of consulting, systems integration and software engineering services that span all stages of the sale, deployment and support of our complex systems and solutions. Our direct sales organizations serve customers globally across the commercial communications, aerospace, defense and government, automotive and energy, semiconductor, general electronics, network test and network visibility markets.

To complement our direct sales force, we have an extensive network of channel partners around the world. These channel partners include resellers, manufacturer’s representatives and distributors. They serve thousands of customers across a wide range of end-user markets. They are expected to provide the same level of service and support as our direct sales force for the products they sell and generate new sales opportunities to extend our reach. Electronic commerce and telesales channels are also in place for transactional, lower-touch sales.

For certain verticals such as network monitoring and performance management, our go-to-market solution strategy is based on strategic relationships with technical partners to provide the customer with a complete solution. In these cases, we work with technical partners in two main ways: (i) through customer referrals and recommendations, and (ii) through automation integration/interoperability that provides a differentiated solution for our customers.

Manufacturing

To maximize our productivity and our ability to respond to market conditions, we have significant in-house manufacturing capabilities that are supplemented by contract manufacturers. Our in-house manufacturing efforts are focused on the highest value added, more complex and highly technical aspects of production, and we use contract manufacturers for assembly, printed circuit board production and chassis assembly. We have centralized manufacturing in Penang, Malaysia, our largest manufacturing facility, which focuses on the final assembly of our most sophisticated instruments and on final tuning, calibration and test of instruments across the broader portfolio. Our other principal manufacturing facilities are in California and Colorado in the United States, and Germany and Japan outside of the United States.

We also operate three technology centers located in Santa Rosa, California; Colorado Springs, Colorado; and Boeblingen, Germany that collectively provide key components and sub-systems for our instruments, including microwave monolithic integrated circuits, thick and thin film circuits, optical components, high-speed probes and precision machining. Our technology centers provide a competitive advantage by developing and manufacturing differentiated technology components with performance levels that are not commercially available. We plan our supply chain based on forecasts, and generally manufacture and configure the finished products upon receipt of firm orders.

Marketing

Keysight Global Marketing builds the company brand and drives growth through programs that increase awareness, reputation, and demand for Keysight’s design, simulation, emulation, and test solutions. We employ a multi-pronged marketing strategy to enhance brand equity, including articulating a strong, cohesive brand purpose, establishing our presence and thought leadership in existing and promising emerging markets, resulting in one powerful brand voice for Keysight. We fuel growth initiatives through online digital transformation, high-value content, new product launches, and sophisticated digital demand

generation programs tailored to local markets, to attract new accounts. As the world enters the post-pandemic era, we’re blending virtual and physical events to broaden our reach, while capitalizing on the benefits of physical interactions. We continue to expand Keysight University, an online learning hub for engineers, with inbound marketing events and compelling courses that deliver key insights from registrants into Keysight’s marketing engine. At our premium Keysight World virtual events around the globe, we bring together customers, industry visionaries, and Keysight experts to share the applications and benefits of emerging technologies to accelerate industry breakthroughs. We continuously evolve our marketing practices and technology stack in order to support a data-driven approach to our sales and marketing.

Human Capital

We have a diverse, inclusive and respectful work environment, where employees are offered challenging assignments, development opportunities, competitive salaries and a safe workplace. As of October 31, 2022, we had approximately 15,000 employees worldwide representing more than 80 self-identified nationalities working in 30 countries. Of those employees, 5,500 are located in the Americas (including 5,300 in the U.S.), 2,800 are located in Europe and 6,700 are located in Asia.

Culture, Values and Standards

Our core values and culture reflect a commitment to ethical business practices and outstanding corporate citizenship. We adhere to the tenets of the United Nations Guiding Principles on Business and Human Rights, and core International Labor Organization conventions, and we are an affiliate member of the Responsible Business Alliance. We comply with the labor and employment laws of all countries in which we operate, prioritizing fair employment practices, labor compliance, non-discrimination and equal employment opportunity. The KLM is the framework for how we do business, enabling us to execute on our strategies for the benefit of our customers, stockholders and employees while operating within our values of Speed and Courage, Uncompromising Integrity, High Performance, Social Responsibility and One Keysight.

We believe our culture, which fosters employee inclusion, engagement and innovation, is a competitive advantage. We are committed to maintaining a work environment founded on respect for all, regardless of race, color, age, gender, sexual orientation, gender identity and expression, ethnicity, religion, disability, veteran status, national origin, or any protected class. Our Keysight Standards of Business Conduct ("SBC") govern our dealings with our customers, competitors, suppliers, third-party partners, as well as with our fellow employees, and is available for review on our website. Our employees are responsible for upholding the SBC, and SBC training is required annually for all our employees.

Oversight and Governance

The Chief People and Administrative Officer ("CAO") is responsible for developing and executing the company’s human capital strategy. Our strategy incorporates global policies and programs for leadership and talent development, diversity, equity and inclusion, compensation, benefits, staffing and workforce planning, human resources systems, education and organization development. The CAO is responsible for developing and integrating the company’s diversity, equity and inclusion priorities and strategy.

The Chief Executive Officer ("CEO") and CAO regularly update our board of directors and the Compensation and Human Capital Committee (the “Committee”) on human capital matters.

Hiring, Retention and Succession Planning

We understand that Science, Technology, Engineering and Math ("STEM") education is critical to creating a pipeline of future engineers, and we provide global support for STEM education through a variety of company-sponsored and employee-led programs, which introduce school-age students to engineering.

Our talent acquisition and Human Resources teams work with business leaders to understand and align on how our business goals and strategies impact our talent needs. The teams use this information to inform recruiting efforts and to build talent pipelines to support growth. In partnership with the marketing team, we have built a strong company brand utilizing multiple communication platforms to better enable us to attract top talent.

We continue to refine and expand our talent acquisition strategies and processes. As part of our talent acquisition strategy, we provide training to recruiters and hiring managers to assist them in recruiting and hiring top talent. We had a global job acceptance rate of 83.2 percent in 2022. The number of software engineers in our R&D function have more than doubled since we became an independent company in 2014.

Our business leaders are required to periodically evaluate employee contributions to the company and to identify key contributors, as well as those in need of improvement. Our annual rewards process provides employees with feedback on their

performance over the past fiscal year and rewards achievement. Working with Human Resources, business leaders develop retention strategies and initiatives to keep critical talent focused and engaged and to minimize attrition. The average tenure of our employees is 12.2 years. Our three-year average employee turnover rate was approximately 7 percent and has been lower than the industry average for the past five years.

We continue to develop our leadership capability. We have identified core competencies for leadership positions along with a learning and development framework that can help leaders refine their skills. Succession planning sessions are conducted annually in each business and at many levels in the organization, including the executive level. These reviews provide visibility to top talent, potential leadership gaps, and development plans.

Globally, 4 percent of our employee population is eligible to retire. In the U.S. and Japan, employees eligible to retire are 24.8 percent and 17.3 percent, respectively. We recognize that many of these employees have valuable skills and historical information and that knowledge transfer is critical. We have created knowledge transfer practices to enable us to retain critical knowledge. In the U.S., we have a program specifically designed to enable retirement-ready critical talent to gradually reduce hours leading up to retirement, giving us time to transfer critical information and processes. Once retired, these former employees are given the opportunity to consult with us on a limited basis to provide on-going mentoring and training.

Diversity and Equal Employment Policy

We are an equal opportunity employer, and we are committed to maintaining a diverse and inclusive work environment that is free from harassment and discrimination. The value we place on diversity, equity and inclusion ("DE&I") is a competitive advantage, and it helps us attract and retain the best talent and drive high performance through innovation and collaboration. We benefit from the innovation that results when people with differing experiences, perspectives and cultures work together.

DE&I is among our top priorities. In addition to our broader DE&I initiatives, we set near-term objectives to increase representation of women globally and under-represented minorities in the U.S. We have a DE&I Director who is responsible for driving strategy and for implementation of new and ongoing DE&I initiatives.

In order to increase the pool of diverse candidates for open positions, we participate in diversity-focused career fairs and conferences in the U.S., Asia and Europe. We identify diversity recruiting business champions to develop business-specific talent acquisition plans, and we have partnerships with universities worldwide that are aligned with our strategic talent needs, including Historically Black Colleges and Universities ("HBCU") in the United States.

In an effort to enable employees to be successful, we provide mentoring programs, inclusive benefits, access to employee network groups, and training for every stage of employment.

As of October 31, 2022, women represented 30.6 percent of our global workforce, and underrepresented minorities represented 37.7 percent of the U.S. workforce. The percentage of women in leadership positions (Officer, Senior Vice President, Vice President, Senior Manager, Integrating Manager, Operating Manager and Supervisor) globally was 24.4 percent and the percentage of underrepresented minorities in the U.S. was 33.3 percent. At the senior executive level (Officer, Senior Vice President, Vice President), 23.4 percent were women and 24.0 percent were underrepresented minorities. Our Board has eleven members, three of whom are women, and three are self-identified underrepresented minorities.

In the rest of the workforce, we seek to expand hiring of women globally and underrepresented minorities in the U.S. We established annual hiring goals to improve our workforce diversity. In 2022, 32.6 percent of our global external new hires were women, falling short of our 2022 goal of 35.4 percent. In 2022, 49.1 percent of external new hires in the U.S. were underrepresented minorities, exceeding our goal of 47.4 percent. For fiscal year 2023, the adjusted hiring goals for global external new hires being women is 33.6 percent, and external new hires in the U.S. being underrepresented minorities is 50.1 percent. A metric in our short-term executive compensation program for fiscal year 2023 is tied to the achievement of these goals. To measure achievement of this goal, we use the following definition of underrepresented minorities: Black, African American, Hispanic, Latino, Asian, Pacific Islander, Native American, Native Hawaiian, Alaska Native, or gay, lesbian, bisexual or transgender.

Learning and Development

We believe that learning is a lifelong pursuit that creates a mindset of professional growth and continuous improvement. We emphasize on-the-job learning through stretch assignments and development opportunities, as well as education. Our employees have access to a wide range of programs, workshops, classes and resources to help them excel in their careers. Our Keysight University platform offers training and development programs, as well as learning resources. Our Employee

Educational Assistance Program provides financial and management support to eligible employees, allowing them to pursue academic degrees related to their field of work.

Many of our employees are required to take annual training courses related to their work, including those pertaining to the environment, data privacy, contributing to an inclusive workplace, and workplace health and safety. We also have leadership development programs including training for new managers and development through ExecOnline. We hold an annual Keysight Executive Development ("KED") program with senior leaders to align on strategy and key focus areas for the company.

Compensation and Benefits

We compensate employees with competitive wages and benefit programs designed to meet employee needs. Our compensation and benefit programs are designed to recognize our employees' contributions to value creation and business results. We seek to achieve pay parity across our organization and in 2022 maintained a worldwide women-to-men pay parity of nearly 1:1.

Listening to Employees

We provide multiple avenues for employee input. Our Open-Door Policy provides employees with direct access to any level of management to discuss ideas, get input on career development and discuss concerns in a constructive manner. The MyVoice program fosters inclusion through engagement surveys on a variety of topics that give us insight on what employees value and helps us identify where to prioritize our efforts. We also created a global Inclusion Council comprised of employees from all functions across the globe to help formulate our inclusion goals and track our progress.

Health, Safety and Wellness

We strive to maintain a best-in-class work environment and provide a safe and healthy workplace for all employees. We accomplish this through strict compliance with applicable laws and regulations regarding workplace safety. Our programs include recognition and control of workplace hazards, ergonomics training, a global travel health program, and robust emergency and disaster recovery plans. We promote the health and wellness of our employees through our Employee Well Being programs and workplace accessibility and accommodations.

Backlog

Backlog represents the amount of revenue expected from orders that have already been booked, including orders for goods and services that have not been delivered to customers, orders invoiced but not yet recognized as revenue (booked as deferred revenue), and orders for goods that were shipped but not yet recognized, awaiting acceptance by customers and/or completion of a commitment to a customer. At October 31, 2022, our backlog was approximately \$2,550 million as compared to approximately \$2,115 million at October 31, 2021, primarily driven by strong order growth, supply-chain constraints, and an increase in solution sales with a longer order-to-revenue conversion cycle, partially offset by the impact of foreign currency exchange movements. In accordance with our order acceptance policy, we continue to expect the majority of backlog to be recognized as revenue within six months. While backlog on any particular date can be an indicator of short-term revenue performance, it is not necessarily a reliable indicator of medium or long-term revenue performance.

Intellectual Property

We generate patent and other intellectual property rights covering significant inventions and other innovations in order to create a competitive advantage. Although we believe that our licenses, patents and other intellectual property rights have value, in general no single license, patent or other intellectual property right is in itself material, other than the Keysight mark.

Materials

Our manufacturing operations employ a wide variety of semiconductors, electromechanical components and assemblies and raw materials, such as plastic resins and sheet metal. We purchase materials from thousands of suppliers on a global basis. Some of the parts that require custom design work are not readily available from alternate suppliers due to their unique design or the length of time necessary for design work. Our long-term relationships with suppliers allow us to proactively manage technology road maps and product discontinuance plans and monitor their financial health. To address the potential disruption in, and other risks related to, our supply chain, we use a number of techniques, including qualifying multiple sources of supply and redesign of solutions for alternative components. In addition, while we generally attempt to keep our inventory at optimal levels, we do purchase incremental inventory as circumstances warrant to protect the supply chain. With the global shortages and increased lead-times for materials such as semiconductors and passive components, we align our purchase lead-times

through placement of advance of purchase orders where necessary. For a further discussion of risks related to the materials and components required for our operations, please refer to “Item 1A. Risk Factors.”

Government Regulations

Our company is subject to various federal, state, local and international laws and regulations relating to the development, manufacture, sale and distribution of our products and solutions, and it is our policy to comply with the laws in every jurisdiction in which we conduct business. Regulations include but are not limited to those related to environment, corruption, bribery, import and export controls, competition, product safety, workplace health and safety, employment, labor and data privacy. The following describes certain significant regulations that may impact our business. For additional information about the risks related to government regulations, please refer to “Item 1A. Risk Factors.”

Environmental Regulations

Our R&D, manufacturing and distribution operations involve the use of hazardous substances and are regulated under international, federal, state and local laws governing health and safety and the environment. We apply strict standards for protection of the environment and occupational health and safety to sites inside and outside the United States, even if not subject to regulation imposed by foreign governments. We believe that our properties and operations at our facilities comply in all material respects with applicable environmental laws and occupational health and safety laws. However, the risk of environmental liabilities cannot be completely eliminated, and there can be no assurance that the application of environmental and health and safety laws will not require us to incur significant expenditures. We are also regulated under a number of international, federal, state and local laws regarding recycling, product packaging and product content requirements. The environmental, product content/disposal and recycling laws are gradually becoming more stringent and may cause us to incur additional costs in the future.

Some of our properties have been the subject of ongoing remediation by HP Inc. ("HP") for subsurface contamination that was known at the time of Agilent’s separation from HP in 1999. In connection with Agilent’s separation from HP, HP and Agilent entered into an agreement pursuant to which HP agreed to retain the liability for this subsurface contamination, perform the required remediation and indemnify Agilent with respect to claims arising out of that contamination. Agilent has assigned its rights and obligations under this agreement to Keysight in respect of facilities transferred to Keysight in our separation from Agilent on November 1, 2014 (the "Separation"). As a result, HP has access to a limited number of our properties to perform remediation. Although HP agreed to minimize interference with on-site operations at such properties, remediation activities and subsurface contamination may require us to incur unreimbursed costs and could harm on-site operations and the future use and value of the properties. In connection with the Separation, Agilent will indemnify us directly for any liabilities related thereto. We cannot be sure that HP will continue to fulfill its remediation obligations or that Agilent will continue to fulfill its indemnification obligations. On December 17, 2021, Keysight and HP signed a restrictive covenant related to our Santa Rosa facility which prohibits certain uses of the property (such as running a daycare facility, hospital or school) and terminates HP’s remediation obligation related to that facility. HP’s remediation obligations relating to Keysight’s Colorado Springs facility are ongoing.

We maintain a comprehensive environmental site liability insurance policy that may cover certain clean-up costs or legal claims related to environmental contamination. This policy covers specified active, inactive and divested locations.

Import/Export Regulations

We sell products and solutions to customers all over the world and are required to comply with the U.S Export Administration Regulations and economic and trade sanctions programs limiting or banning sales into certain countries. Countries outside of the U.S. have implemented similar controls and sanction regulations. Together these controls and regulations may impose licensing requirements on exports of certain technology and software from the U.S. and may impact our ability to transact business in certain countries or with certain customers. We have developed compliance programs and training to prevent violations of these programs and regulations, and we regularly monitor changes in the law and regulations.

On August 3, 2021, we entered into a Consent Agreement with the Directorate of Defense Trade Controls, Bureau of Political-Military Affairs, Department of State to resolve alleged violations of the Arms Export Control Act and the International Traffic in Arms Regulations ("ITAR"). Pursuant to the Consent Agreement, we were assessed a penalty of \$6.6 million to be paid over three years, \$2.5 million of which was suspended and designated for remediation activities over three years, including employment of a special compliance officer. To date, we have paid \$2.1 million of the penalty. The suspended portion of the penalty has been satisfied by amounts we have spent on qualifying compliance activities to date.

In February 2022, the U.S. imposed economic sanctions and other restrictions on Russia following its invasion of Ukraine. As a result, after an initial suspension of operations in Russia, we permanently discontinued our Russian operations and are exiting Russia.

Changes in these or other import or export laws and regulations may restrict or further restrict our ability to sell certain products and solutions and may require us to develop additional compliance programs and training.

Anti-Corruption Regulations

As a result of our extensive international operations, we must comply with complex foreign and U.S. laws and regulations, such as the U.S. Foreign Corrupt Practices Act, the U.K. Bribery Act and other local laws prohibiting corrupt payments to governmental officials, and anti-competition regulations. We have compliance policies, programs and training to prevent non-compliance with such anti-corruption regulations in the U.S. and outside of the U.S. We monitor pending and proposed legislation and regulatory changes that may impact our business and develop strategies to address the changes and incorporate them into existing compliance programs.

Data Privacy Regulations

With extensive operations all over the world, we must comply with complex regulations governing data privacy, including the General Data Protection Regulation (“GDPR”) in the European Union and data privacy regulations in other jurisdictions. These regulations require careful handling of internal data. We have internal data handling policies and practices to comply with global data privacy requirements, including GDPR and similar regulations and devote resources to keep up with changing data privacy regulations. The risk of data privacy breaches cannot be entirely eliminated, creating risk of fines and penalties. Additionally, new laws, amendments, or interpretations of regulations, industry standards, and contractual obligations relating to data privacy may require us to incur additional costs related to compliance and may restrict our business operations.

Health and Safety Regulations

We are subject to and comply with health and safety laws and regulations in jurisdictions in which we operate. These regulations may differ by country, requiring us to keep track of varied and complex requirements. In the U.S. we are subject to federal and state Occupational Health and Safety laws as well as federal, state and local requirements.

Executive Officers of the Registrant

The following is information regarding our executive officers as of December 1, 2022.

Ronald S. Nersesian, 63, has served as Executive Chair of the Board of Directors since May 2022. From December 2013 to May 2022, Mr. Nersesian served as President and Chief Executive Officer of Keysight. From September 2013 to December 2013, he served as Executive Vice President of Agilent. Mr. Nersesian served as President of Agilent and Chief Operating Officer, Agilent from November 2012 to September 2013. He served as Executive Vice President, Agilent and Chief Operating Officer from November 2011 to September 2013. Mr. Nersesian has served as a Director on our board of directors since the December 2013, and as Chair of our board of directors since November 2019.

Satish Dhanasekaran, 50, has served as President and Chief Executive Officer of Keysight since May 2022. He served as Senior Vice President and Chief Operating Officer since October 2020. He was Senior Vice President and President of the Communications Solutions Group from July 2017 to September 2020. From May 2016 to July 2017, Mr. Dhanasekaran served as Keysight’s Vice President and General Manager, Wireless Devices and Operators Business Unit. From June 2015 to May 2016, Mr. Dhanasekaran served as the General Manager of the Mobile Broadband Operation, and from November 2014 through June 2015, he led the marketing function for the Signal Analysis and Signal Sources Division.

Neil Dougherty, 53, has served as Executive Vice President and Chief Financial Officer since May 2022 and as Senior Vice President and Chief Financial Officer of Keysight since December 2013. From 2012 to December 2013, Mr. Dougherty served as Vice President and Treasurer of Agilent. He served as Senior Director in Agilent’s Corporate Development Group from 2010 to 2012, and from 2006 to 2010, he served as Agilent’s Assistant Treasurer.

Huei Sin Ee, 56, has served as Keysight’s Senior Vice President and President of the Electronic Industrial Solutions Group since October 2020. Previously, she was Vice President and General Manager of Keysight’s General Electronics Measurement Solutions from November 2015 to September 2020. Ms. Ee concurrently served as Vice President of Keysight Education from September 2018 to September 2020. From June 2013 to October 2015, Ms. Ee was the Vice President and General Manager of Keysight’s General-Purpose Electronic Measurement Division. Ms. Ee served as Vice President and General Manager of Agilent’s Basic Instruments Division from February 2005 to May 2013.

Ingrid Estrada, 58, has served as Senior Vice President, Chief People and Administrative Officer and Chief of Staff since August 2017. Previously, she served as Keysight’s Senior Vice President, Human Resources from December 2013 until August 2017. From 2011 until December 2013, she served as Vice President and General Manager of Global Sourcing of Agilent from 2011.

Soon Chai Gooi, 61, has served as Senior Vice President, Order Fulfillment and Digital Operations since October 2020 and as Senior Vice President and President of the Electronic Industrial Solutions Group since November 2015. From December 2013 to November 2015, Mr. Gooi served as Senior Vice President of Order Fulfillment and Infrastructure for Keysight. Mr. Gooi served as President, from November 2012 to September 2013, and as Senior Vice President, from December 2011 to November 2012, of Agilent's Order Fulfillment and Supply Chain.

Jeffrey Li, 53, has served as Senior Vice President, General Counsel, and Secretary since July 2019. From December 2013 through July 2019, Mr. Li served as Vice President, Assistant General Counsel, and Assistant Secretary of Keysight, and as Senior Counsel of Agilent from 2011 to December 2013.

Kailash Narayanan, 49, has served as Keysight's Senior Vice President and President of the Communications Solutions Group since November 2021. From November 2020 until November 2021, Mr. Narayanan served as President of the Commercial Communications business. He served as Vice President and General Manager, Wireless Test Business Unit, from September 2017 until November 2020, and was Vice President and General Manager, Wireless Devices from May 2016 until September 2017. From November 2014 until May 2016, Mr. Narayanan served as R&D Senior Manager of Keysight's Mobile Broadband business.

John Page, 58, has served as Senior Vice President and President of Global Services since November 2015 and most recently served as Vice President of business finance of Keysight from February 2014 to November 2015. Prior to joining Keysight, Mr. Page served as the Chief Financial Officer of Nanosys, Inc. from 2010 to 2014.

John Skinner, 60, has served as Vice President, Corporate Controller and Principal Accounting Officer of Keysight since December 2013. Prior to that, Mr. Skinner served as Vice President, Agilent and Controller of Global Infrastructure and Enterprise Financial Planning and Analysis from April 2012 to December 2013.

Mark Wallace, 57, has served as Senior Vice President, Chief Customer Officer since September 2022 and as Senior Vice President of Worldwide Sales from November 2016 to September 2022. From November 2014 to November 2016, Mr. Wallace served as Vice President and General Manager of Americas Field Operations. From November 2011 to November 2014, he served as Americas Field Operations Vice President of Agilent's Electronic Measurement Group.

Investor Information

We are subject to the informational requirements of the Securities Exchange Act of 1934 (“Exchange Act”). Therefore, we file periodic reports, proxy statements and other information with the Securities and Exchange Commission (“SEC”). The SEC maintains an internet site (<http://www.sec.gov>) that contains reports, proxy and information statements and other information regarding issuers.

You can access financial and other information at our Investor Relations website at www.investor.keysight.com. We make available, free of charge, printed copies of our annual report on Form 10-K, current reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act as soon as reasonably practicable after filing such material electronically or otherwise furnishing it to the SEC.

Our Corporate Governance Guidelines, the charters of our Audit and Finance Committee, Compensation and Human Capital Committee, Nominating and Corporate Governance Committee, Executive Committee as well as our SBC and Corporate Social Responsibilities reports are available on our website at www.investor.keysight.com under “Corporate Governance.” These items are also available in print to any stockholder in the United States and Canada who requests them by calling (800) 829-4444. This information is also available by writing to the company at the address on the cover of this Annual Report on Form 10-K.

Item 1A. Risk Factors

Risks, Uncertainties and Other Factors That May Affect Future Results

Risks Related to Our Business

Volatile geopolitical turmoil, including popular uprisings, regional conflicts, terrorism and war could result in market instability, which could negatively impact our business results.

We are a global company with international operations, and we sell our products and solutions in countries throughout the world. Recent escalation in regional conflicts, including the Russian invasion of Ukraine, which resulted in economic sanctions, and the risk of increased tensions between China and Taiwan, could limit or prohibit our ability to transfer certain technologies, to sell our products and solutions, and could result in closure of facilities in sanctioned countries, such as our recent decision to discontinue operations in Russia. In addition, international conflict has resulted in increased pressure on the supply chain and could further result in increased energy costs, which could increase the cost of manufacturing, selling and delivering products and solutions; inflation, which could result in increases in the cost of manufacturing products and solutions, reduced customer purchasing power, increased price pressure, and reduced or cancelled orders; increased risk of cybersecurity attacks; and market instability, which could adversely impact our financial results.

Uncertainty in general economic conditions may adversely affect our operating results and financial condition.

Our business is sensitive to negative changes in general economic conditions, both inside and outside the United States. Global and regional economic uncertainty, inflation, recession or depression may impact our business, resulting in:

- increased cost to manufacture products or deliver solutions;
- reduced customer purchasing power;
- reduced demand for our solutions, delays in the shipment of orders or increases in order cancellations;
- increased risk of excess and obsolete inventory;
- increased price pressure for our solutions and services; and
- greater risk of impairment to the value, and a detriment to the liquidity, of our future investment portfolio.

In addition, global and regional macroeconomic developments, such as increased unemployment, decreased income, uncertainty related to future economic activity, reduced access to credit, increased interest rates, volatility in capital markets, decreased liquidity, uncertain or destabilizing national election results in the U.S., Europe, and Asia, and negative changes or volatility in general economic conditions in the U.S., Europe, and Asia could negatively affect our ability to conduct business in those territories. Financial difficulties experienced by our suppliers and customers, including distributors, due to economic volatility or negative changes could result in product delays, reduced purchasing power, delays in payment or inability to pay us, and inventory issues. Economic risks related to accounts receivable could result in delays in collection and greater bad debt expense.

Economic, political, and other risks associated with international sales and operations could adversely affect our results of operations.

Because we operate our businesses and sell our solutions worldwide, our business is subject to risks associated with doing business internationally. We anticipate that revenue from international operations will continue to represent a majority of our total revenue. However, there can be no assurances that our international sales will continue at existing levels or grow in accordance with our effort to increase foreign market penetration. In addition, many of our employees, contract manufacturers, suppliers and manufacturing facilities are located outside the United States. Accordingly, our future results could be harmed by a variety of factors, including but not limited to:

- inability to conduct business in certain countries or regions or with certain customers due to U.S. sanctions or trade restrictions;
- inability to sell certain products, technologies, or services to countries, regions, facilities, or customers due to U.S. sanctions or trade restrictions;
- changes in a specific country's or region's political, economic or other conditions, including but not limited to changes that favor national interests and economic volatility;

- negative impact of a country’s response to, or an imposed reduction in economic activity and other economic and political measures taken to contain the spread of global pandemic conditions;
- negative consequences from changes in tax laws;
- difficulty in protecting intellectual property;
- injunctions or exclusion orders related to intellectual property disputes;
- interruptions to transportation flows for delivery of parts to us and finished goods to our customers;
- changes in foreign currency exchange rates;
- difficulty in staffing and managing foreign operations;
- local competition;
- differing labor regulations;
- unexpected changes in regulatory requirements;
- inadequate local infrastructure;
- potential incidences of corruption and fraudulent business practices; and
- volatile geopolitical turmoil, including popular uprisings, regional conflicts, terrorism, and war.

We centralize most of our accounting processes at two locations: India and Malaysia. If conditions change in those countries, it may adversely affect operations, including impairing our ability to pay our suppliers. Our results of operations, as well as our liquidity, may be adversely affected and possible delays may occur in reporting financial results.

Further, even if we are able to successfully manage the risks of international operations, our business may be adversely affected if our business partners are not able to successfully manage similar risks.

Economic and political policies favoring national interests could adversely affect our results of operations.

Nationalistic economic policies and political trends such as opposition to globalization and free trade, sanctions or trade restrictions, including those on advanced computing and semiconductor manufacturing, withdrawal from or re-negotiation of global trade agreements, tax policies that favor domestic industries and interests, the distancing or potential exit of countries from the European Union, and other similar actions may result in increased transaction costs, reduced ability to hire employees, reduced access to supplies and materials, reduced demand or access to customers, and inability to conduct our operations as they have been conducted historically. Each of these factors may adversely affect our business.

International trade disputes and increased tariffs between the United States and the United Kingdom, the European Union, Singapore, Malaysia and China, among other countries could substantially change our expectations and ability to operate in such jurisdictions as we have done historically. Many of our suppliers, vendors, customers, partners, and other entities with whom we do business have strong ties to doing business in China. Their ability to supply materials to us, buy products or services from us, or otherwise work with us is affected by their ability to do business in China. If the U.S.’s relationship with China results in additional trade disputes, trade protection measures, retaliatory actions, tariffs and increased barriers, policies that favor domestic industries, or increased import or export licensing requirements or restrictions, then our deployment of resources in jurisdictions affected by such measures could be misaligned and our operations may be adversely affected due to such changes in the economic and political ecosystem in which our suppliers, vendors, customers, partners, and other entities with whom we do business operate.

Global health crises, such as the COVID-19 pandemic, have had an impact on our supply chain and could have a material impact on our global operations, our customers and our vendors, which could adversely impact our business results and financial condition.

The continued evolution of COVID-19 and its variants, as well as periodic spikes in infection rates, local outbreaks on our sites or supplier, customer or vendor sites, in spite of safety measures or vaccinations, could cause disruptions to our operations or those of our suppliers, customers or vendors. The pandemic has led to global supply chain challenges, which have adversely

impacted our ability to procure certain components and could impact our ability to manufacture products and cause delays in delivery of our solutions to our customers. As new variants of the virus appear, especially variants that are more easily spread, cause more serious outcomes, or are resistant to existing vaccines, new health orders and safety protocols could further impact our on-site operations and our ability to manufacture, ship or deliver products and solutions to customers.

These factors could materially and negatively impact our business results, operations, revenue, growth and overall financial condition.

Our operating results and financial condition could be harmed if the markets into which we sell our solutions decline or do not grow as anticipated.

Visibility into our markets is limited. Our quarterly sales and operating results are highly dependent on the volume and timing of technology-related spending and orders received during the fiscal quarter, which are difficult to forecast and may be cancelled by our customers. In addition, our revenues and earnings forecasts for future fiscal quarters are often based on the expected seasonality or cyclicalities of our markets. However, due to the uncertainties and volatile economic environment created by increased geopolitical tensions, including the war between Russia and Ukraine, the impact of inflation, the potential for future recession, and continued supply chain challenges, the markets we serve may experience increased volatility and may not experience the seasonality or cyclicalities that we expect. Any decline in our customers' markets would likely result in a reduction in demand for our solutions and services. If our customers' markets decline, we may not be able to collect on outstanding amounts due to us. Such declines could harm our financial position, results of operations, cash flows and stock price, and could limit our profitability. In such an environment, pricing pressures could intensify. Since a significant portion of our operating expenses is relatively fixed in nature due to sales, R&D and manufacturing costs, if we were unable to respond quickly enough, these pricing pressures could further reduce our operating margins.

A decreased demand for our customers' products or trade restrictions could adversely affect our results of operations.

Our business depends on our customers' ability to manufacture, design, and sell their products in the marketplace. International trade disputes affecting our customers could adversely affect our business. Tariffs on imports to or from China could increase the cost of our customers' components and raw materials, which could make our customers' products and services more expensive and could reduce demand for our customers' products. Protectionist and retaliatory trade measures by either China or the United States could limit our customers' ability to sell their products and services and could reduce demand for our customers' products. Our customers and other entities in our customer chain could decide to take actions in response to international trade disputes that we could not foresee. A decrease in demand or significant change in operations from our customers due to international trade disputes could adversely affect our operating results and financial condition.

In addition to the above, our customers and suppliers have become subject to U.S. export restrictions and sanctions, such as being added to the U.S. Department of Commerce's "Lists of Parties of Concern" and having U.S. export privileges denied or suspended. When a customer or supplier of ours becomes subject to such sanctions, we suspend our business with such customer or supplier. Because of the continued tense political and economic relationship between the U.S. and China and between the U.S. and Russia, new restrictions or sanctions have been imposed with little notice, which could leave us without an adequate alternative solution to compensate for our inability to continue to do business with such customer or supplier. Some of our suppliers and customers in the supply chain are working on unique solutions and products in the market, and it may be difficult if not impossible to replace them, especially with short notice. We cannot predict what impact future sanctions could have on our customers or suppliers, and therefore, our business. Any export restrictions or sanctions and any tariffs or other trade restriction imposed on our customers or suppliers could adversely affect our financial condition and business.

Failure to introduce successful new solutions and services in a timely manner to address increased competition, rapid technological changes, and changing industry standards could result in our solutions and services becoming obsolete.

We generally sell our solutions in industries that are characterized by increased competition through frequent new solution and service introductions, rapid technological changes and changing industry standards. In addition, many of the markets in which we operate are seasonal and cyclical. Without the timely introduction of new solutions, services and enhancements, our solutions and services will become technologically obsolete over time, in which case our revenue and operating results would suffer. Our ability to offer new solutions and services and to deploy them in a timely manner depend on several factors, including but not limited to our ability to:

- properly identify and assess customer needs;
- innovate and develop new technologies, services and applications;
- successfully commercialize new technologies in a timely manner;

- manufacture and deliver our solutions in sufficient volumes and on time;
- differentiate our offerings from our competitors' offerings;
- price our solutions competitively;
- anticipate our competitors' development of new solutions, services or technological innovations; and
- control product quality in our manufacturing process.

Our future operating results may fluctuate significantly if our investments in innovative technologies are not as profitable as we anticipate.

On a regular basis, we review the existing technologies available in the market and identify strategic new technologies to develop and invest in. We are currently devoting significant resources to new technologies in the communications, automotive, battery, Internet of Things, and mobile industries. We are investing in R&D, developing relationships with customers and suppliers, and re-directing our corporate and operational resources to grow within these innovative technologies. Our income could be harmed if we fail to expand our customer base, if demand for our solutions is lower than we expect, or if our income related to the innovative technologies is lower than we anticipate. We provide solutions for the design, development, and manufacturing stages of our customers’ workflow. Our customers who currently use our solutions in one stage of their workflow may not use our solutions in other aspects of their manufacturing process.

Failure to adjust our purchases due to changing market conditions or failure to estimate our customers' demand could adversely affect our income.

Our income could be harmed if we are unable to adjust our purchases to market fluctuations, including those caused by global economic conditions, volatile geopolitical conflict, or the seasonal or cyclical nature of the markets in which we operate. The sale of our solutions and services are dependent, to a large degree, on customers whose industries are subject to seasonal or cyclical trends in the demand for their products. For example, the consumer electronics market is particularly volatile, making demand difficult to anticipate. Making such estimations in an economic climate affected by inflation or recession, fluctuations in global currency, geopolitical tension and war is particularly difficult as increased volatility may impact seasonal trends making it more difficult to anticipate demand fluctuations. Additionally, the current disruption to the global supply chain has impacted our ability to purchase parts and components to meet increasing product demand, which has increased lead times, delayed shipments and could materially affect our results. We have seen a shortage of parts for some of our products. In addition, some of the parts that require custom design are not readily available from alternate suppliers due to their unique design or the length of time necessary for design work. Should a supplier cease manufacturing such a component, we would be forced to re-engineer our solution. In addition to discontinuing parts, suppliers may also extend lead times, limit supplies or increase prices due to capacity constraints or other factors. In order to secure components for the production of products, we may continue to enter into non-cancellable purchase commitments with vendors, or at times make advance payments to suppliers, which could impact our ability to adjust our inventory to declining market demands. Prior commitments of this type have resulted in an excess of parts when demand for electronic products has decreased. If demand for our solutions is less than we expect, we may experience additional excess and obsolete inventories and be forced to incur additional charges.

Dependence on contract manufacturing and outsourcing other portions of our supply chain may adversely affect our ability to bring solutions to market and damage our reputation. Dependence on outsourced information technology and other administrative functions may impair our ability to operate effectively.

As part of our efforts to streamline operations and to cut costs, we outsource aspects of our manufacturing processes and other functions and continue to evaluate additional outsourcing. If our contract manufacturers or other outsourcers fail to perform their obligations in a timely manner or at satisfactory quality levels, our ability to bring solutions to market and our reputation could suffer. For example, during a market upturn, our contract manufacturers may be unable to meet our demand requirements, which may preclude us from fulfilling our customers' orders on a timely basis. The ability of these manufacturers to perform is largely outside of our control. Additionally, changing or replacing our contract manufacturers or other outsourced vendors could cause disruptions or delays. In addition, we outsource significant portions of our information technology ("IT") and other administrative functions. Since IT is critical to our operations, any failure of our IT providers to perform could impair our ability to operate effectively. In addition to the risks outlined above, problems with manufacturing or IT outsourcing could result in lower revenues and unrealized efficiencies and could impact our results of operations and stock price. Much of our outsourcing takes place in developing countries and, as a result, may be subject to geopolitical uncertainty.

Our operating results may suffer if our manufacturing capacity does not match the demand for our solutions.

Because we cannot immediately adapt our production capacity and related cost structures to rapidly changing market conditions, when demand is lower than our expectations, our manufacturing capacity will likely exceed our production requirements. During a general market upturn or an upturn in our business, if we cannot increase our manufacturing capacity to meet product demand, we will not be able to fulfill orders in a timely manner, which could lead to order cancellations, contract breaches or indemnification obligations. This inability could materially and adversely limit our ability to improve our income, margin and operating results. By contrast, if, during an economic downturn, we had excess manufacturing capacity, then our fixed costs associated with excess manufacturing capacity would adversely affect our income, margins and operating results.

Key customers or large orders may expose us to additional business and legal risks that could have a material adverse impact on our operating results and financial condition.

As a global company, we have key customers all over the world, although no one customer makes up more than 10 percent of our revenue. Sales to those customers could be reduced or eliminated as a result of failure to respond to customer needs, reduced customer demand, increased sales to our competitors, inability to manufacture or ship products and solutions, supply chain constraints, trade restrictions, sanctions and embargoes. We have experienced forced reductions in sales and been prevented from selling large orders to certain key customers due to trade restrictions, which we have been able to mitigate with the addition of new customers and new business. If we have future reductions in sales or lose key customers, there is no guarantee that we will be able to mitigate the impact of such reductions or losses, which could negatively impact our income, operating results and financial condition.

Certain key customers have substantial purchasing power and leverage in negotiating contractual arrangements with us. These customers may demand contract terms that differ considerably from our standard terms and conditions. Large orders may also include severe contractual liabilities if we fail to provide the quantity and quality of product at the required delivery times or fail to meet other obligations. While we attempt to contractually limit our potential liability, we may agree to some or all of these provisions to secure these orders and grow our business. Such actions expose us to significant additional risks, which could result in a material adverse impact on our operating results and financial condition.

Industry consolidation and consolidation among our customer base may lead to increased competition and may harm our operating results.

There is potential for industry consolidation in our markets. As companies attempt to strengthen or hold their market positions in an evolving industry, companies could be acquired or may be unable to continue operations. Companies that are strategic alliance partners in some areas of our business may acquire or form alliances with our competitors, thereby reducing their business with us. We believe that industry consolidation may result in stronger competitors and could lead to more variability in our operating results and could have a material adverse effect on our business, operating results, and financial condition. Furthermore, particularly in the communications market, rapid consolidation would lead to fewer customers, with the effect that loss of a major customer could have a material impact on results not anticipated in a customer marketplace composed of more numerous participants.

Additionally, if there is consolidation among our customer base, our customers may be able to command increased leverage in negotiating prices and other terms of sale, which could adversely affect our profitability. In addition, if, as a result of increased leverage, customer pressures require us to reduce our pricing such that our gross margins are diminished, we could decide not to sell our solutions under such less favorable terms, which would decrease our revenue. Consolidation among our customer base may also lead to reduced demand for our solutions, replacement of our products by the combined entity with those of our competitors and cancellations of orders, each of which could harm our operating results.

Our acquisitions, strategic alliances, joint ventures, internal reorganizations and divestitures may result in financial results that are different than expected.

In the normal course of business, we may engage in discussions with third parties relating to possible acquisitions, strategic alliances, joint ventures and divestitures. Additionally, we occasionally make changes to our internal structure to align business products, services and solutions with market demands and to obtain cost synergies and operational efficiencies. As a result of such transactions, our financial results may differ from our own or the investment community's expectations in a given fiscal quarter, or over the long term. If market conditions or other factors lead us to change our strategic direction, we may not realize the expected value from such transactions or reorganizations. Further, such third-party transactions often have post-closing arrangements, including, but not limited to, post-closing adjustments, transition services, escrows or indemnifications, the financial results of which can be difficult to predict. In addition, acquisitions and strategic alliances may require us to integrate a different company culture, management team, employees and business infrastructure into our existing operations without impacting the business operations of the newly acquired company. We may have difficulty developing, manufacturing and

marketing the products of a newly acquired company in a way that enhances performance and expands the markets of the newly acquired company. The acquired company may not enhance the performance of our businesses or product lines such that we do not realize the value from expected synergies. Depending on the size and complexity of an acquisition, the successful integration of the entity depends on a variety of factors, including but not limited to:

- the achievement of anticipated cost savings, synergies, business opportunities and growth prospects from combining the acquired company;
- the scalability of production, manufacturing and marketing of products of a newly acquired company to broader adjacent markets;
- the ability to cohesively integrate operations, product definitions, price lists, contract terms and conditions, delivery, and technical support for products and solutions of a newly acquired company into our existing operations;
- the compatibility of our infrastructure, operations, policies and organizations with those of the acquired company;
- the retention of key employees and/or customers;
- the management of facilities and employees in different geographic areas; and
- the management of relationships with our strategic partners, suppliers, and customer base.

If we do not realize the expected benefits or synergies of such transactions, our consolidated financial position, results of operations, cash flows and stock price could be negatively impacted. Additionally, we may record significant goodwill and other assets as a result of acquisitions or investments, and we may be required to incur impairment charges, which could adversely affect our consolidated financial position and results of operations.

Any inability to complete acquisitions on acceptable terms could negatively impact our growth rate and financial performance.

Our ability to grow revenues, earnings and cash flow depends in part upon our ability to identify and successfully acquire and integrate businesses at appropriate prices and realize anticipated synergies and business performance. Appropriate targets for acquisition are difficult to identify and complete for a variety of reasons, including but not limited to, limited due diligence, high valuations, business and intellectual property evaluations, other interested parties, negotiations of the definitive documentation, satisfaction of closing conditions, the need to obtain antitrust or other regulatory approvals on acceptable terms, and availability of funding. The inability to close appropriate acquisitions on acceptable terms could adversely impact our growth rate, revenue, and financial performance.

We may need additional financing in the future to meet our capital needs or to make opportunistic acquisitions, and such financing may not be available on terms favorable to us, if at all, and may be dilutive to existing shareholders.

We may need to seek additional financing for our general corporate purposes. For example, we may need to increase our investment in R&D activities or need funds to make acquisitions. We may be unable to obtain any desired additional financing on terms favorable to us, if at all. If adequate funds are not available on acceptable terms, we may be unable to fund our expansion, successfully develop or enhance solutions or respond to competitive pressures, any of which could negatively affect our business. If we finance acquisitions by issuing additional convertible debt or equity securities, our existing stockholders may experience share dilution, which could affect the market price of our stock. If we raise additional funds through the issuance of equity securities, our shareholders will experience dilution of their ownership interest. If we raise additional funds by issuing debt, we may be subject to further limitations on our operations and ability to pay dividends due to restrictive covenants.

We have outstanding debt and may incur other debt in the future, which could adversely affect our financial condition, liquidity and results of operations.

We currently have outstanding debt as well as availability to borrow under a revolving credit facility. We may borrow additional amounts in the future and use the proceeds from any future borrowing for general corporate purposes, future acquisitions, expansion of our business or repurchases of our outstanding shares of common stock.

Our incurrence of this debt, and increases in our aggregate levels of debt, may adversely affect our operating results and financial condition by, among other things:

- requiring a portion of our cash flow from operations to make interest payments on this debt;

- increasing our vulnerability to general adverse economic and industry conditions;
- reducing the cash flow available to fund capital expenditures and other corporate purposes and to grow our business; and
- limiting our flexibility in planning for, or reacting to, changes in our business and the industry.

Our current revolving credit facility and term loan imposes restrictions on us, including restrictions on our ability to create liens on our assets and the ability of our subsidiaries to incur indebtedness, and requires us to maintain compliance with specified financial ratios. Our ability to comply with these ratios may be affected by events beyond our control. In addition, the indenture governing our senior notes contains covenants that may adversely affect our ability to incur certain liens. If we breach any of the covenants and do not obtain a waiver from the lenders, then, subject to applicable cure periods, our outstanding indebtedness could be declared immediately due and payable.

If currency exchange rates fluctuate substantially in the future, our financial results could be adversely affected.

A substantial amount of our solutions are priced and paid for in U.S. Dollars, although many of our solutions are priced in local currencies and a significant amount of certain types of expenses, such as payroll, utilities, tax and marketing expenses, are paid in local currencies. Our hedging programs are designed to reduce, but not entirely eliminate, within any given 12-month period, the impact of currency exchange rate movements, including those caused by currency controls, which could impact our business, operating results and financial condition by resulting in lower revenue or increased expenses. However, for expenses beyond a 12-month period, our hedging strategy will not mitigate our exchange rate risk. In addition, our currency hedging programs involve third-party financial institutions as counterparties. The weakening or failure of these counterparties may adversely affect our hedging programs and our financial condition through, among other things, a reduction in the number of available counterparties, increasingly unfavorable terms or the failure of counterparties to perform under hedging contracts.

Volatile changes in weather conditions and effects of climate change could damage or destroy strategic facilities, including our headquarters, which could have a significant negative impact on our operations.

We and our customers and suppliers are vulnerable to the increasing impact of climate change. Volatile changes in weather conditions, including extreme heat or cold, could increase the risk of wildfires, floods, blizzards, hurricanes and other weather-related disasters. Such extreme weather events can cause power outages and network disruptions that may result in disruption to operations and may impact our ability to manufacture and ship product, which may negatively impact revenue. Disasters created by extreme conditions could cause significant damage to or destruction of our facilities resulting in temporary or long-term closures of our facilities and operations and significant expense for repair or replacement of damaged or destroyed facilities. This could also result in loss or damage to employee homes, employees relocating to other parts of the country or being unwilling to relocate to the strategic locations, housing shortages and loss of or inability to recruit key employees. This could result in adverse impact to the available workforce, damage to or destruction of inventory, inability to manufacture and deliver solutions, cancellation of orders, and breaches of customer contracts leading to reduced revenue.

If we suffer a loss to our employees, factories, facilities or distribution system due to a catastrophic event, our operations could be significantly harmed.

Our factories, facilities and distribution system are vulnerable to catastrophic loss due to natural or man-made disasters. Several of our facilities could be subject to a catastrophic loss caused by earthquake or other natural disasters due to their locations. For example, our production facilities, headquarters and laboratories in California and our production facilities in Japan are all located in areas with above-average seismic activity. If any of these facilities were to experience a catastrophic loss, it could disrupt our operations, delay production, shipments and revenue and result in large expenses to repair or replace the facility. In addition, since we have consolidated our manufacturing facilities, we are more likely to experience an interruption to our operations in the event of a catastrophe in any one location. Although we carry insurance for property damage and business interruption, we do not carry insurance or financial reserves for interruptions or potential losses arising from earthquakes or terrorism. Also, our third-party insurance coverage will vary from time to time in both type and amount depending on availability, cost and our decisions with respect to risk retention. Economic conditions and uncertainties in global markets may adversely affect the cost and other terms upon which we are able to obtain third-party insurance. If our third-party insurance coverage is adversely affected, or to the extent we have elected to self-insure, we may be at a greater risk that our operations will be harmed by a catastrophic loss.

Our commitment to Net Zero emissions in company operations by Fiscal Year 2040 will be subject to significant costs and regulations which could impact business operations, processes, revenue, and reputation.

In May 2021, the company disclosed its commitment to achieving net zero Scope 1 and Scope 2 emissions by the end of fiscal year 2040. The company plans to meet this commitment by reducing energy consumption through efficiency and conservation measures, investments in renewable energy and selective purchase of certified offsets for residual emissions. The company also committed in September 2021 to developing approved science-based targets in line with limiting global warming to 1.5 degrees Celsius above pre-industrial levels. In addition to Scope 1 and Scope 2 emissions defined by our net zero goal, the company will develop Scope 3 reduction and engagement targets across relevant categories as part of our commitment to science-based targets. The development and implementation of goals and targets may require significant and expensive capital improvements, changes in product development, manufacturing processes and shipping methods. These changes may materially increase the cost to manufacture and ship products and solutions, result in price increases to customers, reduce product or solution performance, and create customer dissatisfaction, potentially adversely impacting our revenue and profitability.

Achieving net zero emissions goals and targets may entail compliance with evolving laws and regulatory requirements, which may cause us to change or reconfigure facilities and operations to meet regulatory standards. If operations are out of compliance, we may be subject to civil or criminal actions, fines and penalties and be required to make significant changes to facilities and operations and temporarily or permanently shut down non-compliant operations, which could result in business disruption and significant unexpected expense, delays in or inability to develop, manufacture and ship products and solutions, customer dissatisfaction, loss of revenue and damage to our reputation.

If we are unable to sufficiently reduce Scope 1 and Scope 2 emissions through energy reduction measures or our investments in renewable energy are not successful, we may fail to achieve our net zero emission commitment by fiscal year 2040. If we are unable to achieve Scope 3 reduction and engagement targets, we may fail to achieve our commitment to science-based targets. Failing to achieve the company’s net zero or science-based targets commitments could result in regulatory non-compliance, criminal or civil actions against us, assessment of fees and penalties, inability to develop, manufacture and ship products, customer dissatisfaction with our products and solutions, reduced revenue and profitability, shareholder lawsuits and damage to our reputation.

Third parties may claim that we are infringing their intellectual property rights, and we could suffer significant litigation or licensing expenses or be prevented from selling solutions or services.

From time to time parties have claimed that one or more of our solutions or services infringe their intellectual property rights. We analyze and take action in response to such claims on a case-by-case basis. On January 1, 2022, Centripetal Networks filed a lawsuit in Federal District Court in Virginia, alleging that certain Keysight products infringe certain of Centripetal’s patents. In addition, in February 2022, Centripetal filed complaints in Germany alleging infringement of certain of Centripetal’s German patents, and in April 2022, Centripetal filed a complaint with the International Trade Commission (“ITC”) requesting that they investigate whether Keysight should be enjoined from importing certain products that are manufactured outside of the U.S. which are alleged to infringe Centripetal patents. Although we deny the allegations and intend to aggressively defend each case, the outcome of existing proceedings, lawsuits and claims may differ from our expectations because the outcomes of litigation are often difficult to reliably predict.

Disputes and litigation regarding patents or other intellectual property are costly and time-consuming due to the complexity of our technology and the uncertainty of intellectual property litigation and could divert our management and key personnel from business operations. Claims of intellectual property infringement could cause us to enter into a costly or restrictive license agreement (which may not be available under acceptable terms, or at all), require us to redesign certain of our solutions (which would be costly and time-consuming) and/or subject us to significant damages or an injunction against the development, sale and importation of certain solutions or services. In certain of our businesses, we rely on third-party intellectual property licenses, and we cannot ensure that these licenses will be available to us in the future on terms favorable to us or at all.

Third parties may infringe our intellectual property rights, and we may suffer competitive injury or expend significant resources enforcing our intellectual property rights.

Our success depends in part on our proprietary technology, including technology we obtained through acquisitions. We rely on various intellectual property rights, including patents, copyrights, trademarks and trade secrets, as well as confidentiality provisions and licensing arrangements, to establish our proprietary rights. If we do not enforce our intellectual property rights successfully, our competitive position may suffer, which could harm our operating results.

Our pending patent, copyright and trademark registration applications may not be allowed or competitors may challenge the validity or scope of our patents, copyrights or trademarks. In addition, our patents, copyrights, trademarks and other intellectual property rights may not provide us with a significant competitive advantage. In preparation for the separation and

distribution, we applied for trademarks related to new global brand name in various jurisdictions worldwide. Any successful opposition to our applications in material jurisdictions could impose material costs on us or make it more difficult to protect our brand. Different jurisdictions vary widely in the level of protection and priority they give to trademark and other intellectual property rights.

We may be required to spend significant resources monitoring our intellectual property rights, and we may or may not be able to detect infringement of such rights by third parties. Our competitive position may be harmed if we cannot detect infringement and enforce our intellectual property rights in a timely manner, or at all. In some circumstances, we may choose to not pursue enforcement due to a variety of reasons. In addition, competitors may avoid infringement by designing around our intellectual property rights or by developing non-infringing competing technologies. Intellectual property rights and our ability to enforce them may be unavailable or limited in some countries, which could make it easier for competitors to infringe our intellectual property rights, capture market share and could result in lost revenues to the company. Furthermore, some of our intellectual property is licensed to others, which allows them to compete with us using that intellectual property.

If we experience a significant cybersecurity attack or disruption in our IT systems, our business, reputation, and operating results could be adversely affected.

We rely on several centralized IT systems to provide solutions and services, maintain financial records, retain sensitive data such as intellectual property, proprietary business information, and data related to customers, suppliers, and business partners, process orders, manage inventory, process shipments to customers and operate other critical functions. The ongoing maintenance and security of this information is pertinent to the success of our business operations and our strategic goals.

Despite our implementation of network security measures, our network may be vulnerable to cybersecurity attacks, computer viruses, break-ins and similar disruptions. Our network security measures include, but are not limited to, the implementation of firewalls, antivirus protection, patches, log monitors, routine backups, offsite storage, network audits, employee training and routine updates and modifications. Despite our efforts to create these security barriers, we may not be able to keep pace as new threats emerge and it is virtually impossible for us to entirely eliminate this risk. Cybersecurity attacks are evolving and include, but are not limited to, malicious software, attempts to gain unauthorized access to data, and other electronic security breaches that could lead to disruptions in systems, unauthorized release of confidential or otherwise protected information and corruption of data. Any such event could have a material adverse effect on our business, reputation, operating results and financial condition, and no assurance can be given that our efforts to reduce the risk of such attacks will be successful.

In addition, our IT systems may be susceptible to damage, disruptions, instability, or shutdowns due to power outages, hardware failures, telecommunication failures, user errors, implementation of new operational systems or software or upgrades to existing systems and software, catastrophes, or other unforeseen events. Such events could result in the disruption of business processes, network degradation and system downtime, along with the potential that a third party will exploit our critical assets such as intellectual property, proprietary business information and data related to our customers, suppliers and business partners. Further, such events could result in loss of revenue, loss of or reduction in purchase orders, inability to report financial information, litigation, regulatory fines and penalties, and other damage that could have a material impact on our business operations. To the extent that such disruptions occur, our customers and partners may lose confidence in our solutions and we may lose business or brand reputation, resulting in a material and adverse effect on our business operating results and financial condition.

We are or will be subject to ongoing tax examinations of our tax returns by the IRS and other tax authorities. An adverse outcome of any such audit or examination by the IRS or other tax authority could have a material adverse effect on our results of operations, financial condition and liquidity.

We are or will be subject to ongoing tax examinations of our tax returns by the IRS and other tax authorities in various jurisdictions. We regularly assess the likelihood of adverse outcomes resulting from ongoing tax examinations to determine the adequacy of our provision for income taxes. These assessments can require considerable estimates and judgments. Intercompany transactions associated with the sale of inventory, services, intellectual property and cost sharing arrangements are complex and affect our tax liabilities. The calculation of our tax liabilities involves uncertainties in the application of complex tax laws and regulations in multiple jurisdictions. The outcomes of these tax examinations could have an adverse effect on our operating results and financial condition. Due to the complexity of tax contingencies, the ultimate resolution of any tax matters related to operations may result in payments greater or less than amounts accrued.

Our operations may be adversely impacted by changes in our business mix or changes in the tax legislative landscape.

Our effective tax rate may be adversely impacted by, among other things, changes in the mix of our earnings among countries with differing statutory tax rates, changes in the valuation allowance of deferred tax assets, and changes in tax

laws. We cannot give any assurance as to what our effective tax rate will be in the future because, among other things, there is uncertainty regarding the tax policies of the jurisdictions where we operate. Changes in tax laws, such as tax reform in the United States or changes in tax laws resulting from the Organization for Economic Co-operation and Development’s (“OECD”) multi-jurisdictional plan of action to address “base erosion and profit shifting” and the taxation of the “Digital Economy” could impact our effective tax rate.

If tax laws or incentives change or cease to be in effect, our income taxes could increase significantly.

We are subject to federal, state, and local taxes in the United States and numerous foreign jurisdictions. We devote significant resources to evaluating our tax positions and our worldwide provision for taxes. Our financial results and tax treatment are susceptible to changes in tax, accounting, and other laws, regulations, principles, and interpretations in the United States and in other jurisdictions where we do business. With the existence of economic and political policies that favor domestic interests, it is possible that more countries will enact tax laws that either increase the tax rates, or reduce or change the tax incentives available to multinational companies like ours. Upon a change in tax laws in any territory where we do significant business, we may not be able to maintain our current tax rate or qualify for or maintain the benefits of any tax incentives offered, to the extent such incentives are offered.

Keysight benefits from tax incentives in several jurisdictions, most significantly in Singapore and Malaysia, that will expire or require renewal at various times in the future. The tax incentives provide lower rates of taxation on certain classes of income and require thresholds of investments and employment in those jurisdictions. Based on the current tax environment, we believe that we will satisfy such conditions in the future as needed, but cannot guarantee that the tax environment will not change or that such conditions will be satisfied. If we cannot or do not wish to satisfy all or portions of the tax incentives conditions, we may lose the related tax incentives and could be required to refund the benefits that the tax incentives previously provided. The Singapore tax incentive is due for renewal in 2024, and the Malaysia incentive is due for renewal in 2025. Based on the current tax environment, we believe that we will satisfy such conditions in the future as needed, but cannot guarantee that the tax environment will not change or that such conditions will be satisfied. We cannot guarantee that we will qualify or wish to qualify for any future incentive regime that may exist in the future. As a result, our effective tax rate could be higher than it would have been had we maintained the benefits of the tax incentives and could harm our operating results.

Our taxes could increase if the existing Singapore or Malaysia incentives are revoked or are not renewed upon expiration. We cannot guarantee that we will qualify for any new incentive regime that may exist in fiscal years 2024 or 2025, respectively. If we cannot or do not wish to satisfy all or portions of the tax incentives conditions, we may lose the related tax incentives and could be required to refund the benefits that the tax incentives previously provided. As a result, our effective tax rate could be higher than it would have been had we maintained the benefits of the tax incentives and could harm our operating results after tax.

Our business will suffer if we are not able to retain and hire key personnel.

Our future success depends partly on the continued service of our key research, engineering, sales, marketing, manufacturing, executive and administrative personnel, including personnel joining our company through acquisitions. The markets in which we operate are dynamic, and we may need to respond with reorganizations, workforce reductions and site closures from time to time. We believe our pay levels are competitive within the regions in which we operate. However, global labor shortages, inflationary pressure on wages, and increased global attrition have intensified competition for talent in most fields across the geographic areas in which we operate, and it may become more difficult to retain key employees. If we fail to retain key personnel and are unable to hire highly qualified replacements, we may not be able to meet key objectives, such as launching effective product innovations and meeting financial goals, and maintain or expand our business.

If we fail to maintain satisfactory compliance with certain regulations, we may be subject to substantial negative financial consequences and civil or criminal penalties.

We and our customers are subject to various significant international, federal, state and local regulations, including, but not limited to, export regulations, sanctions and embargoes, packaging, data privacy, product content, environmental, health and safety and labor. These regulations are complex, change frequently and may become more stringent over time. We have been required to incur significant expenses to comply with these regulations and to remedy violations of certain import/export regulations. Any future failure by us to comply with applicable government regulations could also result in cessation of our operations or portions of our operations, high financial penalties, product recalls or impositions of fines, and restrictions on our ability to carry on or expand our operations. If demand for our solutions is adversely affected or our costs increase, our business would suffer.

Our R&D, manufacturing and distribution operations involve the use of hazardous substances and are regulated under international, federal, state and local laws governing health and safety and the environment. We are also regulated under a

number of international, federal, state and local laws regarding recycling, product packaging and product content requirements. We apply strict standards for protection of the environment and occupational health and safety inside and outside the United States, even where not subject to regulation imposed by foreign governments. We believe that our properties and operations at our facilities comply in all material respects with applicable environmental and occupational health and safety laws. In spite of these efforts, no assurance can be given that we will be compliant with all applicable environmental and workplace health and safety laws and regulations and violations could result in civil or criminal sanctions, fines and penalties.

We have developed internal data handling policies and practices to comply with the General Data Protection Regulation (“GDPR”) in the European Union and data privacy regulations similar to GDPR in other jurisdictions. Our existing business strategy does not rely on aggregating or selling personally identifiable information, and as a general matter Keysight does not process personally identifiable information on behalf of our customers. We devote resources to keep up with the changing regulatory environment on data privacy in the jurisdictions where we do business. Despite our efforts, no assurance can be given that we will be compliant with data privacy regulations. New laws, amendments, or interpretations of regulations, industry standards, and contractual obligations relating to data privacy may require us to incur additional costs and restrict our business operations. If we fail to comply with GDPR or other data privacy regulation, we may be subject to significant financial fines and civil or criminal penalties, and may suffer damage to our reputation or brand, which could adversely affect our business and financial results.

In addition, our products and operations are also often subject to the rules of industrial standards bodies, like the International Standards Organization, as well as regulation by other agencies such as the U.S. Federal Communications Commission. We also must comply with work safety rules. If we fail to adequately address any of these regulations, our businesses could be harmed.

Failure to comply with anti-corruption laws could adversely affect our business and result in financial penalties.

Because we have extensive international operations, we must comply with complex foreign and U.S. laws and regulations, such as the U.S. Foreign Corrupt Practices Act, the U.K. Bribery Act and other local laws prohibiting corrupt payments to governmental officials, and anti-competition regulations. Although we actively maintain policies and procedures designed to ensure ongoing compliance with these laws and regulations, there can be no assurance that our employees, contractors or agents will not violate these policies and procedures. Violations of these laws and regulations could result in fines and penalties, criminal sanctions, restrictions on our business conduct and on our ability to offer our solutions in one or more countries, and could also materially affect our brand, ability to attract and retain employees, international operations, business and operating results.

Our business and financial results may be adversely affected by various legal and regulatory proceedings.

We are subject to legal proceedings, lawsuits and other claims in the normal course of business and could become subject to additional claims in the future, some of which could be material. On January 1, 2022, Centripetal Networks filed a lawsuit in Federal District Court in Virginia, alleging that certain Keysight products infringe certain of Centripetal’s patents. In addition, in February 2022, Centripetal filed complaints in Germany alleging infringement of certain of Centripetal’s German patents, and in April 2022, Centripetal filed a complaint with the International Trade Commission (“ITC”) requesting that they investigate whether Keysight should be enjoined from importing certain products that are manufactured outside of the U.S. and alleged to infringe Centripetal patents. Although we deny the allegations and intend to aggressively defend each case, the outcome of existing proceedings, lawsuits and claims may differ from our expectations because the outcomes of litigation are often difficult to reliably predict. Various factors or developments can lead us to change current estimates of liabilities and related insurance receivables where applicable, or permit us to make such estimates for matters previously not susceptible to reasonable estimates, such as a significant judicial ruling or judgment, a significant settlement, significant regulatory developments or changes in applicable law. A future adverse ruling, settlement or unfavorable development could result in charges that could adversely affect our business, operating results or financial condition.

Our internal controls may be determined to be ineffective, which may adversely affect investor confidence in our company, the value of our stock, and our access to capital.

The Sarbanes-Oxley Act of 2002 requires us to furnish a report by management on the effectiveness of our internal control over financial reporting, among other things. We devote significant resources and time to comply with such internal control over financial reporting requirements. However, we cannot be certain that these measures will ensure that we design, implement and maintain adequate control over our financial processes and reporting in the future, especially in the context of acquisitions of other businesses. Any difficulties in the assimilation of acquired businesses into our control system could harm our operating results or cause us to fail to meet our financial reporting obligations. Inferior internal controls could also cause investors to lose confidence in our reported financial information, which could have a negative effect on the trading price of our stock or on our access to capital, or cause us to be subject to investigation or sanctions by the SEC.

Adverse conditions in the global banking industry and credit markets may adversely impact the value of our cash investments or impair our liquidity.

Our cash and cash equivalents are invested or held in a mix of money market funds, time deposit accounts and bank demand deposit accounts. Disruptions in the financial markets may, in some cases, result in an inability to access assets such as money market funds that traditionally have been viewed as highly liquid. Any failure of our counterparty financial institutions or funds in which we have invested may adversely impact our cash and cash equivalent positions and, in turn, our results and financial condition.

Future investment returns on pension assets may be lower than expected or interest rates may decline, requiring us to make significant additional cash contributions to our future plans.

We sponsor several defined benefit pension plans that cover many of our salaried and hourly employees. The Federal Pension Protection Act of 2006 requires that certain capitalization levels be maintained in each of the U.S. plans, and there may be similar funding requirements in the plans outside the United States. Because it is unknown what the investment return on and the fair value of our pension assets will be in future years or what interest rates and discount rates may be at any point in time, no assurances can be given that applicable law will not require us to make future material plan contributions. Any such contributions could adversely affect our financial condition.

Environmental contamination from past operations could subject us to unreimbursed costs and could harm on-site operations and the future use and value of the properties involved, and environmental contamination caused by ongoing operations could subject us to substantial liabilities in the future.

Some of our properties have been the subject of remediation by HP Inc. ("HP") for subsurface contaminations that were known at the time of Agilent's separation from HP in 1999. In connection with Agilent's separation from HP, HP and Agilent entered into an agreement pursuant to which HP agreed to retain the liability for this subsurface contamination, perform the required remediation and indemnify Agilent with respect to claims arising out of that contamination. Agilent has assigned its rights and obligations under this agreement to Keysight in respect of facilities transferred to us in the separation. As a result, HP will have access to a limited number of our properties to perform remediation. Although HP agreed to minimize interference with on-site operations at such properties, remediation activities and subsurface contamination may require us to incur unreimbursed costs and could harm on-site operations and the future use and value of the properties. In connection with the separation, Agilent will indemnify us directly for any liabilities related thereto. We cannot be sure that HP will continue to fulfill its remediation obligations or that Agilent will continue to fulfill its indemnification obligations.

On December 17, 2021, Keysight and HP signed a restrictive covenant related to our Santa Rosa facility which prohibits certain uses of the property (such as running a daycare facility, hospital or school) and terminates HP’s remediation obligation related to that facility. HP’s remediation obligations relating to Keysight’s Colorado Springs facility are ongoing.

Our current manufacturing processes involve the use of substances regulated under various international, federal, state and local laws governing the environment. As a result, we may become subject to liabilities for environmental contamination, and these liabilities may be substantial. Although our policy is to apply strict standards for environmental protection at our sites inside and outside the United States, even if the sites outside the United States are not subject to regulations imposed by foreign governments, we may not be aware of all conditions that could subject us to liability.

Risks Related to Our Common Stock

Our share price may fluctuate significantly.

Our common stock is listed on the New York Stock Exchange ("NYSE") under the ticker symbol “KEYS.” The market price of our common stock may fluctuate widely, depending on many factors, some of which may be beyond our control, including but not limited to:

- actual or anticipated fluctuations in our operating results due to factors related to our business;
- success or failure of our business strategy;
- our quarterly or annual earnings, or those of other companies in our industry;
- our ability to obtain third-party financing as needed;
- announcements by us or our competitors of significant acquisitions or dispositions;

- changes in accounting standards, policies, guidance, interpretations or principles;
- the failure of securities analysts to cover our common stock;
- changes in earnings estimates by securities analysts or our ability to meet those estimates;
- the operating and share price performance of other comparable companies;
- investor perception of our company;
- natural or other disasters that investors believe may affect us;
- overall market fluctuations;
- results from any material litigation or government investigations;
- changes in laws or regulations affecting our business;
- new or expanded trade restrictions;
- economic conditions such as inflation or recession;
- geopolitical conflicts; and
- other external factors.

Stock markets in general have experienced volatility that has often been unrelated to the operating performance of a particular company. These broad market fluctuations have adversely affected the trading price of our common stock.

In addition, when the market price of a company’s shares drops significantly, shareholders often institute securities class action lawsuits against the company. A lawsuit against us could cause us to incur substantial costs and could divert the time and attention of management and other resources.

We do not currently pay dividends on our common stock.

We do not currently pay dividends on our common stock. The payment of any dividends in the future, and the timing and amount thereof, to our stockholders fall within the discretion of our board of directors. The board's decisions regarding the payment of dividends will depend on many factors, such as our financial condition, earnings, capital requirements, debt service obligations, restrictive covenants in our debt, industry practice, legal requirements, regulatory constraints and other factors that our board of directors deems relevant. We cannot guarantee that we will pay a dividend in the future or continue to pay any dividends if we commence paying dividends.

Certain provisions in our amended and restated certificate of incorporation and bylaws, and of Delaware law, may prevent or delay an acquisition of the company, which could decrease the trading price of our common stock.

Our amended and restated certificate of incorporation and amended and restated bylaws contain, and Delaware law contains, provisions that are intended to deter coercive takeover practices and inadequate takeover bids by making such practices or bids unacceptably expensive to the bidder and to encourage prospective acquirers to negotiate with our board of directors rather than to attempt a hostile takeover. These provisions include but are not limited to:

- the inability of our shareholders to call a special meeting;
- the inability of our shareholders to act without a meeting of shareholders;
- rules regarding how shareholders may present proposals or nominate directors for election at shareholder meetings;
- the right of our board of directors to issue preferred stock without shareholder approval;
- the division of our board of directors into three classes of directors, with each class serving a staggered three-year term, and this classified board provision could have the effect of making the replacement of incumbent directors more time consuming and difficult;
- a provision that shareholders may only remove directors with cause;
- the ability of our directors, and not shareholders, to fill vacancies on our board of directors; and

- the requirement that the affirmative vote of shareholders holding at least 80 percent of our voting stock is required to amend certain provisions in our amended and restated certificate of incorporation (relating to the number, term and removal of our directors, the filling of our board vacancies, the advance notice to be given for nominations for elections of directors, the calling of special meetings of shareholders, shareholder action by written consent, the ability of the board of directors to amend the bylaws, elimination of liability of directors to the extent permitted by Delaware law, exclusive forum for certain types of actions and proceedings that may be initiated by our shareholders and amendments of the certificate of incorporation) and certain provisions in our amended and restated bylaws (relating to the calling of special meetings of shareholders, the business that may be conducted or considered at annual or special meetings, the advance notice of shareholder business and nominations, shareholder action by written consent, the number, tenure, qualifications and removal of our directors, the filling of our board vacancies, director and officer indemnification and amendments of the bylaws).

In addition, because we have not chosen to be exempt from Section 203 of the Delaware General Corporation Law (the "DGCL"), this provision could also delay or prevent a change of control that some shareholders may favor. Section 203 provides that, subject to limited exceptions, persons that acquire, or are affiliated with a person that acquires, more than 15 percent of the outstanding voting stock of a Delaware corporation (an "interested stockholder") shall not engage in any business combination with that corporation, including by merger, consolidation or acquisitions of additional shares, for a three-year period following the date on which the person became an interested stockholder, unless (i) prior to such time, the board of directors of such corporation approved either the business combination or the transaction that resulted in the stockholder becoming an interested stockholder; (ii) upon consummation of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85 percent of the voting stock of such corporation at the time the transaction commenced (excluding for purposes of determining the voting stock outstanding (but not the outstanding voting stock owned by the interested stockholder) the voting stock owned by directors who are also officers or held in employee benefit plans in which the employees do not have a confidential right to tender or vote stock held by the plan); or (iii) on or subsequent to such time the business combination is approved by the board of directors of such corporation and authorized at a meeting of shareholders by the affirmative vote of at least two-thirds of the outstanding voting stock of such corporation not owned by the interested stockholder.

We believe these provisions will protect our shareholders from coercive or otherwise unfair takeover tactics by requiring potential acquirers to negotiate with our board of directors and by providing our board of directors with more time to assess any acquisition proposal. These provisions are not intended to make us immune from takeovers. However, these provisions will apply even if the offer may be considered beneficial by some shareholders and could delay or prevent an acquisition that our board of directors determines is not in the best interests of the company and our shareholders. These provisions may also prevent or discourage attempts to remove and replace incumbent directors.

Our amended and restated certificate of incorporation designates that the state courts in the State of Delaware or, if no state court located within the State of Delaware has jurisdiction, the federal court for the District of Delaware, as the sole and exclusive forum for certain types of actions and proceedings that may be initiated by our shareholders, which could discourage lawsuits against the company and our directors and officers.

Our amended and restated certificate of incorporation provide that unless the board of directors otherwise determines, the state courts in the State of Delaware or, if no state court located within the State of Delaware has jurisdiction, the federal court for the District of Delaware, will be the sole and exclusive forum for any derivative action or proceeding brought on our behalf, any action asserting a claim of breach of a fiduciary duty owed by any of our directors or officers to the company or our shareholders, any action asserting a claim against us or any of our directors or officers arising pursuant to any provision of the DGCL or Keysight's amended and restated certificate of incorporation or bylaws, or any action asserting a claim against us or any of our directors or officers governed by the internal affairs doctrine. This exclusive forum provision may limit the ability of our shareholders to bring a claim in a judicial forum that such shareholders find favorable for disputes with us or our directors or officers, which may discourage such lawsuits against us and our directors and officers.

Item 1B. Unresolved Staff Comments

None.

Item 2. *Properties*

Our executive offices are located in the United States in an owned facility in Santa Rosa, California. We own or lease 139 operating facilities located throughout the world that handle manufacturing production, R&D, administration, assembly, sales, quality, assurance testing, distribution and packaging of our products. These facilities are primarily located in the following countries: United States, Malaysia, Japan, China, Germany, India, Taiwan, United Kingdom, Spain, Singapore, Romania, and Italy.

As of October 31, 2022, we own or lease approximately 5.6 million square feet^(a) of space worldwide, a summary of which is provided below:

	Total square feet (in millions)
Owned facilities	3.5
Leased facilities	2.1
Total	5.6
<i>Occupancy of our facilities</i>	
Manufacturing plants, R&D facilities and warehouse and administrative facilities	5.3
Sales facilities	0.3
Total	5.6

^(a) Excludes 0.6 million square feet of vacated space, all of which is leased to third parties.

All of these facilities are well maintained and suitable for the operations conducted in them.

Item 3. Legal Proceedings

On August 3, 2021, we entered into a Consent Agreement with the Directorate of Defense Trade Controls, Bureau of Political-Military Affairs, Department of State to resolve alleged violations of the Arms Export Control Act and the International Traffic in Arms Regulations ("ITAR"). Pursuant to the Consent Agreement, we were assessed a penalty of \$6.6 million to be paid over three years, \$2.5 million of which was suspended and designated for remediation activities over three years, including employment of a special compliance officer. To date, we have paid \$2.1 million of the penalty. The suspended portion of the penalty has been satisfied by amounts we have spent on qualifying compliance activities to date.

On January 1, 2022, Centripetal Networks filed a lawsuit in Federal District Court in Virginia, alleging that certain Keysight products infringe certain of Centripetal’s patents. In addition, in February 2022 Centripetal filed complaints in Germany alleging infringement of certain of Centripetal’s German patents, and in April 2022 Centripetal filed a complaint with the International Trade Commission (“ITC”) requesting that they investigate whether Keysight should be enjoined from importing certain products that are manufactured outside of the U.S. and which are alleged to infringe Centripetal patents. We deny the allegations and intend to aggressively defend each case. Although there are no matters pending that we currently believe are probable and reasonably possible of having a material impact to our business, consolidated financial position, or results of operations or cash flows, the outcome of litigation is inherently uncertain and is difficult to predict. An adverse outcome in any outstanding lawsuit or proceeding could result in significant monetary damages or injunctive relief. If adverse results are above management’s expectations or are unforeseen, management may not have accrued for the liability, which could impact our results in a financial period.

We are also involved in lawsuits, claims, investigations and other proceedings, including, but not limited to, patent, commercial and environmental matters, which arise in the ordinary course of business.

Item 4. Mine Safety Disclosures

Not applicable.

PART II

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

Our common stock is listed on the New York Stock Exchange ("NYSE") with the ticker symbol "KEYS.”

There were 17,025 shareholders of record of Keysight common stock as of December 12, 2022.

We have not paid any dividends, and we do not anticipate paying any cash dividends in the foreseeable future. All decisions regarding the declaration and payment of dividends and stock repurchases are at the discretion of our board of directors and will be evaluated regularly in light of our financial condition, earnings, growth prospects, funding requirements, applicable law, and any other factors that our board of directors deems relevant.

The information required by this item with respect to equity compensation plans will be included under the caption Equity Compensation Plans in our proxy statement to be filed with the Securities and Exchange Commission pursuant to Regulation 14A, and is incorporated herein by reference.

ISSUER PURCHASES OF EQUITY SECURITIES

The table below summarizes information about the company’s purchases, based on trade date, of its equity securities registered pursuant to Section 12 of the Exchange Act during the fiscal quarter ended October 31, 2022. The total number of shares of common stock purchased by the company during the fiscal year ended October 31, 2022 is 5,442,280 shares.

Period	Total Number of Shares of Common Stock Purchased ⁽¹⁾	Weighted Average Price Paid per Share of Common Stock ⁽²⁾	Total Number of Shares of Common Stock Purchased as Part of Publicly Announced Plans or Programs ⁽¹⁾	Maximum Approximate Dollar Value of Shares of Common Stock that May Yet Be Purchased Under the Program ⁽¹⁾
August 1, 2022 through August 31, 2022	—	—	—	\$476,957,554
September 1, 2022 through September 30, 2022	605,322	\$159.20	605,322	\$380,592,418
October 1, 2022 through October 31, 2022	190,531	\$157.31	190,531	\$350,619,747
Total	795,853		795,853	

- (1)

On November 18, 2021, our board of directors approved a stock repurchase program authorizing the purchase of up to \$1,200 million of the company’s common stock, replacing the previously approved November 2020 program, under which \$77 million remained.

Under our stock repurchase program, shares may be purchased from time to time, subject to general business and market conditions and other investment opportunities, through open market purchases, privately negotiated transactions or other means. All such shares and related costs are held as treasury stock and accounted for at the trade date using the cost method.
- (2)

The weighted average price paid per share of common stock does not include the cost of commissions.

Item 6. [Reserved]

Not applicable.

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

The following discussion should be read in conjunction with the consolidated financial statements and notes thereto included elsewhere in this Annual Report on Form 10-K. This report contains forward-looking statements including, without limitation, statements regarding trends, seasonality, cyclicalities and growth in, and drivers of, the markets we sell into, our strategic direction, earnings from our foreign subsidiaries, remediation activities, new solution and service introductions, the ability of our solutions to meet market needs, changes to our manufacturing processes, the use of contract manufacturers, the impact of local government regulations on our ability to pay vendors or conduct operations, our liquidity position, our ability to generate cash from operations, growth in our businesses, our investments, the potential impact of adopting new accounting pronouncements, our financial results, our purchase commitments, our contributions to our pension plans, the selection of discount rates and recognition of any gains or losses for our benefit plans, our cost-control activities, savings and headcount reduction recognized from our restructuring programs and other cost saving initiatives, and other regulatory approvals, the integration of our completed acquisitions and other transactions, our transition to lower-cost regions, the existence of political or economic instability, impacts of geopolitical tension and conflict in regions outside of the U.S., including the war between Russia and Ukraine and the risk of increased tensions between China and Taiwan, the impacts of increased trade tension and tightening of export control regulations, the impact of compliance with the August 3, 2021 Consent Agreement with the Directorate of Defense Trade Controls, Bureau of Political-Military Affairs, Department of State, the impact of new and ongoing litigation, inflationary pressures, continued impacts to the supply chain, impacts related to endemic and pandemic conditions, impacts related to net zero emissions commitments, the impact of volatile weather caused by environmental conditions such as climate change, increases in attrition and our ability to retain key personnel, and our estimated or anticipated future results of operations, which involve risks and uncertainties. Our actual results could differ materially from the results contemplated by these forward-looking statements due to various factors, including but not limited to those risks and uncertainties discussed in Part II Item 1A and elsewhere in this Annual Report on Form 10-K.

Overview and Executive Summary

Keysight Technologies, Inc. ("we," "us," "Keysight" or the "company"), incorporated in Delaware on December 6, 2013, is a technology company that helps enterprises, service providers and governments accelerate innovation to connect and secure the world by providing electronic design and test solutions that are used in the simulation, design, validation, manufacture, installation, optimization and secure operation of electronics systems in the communications, networking and electronics industries. We also offer customization, consulting and optimization services throughout the customer's product development lifecycle, including start-up assistance, asset management, up-time services, application services and instrument calibration and repair.

Our fiscal year end is October 31. Unless otherwise stated, all years and dates refer to our fiscal year.

Inflation, supply chain disruptions and the challenging geopolitical and macro-economic environment

Our global operations have been affected by many headwinds, including inflationary pressures, ongoing global supply chain disruptions, increased geopolitical tensions, including the war between Russia and Ukraine, increased trade restrictions, financial market volatility, currency movements, and the pandemic. These headwinds, specifically the supply chain disruptions, have adversely impacted our ability to procure certain components, which in some cases has impacted our ability to manufacture products, causing delays in delivery of our solutions to our customers and higher material procurement costs. We used a number of strategies to effectively navigate supply chain challenges, including product redesign, alternate sourcing, and increased supplier and customer engagement. These, along with the strength of our broad portfolio and global application of the Keysight Leadership Model, enables us to deliver consistent value to our customers.

For discussion of risks related to potential impacts of supply chain, geopolitical and macro-economic challenges on our operations, business results and financial condition, see “Item 1A. Risk Factors.”

Russia-Ukraine war

In February 2022, the U.S. imposed economic sanctions and other restrictions on Russia following its invasion of Ukraine. As a result, after an initial suspension of operations in Russia, we permanently discontinued our Russian operations and are exiting Russia. Our business in Russia accounted for approximately 1 percent of total revenue for 2021. In 2022, we recorded pre-tax expenses of \$13 million, including asset impairment charges of \$7 million and other liquidation-related expenses, including employee severance related to our exit of Russia.

Years ended October 31, 2022, 2021 and 2020

Orders of \$5,984 million for 2022 increased 12 percent when compared to 2021. Foreign currency movements had an unfavorable impact of 3 percentage points on order growth for 2022 as compared to 2021. Orders grew across all regions, including double-digit growth in Asia Pacific. Total orders for 2021 were \$5,356 million, an increase of 18 percent when compared to 2020. Foreign currency movements and acquisitions each contributed 1 percentage point to the order growth for 2021 when compared to 2020. Orders grew double-digits across all regions.

Revenue of \$5,420 million for 2022 increased 10 percent when compared to 2021. Foreign currency movements had an unfavorable impact of 2 percentage points on revenue growth for 2022 as compared to 2021. Revenue for both the Communications Solutions Group and the Electronic Industrial Solutions Group grew as compared to 2021, driven by growth across all regions and markets. Revenue from the Communications Solutions Group and the Electronic Industrial Solutions Group represented approximately 70 percent and 30 percent, respectively, of total revenue for 2022. Revenue of \$4,941 million for 2021 increased 17 percent when compared to 2020. Foreign currency movements and acquisitions each contributed 1 percentage point to the revenue growth for 2021 as compared to 2020. Revenue for both the Communications Solutions Group and the Electronic Industrial Solutions Group grew as compared to 2020, driven by strong demand across all the regions and markets. Revenue from the Communications Solutions Group and the Electronic Industrial Solutions Group represented approximately 71 percent and 29 percent, respectively, of total revenue for 2021.

Net income was \$1,124 million in 2022 compared to net income of \$894 million and \$627 million in 2021 and 2020, respectively. The increase in net income for 2022 when compared to 2021 was primarily driven by higher revenue volume, lower amortization of acquisition-related balances and lower variable people-related costs, partially offset by higher material costs and higher selling, general and administrative, R&D and income tax expenses. The increase in net income for 2021 when compared to 2020 was primarily driven by higher revenue volume, lower amortization of acquisition-related balances and lower income tax expense, partially offset by an increase in variable people-related costs, higher R&D investments, lower operating income due to a one-time prior-period gain related to an insurance settlement, a loss on a partial settlement of our Netherlands defined benefit plan and the incremental costs of acquired businesses. In 2022, 2021 and 2020, we generated operating cash flows of \$1,144 million, \$1,322 million and \$1,016 million, respectively.

Outlook

Our first-to-market solutions strategy enables customers to develop new technologies and accelerate innovation and provides a platform for long-term growth. Our customers are expected to continue to make R&D investments in certain next-generation technologies, such as 5G/6G, new mobility technologies, industrial internet of things ("IoT") and defense modernization. In the midst of an uncertain economic environment, we continue to closely monitor the macro indicators related to inflation, trade, tariffs, monetary and fiscal policies, endemic and pandemic conditions, and the related global supply chain challenges, increased trade restrictions and increasing geopolitical tension in regions outside of the U.S., including the risk of increased tensions between China and Taiwan. We remain confident in our long-term secular market growth trends and the strength of our operating model.

Currency Exchange Rate Exposure

Our revenues, costs and expenses, and monetary assets and liabilities are exposed to changes in foreign currency exchange rates as a result of our global operating and financing activities. We hedge revenues, expenses and balance sheet exposures that are not denominated in the functional currencies of our subsidiaries on a short-term and anticipated basis. The result of the hedging has been included in our consolidated statement of operations. We experience some fluctuations within individual lines of the consolidated balance sheet and consolidated statement of operations because our hedging program is not designed to offset the currency movements in each category of revenues, expenses, monetary assets and liabilities. Our cash flow hedging program is designed to hedge short-term currency movements based on a rolling period of up to twelve months. Therefore, we are exposed to currency fluctuations over the longer term. To the extent that we are required to pay for all, or portions, of an acquisition price in foreign currencies, we may enter into foreign exchange contracts to reduce the risk that currency movements will impact the U.S. dollar cost of the transaction.

Results from Operations - Years ended October 31, 2022, 2021 and 2020

A summary of our results is as follows:

	Year Ended October 31,			2022 over 2021 % Change	2021 over 2020 % Change
	2022	2021	2020		
in millions, except margin data					
Revenue	\$ 5,420	\$ 4,941	\$ 4,221	10%	17%
Products	\$ 4,474	\$ 4,050	\$ 3,432	10%	18%
<i>Percentage of revenue</i>	83 %	82 %	81 %	1 ppt	1 ppt
Services and other	\$ 946	\$ 891	\$ 789	6%	13%
<i>Percentage of revenue</i>	17 %	18 %	19 %	(1) ppt	(1) ppt
Gross margin	63.7 %	62.1 %	60.0 %	2 ppts	2 ppts
Products	63.9 %	62.4 %	60.0 %	2 ppts	2 ppts
Services and other	62.7 %	60.7 %	60.0 %	2 ppts	1 ppt
Research and development	\$ 841	\$ 811	\$ 715	4%	13%
<i>Percentage of revenue</i>	16 %	16 %	17 %	(1) ppt	(1) ppt
Selling, general and administrative	\$ 1,283	\$ 1,195	\$ 1,097	7%	9%
<i>Percentage of revenue</i>	24 %	24 %	26 %	—	(2) ppts
Other operating expense (income), net	\$ (8)	\$ (17)	\$ (44)	(53)%	(61)%
Income from operations	\$ 1,334	\$ 1,080	\$ 765	24%	41%
Operating margin	24.6 %	21.9 %	18.1 %	3 ppts	4 ppts
Interest income	\$ 16	\$ 3	\$ 11	676%	(81)%
Interest expense	\$ (79)	\$ (79)	\$ (78)	—%	1%
Other income (expense), net	\$ 14	\$ 6	\$ 63	105%	(90)%
Income before taxes	\$ 1,285	\$ 1,010	\$ 761	27%	33%
Provision for income taxes	\$ 161	\$ 116	\$ 134	39%	(14)%
Net income	\$ 1,124	\$ 894	\$ 627	26%	43%

Revenue

Revenue is recognized upon transfer of control of the promised products or services to customers in an amount that reflects the consideration we expect to receive in exchange for those products or services. Returns are recorded in the period received from the customer and historically have not been material.

The following table provides the percent change in revenue for 2022 and 2021 by geographic region and the impact of foreign currency movements as compared to the respective prior year.

Geographic Region	Year over Year % Change			
	2022 over 2021		2021 over 2020	
	actual	Currency Impact Favorable (Unfavorable)	actual	Currency Impact Favorable (Unfavorable)
Americas	10%	—	22%	—
Europe	11%	(5) ppts	18%	4 ppts
Asia Pacific	9%	(4) ppts	13%	1 ppt
Total revenue	10%	(2) ppts	17%	1 ppt

Gross Margin, Operating Margin and Income Before Taxes

Gross margin increased 2 percentage points in 2022 compared to 2021, primarily driven by lower amortization of acquisition-related balances, price increases, higher revenue volume and lower variable people-related costs, partially offset by higher material costs. Gross margin increased 2 percentage points in 2021 compared to 2020, primarily driven by lower amortization of acquisition-related balances and higher revenue volume, partially offset by higher variable people-related costs.

Excess and obsolete inventory charges were \$27 million in 2022, \$27 million in 2021 and \$29 million in 2020.

Research and development expense increased 4 percent in 2022 compared to 2021, primarily driven by investments in key growth opportunities in our end markets and leading-edge technologies, as well as incremental costs of acquired businesses,

partially offset by lower variable people-related costs. Research and development expense increased 13 percent in 2021 compared to 2020, primarily driven by greater investments in key growth opportunities in our end markets and leading-edge technologies, an increase in variable people-related costs and incremental costs of acquired businesses.

Selling, general and administrative expenses increased 7 percent in 2022 compared to 2021, primarily driven by increased investment in sales resources, higher infrastructure-related, travel and marketing-related costs, as well as incremental costs of acquired businesses, partially offset by lower variable people-related costs. Selling, general and administrative expenses increased 9 percent in 2021 compared to 2020, primarily driven by increases in variable and other people-related costs, infrastructure-related costs, and incremental costs of acquired businesses, partially offset by reductions in travel and marketing-related costs due to COVID-19 related disruptions.

Other operating expense (income), net was income of \$8 million, \$17 million and \$44 million for 2022, 2021 and 2020, respectively. The decrease in net other operating income in 2022 was primarily driven by asset impairment charges related to the discontinuance of our Russia operations. Other operating expense (income), net for 2020 includes a one-time gain of \$32 million on an insurance settlement.

Operating margin increased 3 percentage points in 2022 when compared to 2021, primarily driven by gross margin gains and lower operating expenses as a percentage of sales. Operating margin increased 4 percentage points in 2021 when compared to 2020, primarily driven by gross margin gains and lower operating expenses as a percentage of sales.

Our headcount was approximately 15,000 at October 31, 2022, compared to approximately 14,300 at October 31, 2021.

Interest Income and Expense

Interest income for 2022, 2021 and 2020 was \$16 million, \$3 million and \$11 million, respectively, and primarily relates to interest earned on our cash balances. Interest expense for 2022, 2021 and 2020 was \$79 million, \$79 million and \$78 million, respectively, and primarily relates to interest on our senior notes.

Other income (expense), net

Other income (expense), net for 2022, 2021 and 2020 was income of \$14 million, \$6 million and \$63 million, respectively, and primarily includes net income related to our defined benefit and post-retirement benefit plans (interest cost, expected return on assets, amortization of net actuarial loss and prior service credits, and gains (losses) on settlements and curtailments) and the change in fair value of our equity investments. The increase in net other income for 2022 when compared to 2021 was primarily driven by \$38 million lower amortization of net actuarial losses and a 2021 loss on a partial settlement of a non-U.S. pension plan, partially offset by a \$31 million loss on our equity investments. The decrease in net other income for 2021 when compared to 2020 was driven by a \$16 million loss on the partial settlement of our Netherlands defined benefit plan and higher amortization of net actuarial losses. We also recognized gains from insurance proceeds of \$9 million for the year ended October 31, 2020.

Income Taxes

	Year Ended October 31,		
	2022	2021	2020
	(in millions)		
Provision for income taxes	\$ 161	\$ 116	\$ 134
Effective tax rate	13 %	11 %	18 %

The effective tax rate was 13 percent, 11 percent, and 18 percent for 2022, 2021 and 2020, respectively. The tax rate in each of these years was lower than the U.S. statutory rate primarily due to the proportion of worldwide earnings that are taxed at lower statutory tax rates in non-U.S. jurisdictions, partially offset by U.S. tax imposed on earnings in non-U.S. jurisdictions.

The increase in the effective tax rate from 2021 to 2022 was due to nonrecurring tax benefits recorded in 2021, partially offset by a decrease in 2022 taxes from changes in tax reserves primarily due to audit settlement and from a relative decrease in U.S. tax due on non-U.S. earnings. The 2022 tax expense also includes a decrease in tax expense resulting from an out-of-period adjustment to tax reserves for fiscal years 2019 through 2021 related to the potential U.S. benefit associated with the future resolution of non-U.S. tax reserves. The 2022 decrease in tax expense was partially offset by an increase to tax expense resulting from an out-of-period adjustment related to corrections to the tax rate applied to non-US pension deferred tax balances. Neither of these out-of-period adjustments were material individually or in the aggregate. The 2021 significant nonrecurring tax benefits include the release of valuation allowance on Netherlands net operating losses in 2021 and a decrease

due to the 2021 actual tax impact of acquired entity integration as compared to the estimate at acquisition based on the finalization of the integration plan. The decrease in the effective tax rate from 2020 to 2021 was due to a change in the jurisdictional mix of non-U.S. earnings, partially offset by an increase in U.S. taxes on non-U.S. earnings and the 2021 nonrecurring tax benefits described above.

Keysight benefits from tax incentives in several jurisdictions, most significantly in Singapore and Malaysia, that will expire or require renewal at various times in the future. The tax incentives provide lower rates of taxation on certain classes of income and require thresholds of investments and employment in those jurisdictions. The Singapore tax incentive is due for renewal in 2024, and the Malaysia incentive is due for renewal in 2025. We are continuing to evaluate renewal options and the impact of potential outcomes on our effective tax rate. The impact of the tax incentives decreased income taxes by \$81 million, \$70 million and \$53 million in 2022, 2021 and 2020, respectively. The increase in tax benefit from 2021 to 2022 is primarily due to a change in the jurisdictional mix of non-U.S. earnings, which increased the earnings taxed at incentive tax rates in 2022.

The calculation of our tax liabilities involves uncertainties in the application of complex tax law and regulations in a multitude of jurisdictions. Although the guidance on the accounting for uncertainty in income taxes prescribes the use of a recognition and measurement model, the determination of whether an uncertain tax position has met those thresholds will continue to require significant judgment by management. In accordance with the guidance on the accounting for uncertainty in income taxes, for all U.S. and other tax jurisdictions, we recognize potential liabilities for anticipated tax audit issues based on our estimate of whether, and the extent to which, additional taxes and interest will be due. We include interest and penalties related to unrecognized tax benefits within the provision for income taxes in the consolidated statements of operations. Accrued interest and penalties are included on the related tax liability line in the consolidated balance sheet.

The open tax years for the U.S. federal income tax return and most state income tax returns are from November 1, 2017 through the current tax year. For the majority of our foreign entities, the open tax years are from November 1, 2017 through the current tax year. For certain foreign entities, the tax years remain open, at most, back to the year 2008.

Keysight’s fiscal year 2018 U.S. federal income tax return was under examination by the Internal Revenue Service. The Tax Cuts and Jobs Act ("TCJA") was enacted in December 2017 and imposed a one-time U.S. tax on foreign earnings not previously repatriated to the U.S., known as the Transition Tax, which was reported in Keysight’s fiscal year 2018 U.S. federal income tax return. As of June 2022, the fiscal year 2018 U.S. federal income tax audit was effectively settled with no material assessments and no additional cash taxes paid.

The company is being audited in Malaysia for fiscal year 2008. This tax year predates our separation from Agilent. However, pursuant to the agreement between Agilent and Keysight pertaining to tax matters, as finalized at the time of separation, for certain entities, including Malaysia, any historical tax liability is the responsibility of Keysight. In the fourth quarter of fiscal year 2017, Keysight paid income taxes and penalties of \$68 million on gains related to intellectual property rights. The company believes there are numerous defenses to the current assessment; the statute of limitations for the fiscal year 2008 in Malaysia was closed, and the income in question is exempt from tax in Malaysia. The company is disputing this assessment and pursuing all avenues to resolve this issue favorably for the company. Our appeals to both the Special Commissioners of Income Tax and the High Court in Malaysia have been unsuccessful. We have filed a Notice of Appeal with the Court of Appeal, and a hearing is currently scheduled for 2023.

At this time, management does not believe that the outcome of any future or currently ongoing examination will have a material impact on our consolidated financial statements. We believe that we have an adequate provision for any adjustments that may result from tax examinations. However, the outcome of tax examinations cannot be predicted with certainty. Given the numerous tax years and matters that remain subject to examination in various tax jurisdictions, the ultimate resolution of current and future tax examinations could be inconsistent with management’s current expectations. If that were to occur, it could have an impact on our effective tax rate in the period in which such examinations are resolved.

A provision enacted in the TCJA requiring U.S. tax research and experimental expenditures to be capitalized and amortized over five years for research activities conducted in the U.S. and fifteen years for research activities conducted outside of the U.S. will be effective for Keysight beginning November 1, 2022. If this provision is not deferred, the capitalization is expected to increase U.S. taxable income and increase the U.S. federal Foreign-Derived Intangible Income tax deduction. As Keysight has elected to treat global intangible low-taxed income (“GILTI”) as a period cost, the capitalization will also increase the provision for income taxes. On August 16, 2022, the U.S. government enacted the Inflation Reduction Act of 2022 that includes changes to the U.S. corporate income tax system, including a fifteen percent minimum tax based on "adjusted financial statement income," which is effective for Keysight beginning November 1, 2023 and a one percent excise tax on repurchases of stock after December 31, 2022. We are continuing to evaluate the impact of these changes in U.S. tax law, as well as its application to our business.

Segment Overview

We have two reportable operating segments, the Communications Solutions Group and the Electronic Industrial Solutions Group. The profitability of each of the segments is measured after excluding share-based compensation expense, amortization of acquisition-related balances, acquisition and integration costs, a 2020 gain on an insurance settlement related to northern California wildfires, restructuring costs, interest income, interest expense and other items.

Communications Solutions Group

The Communications Solutions Group serves customers spanning the worldwide commercial communications and aerospace, defense, and government end markets. The group’s solutions consist of electronic design and test software, electronic measurement instruments, systems and related services. These solutions are used in the simulation, design, validation, manufacturing, installation, and optimization of electronic equipment and networks.

Revenue

	Year Ended October 31,			2022 over 2021 % Change	2021 over 2020 % Change
	2022	2021	2020		
	(in millions)				
Total revenue	\$ 3,803	\$ 3,523	\$ 3,132	8%	12%

Communications Solutions Group revenue for 2022 increased 8 percent when compared to 2021. Foreign currency movements had an unfavorable impact of 2 percentage points on year-over-year revenue growth for 2022 as compared to 2021. Revenue grew across all regions and in both the commercial communications and the aerospace, defense and government markets. Investment continues to be strong to support new communications technologies like 5G, Open Radio Access Networks ("O-RAN"), 400G, 800G, 1.6 Terabit networks, high-speed digital applications, spectrum operations, cybersecurity, space and satellite solutions; however, on-going supply chain constraints limited shipments and moderated revenue growth in 2022. Communications Solutions Group revenue for 2021 increased 12 percent when compared to 2020. Foreign currency movements and acquisitions each contributed 1 percentage point to revenue growth for 2021 when compared to 2020. Revenue grew in both the aerospace, defense and government and the commercial communications markets. Revenue grew across all regions driven by strength in the Americas and Europe.

Revenue from the commercial communications market represented approximately 69 percent of total Communications Solutions Group revenue in 2022 and increased 11 percent as compared to 2021. Revenue grew across all regions, driven by strong market demand across the communications ecosystem. Wireless 5G development and manufacturing of chipsets, components and devices, O-RAN, and high-speed data solutions to support data centers and the cloud drove growth. Revenue from the commercial communications market represented approximately 68 percent of total Communications Solutions Group revenue in 2021 and increased 8 percent as compared to 2020, with growth in the Americas and Europe, partially offset by a decline in Asia Pacific. The 2021 revenue growth was driven by improved economic conditions across the communications ecosystem, partially offset by the impact of China trade restrictions.

Revenue from the aerospace, defense and government market represented approximately 31 percent of total Communications Solutions Group revenue in 2022 and increased 3 percent as compared to 2021. The growth in Asia Pacific and Europe was partially offset by a decline in the Americas. We continue to see investments in spectrum operations, cybersecurity, and satellites and space, as well as new commercial technologies like 5G and early 6G research applications. Revenue from the aerospace, defense and government market represented approximately 32 percent of total Communications Solutions Group revenue in 2021 and increased 23 percent as compared to 2020, with revenue growing across all regions. The strong revenue growth was driven by increased customer demand and continued investment in space, satellite, spectrum operations, and new commercial technologies like 5G and early 6G research applications.

Gross Margin and Operating Margin

The following table provides Communications Solutions Group margins, expenses and income from operations for 2022 versus 2021, and 2021 versus 2020.

	Year Ended October 31,			2022 over 2021 % Change	2021 over 2020 % Change
	2022	2021	2020		
Total gross margin	66.5 %	65.3 %	65.2 %	1 ppt	—
Operating margin	28.5 %	26.5 %	24.7 %	2 ppts	2 ppts
(in millions)					
Research and development	\$ 606	\$ 589	\$ 530	3%	11%
Selling, general and administrative	\$ 848	\$ 791	\$ 749	7%	6%
Other operating expense (income), net	\$ (11)	\$ (12)	\$ (9)	(15)%	34%
Income from operations	\$ 1,085	\$ 932	\$ 773	16%	20%

Gross margin for the Communications Solutions Group in 2022 increased 1 percentage point as compared to 2021, primarily driven by price increases, higher revenue volume and lower variable people-related costs, partially offset by higher material costs. Gross margin for the Communications Solutions Group in 2021 was flat as compared to 2020, as gains driven by higher revenue volume were offset by higher variable people-related costs.

Research and development expense in 2022 increased 3 percent when compared to 2021, primarily driven by investments in key growth opportunities in our end markets and leading-edge technologies, as well as incremental costs of acquired businesses, partially offset by lower variable people-related costs. Research and development expense in 2021 increased 11 percent when compared to 2020, driven by greater investments in key growth opportunities in our end markets and leading-edge technologies, higher variable people-related costs, infrastructure-related costs and incremental costs of acquired businesses.

Selling, general and administrative expense in 2022 increased 7 percent when compared to 2021, primarily driven by increased investment in sales resources, higher infrastructure-related, marketing and travel-related costs, as well as incremental costs of acquired businesses, partially offset by lower variable people-related costs. Selling, general and administrative expense in 2021 increased 6 percent when compared to 2020, primarily driven by higher infrastructure-related, selling and variable people-related costs.

Other operating expense (income), net, primarily includes property rental income and was income of \$11 million in 2022, \$12 million in 2021 and \$9 million in 2020.

Income from Operations

Income from operations for 2022 increased \$153 million on a corresponding revenue increase of \$280 million. Income from operations for 2021 increased \$159 million on a corresponding revenue increase of \$391 million.

Operating margin in 2022 increased 2 percentage points when compared to 2021, driven by gross margin gains and lower operating expenses as a percentage of sales. Operating margin in 2021 increased 2 percentage points when compared to 2020, driven by gross margin gains from higher revenue volume and lower operating expenses as a percentage of sales.

Electronic Industrial Solutions Group

The Electronic Industrial Solutions Group provides test and measurement solutions and related services across a broad set of electronic industrial end markets, focusing on high-value applications in the automotive and energy industries and measurement solutions for consumer electronics, education, general electronics design and manufacturing, and semiconductor design and manufacturing. The group provides electronic measurement instruments, design and test software and systems, and related services used in the simulation, design, validation, manufacturing, installation and optimization of electronic equipment, as well as automated test software that uses artificial intelligence and machine learning to automate test creation and test execution.

Revenue					
	Year Ended October 31,				
	2022	2021	2020	2022 over 2021 % Change	2021 over 2020 % Change
	(in millions)				
Total revenue	\$ 1,617	\$ 1,418	\$ 1,089	14%	30%

Electronic Industrial Solutions Group revenue for 2022 increased 14 percent when compared to 2021. Foreign currency movements had an unfavorable impact of 3 percentage points on year-over-year revenue growth for 2022 as compared to 2021. The revenue increase was driven by continued investments in next-generation automotive and energy technologies, semiconductor measurement solutions, and industrial IoT. Revenue grew across all regions for 2022 as compared to 2021.

Electronic Industrial Solutions Group revenue for 2021 increased 30 percent when compared to 2020. Foreign currency movements had a favorable impact of 1 percentage point on revenue. Revenue associated with acquisitions contributed 2 percentage points to revenue growth for 2021 when compared to 2020. The revenue increase was driven by growth in semiconductor measurement solutions, general electronics measurement and automotive and energy, led by ongoing investments in advanced semiconductor technology nodes, EV and AV technologies and capacity expansions to address demand. Revenue grew across all regions for 2021 as compared to 2020.

Gross Margin and Operating Margin

The following table provides Electronic Industrial Solutions Group margins, expenses and income from operations for 2022 versus 2021, and 2021 versus 2020.

	Year Ended October 31,			2022 over 2021 % Change	2021 over 2020 % Change
	2022	2021	2020		
Total gross margin	61.5 %	64.2 %	62.7 %	(3) ppts	2 ppts
Operating margin	31.0 %	31.3 %	27.1 %	—	4 ppts
(in millions)					
Research and development	\$ 207	\$ 199	\$ 167	4%	20%
Selling, general and administrative	\$ 290	\$ 272	\$ 224	6%	21%
Other operating expense (income), net	\$ (4)	\$ (5)	\$ (4)	(17)%	20%
Income from operations	\$ 501	\$ 444	\$ 296	13%	50%

Gross margin in 2022 decreased 3 percentage points as compared to 2021, primarily driven by higher material costs, partially offset by higher revenue volume and price increases. Gross margin in 2021 increased 2 percentage points as compared to 2020, primarily driven by higher revenue volume and favorable mix.

Research and development expense in 2022 increased 4 percent when compared to 2021, primarily driven by greater investments in key growth opportunities in our end markets and leading-edge technologies, partially offset by lower variable people-related costs. Research and development expense in 2021 increased 20 percent when compared to 2020, primarily driven by greater investments in key growth opportunities in our end markets and leading-edge technologies, incremental costs of an acquired business, and higher variable people-related costs.

Selling, general and administrative expense in 2022 increased 6 percent when compared to 2021, primarily driven by higher infrastructure-related, marketing and travel-related costs, partially offset by lower variable people-related costs. Selling, general and administrative expense in 2021 increased 21 percent when compared to 2020, primarily due to incremental costs of an acquired business, higher selling costs, higher infrastructure-related costs and variable people-related costs.

Other operating expense (income), net primarily includes property rental income and was income of \$4 million, \$5 million and \$4 million in 2022, 2021 and 2020, respectively.

Income from Operations

Income from operations for 2022 increased \$57 million on a corresponding revenue increase of \$199 million. Income from operations for 2021 increased \$148 million on a corresponding revenue increase of \$329 million.

Operating margin in 2022 was flat when compared to 2021, primarily driven by lower operating expenses as a percentage of sales, partially offset by gross margin declines. Operating margin increased 4 percentage points in 2021 compared to 2020, primarily driven by gross margin gains from higher revenue volume and favorable mix and lower operating expenses as a percentage of sales.

Financial Condition

Liquidity and Capital Resources

Our liquidity is affected by many factors, some of which are based on normal ongoing operations of our business and some of which arise from fluctuations related to global economics and markets. Our cash balances are generated and held in many locations throughout the world. Under certain circumstances, local government regulations may limit our ability to move cash balances to meet cash needs. We do not currently expect such regulations and restrictions to impact our ability to pay vendors and conduct operations throughout our global organization.

Overview of Cash Flows

Our key cash flow activities were as follows:

	Year Ended October 31,					
	2022		2021		2020	
			(in millions)			
Net cash provided by operating activities	\$	1,144	\$	1,322	\$	1,016
Net cash used in investing activities	\$	(251)	\$	(353)	\$	(442)
Net cash used in financing activities	\$	(861)	\$	(671)	\$	(413)

Operating Activities

Cash flows from operating activities can fluctuate significantly from period to period as working capital needs, the timing of payments for income taxes, variable pay, pension funding, and other items impact reported cash flows.

Net cash provided by operating activities decreased by \$178 million in 2022 as compared to 2021 and increased \$306 million in 2021 as compared to 2020.

- Net income in 2022 increased \$230 million as compared to 2021. Non-cash adjustments to net income were higher by \$32 million, primarily due to a \$60 million decrease in deferred tax benefits, a \$31 million unrealized loss on investment in equity securities, a \$22 million increase in share-based compensation expense and a \$7 million impairment of assets, partially offset by a \$70 million decrease in amortization, a \$16 million lower pension settlement loss and a \$2 million decrease from other miscellaneous non-cash activities.

Net income in 2021 increased \$267 million as compared to 2020. Non-cash adjustments to net income were lower by \$54 million, primarily due to a \$94 million increase in deferred tax benefits and a \$46 million decrease in amortization, partially offset by a one-time prior-period gain of \$32 million related to an insurance recovery of property, plant and equipment reflected as cash from investing activity, a \$16 million loss on a partial settlement of our Netherlands defined benefit plan, a \$13 million increase in depreciation, a \$11 million increase in share-based compensation expense, and a \$14 million increase from other miscellaneous non-cash activities.

- The aggregate of accounts receivable, inventory and accounts payable used net cash of \$273 million during 2022, compared to net cash used of \$112 million in 2021 and \$31 million in 2020. The increase in aggregate net cash used in 2022 is primarily driven by higher revenue volume, net of collections, and an increase in inventory due to higher material procurement costs and incremental stock build-up to secure supply. The amount of cash flow generated from or used by the aggregate of accounts receivable, inventory and accounts payable depends on the cash conversion cycle, which represents the number of days that elapse from the day we pay for the purchase of raw materials and components to the collection of cash from our customers and can be significantly impacted by the timing of shipments and purchases, as well as collections and payments in a period.
- Net cash used for retirement and post-retirement benefits was \$19 million in 2022, compared to net cash provided of \$7 million in 2021 and net cash used of \$108 million in 2020. The company's contributions to our U.S. Defined Benefit Plan were zero, zero and \$100 million in 2022, 2021 and 2020, respectively. The company's contributions to our non-U.S. defined benefit plans were \$7 million, \$8 million and \$10 million in 2022, 2021 and 2020, respectively. We did not contribute to the Keysight Technologies, Inc. Health Plan for Retirees ("U.S. Post-Retirement Benefit Plan") in 2022, 2021 and 2020.

- The aggregate other movements in assets and liabilities used net cash of \$112 million during 2022, compared to net cash provided of \$141 million in 2021 and \$82 million in 2020. The difference between 2022 and 2021 cash flows is primarily due to higher prepaid inventory deposits driven by supply chain constraints, higher income tax payments, net of accruals, higher variable compensation and other payroll-related payments, net of accruals, higher prepaid expenses, and changes in deferred revenue. The difference between 2021 and 2020 cash flows is primarily due to higher variable compensation accruals, net of payments, and higher cash inflow from deferred revenue, partially offset by an increase in prepaid current assets as compared to the same period last year.

Investing Activities

Net cash changes in investing activities primarily relates to investments in property, plant and equipment and acquisitions of businesses to support our growth.

Net cash used in investing activities decreased by \$102 million in 2022 as compared to 2021 and decreased by \$89 million in 2021 as compared to 2020. Investments in property, plant and equipment increased \$11 million as compared to 2021 and increased \$57 million in 2021 as compared to 2020. The increase in capital spending in 2022 was driven by capital investments to increase the resiliency of our supply chains.

In 2022, we used \$251 million for investing activities, including \$185 million for purchases of property, plant and equipment; \$33 million, net of cash acquired, for acquisition activities; and \$33 million for investments, including \$30 million for purchase of an equity investment.

In 2021, we used \$353 million for investing activities, including \$174 million for purchases of property, plant and equipment; \$102 million, net of \$11 million of cash acquired, for the acquisition of Sanjole Inc.; and \$76 million, net of cash acquired, for other acquisition activities.

In 2020, we used \$442 million for investing activities, including \$117 million for purchases of property, plant and equipment; \$319 million, net of \$11 million of cash acquired, for the acquisition of Eggplant Topco Limited ("Eggplant") and \$38 million, net of cash acquired, for other acquisition activities; partially offset by receipt of insurance proceeds of \$32 million for property, plant and equipment damaged in the 2017 northern California wildfires.

Financing Activities

Net cash changes in financing activities primarily relate to proceeds from issuance of common stock under employee stock plans, tax payments related to net share settlement of equity awards and treasury stock repurchases.

Net cash used in financing activities increased by \$190 million in 2022 as compared to 2021 and increased by \$258 million in 2021 as compared to 2020. The incremental increases were primarily due to treasury stock repurchases.

In 2022, we used \$861 million for financing activities, including \$849 million of treasury stock repurchases and \$74 million of tax payments related to net share settlement of equity awards, partially offset by \$63 million of proceeds from issuance of common stock under employee stock plans.

In 2021, we used \$671 million for financing activities, including \$673 million of treasury stock repurchases and \$53 million of tax payments related to net share settlement of equity awards, partially offset by \$59 million of proceeds from issuance of common stock under employee stock plans.

In 2020, we used \$413 million for financing activities, including \$411 million of treasury stock repurchases and \$53 million of tax payments related to net share settlement of equity awards and \$7 million of payments on short-term debt, partially offset by \$58 million of proceeds from issuance of common stock under employee stock plans.

Treasury stock repurchases

On November 18, 2021, our board of directors approved a stock repurchase program authorizing the purchase of up to \$1,200 million of the company’s common stock, replacing the previously approved November 2020 program, under which \$77 million remained. The stock repurchase program may be commenced, suspended or discontinued at any time at the company’s discretion and does not have an expiration date. See "Issuer Purchases of Equity Securities" under Part II Item 2 for additional information.

Debt

	October 31,			
	2022		2021	
	(in millions)			
Total debt (par value)	\$	1,800	\$	1,800
Revolving credit facility	\$	750	\$	750

On July 30, 2021, we entered into a new credit agreement that amended and restated our existing credit agreement dated February 15, 2017 in its entirety, and provides for a \$750 million five-year unsecured revolving credit facility (the “Revolving Credit Facility”) that will expire on July 30, 2026 and bears interest at an annual rate of LIBOR + 1 percent along with a facility fee of 0.125 percent per annum. In addition, the new credit agreement permits the company, subject to certain customary conditions, on one or more occasions to request to increase the total commitments under the Revolving Credit Facility by up to \$250 million in the aggregate. We may use amounts borrowed under the facility for general corporate purposes. As of October 31, 2022 and October 31, 2021, we had no borrowings outstanding under the Revolving Credit Facility. We were in compliance with the covenants of the Revolving Credit Facility during the year ended October 31, 2022. See note 11, "Debt" for additional information.

Cash and cash requirements

	October 31,			
	2022		2021	
	(in millions)			
Cash, cash equivalents and restricted cash	\$	2,057	\$	2,068
U.S.	\$	371	\$	427
Non-U.S.	\$	1,686	\$	1,641

Our cash and cash equivalents mainly consist of investments in institutional money market funds, short-term deposits held at major global financial institutions and similar short duration instruments with original maturities of three months or less. We continuously monitor the creditworthiness of the financial institutions and money market fund asset managers with whom we invest our funds. We utilize a variety of funding strategies in an effort to ensure that our worldwide cash is available in the locations in which it is needed. Most significant international locations have access to internal funding through an offshore cash pool for working capital needs. In addition, a few locations that are unable to access internal funding have access to temporary local overdraft and short-term working capital lines of credit.

Cash requirements

We have cash requirements to support working capital needs, capital expenditures, business acquisitions, contractual obligations, commitments, principal and interest payments on debt, and other liquidity requirements associated with our operations. We generally intend to use available cash and funds generated from our operations to meet these cash requirements, but in the event that additional liquidity is required, we may also borrow under our revolving credit facility.

The following table summarizes our short and long-term cash requirements as of October 31, 2022:

	Total		Due within one year		Due later than one year	
			(in millions)			
Senior notes obligations	\$	1,800	\$	—	\$	1,800
Interest payments on senior notes		304		75		229
Operating lease commitments		251		45		206
Commitments to contract manufacturers and suppliers		631		593		38
Other purchase commitments		55		55		—
Other liabilities reflected on our consolidated balance sheet		1,547		996		551
Total	\$	4,588	\$	1,764	\$	2,824

Senior notes obligations and interest payments on senior notes. We have contractual obligations for principal and interest payments on our senior notes. See note 11, "Debt" for additional information.

Operating lease commitments. Commitments under operating leases primarily relates to leasehold properties. See Note 10, "Leases" for additional information.

Commitments to contract manufacturers and suppliers. We purchase components from a variety of suppliers and use several contract manufacturers to provide manufacturing services for our products. See note 14, "Commitments and contingencies." As of October 31, 2022, we had non-cancellable purchase commitments that aggregated to approximately \$553 million, of which the majority is for less than one year.

Other purchase commitments. Other purchase commitments relate to contracts with professional services suppliers. See note 14, "Commitments and Contingencies."

Other liabilities. Other liabilities primarily includes contract liabilities, net pensions and post-retirement benefit obligations, employee compensation and benefits, net tax liabilities, standard warranties and other accrued liabilities. The timing of cash flows associated with these obligations is based upon management’s estimates over the terms of these arrangements and is largely based upon historical experience.

Of the tax liabilities included in the above table, \$59 million relates to a U.S. transition tax liability and \$136 million for uncertain tax positions. The remaining U.S. transition tax liability, which Keysight originally elected to pay over 8 years, is payable over the next 4 years and relates to a one-time U.S. tax on those earnings that had not been previously repatriated to the U.S. With regard to the \$136 million of long-term liabilities for uncertain tax positions, we are unable to accurately predict when these amounts will be realized or released. We believe that we have an adequate provision for any adjustments that may result from tax examinations. However, the outcome of tax examinations cannot be predicted with certainty. Given the numerous tax years and matters that remain subject to examination in various tax jurisdictions, the ultimate resolution of current and future tax examinations could be inconsistent with management’s current expectations. See note 5 “Income taxes” for additional information.

In addition to the obligations noted above, as of October 31, 2022 we had \$38 million of outstanding letters of credit and surety bonds unrelated to the credit facility that were issued by various lenders.

For the next twelve months, we do not expect to contribute to our U.S. defined benefit plan and U.S. post-retirement benefit plan, and we expect to contribute \$11 million to our non-U.S. defined benefit plans. The ultimate amounts we will contribute depend upon, among other things, legal requirements, underlying asset returns, the plan’s funded status, the anticipated tax deductibility of the contribution, local practices, market conditions, interest rates and other factors. See note 12, "Retirements plans and post-retirements benefits."

Additionally, we expect capital spending to be approximately \$250 million in 2023, with greater investments in capacity expansion and technology investments.

As of October 31, 2022, we believe our cash and cash equivalents, cash generated from operations, and our ability to access capital markets and credit lines will satisfy our cash needs for the foreseeable future both globally and domestically.

Critical Accounting Policies and Estimates

The preparation of financial statements in accordance with accounting principles generally accepted in the United States requires management to make estimates and assumptions that affect the amounts reported in our consolidated financial statements and accompanying notes. Management bases its estimates on historical experience and various other assumptions believed to be reasonable. Although these estimates are based on management's best knowledge of current events and actions that may impact the company in the future, actual results may be different from the estimates. We are not aware of any specific event or circumstance that would require an update to our estimates or judgments or a revision of the carrying value of our assets or liabilities as of October 31, 2022. An accounting policy is deemed to be critical if it requires an accounting estimate to be made based on assumptions about matters that are highly uncertain at the time the estimate is made, and if different estimates that reasonably could have been used or changes in the accounting estimate that are reasonably likely to occur could materially change the financial statements. Our critical accounting policies are those that affect our financial statements materially and involve difficult, subjective or complex judgments by management. Those policies are revenue recognition, inventory valuation, share-based compensation, retirement and post-retirement plan assumptions, valuation of goodwill and other intangible assets, warranty, loss contingencies, restructuring and accounting for income taxes.

Revenue recognition. Revenue is recognized upon transfer of control of the promised products or services to customers in an amount that reflects the consideration we expect to receive in exchange for those products or services. We primarily generate revenue from the sale of products (hardware and/or software), services, or a combination thereof. We enter into contracts that

may involve multiple performance obligations, and we allocate the transaction price between each performance obligation on the basis of relative standalone selling price (“SSP”). We recognize revenue following the five-step model.

1. *Identify the contract with a customer:* Generally, we consider customer purchase orders, which in some cases are governed by master sales or other purchase agreements, to be the customer contract. All of the following criteria must be met before we consider an agreement to qualify as a contract with a customer under the revenue standard: (i) it must be approved by all parties; (ii) each party’s rights regarding the goods and services to be transferred can be identified; (iii) the payment terms for the goods and services can be identified; (iv) the agreement has commercial substance; and, (v) the customer has the ability and intent to pay and collection of substantially all of the consideration is probable. We exercise reasonable judgment to determine the customer’s ability and intent to pay, which is based upon various factors including the customer’s historical payment experience or credit and financial information and credit risk management measures that we implement.
2. *Identify the performance obligations in the contract:* We assess whether each promised good or service is distinct for the purpose of identifying the various performance obligations in each contract. Promised goods and services are considered distinct provided that: (i) the customer can benefit from the good or service either on its own or together with other resources that are readily available to the customer; and, (ii) our promise to transfer the good or service to the customer is separately identifiable or distinct from other promises in the contract.
3. *Determine the transaction price:* Transaction price reflects the amount of consideration to which we expect to be entitled in exchange for transferring goods or services. Our contracts may include terms that could cause variability in the transaction price including rebates, rights of return, trade-in credits, and discounts. Variable consideration is generally accounted for at the portfolio level and estimated based on historical information.
4. *Allocate the transaction price to performance obligations in the contract:* If the contract contains a single performance obligation, the entire transaction price is allocated to that performance obligation. Many of our contracts include multiple performance obligations with a combination of distinct products and services, maintenance and support, professional services and/or training. For contracts with multiple performance obligations, we allocate the total transaction value to each distinct performance obligation based on relative SSP. Judgment is required to determine the SSP for each distinct performance obligation. The best evidence of SSP is the observable price of a good or service when we sell that good or service separately under similar circumstances to similar customers. Since most contracts contain multiple performance obligations, we use information that may include market conditions and other observable inputs to estimate SSP when we don’t have standalone transactions.
5. *Recognize revenue when (or as) performance obligations are satisfied:* Revenue is recognized at the point in time control is transferred to the customer. For hardware sales, transfer of control to the customer typically occurs at the point the product is shipped or delivered to the customer’s designated location. For software license sales transfer of control to the customer typically occurs upon shipment, electronic delivery, or when the software is available for download by the customer. For sales of implementation service and custom solutions or in instances where products are sold along with essential installation services, transfer of control occurs and revenue is typically recognized upon customer acceptance. For fixed-price support and extended warranty contracts, or certain software arrangements that provide customers with a right to access over a discrete period, control is deemed to transfer over time and revenue is recognized on a straight-line basis over the contract term due to the stand-ready nature of the performance obligation. Revenue from hardware repairs and calibration services outside of an extended warranty or support contract is recognized at the time of completion of the related service. For other professional services or time-based labor contracts, revenue is recognized as we perform the services and the customers receive and/or consume the benefits.

Inventory valuation. We assess the valuation of our inventory on a periodic basis and make adjustments to the value for estimated excess and obsolete inventory based upon estimates about future demand and actual usage. Such estimates are difficult to make under most economic conditions. The excess balance determined by this analysis becomes the basis for our excess inventory charge. Our excess inventory review process includes analysis of sales forecasts, managing product rollovers and working with manufacturing and sales to maximize recovery of excess inventory. If actual market conditions are less favorable than those projected by management, additional write-downs may be required. If actual market conditions are more favorable than anticipated, inventory previously written down may be sold to customers, resulting in lower cost of sales and higher income from operations than expected in that period.

Share-based compensation. We account for share-based awards in accordance with the provisions of the authoritative accounting guidance, which requires the measurement and recognition of compensation expense for all share-based payment awards made to our employees and directors. Awards granted under the Keysight Technologies, Inc. Long-Term Performance ("LTP") Program are based on a variety of targets, such as total shareholder return ("TSR") or financial metrics such as

operating margin. The awards based on TSR were valued using a Monte Carlo simulation model and those based on financial metrics were valued based on the market price of Keysight’s common stock on the date of grant. The compensation cost for financial metrics-based performance awards reflect the cost of awards that are probable to vest at the end of the performance period. The Monte Carlo simulation fair value model requires the use of highly subjective and complex assumptions, including the price volatility of the underlying stock. For additional information on valuation assumptions, see Note 4, “Share-Based Compensation.” The estimated fair value of restricted stock awards is determined based on the market price of Keysight’s common stock on the date of grant. We did not grant any option awards in 2022, 2021 and 2020.

Retirement and post-retirement benefit plan assumptions. Retirement and post-retirement benefit plan costs are a significant cost of doing business. They represent obligations that will ultimately be settled sometime in the future and therefore are subject to estimation. Defined benefit plan obligations are remeasured at least annually as of October 31, based on the present value of future benefit payments to reflect the future benefit costs over the employees' average expected future service to Keysight based on the terms of the plans. To estimate the present value of these future payments, we are required to make assumptions using actuarial concepts within the framework of GAAP. The discount rate is a critical assumption. Other important assumptions include expected long-term return on plan assets, expected future salary increases, expected future increases to benefit payments, expected retirement dates, employee turnover, retiree mortality rates and investment portfolio composition. We evaluate these assumptions at least annually. See Note 12, "Retirement Plans and Post-Retirement Benefit Plans."

The discount rate is used to determine the present value of future benefit payments at the measurement date, which is October 31 for both U.S. and non-U.S. plans. The U.S. discount rates as of October 31, 2022 and 2021 were determined based on the results of matching expected plan benefit payments with cash flows from a hypothetically constructed bond portfolio. The non-U.S. discount rates as of October 31, 2022 and 2021 were determined using spot rates along the yield curve to calculate disaggregated discount rates. In addition, we used this method to calculate two components of the periodic benefit cost: service cost and interest cost. If we changed our discount rate by 1 percent, the impact would be \$7 million on U.S. net periodic benefit cost and \$8 million on non-U.S. net periodic benefit cost. Lower discount rates increase the present value of the liability and subsequent year pension expense; higher discount rates decrease the present value of the liability and subsequent year pension expense.

The company uses alternate methods of amortization, as allowed by the authoritative guidance, that amortizes the actuarial gains and losses on a consistent basis for the years presented. For U.S. plans, gains and losses are amortized over the average future working lifetime. For most non-U.S. plans and U.S. post-retirement benefit plans, gains and losses are amortized using a separate layer for each year's gains and losses. The expected long-term return on plan assets is estimated using current and expected asset allocations as well as historical and expected returns. Plan assets are valued at fair value. If we changed our estimated return on assets by 1 percent, the impact would be \$10 million on U.S. net periodic benefit cost and \$11 million on non-U.S. net periodic benefit cost.

Goodwill and other intangible assets. We review goodwill for impairment annually during our fourth fiscal quarter and whenever events or changes in circumstances indicate the carrying value may not be recoverable. As defined in the authoritative guidance, a reporting unit is an operating segment, or one level below an operating segment. At the time of an acquisition, we assign goodwill to the reporting unit that is expected to benefit from the synergies of the combination.

Companies have the option to perform a qualitative assessment to determine whether performing a quantitative test is necessary. If an entity believes, as a result of its qualitative assessment, that it is more-likely-than-not that the fair value of a reporting unit is less than its carrying amount, the quantitative impairment test will be required. Otherwise, no further testing will be required.

The quantitative impairment test involves a comparison of the estimated fair value of a reporting unit to its carrying amount, including goodwill. We determine the fair value of a reporting unit using the results derived using the market approach, when available and appropriate, or the income approach, or a combination of both. If multiple valuation methodologies are used, the results are weighted accordingly. The income approach is estimated through the discounted cash flow (“DCF”) analysis. Determining fair value requires the exercise of significant judgment, including judgments about appropriate discount rates, revenue growth rates, and the amount and timing of expected future cash flows. Discount rates are based on a weighted average cost of capital (“WACC”), which represents the average rate a business must pay its providers of debt and equity, plus a risk premium. The WACC used to test goodwill is derived from a group of comparable companies. The cash flows employed in the DCF analysis are derived from internal forecasts and external market forecasts. The market approach estimates the fair value of the reporting unit by utilizing the market comparable method, which is based on revenue and earnings multiples from comparable companies. If the estimated fair value of a reporting unit exceeds its carrying amount, goodwill of the reporting unit is not impaired. If the carrying amount of a reporting unit exceeds its estimated fair value, then an impairment charge is

recorded for the amount by which the carrying amount exceeds the reporting unit's fair value up to a maximum amount of the goodwill balance for the reporting unit.

During the fourth quarter of 2022, we performed our annual impairment test of goodwill for all our reporting units using a qualitative approach. Based on the results of our qualitative testing, we believe that it is more-likely-than-not that the fair value of each reporting unit is greater than its respective carrying value.

Other intangible assets consist primarily of developed technologies, proprietary know-how, trademarks, customer relationships, non-compete agreements, and backlog and are amortized using the straight-line method over estimated useful lives ranging from 6 months to 12 years. We review other intangible assets for impairment whenever events or changes in business circumstances indicate that the carrying amount of the assets may not be fully recoverable or that the useful lives of these assets are no longer appropriate. We performed an impairment test of Eggplant's long-lived assets in 2021, which preceded the quantitative test of goodwill in accordance with the guidance, and concluded that no impairment charge was required. No impairments of purchased intangible assets were recorded during the years ended October 31, 2022, 2021 and 2020.

We review indefinite-lived intangible assets for impairment whenever events or changes in business circumstances indicate that the carrying amount of the assets may not be fully recoverable or that the useful lives of these assets are no longer appropriate. The authoritative accounting guidance allows a qualitative approach for testing indefinite-lived intangible assets for impairment, similar to the impairment testing guidance for goodwill. It allows the option to first assess qualitative factors (events and circumstances) that could have affected the significant inputs used in determining the fair value of the indefinite-lived intangible asset. The qualitative factors assist in determining whether it is more-likely-than-not that the indefinite-lived intangible asset is impaired. An organization may choose to bypass the qualitative assessment for any indefinite-lived intangible asset in any period and proceed directly to calculating its fair value. Our indefinite-lived intangible assets are in-process research and development ("IPR&D") intangible assets. In 2022, 2021 and 2020, we assessed impairment by performing a qualitative test. No material impairments of indefinite-lived intangible assets were recorded in 2022, 2021 and 2020.

Warranty. Keysight warranties on products sold through direct sales channels are primarily for one year. Warranties for products sold through distribution channels are primarily for three years. We accrue for standard warranty costs based on historical trends in warranty charges. The accrual is reviewed regularly and periodically adjusted to reflect changes in warranty cost estimates. Estimated warranty charges are recorded within cost of products at the time related product revenue is recognized.

We also sell extended warranties that provide warranty coverage beyond the standard warranty term. Revenue associated with extended warranties is deferred and recognized over the extended coverage period.

Loss Contingencies. As discussed in Note 13 and 14 to the consolidated financial statements, we are, from time to time, subject to a variety of litigation and similar contingent liabilities incidental to our business (or the business operations of previously owned entities). We recognize a liability for any contingency that is known or probable of occurrence and reasonably estimable. These assessments require judgments concerning matters such as litigation developments and outcomes, the anticipated outcome of negotiations, the number of future claims and the cost of both pending and future claims. In addition, because most contingencies are resolved over long periods of time, liabilities may change in the future due to various factors. Changes in these factors could materially impact our financial position or our results of operation.

Restructuring. The main component of our restructuring plan is related to workforce reductions and site restructuring. Workforce reduction charges are accrued when payment of benefits becomes probable and the amounts can be estimated. If the amounts and timing of cash flows from restructuring activities are significantly different from what we have estimated, the actual amount of restructuring and other related charges could be materially different, either higher or lower, than those we have recorded.

Accounting for income taxes. We must make certain estimates and judgments in determining income tax expense for financial statement purposes. These estimates and judgments occur in the calculation of tax benefits, credits and deductions, and in the calculation of certain tax assets and liabilities that arise from differences in the timing of recognition of revenue and expense for tax and financial statement purposes. Significant changes to these estimates may result in an increase or decrease to our tax provision in a subsequent period.

Significant management judgment is also required in determining whether deferred tax assets will be realized in full or in part. When it is more-likely-than-not that all or some portion of specific deferred tax assets such as net operating losses or foreign tax credit carryforwards will not be realized, a valuation allowance must be established for the amount of the deferred tax assets that cannot be realized. We consider all available positive and negative evidence on a jurisdiction-by-jurisdiction

basis when assessing whether it is more likely than not that deferred tax assets are recoverable. We consider evidence such as our past operating results, the existence of losses in recent years and our forecast of future taxable income. At October 31, 2022, the company maintains a valuation allowance mainly related to net operating losses in Luxembourg and the U.K., capital losses in the U.K., and California research credits. We intend to maintain a valuation allowance in these jurisdictions until sufficient positive evidence exists to support their reversal.

The calculation of our tax liabilities involves dealing with uncertainties in the application of complex tax law and regulations in a multitude of jurisdictions. Although the guidance on the accounting for uncertainty in income taxes prescribes the use of a recognition and measurement model, the determination of whether an uncertain tax position has met those thresholds will continue to require significant judgment by management. In accordance with the guidance on the accounting for uncertainty in income taxes, for all U.S. and other tax jurisdictions, we recognize potential liabilities for anticipated tax audit issues based on our estimate of whether, and the extent to which, additional taxes and interest will be due. The ultimate resolution of tax uncertainties may differ from what is currently estimated, which could result in a material impact on income tax expense. If our estimate of income tax liabilities proves to be less than the ultimate assessment, a further charge to expense would be required. If events occur and the payment of these amounts ultimately proves to be 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. We include interest and penalties related to unrecognized tax benefits within the provision for income taxes in the consolidated statements of operations.

New Accounting Standards

See Note 1, "Overview and summary of significant accounting policies," to the consolidated financial statements for a description of new accounting pronouncements.

Item 7A. *Quantitative and Qualitative Disclosures About Market Risk*

At various times, we use derivative financial instruments to limit exposure to changes in foreign currency exchange rates and interest rates. Because derivative instruments are used solely as hedges and not for speculative trading purposes, fluctuations in the market values of such derivative instruments are generally offset by reciprocal changes in the underlying economic exposures that the instruments are intended to hedge. For further discussion of derivative financial instruments, see Note 9, "Derivatives."

Currency exchange rate risk

We are exposed to foreign currency exchange rate risks inherent in our sales commitments, anticipated sales, expenses and assets and liabilities denominated in currencies other than the functional currency of our subsidiaries. We hedge future cash flows denominated in currencies other than the functional currency using sales and expense forecasts on a rolling period of up to twelve months. Our exposure to exchange rate risks is managed on an enterprise-wide basis. This strategy utilizes derivative financial instruments, primarily forward contracts, to hedge certain foreign currency exposures with the intent of offsetting gains and losses that occur on the underlying exposures with gains and losses on the derivative contracts hedging them. We do not currently and do not intend to utilize derivative financial instruments for speculative trading purposes. To the extent that we are required to pay for all, or portions, of an acquisition price in foreign currencies, we may enter into foreign exchange contracts to reduce the risk that currency movements will impact the cost of the transaction.

Our operations generate non-functional currency cash flows such as revenue, third-party vendor payments and inter-company payments. In anticipation of these foreign currency cash flows and in view of the volatility of the currency market, we enter into foreign exchange contracts as described above to substantially mitigate our currency risk. In 2022, 2021 and 2020, approximately 77 percent, 77 percent and 76 percent of our revenues were generated in U.S. dollars.

The unfavorable effects of changes in foreign currency exchange rates, principally as a result of the strength of the U.S. dollar, had an immaterial impact on our revenue in the year ended October 31, 2022. We calculate the impact of foreign currency exchange rates movements by applying the actual foreign currency exchange rates in effect during the last month of each quarter to the current year to both the applicable current and prior year periods. We also performed a sensitivity analysis assuming a hypothetical 10 percent adverse movement in foreign exchange rates to the hedging contracts and the underlying exposures described above. As of October 31, 2022 and 2021, the analysis indicated that these hypothetical market movements would not have a material effect on our consolidated financial position, results of operations or cash flows.

Interest rate risk

A change in interest rates on long-term debt impacts the fair value of the company’s fixed-rate long-term debt but not the company’s earnings or cash flow because the interest on such debt is fixed. Generally, the fair market value of fixed-rate debt will increase as interest rates fall and decrease as interest rates rise.

As of October 31, 2022, a hypothetical 10 percent increase in interest rates would have decreased the fair value of the company’s fixed-rate long-term debt by approximately \$36 million. However, since the company currently has no plans to repurchase its outstanding fixed-rate instruments before their maturity nor do the investors in our fixed-rate debt obligations have the right to demand we pay off these obligations prior to maturity, the impact of market interest rate fluctuations on the company’s fixed-rate long-term debt does not affect the company’s results of operations or stockholders’ equity.

Item 8. *Financial Statements and Supplementary Data*

Index to Consolidated Financial Statements	Page
Consolidated Financial Statements:	
Report of Independent Registered Public Accounting Firm (PCAOB ID: 238)	55
Consolidated Statement of Operations for each of the three years in the period ended October 31, 2022	57
Consolidated Statement of Comprehensive Income for each of the three years in the period ended October 31, 2022	58
Consolidated Balance Sheet at October 31, 2022 and 2021	59
Consolidated Statement of Cash Flows for each of the three years in the period ended October 31, 2022	60
Consolidated Statement of Equity for each of the three years in the period ended October 31, 2022	61
Notes to Consolidated Financial Statements	62

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of Keysight Technologies, Inc.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Keysight Technologies, Inc. and its subsidiaries (the “Company”) as of October 31, 2022 and 2021, and the related consolidated statements of operations, of comprehensive income, of equity and of cash flows for each of the three years in the period ended October 31, 2022, including the related notes and schedule of valuation and qualifying accounts for each of the three years in the period ended October 31, 2022 appearing under Item 15(a)(2) (collectively referred to as the “consolidated financial statements”). We also have audited the Company's internal control over financial reporting as of October 31, 2022, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of October 31, 2022 and 2021, and the results of its operations and its cash flows for each of the three years in the period ended October 31, 2022 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of October 31, 2022, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

Change in Accounting Principles

As discussed in Note 1 to the consolidated financial statements, the Company changed the manner in which it accounts for leases on November 1, 2019.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in Management’s Report on Internal Control over Financial Reporting appearing under Item 9A. Our responsibility is to express opinions on the Company’s consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (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 audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated 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 consolidated 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 consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

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 (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) 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 (iii) 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.

Critical Audit Matters

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that (i) relates to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters 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.

U.S. Defined Benefit Plan Obligations

As described in Notes 1 and 12 to the consolidated financial statements, the Company has defined benefit plan obligations of \$636 million for its U.S. plans as of October 31, 2022. Management remeasures the defined benefit plan obligations at least annually based on the present value of future benefit payments to reflect the future benefit costs over the employees' average expected future service to Keysight based on the terms of the plans. Management estimates the present value of the future payments using actuarial concepts and assumptions. The critical assumption used by management to estimate the defined benefit plan obligations is the discount rate.

The principal considerations for our determination that performing procedures relating to the Company’s U.S. defined benefit plan obligations is a critical audit matter are (i) the significant judgment by management in determining the present value of the defined benefit plan obligations; (ii) a high degree of auditor judgment, subjectivity, and effort in performing procedures and evaluating the significant assumption related to the discount rate used in determining the present value of the defined benefit plan obligations; and (iii) the audit effort involved the use of professionals with specialized skill and knowledge.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to the determination of the present value of the defined benefit plan obligations, including controls over the Company’s methods, significant assumptions, and data. These procedures also included, among others, testing the completeness and accuracy of the underlying data used in the estimate and the involvement of professionals with specialized skill and knowledge to assist in (i) evaluating the appropriateness of the actuarial concepts used to estimate the present value of the defined benefit plan obligations, (ii) developing an independent range of the U.S. discount rate and (iii) comparing management's selected discount rate to the independently developed ranges to evaluate the reasonableness of management’s discount rate assumption. Developing the independent estimate involved developing a range of independent discount rates for each U.S. benefit plan based on publicly available market data for high quality corporate bonds.

/s/ PricewaterhouseCoopers LLP

San Francisco, California
December 15, 2022

We have served as the Company’s auditor since 2013.

KEYSIGHT TECHNOLOGIES, INC.
CONSOLIDATED STATEMENT OF OPERATIONS
(in millions, except per share data)

	Year Ended October 31,		
	2022	2021	2020
Revenue:			
Products	\$ 4,474	\$ 4,050	\$ 3,432
Services and other	946	891	789
Total revenue	5,420	4,941	4,221
Costs and expenses:			
Cost of products	1,617	1,522	1,373
Cost of services and other	353	350	315
Total costs	1,970	1,872	1,688
Research and development	841	811	715
Selling, general and administrative	1,283	1,195	1,097
Other operating expense (income), net	(8)	(17)	(44)
Total costs and expenses	4,086	3,861	3,456
Income from operations	1,334	1,080	765
Interest income	16	3	11
Interest expense	(79)	(79)	(78)
Other income (expense), net	14	6	63
Income before taxes	1,285	1,010	761
Provision for income taxes	161	116	134
Net income	<u>\$ 1,124</u>	<u>\$ 894</u>	<u>\$ 627</u>
Net income per share:			
Basic	\$ 6.23	\$ 4.84	\$ 3.35
Diluted	\$ 6.18	\$ 4.78	\$ 3.31
Weighted average shares used in computing net income per share:			
Basic	180	185	187
Diluted	182	187	189

The accompanying notes are an integral part of these consolidated financial statements.

KEYSIGHT TECHNOLOGIES, INC.
CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME
(in millions)

	Year Ended October 31,		
	2022	2021	2020
Net income	\$ 1,124	\$ 894	\$ 627
Other comprehensive income (loss):			
Unrealized gain (loss) on derivative instruments, net of tax benefit (expense) of \$(19), \$(6) and \$(4)	73	26	16
Amounts reclassified into earnings related to derivative instruments, net of tax benefit (expense) of zero, zero and \$(1)	(3)	(2)	3
Foreign currency translation, net of tax benefit (expense) of zero	(165)	(10)	33
Net defined benefit pension cost and post retirement plan costs:			
Change in actuarial net gain (loss), net of tax benefit (expense) of zero, \$(55) and \$23	83	144	(64)
Change in net prior service credit, net of tax benefit of zero, zero and \$3	—	(1)	(9)
Other comprehensive income (loss)	(12)	157	(21)
Total comprehensive income	\$ 1,112	\$ 1,051	\$ 606

The accompanying notes are an integral part of these consolidated financial statements.

KEYSIGHT TECHNOLOGIES, INC.
CONSOLIDATED BALANCE SHEET
(in millions, except par value and share data)

	October 31,	
	2022	2021
ASSETS		
Current assets:		
Cash and cash equivalents	\$ 2,042	\$ 2,052
Accounts receivable, net	905	735
Inventory	858	777
Other current assets	429	270
Total current assets	4,234	3,834
Property, plant and equipment, net	690	650
Operating lease right-of-use assets	220	227
Goodwill	1,582	1,628
Other intangible assets, net	189	272
Long-term investments	62	70
Long-term deferred tax assets	667	711
Other assets	454	389
Total assets	\$ 8,098	\$ 7,781
LIABILITIES AND EQUITY		
Current liabilities:		
Accounts payable	\$ 348	\$ 287
Employee compensation and benefits	333	355
Deferred revenue	495	478
Income and other taxes payable	96	74
Operating lease liabilities	39	41
Other accrued liabilities	96	74
Total current liabilities	1,407	1,309
Long-term debt	1,793	1,791
Retirement and post-retirement benefits	58	167
Long-term deferred revenue	197	187
Long-term operating lease liabilities	186	191
Other long-term liabilities	296	352
Total liabilities	3,937	3,997
Commitments and contingencies (Note 14)		
Stockholders' equity:		
Preferred stock; \$0.01 par value; 100 million shares authorized; none issued and outstanding	—	—
Common stock; \$0.01 par value; 1 billion shares authorized; 199 million shares at October 31, 2022, and 197 million shares at October 31, 2021 issued	2	2
Treasury stock at cost; 20.5 million shares at October 31, 2022 and 15.1 million shares at October 31, 2021	(2,274)	(1,425)
Additional paid-in-capital	2,333	2,219
Retained earnings	4,554	3,430
Accumulated other comprehensive loss	(454)	(442)
Total stockholders' equity	4,161	3,784
Total liabilities and equity	\$ 8,098	\$ 7,781

The accompanying notes are an integral part of these consolidated financial statements.

KEYSIGHT TECHNOLOGIES, INC.
CONSOLIDATED STATEMENT OF CASH FLOWS
(in millions)

	Year Ended October 31,		
	2022	2021	2020
Cash flows from operating activities:			
Net income	\$ 1,124	\$ 894	\$ 627
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation	117	117	104
Amortization	106	176	222
Share-based compensation	125	103	92
Deferred tax expense (benefit)	7	(53)	41
Excess and obsolete inventory-related charges	27	27	29
Loss on settlement of pension plan	—	16	—
Gain on insurance proceeds received for damage to property, plant and equipment	—	—	(32)
Unrealized loss (gain) on investments in equity securities	31	—	(11)
Other non-cash expenses (income), net	11	6	1
Changes in assets and liabilities:			
Accounts receivable	(204)	(122)	75
Inventory	(125)	(43)	(73)
Accounts payable	56	53	(33)
Employee compensation and benefits	(17)	50	2
Deferred revenue	79	96	41
Income taxes payable	(14)	34	5
Retirement and post-retirement benefits	(19)	7	(108)
Prepaid expenses	(124)	(43)	2
Other assets and liabilities	(36)	4	32
Net cash provided by operating activities	1,144	1,322	1,016
Cash flows from investing activities:			
Investments in property, plant and equipment	(185)	(174)	(117)
Acquisitions of businesses and intangible assets, net of cash acquired	(33)	(178)	(357)
Insurance proceeds received for damage to property, plant and equipment	—	—	32
Purchase of investments	(33)	(1)	—
Net cash used in investing activities	(251)	(353)	(442)
Cash flows from financing activities:			
Proceeds from issuance of common stock under employee stock plans	63	59	58
Payment of taxes related to net share settlement of equity awards	(74)	(53)	(53)
Treasury stock repurchases	(849)	(673)	(411)
Other financing activities	(1)	(4)	(7)
Net cash used in financing activities	(861)	(671)	(413)
Effect of exchange rate movements	(43)	3	6
Net increase (decrease) in cash, cash equivalents, and restricted cash	(11)	301	167
Cash, cash equivalents, and restricted cash at beginning of year	2,068	1,767	1,600
Cash, cash equivalents, and restricted cash at end of year	\$ 2,057	\$ 2,068	\$ 1,767
Supplemental cash flow information:			
Interest payments	\$ 75	\$ 75	\$ 75
Income tax paid, net	\$ 191	\$ 130	\$ 84
Investments in property, plant and equipment included in accounts payable	\$ 31	\$ 22	\$ 14

The accompanying notes are an integral part of these consolidated financial statements.

KEYSIGHT TECHNOLOGIES, INC. CONSOLIDATED STATEMENT OF EQUITY (in millions, except number of shares in thousands)								
	Common Stock			Treasury Stock		Retained Earnings	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
	Number of Shares	Par Value	Additional Paid-in Capital	Number of Shares	Treasury Stock at Cost			
Balance as of October 31, 2019	193,769	\$ 2	\$ 2,013	(6,458)	\$ (342)	\$ 1,909	\$ (578)	\$ 3,004
Net income	—	—	—	—	—	627	—	627
Other comprehensive loss, net of tax	—	—	—	—	—	—	(21)	(21)
Issuance of common stock	1,892	—	58	—	—	—	—	58
Taxes related to net share settlement of equity awards	—	—	(53)	—	—	—	—	(53)
Share-based compensation	—	—	92	—	—	—	—	92
Repurchase of common stock	—	—	—	(4,274)	(410)	—	—	(410)
Balance as of October 31, 2020	195,661	2	2,110	(10,732)	(752)	2,536	(599)	3,297
Net income	—	—	—	—	—	894	—	894
Other comprehensive income, net of tax	—	—	—	—	—	—	157	157
Issuance of common stock	1,587	—	59	—	—	—	—	59
Taxes related to net share settlement of equity awards	—	—	(53)	—	—	—	—	(53)
Share-based compensation	—	—	103	—	—	—	—	103
Repurchase of common stock	—	—	—	(4,362)	(673)	—	—	(673)
Balance as of October 31, 2021	197,248	2	2,219	(15,094)	(1,425)	3,430	(442)	3,784
Net income	—	—	—	—	—	1,124	—	1,124
Other comprehensive loss, net of tax	—	—	—	—	—	—	(12)	(12)
Issuance of common stock	1,321	—	63	—	—	—	—	63
Taxes related to net share settlement of equity awards	—	—	(74)	—	—	—	—	(74)
Share-based compensation	—	—	125	—	—	—	—	125
Repurchase of common stock	—	—	—	(5,442)	(849)	—	—	(849)
Balance as of October 31, 2022	198,569	\$ 2	\$ 2,333	(20,536)	\$ (2,274)	\$ 4,554	\$ (454)	\$ 4,161

The accompanying notes are an integral part of these consolidated financial statements.

KEYSIGHT TECHNOLOGIES, INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. OVERVIEW, BASIS OF PRESENTATION AND SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Overview. Keysight Technologies, Inc. ("we," "us," "Keysight" or the "company"), incorporated in Delaware on December 6, 2013, is a technology company that helps enterprises, service providers and governments accelerate innovation to connect and secure the world by providing electronic design and test solutions that are used in the simulation, design, validation, manufacture, installation, optimization and secure operation of electronics systems in the communications, networking and electronics industries. We also offer customization, consulting and optimization services throughout the customer's product development lifecycle, including start-up assistance, asset management, up-time services, application services and instrument calibration and repair.

Basis of Presentation. We have prepared the accompanying financial statements pursuant to the rules and regulations of the Securities and Exchange Commission ("SEC") and in conformity with generally accepted accounting principles in the U.S. ("GAAP"). Our fiscal year end is October 31. Unless otherwise stated, all years and dates refer to our fiscal year.

Management is responsible for the fair presentation of the accompanying consolidated financial statements, prepared in accordance with GAAP, and has full responsibility for their integrity and accuracy. In the opinion of management, the accompanying consolidated financial statements contain all normal and recurring adjustments necessary to present fairly our consolidated balance sheet and our consolidated statement of operations, statement of comprehensive income, statement of cash flows and statement of equity.

Principles of consolidation. The consolidated financial statements include the accounts of the company and our wholly- and majority-owned subsidiaries. All significant inter-company transactions have been eliminated.

Use of Estimates. The preparation of financial statements in accordance with GAAP requires management to make estimates and assumptions that affect the amounts reported in our consolidated financial statements and accompanying notes. Management bases its estimates on historical experience and various other assumptions believed to be reasonable. Although these estimates are based on management's knowledge of current events and actions that may impact the company in the future, actual results may be different from the estimates. We are not aware of any specific event or circumstance that would require an update to our estimates or judgments or a revision of the carrying value of our assets or liabilities as of October 31, 2022. Our critical accounting policies are those that affect our financial statements materially and involve difficult, subjective or complex judgments by management. Those policies are revenue recognition, inventory valuation, share-based compensation, retirement and post-retirement plan assumptions, valuation of goodwill and other intangible assets, warranty, loss contingencies, restructuring and accounting for income taxes.

Revenue recognition. Revenue is recognized upon transfer of control of the promised products or services to customers in an amount that reflects the consideration we expect to receive in exchange for those products or services. We primarily generate revenue from the sale of products (hardware and/or software), services, or a combination thereof. We enter into contracts that may involve multiple performance obligations, and we allocate the transaction price between each performance obligation on the basis of relative standalone selling price ("SSP"). Revenue is recognized net of allowances for returns and any taxes collected from customers, which are subsequently remitted to governmental authorities.

Product revenues are generated predominantly from the sale of various types of design and test software and hardware. Products consist of standalone software and hardware generally installed with software applications that are licensed on a perpetual and term basis. Our hardware products generally do not have any substantive acceptance terms that would otherwise preclude the transfer of control. Performance obligations related to our software licenses, including the license portion of our software subscriptions, grant the customer the right to use our software primarily via electronic delivery.

Service revenues consist of repair and calibration services, extended warranties, technical support for hardware and software, when-and-if available software updates and upgrades, and professional services, including installation and implementation, consulting, and training. Services include both hardware and software services. Repair and calibration services for hardware products are sold both as per-incident customer services and as customer agreements to provide such services over the contractual period. Extended warranties are optional to the customer and provide warranty on hardware products for additional years beyond the standard one-year warranty. Technical support for software and when-and-if available software updates and upgrades are sold either together with our software licenses and software subscriptions, or separately as part of our customer support programs. These are considered stand-ready performance obligations where customers benefit from the services evenly throughout the license or service period. These performance obligations provide the customer access evenly over the contract period. Our professional services may be sold on a time and material basis (e.g., consulting) or on a fixed-fee basis (e.g., non-recurring engineering).

We also generate revenues from a combination of products and services ("custom solutions"), including combinations of hardware, software, software subscriptions, installation, professional services, and other support services. Custom solutions provide the customer with a combination of hardware, software and professional services to meet customers' unique specifications and are accounted for as one performance obligation.

For our contracts with customers, we account for individual performance obligations separately if they are distinct. Our standard payment terms are net 30 to 90 days, and we generally do not offer extended payment terms beyond one year. Our contracts typically contain various forms of variable consideration, including trade discounts, trade-in credits, rebates, and rights of return. The transaction price is allocated to the separate performance obligations based on relative SSP. SSPs for a majority of our products and services are estimated based on our established pricing practices and maximize the use of observable inputs. An observable input is the price of the good or service when it is sold as a separate item in a similar circumstance and to a similar customer as in the contract for which SSPs are being determined. We have elected to exclude from the measurement of the transaction price all taxes assessed by a governmental authority that are both imposed on and concurrent with a specific revenue-producing transaction and collected by Keysight from a customer (e.g., sales, use, value added, and some excise taxes). We have also elected to account for shipping and handling activities that occur after control of the related good transfers as fulfillment activities instead of assessing such activities as performance obligations.

Our typical performance obligations include the following:

Performance obligation	When performance obligation is typically satisfied	When payment is typically due	How standalone selling price is typically determined
<i>Product Revenues</i>			
Hardware	When customer obtains control of the product, typically at delivery (point in time)	Within 30-90 days of shipment	Estimated based on established pricing practices or observable based on standalone sales for certain hardware products
Software licenses	Primarily upon electronic delivery of the software, and the applicable license period has begun (point in time)	Within 30-90 days of the beginning of license period	Estimated based on established pricing practices or observable based on standalone sales for certain software products
Software subscriptions	Ratably over the subscription period (over time)	Within 30-90 days of the beginning of subscription period	Estimated based on established pricing practices
<i>Service Revenues</i>			
Calibration contracts	Ratably over the service contract period (over time)	Within 30-90 days of the beginning of service contract period	Estimated based on established pricing practices
Repair and calibration (per- incident)	As services are performed (point in time)	Within 30-90 days of invoicing for services rendered	Estimated based on established pricing practices
Extended hardware warranty	Ratably over the warranty period (over time)	Within 30-90 days of invoicing	Estimated based on established pricing practices or observable based on standalone sales of certain hardware warranty contracts
Technical support and when-and-if-available software updates	Ratably over the license service contract period (over time)	Within 30-90 days of the beginning of license or service contract period	Estimated based on established pricing practices or observable based on standalone sales for certain support contracts
Professional services	As services are performed based on measures of progress (over time) or at a point in time	Within 30-90 days of invoicing for services rendered	Estimated based on established pricing practices
<i>Custom Solutions</i>			
Custom solutions (milestone-based; percentage-of-completion)	As milestones are achieved based on transfer of control to customer (over time)	Within 30-90 days of milestone achievement	Transaction price, as pricing is custom and can vary significantly from contract to contract
Custom solutions (point in time)	When customer obtains control of the solution, typically at delivery or customer acceptance, as defined by the contract (point in time)	Within 30-90 days of delivery of solution	Transaction price, as pricing is custom and can vary significantly from contract to contract

Significant judgment is required to determine the SSP for each distinct performance obligation. As most of our products and services are not sold on a standalone basis, we typically estimate the SSP. In doing so, we consider our internal price list for each product and service, which reflects our desired profitability, based on an expected level of sales, and adjust for factors such as competition, customer relationship, discount provided in the contract, geographic location, and the products and services purchased in the arrangement. We use a range based on actual historical sales to determine whether the calculated SSP for a product or service is a fair representation of the SSP.

For capitalized contract costs, we use judgment in determining the capitalized amount and amortization period.

Our products are generally sold with a right of return and we may provide other credits, discounts, or incentives, which are accounted for as variable consideration at the portfolio level and estimated based on historical information. Returns, credits, and discounts are estimated at contract inception and updated at the end of each reporting period as additional information becomes available to the extent that it is probable a significant reversal of the cumulative amount of revenue recognized will not occur once the variability is subsequently resolved.

Shipping and handling costs. Our shipping and handling costs charged to customers are included in revenue, and the associated expense is recorded in cost of products for all periods presented.

Deferred revenue. We recognize contract liabilities in our consolidated balance sheet as deferred revenue, which represents the amount of service and software revenue deferred and recognized over the contractual period or as services are rendered and accepted by the customer. In addition, it includes the amount allocated to undelivered performance obligations.

Accounts receivable, net. Trade accounts receivable are recorded at the invoiced amount and do not bear interest. Such accounts receivable have been reduced by an allowance for credit losses, which is our best estimate of the amount of probable credit losses in our existing accounts receivable. We determine the allowance based on customer specific experience and the aging of such receivables, among other factors. The allowance for credit losses was approximately \$4 million as of both October 31, 2022 and 2021. We do not have any off-balance-sheet credit exposure related to our customers.

Share-based compensation. We account for share-based awards made to our employees and directors, including restricted stock units ("RSUs"), employee stock purchases made under Keysight's employee stock purchase plan under Section 423(b) of the Internal Revenue Code ("ESPP"), employee stock option awards, and performance share awards under Keysight Technologies, Inc. Long-Term Performance ("the LTP") Program, using the estimated grant date fair value method of accounting. We recorded compensation expense for all share-based awards of \$126 million in 2022, \$104 million in 2021 and \$93 million in 2020.

Inventory. Inventory is valued at standard cost, which approximates actual cost computed on a first-in, first-out basis, not in excess of market value. We assess the valuation of our inventory on a periodic basis and make adjustments to the value for estimated excess and obsolete inventory based on estimates about future demand and actual usage. The excess balance determined by this analysis becomes the basis for our excess inventory charge. Our excess inventory review process includes analysis of sales unit forecasts, managing product rollovers and working with manufacturing to maximize recovery of excess inventory.

Warranty. Keysight warranties on products sold through direct sales channels are primarily for one year. Warranties for products sold through distribution channels are primarily for three years. We accrue for standard warranty costs based on historical trends in warranty charges. The accrual is reviewed regularly and periodically adjusted to reflect changes in warranty cost estimates. Estimated warranty charges are recorded within cost of products at the time related product revenue is recognized. See Note 13, "Supplemental financial information".

We also sell extended warranties that provide warranty coverage beyond the standard warranty term. Revenue associated with extended warranties is deferred and recognized over the extended coverage period.

Loss contingencies. We accrue for probable losses from contingencies, including legal settlement costs, on an undiscounted basis when such costs are considered probable of being incurred and are reasonably estimable. We periodically evaluate available information, both internal and external, relative to such contingencies and adjust this accrual as necessary.

Taxes on income. Income tax expense is based on income or loss before taxes. Deferred income taxes reflect the effect of temporary differences between asset and liability amounts that are recognized for financial reporting purposes and the amounts that are recognized for income tax purposes. These deferred taxes are measured by applying currently enacted tax laws. Valuation allowances are recognized to reduce deferred tax assets to the amount that is more likely than not to be realized.

We account for uncertainty in income taxes using a two-step approach to recognize and measure uncertain tax positions. The first step is to evaluate the tax position for recognition by determining if the weight of available evidence indicates that it is more likely than not that the position will be sustained on audit, including resolution of related appeals or litigation processes, if any. The second step is to measure the tax benefit as the largest amount that is more than 50 percent likely of being realized upon settlement. We make adjustments to these reserves when facts and circumstances change, such as the closing of a tax audit or the refinement of an estimate due to new information. We classify the liability for unrecognized tax benefits as current to the extent that the company anticipates payment (or receipt) of cash within one year. Interest and penalties related to uncertain tax positions are recognized in the provision for income taxes. Given the number of years and numerous matters that remain subject to examination in various tax jurisdictions, we are unable to estimate the range of possible changes to the balance of our unrecognized tax benefits.

Goodwill and other intangible assets. Goodwill is assessed for impairment on a reporting unit basis at least annually in the fourth quarter, as of September 30, or more frequently when events and circumstances occur indicating that the recorded goodwill may be impaired. The impairment test compares the fair value of a reporting unit with its carrying amount, with an impairment charge recorded for the amount by which the carrying amount exceeds the reporting unit’s fair value up to a maximum amount of the goodwill balance for the reporting unit. We determine fair values for each of the reporting units using the market approach, when available and appropriate, or the income approach, or a combination of both. If multiple valuation methodologies are used, the results are weighted appropriately. Valuations using the market approach are derived from metrics of publicly traded comparable companies. The selections of comparable businesses are based on the markets in which our reporting units operate, giving consideration to risk profiles, size, geography and diversity of products and services. Under the income approach, fair value is determined based on the present value of estimated future cash flows, discounted at an appropriate risk-adjusted rate. We use our internal forecasts to estimate future cash flows and include an estimate of long-term future growth rates based on our most recent views of the long-term outlook for each business.

As defined in the authoritative guidance, a reporting unit is an operating segment or one level below an operating segment. During the fourth quarter of 2022, we performed our annual impairment test of goodwill for all our reporting units using a qualitative approach. Based on the results of our qualitative testing, we believe that it is more-likely-than-not that the fair value of each reporting unit is greater than its respective carrying value. There were no impairments of goodwill during the years ended October 31, 2022, 2021 and 2020. See Note 2, “Acquisitions,” and Note 7, “Goodwill and Other Intangible Assets,” for additional information about our goodwill and other intangible assets.

Other intangible assets consist primarily of developed technologies, proprietary know-how, trademarks, customer relationships, non-compete agreements, and acquired backlog and are amortized using the straight-line method over estimated useful lives ranging from 6 months to 12 years. We review other intangible assets for impairment whenever events or changes in business circumstances indicate that the carrying amount of the assets may not be fully recoverable or that the useful lives of these assets are no longer appropriate. No impairments of purchased intangible assets were recorded during the years ended October 31, 2022, 2021 and 2020.

The authoritative accounting guidance allows a qualitative approach for testing indefinite-lived intangible assets for impairment, similar to the impairment testing guidance for goodwill. It allows the option to first assess qualitative factors (events and circumstances) that could have affected the significant inputs used in determining the fair value of the indefinite-lived intangible asset. The qualitative factors assist in determining whether it is more-likely-than-not that the indefinite-lived intangible asset is impaired. An organization may choose to bypass the qualitative assessment for any indefinite-lived intangible asset in any period and proceed directly to calculating its fair value. Our indefinite-lived intangible assets are in-process research and development ("IPR&D") intangible assets. In 2022, 2021 and 2020 we assessed impairment by performing a qualitative test and concluded that no material impairment of indefinite-lived intangible assets was required.

Advertising. Advertising costs are expensed as incurred and were \$27 million in 2022, \$21 million in 2021 and \$24 million in 2020.

Research and development. Costs related to the research, design and development of our products are charged to research and development expense as they are incurred.

Investments. Investments with readily determinable fair values and trading securities are reported at fair value. Equity investments without readily determinable fair values are measured at cost with adjustments for observable changes in price or impairments. Gains or losses resulting from changes in fair value are recognized currently in earnings. The company assesses investments for impairment whenever events or changes in circumstances indicate that the carrying value of an investment may not be recoverable. There was no impairment recognized in 2022, 2021 and 2020.

Net income per share. Basic net income per share is computed by dividing net income by the weighted average number of common shares outstanding during the period excluding the dilutive effect of stock options and other employee stock plans. Diluted net income per share gives effect to all potentially dilutive common stock equivalents outstanding during the period. The dilutive effect of share-based awards is reflected in diluted net income per share by application of the treasury stock method, which includes consideration of unamortized share-based compensation expense, and the dilutive effect of in-the-money options and non-vested RSUs. Under the treasury stock method, the amount the employee must pay for exercising stock options and unamortized share-based compensation expense are assumed proceeds to be used to repurchase hypothetical shares.

Cash, cash equivalents and short-term investments. We classify investments as cash equivalents if their original maturity or remaining maturity at the time of purchase is three months or less at the date of purchase. Cash equivalents are stated at cost, which approximates fair value.

As of October 31, 2022, approximately \$1.7 billion of our cash, cash equivalents and restricted cash was held outside of the U.S. in our foreign subsidiaries. Our cash and cash equivalents mainly consist of investments in institutional money market funds, short-term deposits held at major global financial institutions, and similar short duration instruments with original maturities of three months or less. We continuously monitor the creditworthiness of the financial institutions in which we invest our funds. We utilize a variety of funding strategies in an effort to ensure that our worldwide cash is available in the locations in which it is needed. Most significant international locations have access to internal funding through an offshore cash pool for working capital needs. In addition, a few locations that are unable to access internal funding have access to temporary local overdraft and short-term working capital lines of credit.

We classify investments as short-term investments if their original maturities are greater than three months and their remaining maturities are one year or less.

Fair value of financial instruments. The carrying values of certain of our financial instruments, including cash and cash equivalents, accounts receivable, accounts payable and other accrued liabilities, approximate fair value because of their short maturities. The fair value of long-term equity investments is determined using quoted market prices for those securities when available. For those long-term equity investments accounted for under the equity method or measurement alternative, the carrying value approximates estimated fair value. The fair value of our long-term debt, calculated from quoted prices that are primarily Level 1 inputs under the accounting guidance fair value hierarchy, is approximately \$1,679 million and \$1,977 million as of October 31, 2022 and 2021, respectively. The fair value of foreign currency contracts used for hedging purposes is estimated internally by using inputs tied to active markets. These inputs, for example, interest rate yield curves, foreign exchange rates, and forward and spot prices for currencies, are observable in the market or can be corroborated by observable market data for substantially the full term of the assets or liabilities. See also Note 8, "Fair Value Measurements," for additional information on the fair value of financial instruments.

Concentration of credit risk. Financial instruments that potentially subject us to significant concentration of credit risk include money market fund investments, time deposits and demand deposit balances. These investments are categorized as cash and cash equivalents, short-term investments and long-term investments. In addition, we have credit risk from derivative financial instruments used in hedging activities and accounts receivable. We invest in a variety of financial instruments and limit the amount of credit exposure with any one financial institution. We have a comprehensive credit policy in place and credit exposure is monitored on an ongoing basis.

Credit risk with respect to our accounts receivable is diversified due to the large number of entities comprising our customer base and their dispersion across many different industries and geographies. Credit evaluations are performed on customers requiring credit over a certain amount.

Credit risk is mitigated through collateral, such as letters of credit, bank guarantees or payment terms like cash in advance. No single customer accounted for more than 10 percent of accounts receivable as of October 31, 2022 or 2021.

Derivative instruments. We are exposed to global foreign currency exchange rate fluctuations in the normal course of business. We enter into foreign exchange hedging contracts, and primarily use forward contracts to manage financial exposures resulting from changes in foreign currency exchange rates. Foreign currency exposures include committed and anticipated revenue and expense transactions (cash flow exposure) and assets and liabilities that are denominated in currencies other than the functional currency of the subsidiary (balance sheet exposure). For cash flow hedges, contracts are designed at inception as hedges of the related foreign currency exposures. We formally document all relationships between hedging instruments and hedged items, as well as our risk-management objective and strategy for undertaking various hedge transactions at the inception of the hedge. This process includes linking all derivatives that are designated as cash flow hedges to specific forecasted transactions. We also formally assess, both at the hedge’s inception and on an ongoing basis, whether the hedging instruments are highly effective in offsetting changes in cash flows of hedged items. Our foreign exchange cash flow hedging contracts have

maturities based on a rolling period of up to twelve months. We do not use derivative financial instruments for speculative trading purposes.

All derivatives are recognized on the balance sheet at their fair values. For derivative instruments that are designated and qualify as a cash flow hedge, changes in the value of the effective portion of the derivative instrument is recognized in accumulated comprehensive income, a component of stockholders' equity. Amounts associated with cash flow hedges are reclassified and recognized in income when either the forecast transaction occurs or it becomes probable the forecast transaction will not occur. Derivatives not designated as hedging instruments are recorded on the balance sheet at fair value, and changes in fair value are recorded in earnings in the current period. Derivative instruments are subject to master netting arrangements and qualify for net presentation in the balance sheet. Cash flows from derivative instruments are classified in the statement of cash flows in the same category as the cash flows from the hedged or economically hedged item, primarily in operating activities.

Property, plant and equipment. Property, plant and equipment are stated at cost less accumulated depreciation. Additions, improvements and major renewals are capitalized; maintenance, repairs and minor renewals are expensed as incurred. When assets are retired or disposed of, the assets and related accumulated depreciation are removed from our general ledger, and the resulting gain or loss is reflected in the consolidated statement of operations. We use the straight-line method to depreciate assets. Buildings and improvements are depreciated over the lesser of their useful lives, which is generally over five years to forty years, or the remaining term of the lease; and machinery and equipment is generally depreciated over three years to ten years.

Leases. We adopted Accounting Standards Codification (“ASC”) Topic 842, Leases (“ASC 842”), on November 1, 2019 using the modified retrospective transition approach provided by Accounting Standards Update ("ASU") 2018-11, Leases: Targeted Improvements, with the cumulative effect of initially applying the standard recognized at the date of adoption.

We determine whether an arrangement is a lease at inception. Operating leases are included in operating lease right-of-use (“ROU”) assets and operating lease liabilities (current and non-current) on our consolidated balance sheet. Finance leases are included in property, plant and equipment, other accrued liabilities, and other long-term liabilities in our consolidated balance sheet. Our finance lease and lessor arrangements are immaterial.

ROU assets and lease obligations are recognized based on their present value of the future minimum lease payments over the lease term at commencement date. As most of our leases do not provide an implicit rate, we use our incremental borrowing rate based on the lease term and economic environment to discount lease obligations. ROU assets also include any lease payments made and exclude lease incentives and initial direct costs incurred. We initially measure payments based on an index by using the applicable rate at lease commencement. Variable payments that do not depend on an index are not included in the lease liability and are recognized as they are incurred. See Note 10, "Leases," for additional information.

Impairment of long-lived assets. We continually monitor events and changes in circumstances that could indicate carrying amounts of long-lived assets may not be recoverable. When such events or changes in circumstances occur, we assess the recoverability of long-lived assets by determining whether the carrying value of such assets will be recovered through undiscounted expected future cash flows. If the total of the undiscounted future cash flows is less than the carrying amount of those assets, we recognize an impairment loss based on the excess of the carrying amount over the fair value of the assets.

Restructuring costs. The main component of our existing restructuring plans is related to workforce reductions and site restructuring. Workforce reduction charges are accrued when payment of benefits becomes probable and the amounts can be estimated. If the amounts and timing of cash flows from restructuring activities are significantly different from what we have estimated, the actual amount of restructuring and other related charges could be materially different, either higher or lower, than those we have recorded.

Employee compensation and benefits. Amounts owed to employees, such as accrued salary, bonuses and vacation benefits are reported within employee compensation and benefits in the consolidated balance sheet. The total amount of accrued vacation benefit was \$109 million and \$114 million as of October 31, 2022 and 2021, respectively.

Foreign currency translation. We translate and remeasure balance sheet and statement of operations items into U.S. dollars. For those subsidiaries that operate in a local currency functional environment, all assets and liabilities are translated into U.S. dollars using current exchange rates at the balance sheet date; revenue and expenses are translated using monthly exchange rates that approximate average exchange rates in effect during each period. Resulting translation adjustments are reported as a separate component of accumulated other comprehensive income (loss) in stockholders' equity.

For those subsidiaries that operate in a U.S. dollar functional environment, foreign currency assets and liabilities are re-measured into U.S. dollars at current exchange rates except for non-monetary assets and capital accounts, which are remeasured at historical exchange rates. Revenue and expenses are generally remeasured at monthly exchange rates that approximate

average exchange rates in effect during each period. Gains or losses from foreign currency re-measurement are included in net income. Net gains or losses resulting from foreign currency asset and liability remeasurement transactions are reported in other income (expense) and were a \$1 million loss in 2022, a \$3 million gain in 2021 and a \$3 million gain in 2020.

Retirement plans and post-retirement benefit plan assumptions. Defined benefit plan obligations are remeasured at least annually as of October 31, based on the present value of future benefit payments to reflect future benefit costs over the employees' average expected future service to Keysight based on the terms of the plans. To estimate the present value of these future payments, we are required to make assumptions using actuarial concepts within the framework of GAAP. Two critical assumptions are the discount rate and the expected long-term return on plan assets. Other important assumptions include expected future salary increases, expected future increases to benefit payments, expected retirement dates, employee turnover, retiree mortality rates and investment portfolio composition. We evaluate these assumptions at least annually. See Note 12, "Retirement Plans and Post-Retirement Benefit Plans."

New Accounting Pronouncements.

ASU 2021-08, Business Combinations (Topic 805): Accounting for Contract Assets and Contract Liabilities from Contracts with Customers. In October 2021, the FASB issued guidance that requires entities to apply Topic 606 to recognize and measure contract assets and contract liabilities in a business combination. The standard is effective for fiscal years beginning after December 15, 2022, including interim periods within those fiscal years. Early adoption is permitted. We adopted this guidance effective November 1, 2021. The adoption of this guidance did not have a material impact on our consolidated financial statements.

Other amendments to GAAP that do not require adoption until a future date are not expected to have a material impact on our consolidated financial statements upon adoption.

2. ACQUISITIONS

2022 Acquisitions

During the year ended October 31, 2022, we used \$33 million, net of cash acquired, for acquisition activity and recognized goodwill and other intangible assets of \$20 million and \$23 million, respectively, based on the allocation of the purchase price to the estimated fair values of the assets acquired and liabilities assumed. Of the \$20 million goodwill, \$9 million was assigned to the Communications Solutions Group and \$11 million was assigned to the Electronic Industrial Solutions Group.

2021 Acquisitions

Acquisition of Sanjole

During the first quarter of fiscal 2021, we acquired Sanjole Inc. ("Sanjole") for \$102 million, net of \$11 million cash acquired, and recognized additions to goodwill and other intangible assets of \$48 million and \$51 million, respectively, based on the allocation of the purchase price to the estimated fair values of the assets acquired and liabilities assumed. We expect the goodwill recognized on the Sanjole acquisition or any potential impairment charges in the future to be deductible for income tax purposes. The identified intangible assets primarily consist of developed technology of \$24 million, customer relationships of \$17 million and in-process R&D of \$7 million. The estimated useful lives of developed technology and customer relationships are 7 years and 9 years, respectively. Sanjole is a leader in wireless test and measurement solutions for protocol decoding and interoperability.

Additionally, we acquired two other businesses for \$76 million, net of cash acquired, and recognized goodwill and other intangible assets of \$52 million and \$32 million, respectively, based on the preliminary allocation of the purchase price to the estimated fair values of the assets acquired and liabilities assumed.

Goodwill for the acquisitions was assigned to the Communications Solutions Group.

Supplemental Pro Forma Information (Unaudited)

Pro forma results of operations for 2022 and 2021 acquisitions have not been presented because the effects of the acquisitions were not material to the company’s financial results.

3. REVENUE

Disaggregation of Revenue

We disaggregate our revenue from contracts with customers by geographic region, end market, and timing of revenue recognition, as we believe these categories best depict how the nature, amount, timing and uncertainty of our revenue and cash flows are affected by economic factors. Disaggregated revenue is presented for each of our reportable segments, Communications Solutions Group ("CSG") and Electronic Industrial Solutions Group ("EISG").

	Year Ended October 31,								
	2022			2021			2020		
	CSG	EISG	Total	CSG	EISG	Total	CSG	EISG	Total
	(in millions)								
Region									
Americas	\$ 1,824	\$ 379	\$ 2,203	\$ 1,697	\$ 299	\$ 1,996	\$ 1,424	\$ 217	\$ 1,641
Europe	523	359	882	500	295	795	421	255	676
Asia Pacific	1,456	879	2,335	1,326	824	2,150	1,287	617	1,904
Total revenue	<u>\$ 3,803</u>	<u>\$ 1,617</u>	<u>\$ 5,420</u>	<u>\$ 3,523</u>	<u>\$ 1,418</u>	<u>\$ 4,941</u>	<u>\$ 3,132</u>	<u>\$ 1,089</u>	<u>\$ 4,221</u>
End Market									
Aerospace, Defense & Government	\$ 1,171	\$ —	\$ 1,171	\$ 1,142	\$ —	\$ 1,142	\$ 928	\$ —	\$ 928
Commercial Communications	2,632	—	2,632	2,381	—	2,381	2,204	—	2,204
Electronic Industrial	—	1,617	1,617	—	1,418	1,418	—	1,089	1,089
Total revenue	<u>\$ 3,803</u>	<u>\$ 1,617</u>	<u>\$ 5,420</u>	<u>\$ 3,523</u>	<u>\$ 1,418</u>	<u>\$ 4,941</u>	<u>\$ 3,132</u>	<u>\$ 1,089</u>	<u>\$ 4,221</u>
Timing of Revenue Recognition									
Revenue recognized at a point in time	\$ 3,166	\$ 1,393	\$ 4,559	\$ 2,936	\$ 1,233	\$ 4,169	\$ 2,598	\$ 946	\$ 3,544
Revenue recognized over time	637	224	861	587	185	772	534	143	677
Total revenue	<u>\$ 3,803</u>	<u>\$ 1,617</u>	<u>\$ 5,420</u>	<u>\$ 3,523</u>	<u>\$ 1,418</u>	<u>\$ 4,941</u>	<u>\$ 3,132</u>	<u>\$ 1,089</u>	<u>\$ 4,221</u>

Our point-in-time revenues are generated predominantly from the sale of various types of design and test software and hardware, and per-incident repair and calibration services. Perpetual software and the portion of term software subscription revenue in this category represents revenue recognized up front upon transfer of control at the time of electronic delivery. Revenue on per-incident repair and calibration services is recognized when services are performed. Over-time revenues are generated predominantly from the repair and calibration contracts, extended warranties, technical support for hardware and software, certain software subscription and Software as a Service ("SaaS") product offerings, and professional services. Technical support for software and when-and-if available software updates and upgrades are sold either together with our software licenses and software subscriptions, including SaaS, or separately as part of our customer support programs.

Additionally, we provide custom solutions that include combinations of hardware, software, software subscriptions, installation, professional services, and other support services, and revenue may be recognized either up front on delivery or over time depending upon the terms of the contract.

Contract Balances

Contract assets

Contract assets consist of unbilled receivables and are recorded when revenue is recognized in advance of scheduled billings to our customers. These amounts are primarily related to solutions and support arrangements when transfer of control has occurred but we have not yet invoiced. The contract assets balances were \$88 million and \$84 million as of October 31, 2022 and October 31, 2021, respectively, and are included in "accounts receivables, net" and "other assets" in our consolidated balance sheet.

Contract costs

We capitalize direct and incremental costs incurred to acquire contracts for which the associated revenue is expected to be recognized in future periods. We have determined that certain employee and third-party representative commission programs meet the requirements to be capitalized. These costs are initially deferred and typically amortized over the term of the customer contract which corresponds to the period of benefit. Capitalized contract costs were \$38 million and \$39 million as of October 31, 2022 and October 31, 2021, respectively, and are included in “other current assets” and “other assets” in the consolidated balance sheet. The amortization expense associated with these costs was \$84 million, \$77 million and \$83 million for the years ended October 31, 2022, 2021 and 2020, respectively.

Contract liabilities

Our contract liabilities consist of deferred revenue that arises when we receive consideration in advance of providing the goods or services promised in the contract. Contract liabilities are primarily generated from customer deposits received in advance of shipments for products or rendering of services and are recognized as revenue when services are provided to the customer. We classify deferred revenue as current or non-current based on the timing of when we expect to recognize revenue.

Balance at October 31, 2021	\$	665
Deferral of revenue billed in current period, net of recognition		546
Revenue recognized that was deferred as of the beginning of the period		(482)
Foreign currency translation impact		(37)
Balance at October 31, 2022	\$	692

Remaining Performance Obligations

Our expected remaining performance obligations, excluding contracts that have an original expected duration of one year or less, was approximately \$433 million as of October 31, 2022, and represents the company’s obligation to deliver products and services and obtain customer acceptance on delivered products. As of October 31, 2022, we expect to recognize approximately 47 percent of the revenue related to these unsatisfied performance obligations during 2023, 33 percent in 2024 and 20 percent thereafter.

4. SHARE-BASED COMPENSATION

Keysight accounts for share-based awards in accordance with the provisions of the authoritative accounting guidance, which requires the measurement and recognition of compensation expense for all share-based payment awards made to our employees and directors, including RSUs, employee stock purchases made under our employee stock purchase plan ("ESPP"), employee stock option awards, and performance share awards granted to selected members of our senior management under the LTP Program, based on estimated fair values.

Description of Keysight’s Share-Based Plans

Incentive compensation plans. The 2014 Equity and Incentive Compensation Plan (the "2014 Stock Plan") was originally adopted by our board of directors on July 16, 2014, subsequently amended and restated by our board of directors on September 29, 2014 and on January 22, 2015, and became effective as of November 1, 2014. Our board of directors initially reserved 25 million shares of company common stock that may be issued under the 2014 Stock Plan, plus any shares forfeited or cancelled under the 2014 Stock Plan and subsequently reduced the number to 17 million shares. The 2014 Stock Plan was further amended and restated by our board of directors on November 16, 2017 to increase the maximum aggregate number of shares that may be issued under the 2014 Stock Plan to 21.8 million shares. The 2014 Stock Plan provides for the grant of awards in the form of stock options, stock appreciation rights, restricted stock, RSUs, performance shares and performance units with performance-based conditions on vesting or exercisability, and cash awards. The 2014 Stock Plan has a term of ten years. As of October 31, 2022, approximately 5 million shares were available for future awards under the 2014 Stock Plan.

Stock options granted under the 2014 Stock Plan may be either "incentive stock options," as defined in Section 422 of the Internal Revenue Code, or non-statutory. Options generally vest at a rate of 25 percent per year over a period of four years from the date of grant with a maximum contractual term of ten years. The exercise price for stock options is generally not less than 100 percent of the fair market value of our common stock on the date the stock award is granted.

Performance share awards granted under the LTP Program are administered under the 2014 Stock Plan for the company's executive officers and other key employees. Participants in this program are entitled to receive unrestricted shares of the company's stock after the end of a three-year performance period, contingent upon the achievement of metrics and targets established by the Compensation and Human Capital Committee at the beginning of the performance period. The metrics for

achievement of these awards can vary and may include total shareholder return ("TSR") or financial metrics, such as operating margin (“OM”), cost synergies and others. For TSR-based awards, the peer group comparisons are set at the beginning of the performance period. For OM-based awards, the performance targets are set each year in the first quarter of the respective year. The final pay-out under the LTP Program may range from zero to 200 percent of the target award based on actual performance

During fiscal year 2022, the Compensation and Human Capital Committee approved performance retention awards with a target earnings per share (“EPS”) goal over a three-year performance period to select members of our leadership team. The performance targets are set each half year. The payout range of the award is zero or 100 percent, with no additional payout for performance above target.

RSUs under our share-based plans are granted to directors, executives and employees. The estimated fair value of the restricted stock unit awards granted under the 2014 Stock Plan is determined based on the market price of Keysight common stock on the date of grant. RSUs generally vest, with some exceptions, at a rate of 25 percent per year over a period of four years from the date of grant.

The ESPP allows eligible employees to contribute up to 10 percent of their base compensation to purchase shares of Keysight common stock at 85 percent of the closing market price at the purchase date. Shares authorized for issuance in connection with the ESPP are subject to an automatic annual increase of the lesser of one percent of the outstanding shares of Keysight common stock on November 1 or an amount determined by the Compensation and Human Capital Committee of our board of directors. Under the terms of the ESPP, in no event shall the number of shares issued under the ESPP exceed 75 million shares.

Under our ESPP, employees purchased 462,279 shares for \$62 million in 2022, 541,241 shares for \$56 million in 2021 and 628,449 shares for \$53 million in 2020. As of October 31, 2022, common stock authorized and available for issuance under our ESPP was 18,860,237 shares, which includes shares issued in November 2022 to participants in consideration of the aggregate contribution of \$31 million as of October 31, 2022.

Impact of Share-based Compensation Awards

Share-based compensation expense has been recognized using a straight-line amortization method. The impact of share-based compensation expense on our consolidated statement of operations was as follows:

	Year Ended October 31,		
	2022	2021	2020
	(in millions)		
Cost of products and services	\$ 23	\$ 19	\$ 16
Research and development	28	21	19
Selling, general and administrative	75	64	58
Total share-based compensation expense	<u>\$ 126</u>	<u>\$ 104</u>	<u>\$ 93</u>
Income tax benefit realized from exercised stock options and similar awards	\$ 15	\$ 10	\$ 12

The expense for 2022, 2021 and 2020 includes mark-to-market adjustments for financial metrics-based performance awards of \$7 million, \$5 million and \$2 million, respectively. At October 31, 2022 and 2021, there was no share-based compensation expense capitalized within inventory.

Valuation Assumptions

The TSR-based performance awards were valued using a Monte Carlo simulation model, which requires the use of highly subjective and complex assumptions, including the price volatility of the underlying stock. The estimated fair value of restricted stock awards and the financial metrics-based performance awards (both OM and EPS) is determined based on the market price of Keysight’s common stock on the grant date. The compensation cost for financial metrics-based performance awards reflect the cost of awards that are probable to vest at the end of the performance period.

The following assumptions were used to estimate the fair value of TSR-based performance awards.

	Year Ended October 31,		
	2022	2021	2020
Volatility of Keysight shares	36%	36%	28%
Volatility of index	23%	23%	13%
Price-wise correlation with selected peers	67%	67%	61%

Share-based Payment Award Activity

Employee Stock Options

We have not granted any stock options since fiscal 2015. As of October 31, 2022 and 2021, the options outstanding were approximately 0.2 million and 0.3 million, respectively, having a weighted average exercise price of \$30 and \$29, respectively. During the year, 0.1 million options, with an intrinsic value of \$11 million were exercised at the weighted average exercise price of \$25. The intrinsic value of the options exercised during 2021 and 2020 was \$14 million, respectively, at the weighted average exercise price of \$26 and \$27, respectively. The options outstanding as of October 31, 2022 have a weighted average contractual remaining life of 1.6 years and an intrinsic value of \$27 million, based on Keysight's closing stock price of \$174.15 at October 31, 2022.

Non-vested Awards

The following table summarizes non-vested award activity in 2022 for our LTP Program and restricted stock unit awards:

	Shares	Weighted average grant	
	(in thousands)	date fair value per share	
Non-vested at October 31, 2021	2,181	\$	93
Granted	914		179
Vested	(1,166)		71
Forfeited	(57)		129
LTP Program incremental	220		64
Non-vested at October 31, 2022	2,092	\$	139

As of October 31, 2022, the unrecognized share-based compensation cost for non-vested stock awards was approximately \$107 million, which is expected to be amortized over a weighted average period of 2.7 years. Unrecognized share-based compensation cost does not include expense for financial metrics-based performance awards for which the targets have not yet been set. The total fair value of stock awards vested was \$223 million for 2022, \$165 million for 2021 and \$167 million for 2020. See Note 5, "Income Taxes," for the tax impact on share-based award exercises and vesting.

5. INCOME TAXES

The domestic and foreign components of income before taxes are:

	Year Ended October 31,		
	2022	2021	2020
	(in millions)		
U.S. operations	\$ 235	\$ 89	\$ 68
Non-U.S. operations	1,050	921	693
Total income before taxes	\$ 1,285	\$ 1,010	\$ 761

The provision for income taxes was comprised of:

	Year Ended October 31,		
	2022	2021	2020
	(in millions)		
U.S. federal taxes:			
Current	\$ 28	\$ 71	\$ 16
Deferred	(10)	(10)	1
Non-U.S. taxes:			
Current	113	90	77
Deferred	19	(30)	36
State taxes, net of federal benefit:			
Current	13	8	—
Deferred	(2)	(13)	4
Total provision for income taxes	<u>\$ 161</u>	<u>\$ 116</u>	<u>\$ 134</u>

The following table presents the components of the deferred tax assets and liabilities:

	October 31,	
	2022	2021 ⁽¹⁾
	(in millions)	
Deferred Tax Assets		
Inventory	\$ 25	\$ 18
Intangibles	522	559
Property, plant and equipment	24	31
Warranty reserves	8	8
Pension benefits	18	34
Employee benefits, other than retirement	35	39
Net operating loss, capital loss, and credit carryforwards	296	315
Share-based compensation	21	17
Deferred revenue	41	35
Lease obligations	52	53
Hedging and currency costs	1	—
Others	11	15
Total deferred tax assets	<u>1,054</u>	<u>1,124</u>
Tax valuation allowance	(224)	(231)
Total deferred tax assets less valuation allowance	<u>830</u>	<u>893</u>
Deferred Tax Liabilities		
Inventory	(1)	—
Intangibles	(28)	(41)
Property, plant and equipment	(26)	(26)
Pension benefits	(70)	(84)
Employee benefits, other than retirement	(1)	(1)
Unremitted earnings of foreign subsidiaries	(8)	(21)
Deferred revenue	(1)	(4)
ROU lease assets	(50)	(51)
Hedging and currency costs	(30)	(11)
Others	(7)	(11)
Total deferred tax liabilities	<u>(222)</u>	<u>(250)</u>
Total deferred tax assets, net of deferred tax liabilities	<u>\$ 608</u>	<u>\$ 643</u>

⁽¹⁾ The prior year amounts presented in the table above have been reclassified to conform with the current year presentation.

The decrease in deferred tax assets in 2022 as compared to 2021 primarily relates to a decrease in intangible assets in Singapore due to amortization, a decrease in U.K. net operating loss assets due to currency fluctuations, and a decrease in net pension liabilities in Germany due to remeasurement. The decrease in deferred tax liabilities in 2022 as compared to 2021 primarily relates to a decrease in Japan pension deferred tax liabilities related to currency fluctuations, a decrease in intangibles basis difference in the U.S. and U.K. due to amortization, and a decrease in taxes on unremitted earnings of foreign subsidiaries due to currency fluctuations, partially offset by an increase in deferred tax liabilities related to derivative instruments.

As of October 31, 2022, there was a deferred tax liability of \$8 million for the tax liability expected to be imposed upon the repatriation of unremitted foreign earnings that are not considered indefinitely reinvested. As of October 31, 2022, the cumulative amount of undistributed earnings considered indefinitely reinvested was \$105 million. No deferred tax liability has been recognized on the basis difference created by such earnings since it is our intention to indefinitely reinvest those earnings in the company’s foreign operations. The amount of the unrecognized deferred tax liability on the indefinitely reinvested earnings was \$4 million.

Valuation allowances require an assessment of both positive and negative evidence when determining whether it is more likely than not that deferred tax assets are recoverable. Such assessment is required on a jurisdiction-by-jurisdiction basis.

The \$224 million and \$231 million valuation allowances as of October 31, 2022 and 2021, respectively, are mainly related to net operating losses in Luxembourg and the U.K., capital losses in the U.K., and California research credits from acquired entities that are subject to change in ownership limitations. The decrease in valuation allowance is primarily due to currency fluctuations on U.K. net operating loss assets that are subject to valuation allowance. We will maintain a valuation allowance until sufficient positive evidence exists to support a reversal.

At October 31, 2022, we had U.S. federal net operating loss carryforwards of approximately \$6 million and U.S. state net operating loss carryforwards, primarily from acquired entities, of approximately \$50 million. The U.S. federal net operating losses will expire in years beginning 2027 through 2029 if not utilized. Of the total U.S. state net operating loss carryforwards, \$48 million is subject to change of ownership limitations under various state tax provisions and are subject to valuation allowance. The U.S. state net operating loss carryforwards will begin to expire in 2023, which would result in an immaterial tax impact if not utilized. At October 31, 2022, we had U.S. state research credit carryforwards of approximately \$28 million. Of the total U.S. state research credit carryforwards, \$25 million is California research credits that can be carried forward indefinitely. Due to change of ownership limitations, however, \$21 million of California research credits is subject to valuation allowance.

At October 31, 2022, we also had foreign net operating loss carryforwards of approximately \$957 million. Of the total foreign loss, \$5 million will expire in years beginning 2024 through 2027. The remaining loss is comprised of \$673 million that will expire in years beginning 2032 through 2039 if not utilized and \$279 million that has an indefinite life. Of the \$957 million of foreign net operating loss carryforward, \$687 million is subject to a valuation allowance. At October 31, 2022, we had foreign capital loss carryforwards of approximately \$126 million with an indefinite life and \$4 million of tax credits in foreign jurisdictions with an indefinite life. The foreign capital loss carryforwards are subject to valuation allowance as we do not expect to generate income of the type required in order to utilize these losses.

The differences between the U.S. federal statutory income tax rate and our effective tax rate are:

	Year Ended October 31,		
	2022	2021 ⁽¹⁾	2020 ⁽¹⁾
	(in millions)		
Profit before tax times statutory rate	\$ 270	\$ 212	\$ 160
State income taxes, net of federal benefit	8	(6)	4
U.S. research credits	(14)	(15)	(14)
U.S. share-based compensation	(16)	(11)	(12)
U.S. officers' compensation limitation	8	6	5
Current U.S. tax on foreign earnings	53	58	39
U.S. benefit on foreign sales	(17)	(16)	(8)
Foreign earnings taxed at different rates	(115)	(100)	(59)
Deferred taxes on foreign earnings not considered indefinitely reinvested	(9)	1	8
Change in unrecognized tax benefits	(26)	17	8
Acquired entity integration	—	(15)	—
Release of foreign valuation allowance	—	(17)	—
Other, net	19	2	3
Provision for income taxes	<u>\$ 161</u>	<u>\$ 116</u>	<u>\$ 134</u>
Effective tax rate	<u>13 %</u>	<u>11 %</u>	<u>18 %</u>

⁽¹⁾ The prior year amounts presented in the table above have been reclassified to conform with the current year presentation.

The effective tax rate was 13 percent, 11 percent, and 18 percent for 2022, 2021 and 2020, respectively. The tax rate in each of these years was lower than the U.S. statutory rate primarily due to the proportion of worldwide earnings that are taxed at lower statutory tax rates in non-U.S. jurisdictions, partially offset by U.S. tax imposed on earnings in non-U.S. jurisdictions.

The increase in the effective tax rate from 2021 to 2022 was due to nonrecurring tax benefits recorded in 2021, partially offset by a decrease in 2022 taxes from changes in tax reserves primarily due to audit settlement and from a relative decrease in U.S. tax due on non-U.S. earnings. The 2022 tax expense also includes a decrease in tax expense resulting from an out-of-period adjustment to tax reserves for fiscal years 2019 through 2021 related to the potential U.S. benefit associated with the future resolution of non-U.S. tax reserves. The 2022 decrease in tax expense was partially offset by an increase to tax expense resulting from an out-of-period adjustment related to corrections to the tax rate applied to non-US pension deferred tax balances. Neither of these out-of-period adjustments were material individually or in the aggregate. The 2021 significant nonrecurring tax benefits include the release of valuation allowance on Netherlands net operating losses in 2021 and a decrease due to the 2021 actual tax impact of acquired entity integration as compared to the estimate at acquisition based on the finalization of the integration plan. The decrease in the effective tax rate from 2020 to 2021 was due to a change in the jurisdictional mix of non-U.S. earnings offset by an increase in U.S. taxes on non-U.S. earnings and the 2021 nonrecurring tax benefits described above.

Keysight benefits from tax incentives in several jurisdictions, most significantly in Singapore and Malaysia, that will expire or require renewal at various times in the future. These tax incentives provide lower rates of taxation on certain classes of income and require thresholds of investments and employment in those jurisdictions. The Singapore tax incentive is due for renewal in 2024, and the Malaysia incentive is due for renewal in 2025. We are continuing to evaluate renewal options and the impact of potential outcomes on our effective tax rate. The impact of the tax incentives decreased income taxes by \$81 million, \$70 million and \$53 million in 2022, 2021 and 2020, respectively. The benefit of the tax incentives on net income per share (diluted) was approximately \$0.45, \$0.38 and \$0.28 in 2022, 2021 and 2020, respectively. The increase in tax benefit from 2021 to 2022 is primarily due to a change in the jurisdictional mix of non-U.S. earnings, which increased the earnings taxed at incentive tax rates in 2022.

The breakdown between current and long-term income tax assets and liabilities, excluding deferred tax assets and liabilities, was as follows for the years 2022 and 2021:

	October 31,	
	2022	2021
	(in millions)	
Current income tax assets (included within other current assets)	\$ 49	\$ 30
Current income tax liabilities (included within income and other taxes payable)	(58)	(44)
Long-term income tax assets (included within other assets)	26	—
Long-term income tax liabilities (included within other long-term liabilities)	(190)	(219)
Total	<u>\$ (173)</u>	<u>\$ (233)</u>

The calculation of our tax liabilities involves uncertainties in the application of complex tax law and regulations in a multitude of jurisdictions. Although the guidance on the accounting for uncertainty in income taxes prescribes the use of a recognition and measurement model, the determination of whether an uncertain tax position has met those thresholds will continue to require significant judgment by management. In accordance with the guidance on the accounting for uncertainty in income taxes, for all U.S. and other tax jurisdictions, we recognize potential liabilities for anticipated tax audit issues based on our estimate of whether, and the extent to which, additional taxes and interest will be due. We include interest and penalties related to unrecognized tax benefits within the provision for income taxes in the consolidated statements of operations. Accrued interest and penalties are included on the related tax liability line in the consolidated balance sheet.

The aggregate changes in the balances of our unrecognized tax benefits including all federal, state and foreign tax jurisdictions are as follows:

	2022	2021 ⁽¹⁾	2020 ⁽¹⁾
	(in millions)		
Gross Balance, beginning of year	\$ 249	\$ 237	\$ 226
Additions for tax positions related to the current year	32	19	13
Additions for tax positions from prior years	5	—	2
Reductions for tax positions from prior years	(25)	(2)	(2)
Settlements with taxing authorities	(3)	—	—
Statute of limitations expirations	(4)	(4)	(3)
Impact from currency fluctuations	(20)	(1)	1
Gross Balance, end of year	<u>\$ 234</u>	<u>\$ 249</u>	<u>\$ 237</u>

⁽¹⁾ The prior year amounts presented in the table above have been reclassified to conform with the current year presentation.

As of October 31, 2022, the total amount of gross unrecognized tax benefits, excluding interest and penalties, was \$234 million, of which, if recognized, \$178 million would impact our effective tax rate. However, approximately \$2 million of the unrecognized tax benefits were related to acquisitions, which if recognized within certain agreed upon time periods, would result in the recognition of an offsetting indemnification asset.

Cumulatively, interest and penalties accrued as of the end of October 31, 2022, 2021 and 2020 were \$36 million, \$37 million and \$33 million, respectively. We recognized tax expense of \$3 million, \$4 million, and \$5 million for interest and penalties related to unrecognized tax benefits in 2022, 2021 and 2020, respectively. There was \$4 million of decrease in interest and penalties related to unrecognized tax benefits in 2022 related to currency fluctuations.

The open tax years for the U.S. federal income tax return and most state income tax returns are from November 1, 2017 through the current tax year. For the majority of our foreign entities, the open tax years are from November 1, 2017 through the current tax year. For certain foreign entities, the tax years remain open, at most, back to the year 2008.

Keysight’s fiscal year 2018 U.S. federal income tax return was under examination by the Internal Revenue Service. The Tax Cuts and Jobs Act was enacted in December 2017 and imposed a one-time U.S. tax on foreign earnings not previously repatriated to the U.S., known as the Transition Tax, which was reported in Keysight’s fiscal year 2018 U.S. federal income tax return. As of June 2022, the fiscal year 2018 U.S. federal income tax audit was effectively settled with no material assessments and no additional cash taxes paid.

The company is being audited in Malaysia for the 2008 tax year. This tax year predates our separation from Agilent. However, pursuant to the agreement between Agilent and Keysight pertaining to tax matters, as finalized at the time of separation, for certain entities, including Malaysia, any historical tax liability is the responsibility of Keysight. In the fourth quarter of 2017, Keysight paid income taxes and penalties of \$68 million on gains related to intellectual property rights. The

company believes there are numerous defenses to the current assessment; the statute of limitations for the fiscal year 2008 in Malaysia was closed, and the income in question is exempt from tax in Malaysia. The company is disputing this assessment and pursuing all avenues to resolve this issue favorably for the company. Our appeals to both the Special Commissioners of Income Tax and the High Court in Malaysia have been unsuccessful. We have filed a Notice of Appeal with the Court of Appeal, and a hearing is currently scheduled for 2023.

At this time, management does not believe that the outcome of any future or currently ongoing examination will have a material impact on our consolidated financial statements. We believe that we have an adequate provision for any adjustments that may result from tax examinations. However, the outcome of tax examinations cannot be predicted with certainty. Given the numerous tax years and matters that remain subject to examination in various tax jurisdictions, the ultimate resolution of current and future tax examinations could be inconsistent with management’s current expectations. If that were to occur, it could have an impact on our effective tax rate in the period in which such examinations are resolved.

6. NET INCOME PER SHARE

The following table presents the calculation of basic and diluted net income per share (in millions, except per-share amounts):

	Year Ended October 31,		
	2022	2021	2020
	(in millions)		
Net income	\$ 1,124	\$ 894	\$ 627
Basic weighted-average shares	180	185	187
Potential common shares — RSUs and other employee stock plans	2	2	2
Diluted weighted-average shares	182	187	189
Net income per share - basic	\$ 6.23	\$ 4.84	\$ 3.35
Net income per share - diluted	\$ 6.18	\$ 4.78	\$ 3.31

The dilutive effect of share-based awards is reflected in diluted net income per share by application of the treasury stock method, which includes consideration of unamortized share-based compensation expense and the dilutive effect of in-the-money options and non-vested RSUs. Under the treasury stock method, the amount the employee must pay for exercising stock options and unamortized share-based compensation expense are collectively assumed to be used to repurchase hypothetical shares.

We exclude stock options with exercise prices greater than the average market price of our common stock from the calculation of diluted earnings per share because their effect would be anti-dilutive. For the years ended 2022, 2021 and 2020, we excluded zero shares from the calculation of diluted earnings per share. In addition, we also exclude from the calculation of diluted earnings per share, stock options, ESPP, LTP program awards and restricted stock awards, whose combined exercise price and unamortized fair value collectively were greater than the average market price of our common stock because their effect would also be anti-dilutive. The number of shares excluded was immaterial in 2022, 2021 and 2020.

7. GOODWILL AND OTHER INTANGIBLE ASSETS

The goodwill balances as of October 31, 2022, 2021 and 2020 and the movements in 2022 and 2021 for each of our reportable segments were as follows:

	CSG	EISG	Total
	(in millions)		
Goodwill at October 31, 2020	\$ 984	\$ 553	\$ 1,537
Foreign currency translation impact	(15)	6	(9)
Goodwill arising from acquisitions	100	—	100
Goodwill at October 31, 2021	1,069	559	1,628
Foreign currency translation impact	(56)	(10)	(66)
Goodwill arising from acquisitions	9	11	20
Goodwill at October 31, 2022	\$ 1,022	\$ 560	\$ 1,582

There were no impairments of goodwill during the years ended October 31, 2022, 2021 and 2020. As of October 31, 2022, 2021 and 2020, accumulated impairment losses on goodwill were \$709 million.

Other intangible assets as of October 31, 2022 and 2021 consisted of the following:

	October 31, 2022			October 31, 2021		
	Gross Carrying Amount	Accumulated Amortization	Net Book Value	Gross Carrying Amount	Accumulated Amortization	Net Book Value
			(in millions)			
Developed technology	\$ 992	\$ 914	\$ 78	\$ 969	\$ 866	\$ 103
Backlog	17	17	—	17	17	—
Trademark/Tradename	36	31	5	36	28	8
Customer relationships	393	287	106	389	235	154
Total amortizable intangible assets	1,438	1,249	189	1,411	1,146	265
In-Process R&D	—	—	—	7	—	7
Total	\$ 1,438	\$ 1,249	\$ 189	\$ 1,418	\$ 1,146	\$ 272

In 2022, we recorded additions to goodwill and other intangible assets of \$20 million and \$23 million, respectively, due to acquisition activity. In 2021, we recorded additions to goodwill and other intangible assets of \$100 million and \$83 million, respectively, due to the acquisition of Sanjole and two other acquisitions. For additional information on the acquisitions, see Note 2, "Acquisitions." During the year ended October 31, 2022, we transferred \$7 million from in-process R&D to developed technology as projects were successfully completed.

For the year ended October 31, 2022, other intangible assets decreased \$3 million due to impact of foreign currency translation. Amortization of other intangible assets was \$103 million in 2022, \$174 million in 2021 and \$220 million in 2020. Estimated intangible assets amortization expense for each of the five succeeding fiscal years is as follows:

	Amortization expense
	(in millions)
2023	\$ 82
2024	\$ 43
2025	\$ 25
2026	\$ 16
2027	\$ 9
Thereafter	\$ 14

Goodwill is assessed for impairment on a reporting unit basis at least annually in the fourth quarter, as of September 30, after the annual update to our long-term financial forecasts during our strategic planning cycle, or more frequently when events and circumstances occur indicating that the recorded goodwill may be impaired. The impairment test compares the fair value of a reporting unit with its carrying amount, with an impairment charge recorded for the amount by which the carrying amount exceeds the reporting unit’s fair value up to a maximum amount of the goodwill balance for the reporting unit. As defined in the authoritative guidance, a reporting unit is an operating segment or one level below an operating segment.

We determine fair values for each of the reporting units using the market approach, when available and appropriate, or the income approach, or a combination of both. If multiple valuation methodologies are used, the results are weighted appropriately. Valuations using the market approach are derived from metrics of publicly traded comparable companies. The selections of comparable businesses are based on the markets in which our reporting units operate, giving consideration to risk profiles, size, geography, and diversity of products and services. Under the income approach, fair value is determined based on the present value of estimated future cash flows, discounted at an appropriate risk-adjusted rate. We use our internal forecasts to estimate future cash flows and include an estimate of long-term future growth rates based on our most recent views of the long-term outlook for each business.

During the fourth quarter of 2022, we performed our annual impairment test of goodwill for all our reporting units using a qualitative approach. Based on the results of our qualitative testing, we believe that it is more-likely-than-not that the fair value of each reporting unit is greater than its respective carrying value.

As of October 31, 2022, we determined that no goodwill impairment exists and that the remaining goodwill is recoverable for all of our reporting units; however, there can be no assurance that goodwill will not be impaired in future periods. Estimating the fair value of reporting units requires the use of estimates and significant judgments that are based on a number of

factors including actual operating results. It is possible that the judgments and estimates described above could change in future periods.

In 2021, we performed our annual impairment test of goodwill for all our reporting units using a qualitative approach, except for our previous Eggplant reporting unit, which is included in our EISG reportable segment, for which the test was performed using a quantitative approach. The income and market approaches were used to determine the fair value of the Eggplant reporting unit. With respect to the income approach, the discounted cash flow method was used, which included a forecasted cash flow projection and an estimated terminal value. The market approach used revenue, gross margin and EBITDA multiples to develop an estimate of fair value. A weighting of 75 percent and 25 percent was applied to the income and market approaches, respectively, to determine the fair value of the Eggplant reporting unit. The income approach was given a larger weighting based on the underlying detailed financial projections prepared during the strategic planning cycle that reflect the financial and operational facts and circumstances specific to Eggplant as of the valuation date. Based on the results of our annual impairment tests, the fair value of each of our reporting units exceeded the carrying value.

In 2020, we performed our annual impairment test of goodwill for all our reporting units using a qualitative approach. Based on the results of our annual impairment tests, the fair value of each of our reporting units exceeded the carrying value.

We review long-lived assets for impairment whenever events or changes in business circumstances indicate that the carrying amount of the assets may not be fully recoverable or that the useful lives of these assets are no longer appropriate. We performed an impairment test of Eggplant long-lived assets in 2021 that preceded the quantitative test of goodwill in accordance with the guidance, and concluded that no impairment charge was required.

8. FAIR VALUE MEASUREMENTS

The authoritative guidance defines fair value as the price that would be received from selling an asset or paid to transfer a liability 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 recorded at fair value, we consider the principal or most advantageous market and assumptions that market participants would use when pricing the asset or liability.

Fair Value Hierarchy

The guidance establishes a fair value hierarchy that prioritizes inputs used in valuation techniques into three levels. A financial instrument's categorization within the fair value hierarchy is based upon the lowest level of input that is significant to the fair value measurement. There are three levels of inputs that may be used to measure fair value:

Level 1 — applies to assets or liabilities for which there are quoted prices in active markets for identical assets or liabilities.

Level 2 — applies to assets or liabilities for which there are inputs other than quoted prices included within Level 1 that are observable, either directly or indirectly, for the asset or liability such as: quoted prices for similar assets or liabilities in active markets; quoted prices for identical or similar assets or liabilities in less active markets; or other inputs that can be derived principally from, or corroborated by, observable market data.

Level 3 — applies to assets or liabilities for which there are unobservable inputs to the valuation methodology that are significant to the measurement of the fair value of the assets or liabilities.

Financial Assets and Liabilities Measured at Fair Value on a Recurring Basis

Financial assets and liabilities measured at fair value on a recurring basis as of October 31, 2022 and 2021 were as follows:

Fair Value Measurements as of October 31,										
2022					2021					
Total	Level 1	Level 2	Level 3	Other	Total	Level 1	Level 2	Level 3	Other	
(in millions)										
Assets:										
<i>Short-term</i>										
Cash equivalents										
Money market funds	\$ 1,338	\$ 1,338	\$ —	\$ —	\$ —	\$ 1,296	\$ 1,296	\$ —	\$ —	\$ —
Derivative instruments (foreign exchange contracts)	21	—	21	—	—	6	—	6	—	—
<i>Long-term</i>										
Derivative instruments (interest rate swaps)	133	—	133	—	—	48	—	48	—	—
Equity investments	50	50	—	—	—	60	60	—	—	—
Investments - other	12	—	—	—	12	10	—	—	—	10
Total assets measured at fair value	<u>\$ 1,554</u>	<u>\$ 1,388</u>	<u>\$ 154</u>	<u>\$ —</u>	<u>\$ 12</u>	<u>\$ 1,420</u>	<u>\$ 1,356</u>	<u>\$ 54</u>	<u>\$ —</u>	<u>\$ 10</u>
Liabilities:										
<i>Short-term</i>										
Derivative instruments (foreign exchange contracts)	\$ 12	\$ —	\$ 12	\$ —	\$ —	\$ 4	\$ —	\$ 4	\$ —	\$ —
<i>Long-term</i>										
Deferred compensation liability	22	—	22	—	—	24	—	24	—	—
Total liabilities measured at fair value	<u>\$ 34</u>	<u>\$ —</u>	<u>\$ 34</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 28</u>	<u>\$ —</u>	<u>\$ 28</u>	<u>\$ —</u>	<u>\$ —</u>

During the year ended October 31, 2022, we made investments of \$33 million, including an equity investment of \$30 million. The changes in fair value of the equity investment are recorded within "other income (expense), net" in the consolidated statement of operations.

Our money market funds and equity investments with readily determinable fair values are measured at fair value using quoted market prices and, therefore, are classified within Level 1 of the fair value hierarchy. Equity or fixed income investments without readily determinable fair values that are measured at cost adjusted for observable changes in price or impairments and convertible notes are not categorized in the fair value hierarchy and are presented as "Investments - other" in the tables above. Our deferred compensation liability is classified as Level 2 because the inputs used in the calculations are observable, although the values are not directly based on quoted market prices. Our derivative financial instruments are classified within Level 2 as there is not an active market for each hedge contract, but the inputs used to calculate the value of the instruments are tied to active markets.

Equity investments, including securities that are earmarked to pay the deferred compensation liability, and the deferred compensation liability are reported at fair value, with gains or losses resulting from changes in fair value recognized in earnings. Certain derivative instruments are reported at fair value, with unrealized gains and losses, net of tax, included in accumulated other comprehensive income (loss).

All of our investments are subject to periodic impairment review. The impairment analysis requires judgment to identify events or circumstances that would likely have a significant adverse effect on the future value of the investment. There was no impairment recognized in 2022, 2021 and 2020. Realized gains and losses from the sale of investments are recorded in earnings. Net unrealized gain (loss) on investments still held was a loss of \$36 million in 2022 as compared to gains of \$4 million and \$11 million in 2021 and 2020, respectively. There were no realized gains or losses from the sale of investments in 2022, 2021 and 2020.

Financial Assets and Liabilities Measured at Fair Value on a Non-Recurring Basis

Assets measured at fair value on a non-recurring basis consisted of goodwill and intangible assets. See Note 7, "Goodwill and Other Intangible Assets" for more information.

Goodwill

Fair value assessments of the reporting unit and the reporting unit's net assets, which are performed for goodwill impairments tests, are considered Level 3 measurements due to the significance of unobservable inputs developed using company-specific information. In the event of performing a quantitative impairment test, we consider a market approach as well as an income approach using the discounted cash flow model to determine the fair value of the reporting unit.

Intangible Assets

We utilized an income approach for estimating the fair value of intangible assets. The future cash flows used in the analysis are based on internal cash flow projections based on our long-range plans and include significant assumptions by management. Accordingly, the fair value assessment of the long-lived assets is considered a Level 3 fair value measurement.

Long Lived Assets

For the year ended 2022, our held and used long-lived assets in Russia with a carrying amount of \$3 million were written down to a fair value of zero, resulting from an impairment of assets that were expected to generate zero cash flows in the future, and was recorded within “other operating expense (income), net” in the consolidated statement of operations.

9. DERIVATIVES

We are exposed to foreign currency exchange rate fluctuations and interest rate changes in the normal course of our business. As part of our risk management strategy, we use derivative instruments, which are primarily forward contracts, to hedge economic and/or accounting exposures resulting from changes in foreign currency exchange rates.

Cash Flow Hedges

We enter into foreign exchange contracts to hedge our forecasted operational cash flow exposures resulting from changes in foreign currency exchange rates. These foreign exchange contracts, carried at fair value, have maturities based on a rolling period of up to twelve months. These derivative instruments are designated and qualify as cash flow hedges under the criteria prescribed in the authoritative guidance. The changes in the value of the derivative instrument included in the assessment of effectiveness are recognized in accumulated other comprehensive income and reclassified into earnings when the forecasted transaction occurs in the same financial statement line item in the consolidated statement of operations where the earnings effect of the hedged item is presented. If it becomes probable that the forecasted transaction will not occur, the hedge relationship will be de-designated and amounts accumulated in other comprehensive income will be reclassified into earnings in

the current period. Gains and losses on the derivative instrument representing hedge components excluded from the assessment of effectiveness are amortized to earnings on a straight-line basis over the tenor of the hedge and are presented in the same financial statement line of the consolidated statement of operations where the earnings effect of the hedged item is presented. For hedges executed prior to February 1, 2020, these gains and losses were recognized immediately in earnings.

In 2020, we entered into forward-starting interest rate swaps with an aggregate notional amount of \$600 million associated with future interest payments on anticipated debt issuances through 2024. The contract term allows us to lock-in a treasury rate on anticipated debt issuances. These derivative instruments are designated and qualify as cash flow hedges under the criteria prescribed in the authoritative guidance. The changes in fair value of these derivative instruments have been recognized in accumulated other comprehensive income (loss). For the year ended October 31, 2022, a gain of \$85 million was recognized in accumulated other comprehensive income (loss). Amounts associated with these cash flow hedges will be reclassified to interest expense in the consolidated statement of operations when future interest payments on the anticipated debt occur.

Other Hedges

Additionally, we enter into foreign exchange contracts to hedge monetary assets and liabilities that are denominated in currencies other than the functional currency of our subsidiaries. These foreign exchange contracts are carried at fair value and do not qualify for hedge accounting treatment and are not designated as hedging instruments. Changes in value of the derivative are recognized in other income (expense), net, in the consolidated statement of operations, in the current period, along with the offsetting foreign currency gain or loss on the underlying assets or liabilities.

Our use of derivative instruments exposes us to credit risk to the extent that the counterparties may be unable to meet the terms of the agreement. We do, however, seek to mitigate such risks by limiting our counterparties to major financial institutions, which are selected based on their credit ratings and other factors. We have established policies and procedures for mitigating credit risk that include establishing counterparty credit limits, monitoring credit exposures, and continually assessing the creditworthiness of counterparties.

The number of open foreign exchange forward contracts designated as "cash flow hedges" and "not designated as hedging instruments" was 212 and 74, respectively, as of October 31, 2022. The aggregated notional amounts by currency and designation as of October 31, 2022 were as follows:

Currency	Derivatives in Cash Flow Hedging Relationships		Derivatives Not Designated as Hedging Instruments	
	Forward Contracts		Forward Contracts	
	Buy/(Sell)		Buy/(Sell)	
	(in millions)			
Euro	\$	11	\$	4
British Pound		20		(28)
Singapore Dollar		29		34
Malaysian Ringgit		110		9
Japanese Yen		(150)		(47)
Other currencies		(8)		(28)
Total	\$	12	\$	(56)

Derivative instruments are subject to master netting arrangements and are disclosed at their gross fair value in the consolidated balance sheet. The gross fair values and balance sheet presentation of derivative instruments held as of October 31, 2022 and 2021 were as follows:

Fair Values of Derivative Instruments									
Assets Derivatives			Liabilities Derivatives						
Balance Sheet Location	Fair Value		Balance Sheet Location	Fair Value					
	October 31, 2022	October 31, 2021		October 31, 2022	October 31, 2021				
(in millions)									
Derivatives designated as hedging instruments:									
Cash flow hedges									
Foreign exchange contracts									
Other current assets	\$	18	\$	5	Other accrued liabilities	\$	10	\$	1
Interest rate swap contracts:									
Other assets		133		48					
Derivatives not designated as hedging instruments:									
Foreign exchange contracts									
Other current assets		3		1	Other accrued liabilities		2		3
Total derivatives	\$	154	\$	54		\$	12	\$	4

The effect of derivative instruments for foreign exchange contracts designated as hedging instruments and not designated as hedging instruments in our consolidated statement of operations was as follows:

	2022	2021	2020
	(in millions)		
Derivatives designated as hedging instruments:			
<i>Cash flow hedges</i>			
Interest rate swap contracts:			
Gain recognized in accumulated other comprehensive income (loss)	\$ 85	\$ 26	\$ 23
Foreign exchange contracts:			
Gain (loss) recognized in accumulated other comprehensive income (loss)	7	6	(3)
Gain (loss) reclassified from accumulated other comprehensive income (loss) into earnings:			
Cost of products	13	—	(3)
Selling, general and administrative	(10)	2	(1)
Gain (loss) excluded from effectiveness testing recognized in earnings based on changes in fair value:			
Cost of products	—	—	2
Gain (loss) excluded from effectiveness testing recognized in earnings based on amortization approach:			
Cost of products	2	1	1
Selling, general and administrative	1	1	—
Derivatives not designated as hedging instruments:			
Gain (loss) recognized in other income (expense), net	\$ 22	\$ (3)	\$ 4

The estimated amount at October 31, 2022 expected to be reclassified from accumulated other comprehensive income (loss) to earnings within the next twelve months is a loss of \$7 million.

10. LEASES

We have operating leases for items including office space, manufacturing and production locations, sales and service centers, research and development facilities and certain equipment, primarily automobiles. Our leases have remaining terms of up to 15 years, which represent the non-cancellable periods of the leases and include extension options that we determined are reasonably certain to be exercised. The weighted average lease term of our operating leases was 7.7 years, 8.2 years and 7.3 years as of October 31, 2022, 2021 and 2020, respectively. The weighted average discount rate of our operating leases was 3 percent as of October 31, 2022, 2021 and 2020.

The following table summarizes the components of our lease cost:

	Year ended October 31,					
	2022		2021		2020	
	(in millions)					
Operating lease cost	\$	51	\$	51	\$	49
Variable lease cost	\$	17	\$	14	\$	16

Short-term lease costs, sublease income and finance lease costs were immaterial for the year ended October 31, 2022, 2021 and 2020. Right-of-use (“ROU”) asset impairments were \$2 million in 2022 related to the discontinuance of our Russia operations. Supplemental cash flow information related to our operating leases was as follows:

	Year ended October 31,					
	2022		2021		2020	
	(in millions)					
Cash payments for operating leases	\$	51	\$	53	\$	48
ROU assets obtained in exchange for operating lease obligations	\$	51	\$	78	\$	67

The decrease in ROU assets obtained in exchange for operating lease obligations was primarily driven by reassessment of a lease term in the prior year triggered by significant leasehold improvements. The maturities of our operating leases as of October 31, 2022 with initial terms exceeding one year were as follows:

	Operating Leases	
	(in millions)	
2023	\$	45
2024		37
2025		30
2026		27
2027		25
Thereafter		87
Total undiscounted lease liability		251
Imputed interest		26
Total discounted lease liability	\$	225

As of October 31, 2022, we have additional operating leases, primarily for real estate, that have not yet commenced of \$20 million. These operating leases will commence in 2023 with lease terms of up to 15 years.

Rental income from the lease of excess facilities was \$11 million for the year ended October 31, 2022, 2021 and 2020 and is included in other operating expense (income), net. Other lessor arrangements were immaterial.

11. DEBT

The following table summarizes the components of our long-term debt:

	October 31,	
	2022	2021
	(in millions)	
2024 Senior Notes at 4.55% (\$600 face amount less unamortized costs of \$1 and \$1)	\$ 599	\$ 599
2027 Senior Notes at 4.60% (\$700 face amount less unamortized costs of \$3 and \$4)	697	696
2029 Senior Notes at 3.00% (\$500 face amount less unamortized costs of \$3 and \$4)	497	496
	<u>\$ 1,793</u>	<u>\$ 1,791</u>

Short-Term Debt

Revolving Credit Facility

On July 30, 2021, we entered into a new credit agreement that amended and restated our existing credit agreement dated February 15, 2017 in its entirety, and provides for a \$750 million, five-year unsecured revolving credit facility (the “Revolving Credit Facility”) that will expire on July 30, 2026 and bears interest at an annual rate of LIBOR + 1 percent along with a facility fee of 0.125 percent per annum. In addition, the new credit agreement permits the company, subject to certain customary conditions, on one or more occasions to request to increase the total commitments under the Revolving Credit Facility by up to \$250 million (to a total of \$1 billion) in the aggregate. We may use amounts borrowed under the facility for general corporate purposes. As of October 31, 2022 and October 31, 2021, we had no borrowings outstanding under the Revolving Credit Facility. We were in compliance with the covenants of the Revolving Credit Facility during the year ended October 31, 2022.

Long-Term Debt

The below senior notes are unsecured and rank equally in right of payment with all of our other senior unsecured indebtedness. We were in compliance with the covenants of our senior notes during the year ended October 31, 2022.

2024 Senior Notes

In October 2014, the company issued an aggregate principal amount of \$600 million in unsecured senior notes ("2024 Senior Notes"). The 2024 Senior Notes were issued at 99.966 percent of their principal amount. The notes will mature on October 30, 2024, and bear interest at a fixed rate of 4.55 percent per annum. The interest is payable semi-annually on April 30 and October 30 of each year. We incurred issuance costs of \$5 million in connection with the 2024 Senior Notes that, along with the debt discount, are being amortized to interest expense over the term of the senior notes.

2027 Senior Notes

In April 2017, the company issued an aggregate principal amount of \$700 million in unsecured senior notes ("2027 Senior Notes"). The 2027 Senior Notes were issued at 99.873 percent of their principal amount. The notes will mature on April 6, 2027 and bear interest at a fixed rate of 4.60 percent per annum. The interest is payable semi-annually on April 6 and October 6 of each year, commencing on October 6, 2017. We incurred issuance costs of \$6 million in connection with the 2027 Senior Notes that, along with the debt discount, are being amortized to interest expense over the term of the senior notes.

2029 Senior Notes

In October 2019, the company issued an aggregate principal amount of \$500 million in unsecured senior notes ("2029 Senior Notes"). The 2029 Senior Notes were issued at 99.914 percent of their principal amount. The notes will mature on October 30, 2029 and bear interest at a fixed rate of 3.00 percent per annum. The interest is payable semi-annually on April 30 and October 30 of each year, commencing on April 30, 2020. We incurred issuance costs of \$4 million in connection with the 2029 Senior Notes that, along with the debt discount, are being amortized to interest expense over the term of the senior notes.

Letter of Credit

As of October 31, 2022 and October 31, 2021, we had \$38 million and \$40 million, respectively, of outstanding letters of credit and surety bonds unrelated to the credit facility that were issued by various lenders.

12. RETIREMENT PLANS AND POST-RETIREMENT BENEFIT PLANS

General. The majority of our employees are covered under various defined benefit and/or defined contribution retirement plans. Additionally, we sponsor post-retirement health care benefits for our eligible U.S. employees. We provide U.S. employees who meet eligibility criteria under the Keysight Technologies, Inc. Retirement Plan ("RP") defined benefits that are based on an employee's base or target pay during the years of employment and on length of service. For eligible employees' service through October 31, 1993, the benefit payable under the RP is reduced by any amounts due to the eligible employees' service under our defined contribution Deferred Profit-Sharing Plan ("DPSP"), which was closed to new participants as of November 1993. The obligations under the DPSP equal the fair value of the DPSP assets, which was \$177 million as of October 31, 2022. Employees hired on or after August 1, 2015 are not eligible to participate in the RP or the Keysight Technologies, Inc. Health Plan for Retirees ("U.S. Post-Retirement Benefit Plan").

In addition, in the U.S. we maintain the Supplemental Benefits Retirement Plan ("SBRP"), a supplemental unfunded non-qualified defined benefit plan to provide benefits that would be provided under the RP but for limitations imposed by the Internal Revenue Code. The RP and the SBRP comprise the "U.S. Plans."

Eligible employees outside the U.S. generally receive retirement benefits under various retirement plans ("Non-U.S. Plans") based on factors such as years of service and/or employee compensation levels. Eligibility is generally determined in accordance with local statutory requirements. Certain of our immaterial non-U.S. defined benefit plans are not included in these disclosures.

401(k) defined contribution plan. Eligible U.S. employees may participate in the Keysight Technologies, Inc. 401(k) Plan (the "401(k) Plan"). Enrollment in the 401(k) Plan is automatic for employees who meet eligibility requirements unless they decline participation. We provide matching contributions of up to 4 percent of annual eligible compensation for employees hired prior to August 1, 2015 and up to 6 percent for employees hired thereafter. The 401(k) Plan employer expense included in income from operations was \$31 million in 2022, \$28 million in 2021 and \$27 million in 2020.

Post-retirement medical benefit plans. In addition to receiving retirement benefits, U.S. employees who meet eligibility requirements as of their termination date may participate in the U.S. Post-Retirement Benefit Plans.

Components of net periodic benefit cost. We record the service cost component of net periodic benefit cost (benefit) in the same line item as other employee compensation costs. We record the non-service components of net periodic benefit cost (benefit), such as interest cost, expected return on assets, amortization of prior service cost, and actuarial gains or losses, within "other income (expense), net" in the consolidated statement of operations. The company uses alternate methods of amortization, as allowed by the authoritative guidance, which amortizes the actuarial gains and losses on a consistent basis for the years presented. For the U.S. Plans, gains and losses are amortized over the average future working lifetime. For most Non-U.S. Plans and the U.S. Post-Retirement Benefit Plan, gains and losses are amortized using a separate layer for each year's gains and losses.

During the years ended October 31, 2022 and 2020, the lump-sum payments in our U.K. defined benefit plan were more than the sum of the service cost and interest cost components of net periodic benefit cost ("the threshold amount"), resulting in the recognition of settlement losses of \$9 million and \$5 million, respectively. In March 2021, we transferred substantially all the assets and obligations of our Netherlands defined benefit plan to an insurance company. This partial settlement resulted in a a net refund of \$3 million and a loss of \$16 million for the year 2021, which is included in "other income (expense), net" in the consolidated statement of operations. We recognized a curtailment gain of \$1 million in our Netherlands defined benefit plan for the year 2020, also included in "other income (expense), net" in the consolidated statement of operations.

For the years ended October 31, 2022, 2021 and 2020, components of net periodic benefit cost (benefit) and other amounts recognized in other comprehensive income were comprised of:

	Defined Benefit Plans						U.S. Post-Retirement Benefit Plan		
	U.S. Plans			Non-U.S. Plans					
	2022	2021	2020	2022	2021	2020	2022	2021	2020
	(in millions)								
Net periodic benefit cost (benefit)									
Service cost — benefits earned during the period	\$ 25	\$ 24	\$ 23	\$ 13	\$ 15	\$ 15	\$ 1	\$ 1	\$ 1
Interest cost on benefit obligation	23	22	24	15	15	16	5	4	6
Expected return on plan assets	(61)	(52)	(44)	(58)	(77)	(84)	(14)	(12)	(13)
Amortization:									
Net actuarial loss	11	24	18	24	41	34	1	11	10
Prior service credit		—	—		—	—	(1)	(1)	(11)
Net periodic benefit cost (benefit)	(2)	18	21	(6)	(6)	(19)	(8)	3	(7)
Curtailments and settlements	—	—	—	9	16	4	—	—	—
Total periodic benefit cost (benefit)	<u>\$ (2)</u>	<u>\$ 18</u>	<u>\$ 21</u>	<u>\$ 3</u>	<u>\$ 10</u>	<u>\$ (15)</u>	<u>\$ (8)</u>	<u>\$ 3</u>	<u>\$ (7)</u>
Other changes in plan assets and benefit obligations recognized in other comprehensive (income) loss									
Net actuarial loss (gain)	\$ (9)	\$ (100)	\$ 64	\$ (38)	\$ 26	\$ 81	\$ 17	\$ (38)	\$ 9
Amortization:									
Net actuarial loss	(11)	(24)	(18)	(24)	(41)	(34)	(1)	(11)	(10)
Prior service credit	—	—	—	—	—	—	1	1	11
Curtailments and settlements	—	—	—	(9)	(16)	(4)	—	—	—
Foreign currency	—	—	—	(6)	1	1	—	—	—
Total recognized in other comprehensive (income) loss	<u>\$ (20)</u>	<u>\$ (124)</u>	<u>\$ 46</u>	<u>\$ (77)</u>	<u>\$ (30)</u>	<u>\$ 44</u>	<u>\$ 17</u>	<u>\$ (48)</u>	<u>\$ 10</u>
Total recognized in the periodic benefit cost (benefit) and other comprehensive (income) loss	<u>\$ (22)</u>	<u>\$ (106)</u>	<u>\$ 67</u>	<u>\$ (74)</u>	<u>\$ (20)</u>	<u>\$ 29</u>	<u>\$ 9</u>	<u>\$ (45)</u>	<u>\$ 3</u>

Funded status. As of October 31, 2022 and 2021, the funded status of the defined benefit and post-retirement benefit plans was as follows:

	U.S. Defined Benefit Plans		Non-U.S. Defined Benefit Plans		U.S. Post-Retirement Benefit Plan	
	2022	2021	2022	2021	2022	2021
	(in millions)					
Change in fair value of plan assets:						
Fair value — beginning of year	\$ 862	\$ 722	\$ 1,608	\$ 1,545	\$ 207	\$ 175
Actual return on plan assets	(169)	189	(283)	134	(38)	45
Employer contributions	—	—	11	8	—	—
Settlements	—	—	(12)	(41)	—	—
Benefits paid	(53)	(49)	(37)	(50)	(14)	(13)
Other	—	—	—	(15)	—	—
Currency impact	—	—	(284)	27	—	—
Fair value — end of year	<u>\$ 640</u>	<u>\$ 862</u>	<u>\$ 1,003</u>	<u>\$ 1,608</u>	<u>\$ 155</u>	<u>\$ 207</u>
Change in benefit obligation:						
Benefit obligation — beginning of year	\$ 881	\$ 848	\$ 1,465	\$ 1,421	\$ 190	\$ 203
Service cost	25	24	13	15	1	1
Interest cost	23	22	15	15	5	4
Settlements	—	—	(12)	(41)	—	—
Curtailments	—	—	—	—	—	—
Actuarial loss (gain)	(239)	37	(380)	90	(36)	(5)
Benefits paid	(54)	(50)	(37)	(50)	(14)	(13)
Other	—	—	—	(18)	—	—
Currency impact	—	—	(245)	33	—	—
Benefit obligation — end of year	<u>\$ 636</u>	<u>\$ 881</u>	<u>\$ 819</u>	<u>\$ 1,465</u>	<u>\$ 146</u>	<u>\$ 190</u>
Overfunded (Underfunded) status of PBO	<u>\$ 4</u>	<u>\$ (19)</u>	<u>\$ 184</u>	<u>\$ 143</u>	<u>\$ 9</u>	<u>\$ 17</u>
Amounts recognized in the consolidated balance sheet consist of:						
Other assets	\$ 11	\$ —	\$ 211	\$ 264	\$ 9	\$ 17
Employee compensation and benefits	(1)	(1)	—	—	—	—
Retirement and post-retirement benefits	(6)	(18)	(27)	(121)	—	—
Net asset (liability)	<u>\$ 4</u>	<u>\$ (19)</u>	<u>\$ 184</u>	<u>\$ 143</u>	<u>\$ 9</u>	<u>\$ 17</u>
Amounts recognized in accumulated other comprehensive (income) loss:						
Actuarial losses (gains)	\$ 81	\$ 101	\$ 380	\$ 457	\$ (4)	\$ (21)
Prior service cost (credits)	—	—	1	1	(1)	(1)
Total	<u>\$ 81</u>	<u>\$ 101</u>	<u>\$ 381</u>	<u>\$ 458</u>	<u>\$ (5)</u>	<u>\$ (22)</u>

The change in the benefit obligations for the U.S. and Non-U.S. defined benefit plans was driven by the changes in actuarial assumptions, primarily the discount rate and lump sum conversion rate. The change in the benefit obligations for the U.S. post-retirement benefit plan was primarily driven by changes in the discount rate.

Investment policies and strategies as of October 31, 2022. In the U.S., our RP and U.S. Post-Retirement Benefit Plan target asset allocations are approximately 70 percent to equities, including growth-seeking, and approximately 30 percent to fixed income investments. Our DPSP target asset allocation is approximately 60 percent to equities and approximately 40 percent to fixed income investments. The general investment objective for all our plan assets is to obtain the optimum rate of investment return on the total investment portfolio consistent with the assumed level of risk. Specific investment objectives for the plans' portfolios are to: maintain and enhance the purchasing power of the plans' assets; achieve investment returns consistent with the level of risk being taken; and earn performance rates of return in accordance with the benchmarks adopted for each asset class. Outside of the U.S., our target asset allocation is from 7 to 70 percent to equities, from 30 to 51 percent to fixed income investments, and from zero to 64 percent to insurance contracts and cash. All plans' assets are broadly diversified. Due to fluctuations in capital markets, our actual allocations of plan assets as of October 31, 2022 may differ from the target allocation. Our policy is to periodically bring the actual allocation in line with the target allocation.

Equity securities include exchange-traded common stock and preferred stock of companies from broadly diversified industries. Fixed income securities include a portfolio of corporate bonds of companies from diversified industries, government securities, mortgage-backed securities, asset-backed securities, derivative instruments and other. Portions of the cash and cash equivalent, equity, and fixed income investments are held in commingled funds. Investments in commingled funds are valued using the net asset value (“NAV”) method as a practical expedient. Investments valued using the NAV method are allocated across a broad array of funds and diversify the portfolio. The value of the plan assets directly affects the funded status of our pension and post-retirement benefit plans recorded in the financial statements. In March 2021, we entered into an insurance buy-in contract for a portion of benefit obligations under the U.K. defined benefit plan. In December 2021, we completed the second phase of the same contract and classified it as “Other Investment.” The insurance buy-in contract is similar to an annuity contract, which matches cash flows with future benefit payments for a specific group of pensioners with the obligation remaining with the plan. This contract is issued by a third-party insurance company with no affiliation to us. The insurance contract is valued on an insurer pricing basis, which reflects the purchase price adjusted for changes in discount rates and other actuarial assumptions, which approximates fair value.

Fair Value. The measurement of the fair value of pension and post-retirement plan assets uses the valuation methodologies and the inputs as described in Note 8, "Fair Value Measurements."

Cash and Cash Equivalents - Cash and cash equivalents consist of short-term investment funds that are invested in short-term domestic fixed income securities and other securities with debt-like characteristics, emphasizing short-term maturities and quality. Cash and cash equivalents are generally classified as Level 2 investments except when the cash and cash equivalents are held in commingled funds, which have a daily NAV derived from quoted prices for the underlying securities in active markets; these are classified as assets measured at NAV.

Equity - Some equity securities consisting of common and preferred stock are held in commingled funds, which have daily NAVs derived from quoted prices for the underlying securities in active markets; these are classified as assets measured at NAV. Commingled funds that have quoted prices in active markets are classified as Level 1 investments. Equity also includes some growth-seeking real estate commingled funds that are measured at NAV.

Fixed Income - Some of the fixed income securities are held in commingled funds that have daily NAVs derived from the underlying securities; these are classified as assets measured at NAV. Commingled funds that have quoted prices in active markets are classified as Level 1 investments.

Other Investment - Other investment represents the U.K. insurance buy-in contract and is classified as a Level 3 investment. Insurance contracts are generally classified as Level 3 investments.

The following tables present the fair value of U.S. Defined Benefit Plans assets classified under the appropriate level of the fair value hierarchy as of October 31, 2022 and 2021:

	Fair Value Measurement as of October 31, 2022 Using				
	October 31, 2022	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Assets Measured at NAV ^(a)
			(in millions)		
Cash and cash equivalents	\$ 1	\$ —	\$ 1	\$ —	\$ —
Equity	446	—	—	—	446
Fixed income	193	—	—	—	193
Total assets measured at fair value	<u>\$ 640</u>	<u>\$ —</u>	<u>\$ 1</u>	<u>\$ —</u>	<u>\$ 639</u>

^(a) Certain instruments that are measured at fair value using the NAV per share practical expedient have not been categorized in the fair value hierarchy. The fair value amounts presented in this table are intended to permit reconciliation of the fair value hierarchy to the total value of plan assets.

	Fair Value Measurement as of October 31, 2021 Using				
	October 31, 2021	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Assets Measured at NAV ^(a)
			(in millions)		
Cash and cash equivalents	\$ 18	\$ —	\$ 18	\$ —	\$ —
Equity	605	187	1	—	417
Fixed income	239	27	103	—	109
Total assets measured at fair value	<u>\$ 862</u>	<u>\$ 214</u>	<u>\$ 122</u>	<u>\$ —</u>	<u>\$ 526</u>

^(a) Certain instruments that are measured at fair value using the NAV per share practical expedient have not been categorized in the fair value hierarchy. The fair value amounts presented in this table are intended to permit reconciliation of the fair value hierarchy to the total value of plan assets.

For U.S. Defined Benefit Plans, there was no activity relating to assets measured at fair value using significant unobservable inputs (Level 3) during 2022 and 2021.

The following tables present the fair value of U.S. Post-Retirement Benefit Plan assets classified under the appropriate level of the fair value hierarchy as of October 31, 2022 and 2021:

	Fair Value Measurement as of October 31, 2022 Using				
	October 31, 2022	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Assets Measured at NAV ^(a)
			(in millions)		
Cash and cash equivalents	\$ 1	\$ —	\$ 1	\$ —	\$ —
Equity	109	—	—	—	109
Fixed income	45	1	27	—	17
Total assets measured at fair value	<u>\$ 155</u>	<u>\$ 1</u>	<u>\$ 28</u>	<u>\$ —</u>	<u>\$ 126</u>

^(a) Certain instruments that are measured at fair value using the NAV per share practical expedient have not been categorized in the fair value hierarchy. The fair value amounts presented in this table are intended to permit reconciliation of the fair value hierarchy to the total value of plan assets.

	Fair Value Measurement as of October 31, 2021 Using				
	October 31, 2021	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Assets Measured at NAV ^(a)
			(in millions)		
Cash and cash equivalents	\$ 5	\$ —	\$ 5	\$ —	\$ —
Equity	144	45	—	—	99
Fixed income	58	6	25	—	27
Total assets measured at fair value	<u>\$ 207</u>	<u>\$ 51</u>	<u>\$ 30</u>	<u>\$ —</u>	<u>\$ 126</u>

^(a) Certain instruments that are measured at fair value using the NAV per share practical expedient have not been categorized in the fair value hierarchy. The fair value amounts presented in this table are intended to permit reconciliation of the fair value hierarchy to the total value of plan assets.

For the U.S. Post-Retirement Benefit Plan, there was no activity relating to assets measured at fair value using significant unobservable inputs (Level 3) during 2022 and 2021.

The following tables present the fair value of Non-U.S. Defined Benefit Plans assets classified under the appropriate level of the fair value hierarchy as of October 31, 2022 and 2021:

	Fair Value Measurement as of October 31, 2022 Using				
	October 31, 2022	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Assets Measured at NAV ^(a)
			(in millions)		
Equity	\$ 390	\$ —	\$ —	\$ —	\$ 390
Fixed income	359	—	—	—	359
Other investment	254	—	—	254	—
Total assets measured at fair value	<u>\$ 1,003</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 254</u>	<u>\$ 749</u>

^(a) Certain instruments that are measured at fair value using the NAV per share practical expedient have not been categorized in the fair value hierarchy. The fair value amounts presented in this table are intended to permit reconciliation of the fair value hierarchy to the total value of plan assets.

	Fair Value Measurement as of October 31, 2021 Using				
	October 31, 2021	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Assets Measured at NAV ^(a)
			(in millions)		
Equity	\$ 526	\$ 189	\$ 2	\$ —	\$ 335
Fixed income	718	—	235	—	483
Other investments	364	—	—	364	—
Total assets measured at fair value	<u>\$ 1,608</u>	<u>\$ 189</u>	<u>\$ 237</u>	<u>\$ 364</u>	<u>\$ 818</u>

^(a) Certain instruments that are measured at fair value using the NAV per share practical expedient have not been categorized in the fair value hierarchy. The fair value amounts presented in this table are intended to permit reconciliation of the fair value hierarchy to the total value of plan assets.

For Non-U.S. Defined Benefit Plans assets measured at fair value using significant unobservable inputs (Level 3), the following table summarizes the change in balances during 2022 and 2021:

	Year Ended October 31,	
	2022	2021
	(in millions)	
Balance, beginning of year	\$ 364	\$ —
Unrealized gains/(losses)	(105)	17
Purchases, sales, issuances, and settlements	(16)	(7)
Transfers in (out)	77	354
Currency impact	<u>\$ (66)</u>	<u>—</u>
Balance, end of year	<u>\$ 254</u>	<u>\$ 364</u>

The table below presents the combined projected benefit obligation ("PBO"), accumulated benefit obligation ("ABO") and fair value of plan assets, grouping plans using comparisons of the PBO and ABO relative to the plan assets as of October 31, 2022 and 2021:

	2022		2021	
	Benefit Obligation	Fair Value of Plan Assets	Benefit Obligation	Fair Value of Plan Assets
	PBO		PBO	
	(in millions)		(in millions)	
U.S. defined benefit plans where PBO exceeds the fair value of plan assets	\$ 7	\$ —	\$ 881	\$ 862
U.S. defined benefit plans where fair value of plan assets exceeds PBO	629	640	—	—
Total	\$ 636	\$ 640	\$ 881	\$ 862
Non-U.S. defined benefit plans where PBO exceeds the fair value of plan assets	\$ 58	\$ 31	\$ 383	\$ 262
Non-U.S. defined benefit plans where fair value of plan assets exceeds PBO	761	972	1,082	1,346
Total	\$ 819	\$ 1,003	\$ 1,465	\$ 1,608
	ABO		ABO	
U.S. defined benefit plans where ABO exceeds the fair value of plan assets	\$ 5	\$ —	\$ 5	\$ —
U.S. defined benefit plans where the fair value of plan assets exceeds ABO	581	640	791	862
Total	\$ 586	\$ 640	\$ 796	\$ 862
Non-U.S. defined benefit plans where ABO exceeds the fair value of plan assets	\$ 57	\$ 31	\$ 372	\$ 262
Non-U.S. defined benefit plans where fair value of plan assets exceeds ABO	756	972	1,079	1,346
Total	\$ 813	\$ 1,003	\$ 1,451	\$ 1,608

Contributions and estimated future benefit payments. For 2023, we do not expect to contribute to our U.S. Defined Benefit Plan or U.S. Post-Retirement Benefit Plan, and we expect to contribute \$11 million to our Non-U.S. Defined Benefit Plans. The following table presents expected future benefit payments for the next 10 years.

	U.S. Defined Benefit Plans		Non-U.S. Defined Benefit Plans		U.S. Post-Retirement Benefit Plan
			(in millions)		
2023	\$ 50	\$ 38	\$ 14		
2024	\$ 51	\$ 40	\$ 15		
2025	\$ 60	\$ 41	\$ 15		
2026	\$ 59	\$ 42	\$ 16		
2027	\$ 61	\$ 44	\$ 16		
2028 - 2032	\$ 298	\$ 233	\$ 72		

Assumptions. The assumptions used to determine the benefit obligations and net periodic benefit cost for our defined benefit and post-retirement benefit plans are presented in the tables below. The expected long-term return on assets below represents an estimate of long-term returns on investment portfolios, consisting of a mixture of equities, fixed income and other investments, in proportion to the asset allocations of each of our plans. We consider long-term rates of return, which are weighted based on the asset classes (both historical and forecasted) in which we expect our pension and post-retirement funds to be invested. Discount rates reflect the current rate at which pension and post-retirement obligations could be settled based on the measurement dates of the plans, which is October 31. The U.S. discount rates as of October 31, 2022 and 2021 were determined based on the results of matching expected plan benefit payments with cash flows from a hypothetically constructed bond portfolio. The Non-U.S. discount rates as of October 31, 2022 and 2021 were determined based on a granular approach, which discounts the expected plan benefit payments with rates from a high-quality corporate bond yield curve. In addition, we used this method to calculate two components of the periodic benefit cost: service cost and interest cost. The range of assumptions that were used for the Non-U.S. Defined Benefit Plans reflects the different economic environments within various countries.

Assumptions used to calculate the net periodic benefit cost (benefit) were as follows:

U.S. Defined Benefit Plans:

Discount rate
Average increase in compensation levels
Expected long-term return on assets

Non-U.S. Defined Benefit Plans:

Discount rate
Average increase in compensation levels
Expected long-term return on assets

U.S. Post-Retirement Benefits Plan:

Discount rate
Expected long-term return on assets
Current medical cost trend rate
Ultimate medical cost trend rate
Medical cost trend rate decreases to ultimate rate in year

Year ended October 31,	
2022	2021
2.75%	2.75%
3.50%	3.00%
7.25%	7.50%
0.70-1.86%	0.81-1.66%
2.50-2.75%	2.50-2.75%
3.00-6.50%	4.00-6.50%
2.75%	2.25%
7.25%	7.50%
6.00%	6.25%
4.50%	4.50%
2028	2028

Assumptions used to calculate the benefit obligation as of October 31, 2022 and 2021 were as follows:

U.S. Defined Benefit Plans:

Discount rate
Average increase in compensation levels

Non-U.S. Defined Benefit Plans:

Discount rate
Average increase in compensation levels

U.S. Post-Retirement Benefits Plan:

Discount rate
Current medical cost trend rate
Ultimate medical cost trend rate
Medical cost trend rate decreases to ultimate rate in year

Year ended October 31,	
2022	2021
6.00%	2.75%
3.50%	3.50%
1.87-4.22%	0.70-1.86%
2.50-3.00%	2.50-2.75%
6.00%	2.75%
7.00%	6.00%
4.75%	4.50%
2029	2028

Health care trend rates did not have a significant effect on the total service and interest cost components or on the post-retirement benefit obligation amounts reported for the U.S. Post-Retirement Benefit Plan for the years ended October 31, 2022 and 2021.

13. SUPPLEMENTAL FINANCIAL INFORMATION

The following tables provide details of selected balance sheet items:

Cash, cash equivalents, and restricted cash

Cash and cash equivalents
Restricted cash included in other assets
Total cash, cash equivalents, and restricted cash shown in the statement of cash flows

October 31,	
2022	2021
(in millions)	
\$ 2,042	\$ 2,052
15	16
<u>\$ 2,057</u>	<u>\$ 2,068</u>

Restricted cash primarily relates to deficit reduction contributions to an escrow account for one of our non-U.S. defined benefit pension plans and deposits held as collateral against bank guarantees.

Inventory

	October 31,	
	2022	2021
	(in millions)	
Finished goods	\$ 322	\$ 329
Purchased parts and fabricated assemblies	536	448
Total inventory	<u>\$ 858</u>	<u>\$ 777</u>

Gross inventory-related excess and obsolescence charges recorded in total cost of products were \$27 million in 2022, \$27 million in 2021 and \$29 million in 2020. We record excess and obsolete inventory charges for inventory at our sites and at our contract manufacturers and suppliers, where we have non-cancellable purchase commitments.

Property, plant and equipment

	October 31,	
	2022	2021
	(in millions)	
Land	\$ 48	\$ 61
Buildings and leasehold improvements	798	785
Machinery and equipment	<u>1,385</u>	<u>1,328</u>
Total property, plant and equipment	2,231	2,174
Accumulated depreciation of property, plant and equipment	<u>(1,541)</u>	<u>(1,524)</u>
Property, plant and equipment, net	<u>\$ 690</u>	<u>\$ 650</u>

The increase in property, plant and equipment, net, for the year ended October 31, 2022, is primarily driven by increased capital spending for capacity expansion and technology investments. Asset impairments were \$1 million, zero and zero in 2022, 2021 and 2020, respectively. Depreciation expense was \$117 million in 2022, \$117 million in 2021 and \$104 million in 2020.

Standard warranty

Activity related to the standard warranty accrual, which is included in other accrued and other long-term liabilities in our consolidated balance sheet, is as follows:

	Year Ended October 31,	
	2022	2021
	(in millions)	
Beginning balance	\$ 34	\$ 33
Accruals for warranties	23	29
Settlements made during the period	<u>(25)</u>	<u>(28)</u>
Ending balance	<u>\$ 32</u>	<u>\$ 34</u>
Accruals for warranties due within one year	\$ 20	\$ 21
Accruals for warranties due after one year	12	13
Ending balance	<u>\$ 32</u>	<u>\$ 34</u>

Other current assets

	October 31,	
	2022	2021
	(in millions)	
Prepaid expenses	\$ 280	\$ 168
Other current asset	<u>149</u>	<u>102</u>
Total other current asset	<u>\$ 429</u>	<u>\$ 270</u>

Prepaid expenses include deposits paid in advance to contract manufacturers of \$199 million and \$105 million as of October 31, 2022 and 2021, respectively.

14. COMMITMENTS AND CONTINGENCIES

Commitments to contract manufacturers and suppliers. We purchase components from a variety of suppliers and use several contract manufacturers to provide manufacturing services for our products. During the normal course of business, we issue purchase orders with estimates of our requirements several months ahead of the delivery dates. The reported open purchase orders represent a commitment to our suppliers. Our agreements with suppliers for common materials provide us with the option to cancel, reschedule, and adjust our requirements based on business needs. We expect to fulfill most of our purchase commitments for inventory within one year or based on mutually agreed terms.

As of October 31, 2022 and 2021, our non-cancellable purchase commitments were approximately \$553 million and \$444 million, respectively, of which the majority is for less than one year. The increase in non-cancellable purchase commitments for the year ended October 31, 2022, was driven by higher revenue and advance purchase orders to secure capacity for critical parts due to global supply chain constraints.

Other purchase commitments. Other purchase commitments relate to contracts with professional services suppliers. We can typically cancel these contracts within 90 days without penalties. For those contracts that are not cancellable within 90 days without penalties, we disclose the amounts we are obligated to pay to a supplier under each contract in that period before such contract can be canceled. As of October 31, 2022, our contractual obligations with these suppliers were approximately \$55 million within the next fiscal year, as compared to approximately \$60 million as of October 31, 2021.

Litigation and Contingencies. On August 3, 2021, we entered into a Consent Agreement with the Directorate of Defense Trade Controls, Bureau of Political-Military Affairs, Department of State to resolve alleged violations of the Arms Export Control Act and the International Traffic in Arms Regulations ("ITAR"). Pursuant to the Consent Agreement, we were assessed a penalty of \$6.6 million to be paid over three years, \$2.5 million of which was suspended and designated for remediation activities over three years, including employment of a special compliance officer. To date, we have paid \$2.1 million of the penalty. The suspended portion of the penalty has been satisfied by amounts we have spent on qualifying compliance activities to date.

On January 1, 2022, Centripetal Networks filed a lawsuit in Federal District Court in Virginia, alleging that certain Keysight products infringe certain of Centripetal’s patents. In addition, in February 2022 Centripetal filed complaints in Germany alleging infringement of certain of Centripetal’s German patents, and in April 2022 Centripetal filed a complaint with the International Trade Commission (“ITC”) requesting that they investigate whether Keysight should be enjoined from importing certain products that are manufactured outside of the U.S. and which are alleged to infringe Centripetal patents. We deny the allegations and intend to aggressively defend each case. Although there are no matters pending that we currently believe are probable and reasonably possible of having a material impact to our business, consolidated financial position, or results of operations or cash flows, the outcome of litigation is inherently uncertain and is difficult to predict. An adverse outcome in any outstanding lawsuit or proceeding could result in significant monetary damages or injunctive relief. If adverse results are above management’s expectations or are unforeseen, management may not have accrued for the liability, which could impact our results in a financial period.

We are also involved in lawsuits, claims, investigations and other proceedings, including, but not limited to, patent, commercial and environmental matters, which arise in the ordinary course of business.

Indemnification Obligations Related to Transactions

In connection with acquisitions, divestitures, mergers, spin-offs and other transactions, we have agreed to indemnify certain parties for future damages, losses, expenses and liabilities that were incurred prior to or are related to such transactions. The liabilities covered by these indemnifications, include but are not limited to tax, employment, benefits, intellectual property, environmental, and other liabilities. We do not believe that our indemnification obligations related to such liabilities were material as of October 31, 2022.

Indemnifications to Officers and Directors

Our corporate by-laws require that we indemnify our officers and directors, as well as those who act as directors and officers of other entities at our request, against expenses, judgments, fines, settlements and other amounts actually and reasonably incurred in connection with any proceedings arising out of their services to Keysight and such other entities, including service with respect to employee benefit plans. In addition, we have entered into separate indemnification agreements with each director and each board-appointed officer of Keysight that provide for indemnification under similar and additional circumstances. The indemnification obligations are more fully described in our corporate by-laws and the indemnification agreements, which are available on our website. We purchase standard insurance to cover claims or a portion of the claims made against our directors and officers. Since a maximum obligation is not explicitly stated in our by-laws or in our

indemnification agreements and will depend on the facts and circumstances that arise out of any future claims, the overall maximum amount of the obligations cannot be reasonably estimated. We have not historically made payments related to these obligations, and do not believe that our indemnification obligations related to such claims were material as of October 31, 2022.

Other Indemnifications

As is customary in our industry and as provided for in local law in the U.S. and other jurisdictions, many of our standard contracts provide remedies to our customers and others with whom we enter into contracts, such as defense, settlement, or payment of judgment for intellectual property claims related to the use of our products. From time to time we indemnify customers, as well as our suppliers, contractors, lessors, lessees, companies that purchase our businesses or assets and others with whom we enter into contracts, against combinations of loss, expense, or liability arising from various triggering events related to the sale and the use of our products and services, the use of their goods and services, the use of facilities and state of our owned facilities, the state of the assets and businesses that we sell and other matters covered by such contracts, usually up to a specified maximum amount. In addition, from time to time we also provide protection to these parties against claims related to undiscovered liabilities, additional product liability or environmental obligations. In our experience, claims made under such indemnifications are rare and we do not believe that our indemnification obligations related to such claims were material as of October 31, 2022.

15. STOCKHOLDERS' EQUITY

Stock Repurchase Program

On November 18, 2021, our board of directors approved a stock repurchase program authorizing the purchase of up to \$1,200 million of the company’s common stock, replacing the previously approved November 2020 program, under which \$77 million remained.

Under our stock repurchase program, shares may be purchased from time to time, subject to general business and market conditions and other investment opportunities, through open market purchases, privately negotiated transactions or other means. All such shares and related costs are held as treasury stock and accounted for at the trade date using the cost method. The stock repurchase program may be commenced, suspended or discontinued at any time at the company’s discretion and does not have an expiration date.

In 2022 we repurchased 5,442,280 shares of common stock for \$849 million. In 2021 we repurchased 4,361,542 shares of common stock for \$673 million. In 2020 we repurchased 4,274,366 shares of common stock for \$410 million. All such shares and related costs are held as treasury stock and accounted for at the trade date using the cost method.

Accumulated other comprehensive loss

The following table summarizes the components of accumulated other comprehensive loss, net of tax effect:

	October 31,	
	2022	2021
	(in millions)	
Foreign currency translation, net of tax (expense) of \$(63) and \$(63)	\$ (185)	\$ (20)
Unrealized losses on defined benefit plans, net of tax benefit of \$84 and \$84	(379)	(462)
Unrealized gains (losses) on derivative instruments, net of tax (expense) of \$(30) and \$(11)	110	40
Total accumulated other comprehensive loss	<u>\$ (454)</u>	<u>\$ (442)</u>

Changes in accumulated other comprehensive loss by component and related tax effects were as follows:

	Foreign currency translation	Net defined benefit pension cost and post retirement plan costs:		Unrealized gains (losses) on derivatives	Total
		Actuarial losses	Prior service credits		
			(in millions)		
At October 31, 2020	\$ (10)	\$ (600)	\$ (5)	\$ 16	\$ (599)
Other comprehensive income (loss) before reclassifications	(10)	106	—	32	128
Amounts reclassified out of accumulated other comprehensive gain (loss)	—	93	(1)	(2)	90
Tax benefit (expense)	—	(55)	—	(6)	(61)
Other comprehensive income (loss)	(10)	144	(1)	24	157
At October 31, 2021	(20)	(456)	(6)	40	(442)
Other comprehensive income (loss) before reclassifications	(165)	36	—	92	(37)
Amounts reclassified out of accumulated other comprehensive gain (loss)	—	47	—	(3)	44
Tax benefit (expense)	—	—	—	(19)	(19)
Other comprehensive income (loss)	(165)	83	—	70	(12)
At October 31, 2022	\$ (185)	\$ (373)	\$ (6)	\$ 110	\$ (454)

Reclassifications out of accumulated other comprehensive loss were as follows:

Details about accumulated other comprehensive loss components	Amounts reclassified from other comprehensive loss		Affected line item in statement of operations
	Year Ended October 31,		
	2022	2021	
	(in millions)		
Unrealized gain (loss) on derivatives	\$ 13	\$ —	Cost of products
	(10)	2	Selling, general and administrative
	—	—	Benefit (provision) for income taxes
	<u>3</u>	<u>2</u>	
Net defined benefit pension cost and post retirement plan costs:			
Net actuarial losses	(47)	(93)	Other income (expense), net
Prior service credits	<u>—</u>	<u>1</u>	Other income (expense), net
	(47)	(92)	
	<u>5</u>	<u>24</u>	Provision (benefit) for income taxes
	<u>(42)</u>	<u>(68)</u>	
Total reclassifications for the period	<u>\$ (39)</u>	<u>\$ (66)</u>	

An amount in parentheses indicates a reduction to income and an increase to the accumulated other comprehensive loss.

Reclassifications of prior service credits and net actuarial losses in respect of retirement plans and post-retirement benefit plans are included in the computation of net periodic cost. See Note 12, "Retirement Plans and Post-Retirement Benefit Plans."

16. SEGMENT INFORMATION

Our operating segments were determined based primarily on how the chief operating decision maker views and evaluates our operations. Segment operating results are regularly reviewed by the chief operating decision maker to make decisions about resources to be allocated to each segment and to assess performance. Other factors, including market separation and customer specific applications, go-to-market channels, products and services and manufacturing are considered in determining the formation of these operating segments.

Descriptions of our two reportable segments are as follows:

The Communications Solutions Group serves customers spanning the worldwide commercial communications and aerospace, defense and government end markets. The group's solutions consist of electronic design and test software, electronic measurement instruments, systems and related services. These solutions are used in the simulation, design, validation, manufacturing, installation and optimization of electronic equipment and networks.

The Electronic Industrial Solutions Group provides test and measurement solutions and related services across a broad set of electronic industrial end markets, focusing on high-value applications in the automotive and energy industries and measurement solutions for consumer electronics, education, general electronics design and manufacturing, and semiconductor design and manufacturing. The group provides electronic measurement instruments, design and test software and systems, and related services used in the simulation, design, validation, manufacturing, installation and optimization of electronic equipment, as well as automated test software that uses artificial intelligence and machine learning to automate test creation and test execution.

A significant portion of the segments' expenses arise from allocated corporate charges, as well as expenses related to our centralized sales force, and service, marketing and technology functions that we have historically provided to the segments in order to realize economies of scale and to efficiently use resources. Corporate charges include legal, accounting, real estate, insurance services, information technology services, treasury and other corporate infrastructure expenses. Segment allocations are determined on a basis that we consider to be a reasonable reflection of the utilization of services provided to, or benefits received by, the segments. Newly acquired businesses are not allocated these charges until integrated into our shared services and corporate infrastructure.

The following tables reflect the results of our reportable segments under our management reporting system. These results are not necessarily in conformity with U.S. GAAP. The performance of each segment is measured based on several metrics, including income from operations. These results are used, in part, by the chief operating decision maker in evaluating the performance of, and in allocating resources to, each of the segments.

The profitability of each of the segments is measured after excluding share-based compensation expense, amortization of acquisition-related balances, acquisition and integration costs, a 2020 gain on an insurance settlement related to northern California wildfires, restructuring costs, interest income, interest expense and other items as noted in the reconciliations below.

	CSG		EISG		Total
			(in millions)		
Year ended October 31, 2022:					
Total and segment revenue	\$	3,803	\$	1,617	\$ 5,420
Segment income from operations	\$	1,085	\$	501	\$ 1,586
Depreciation expense	\$	88	\$	29	\$ 117
Year ended October 31, 2021:					
Total and segment revenue	\$	3,523	\$	1,418	\$ 4,941
Segment income from operations	\$	932	\$	444	\$ 1,376
Depreciation expense	\$	91	\$	26	\$ 117
Year ended October 31, 2020:					
Total and segment revenue	\$	3,132	\$	1,089	\$ 4,221
Segment income from operations	\$	773	\$	296	\$ 1,069
Depreciation expense	\$	81	\$	23	\$ 104

The following table reconciles reportable segments' income from operations to our total enterprise income before taxes:

	Year Ended October 31,		
	2022	2021	2020
	(in millions)		
Total reportable segments' income from operations	\$ 1,586	\$ 1,376	\$ 1,069
Share-based compensation	(126)	(104)	(93)
Amortization of acquisition-related balances	(103)	(174)	(224)
Acquisition and integration costs	(9)	(9)	(13)
Gain on insurance settlement	—	—	32
Restructuring and other	(14)	(9)	(6)
Income from operations, as reported	1,334	1,080	765
Interest income	16	3	11
Interest expense	(79)	(79)	(78)
Other income (expense), net	14	6	63
Income before taxes, as reported	\$ 1,285	\$ 1,010	\$ 761

Major customers. No customer represented 10 percent or more of our total revenue in 2022, 2021 or 2020.

The following table presents segment assets and capital expenditures directly managed by each segment.

	Year Ended October 31,					
	2022			2021		
	CSG	EISG	Total	CSG	EISG	Total
	(in millions)					
Segment assets	\$ 4,312	\$ 1,715	\$ 6,027	\$ 4,122	\$ 1,523	\$ 5,645
Capital expenditures	\$ 126	\$ 59	\$ 185	\$ 130	\$ 44	\$ 174

The following table reconciles segment assets to our total assets:

	October 31,	
	2022	2021
	(in millions)	
Total reportable segments' assets	\$ 6,027	\$ 5,645
Cash and cash equivalents	2,042	2,052
Long-term investments	62	70
Long-term deferred tax assets	667	711
Accumulated amortization of other intangibles	(1,249)	(1,146)
Pension and other assets	549	449
Total assets	\$ 8,098	\$ 7,781

The following tables present summarized information for revenue and long-lived assets by country. Revenues from external customers are generally attributed to countries based upon the customer's location. Long-lived assets consist of property, plant, and equipment, operating lease right-of-use assets and other long-term assets excluding intangible assets.

	United States	China	Rest of the World	Total	
	(in millions)				
Revenue:					
Year ended October 31, 2022	\$ 1,933	\$ 1,041	\$ 2,446	\$ 5,420	
Year ended October 31, 2021	\$ 1,803	\$ 927	\$ 2,211	\$ 4,941	
Year ended October 31, 2020	\$ 1,523	\$ 863	\$ 1,835	\$ 4,221	
	United States	Japan	United Kingdom	Rest of the World	Total
	(in millions)				
Long-lived assets:					
October 31, 2022	\$ 637	\$ 222	\$ 82	\$ 283	\$ 1,224
October 31, 2021	\$ 533	\$ 294	\$ 116	\$ 306	\$ 1,249

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

None.

Item 9A. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

Our management has evaluated, under the supervision and with the participation of our Chief Executive Officer and Chief Financial Officer, the effectiveness of our disclosure controls and procedures as of October 31, 2022, pursuant to and as required by Rule 13a-15(b) under the Securities Exchange Act of 1934 (“Exchange Act”). Based on that evaluation, our Chief Executive Officer and Chief Financial Officer have concluded that, as of October 31, 2022, the company's disclosure controls and procedures, as defined by Rule 13a-15(e) under the Exchange Act, were effective and designed to ensure that (i) information required to be disclosed in the company's reports filed under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, and (ii) information is accumulated and communicated to management, including the Chief Executive Officer and Chief Financial Officer, as appropriate to allow timely decisions regarding required disclosures.

Management’s Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rule 13a-15(f). Under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting based on the framework in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on the results of this evaluation, our management concluded that our internal control over financial reporting was effective as of October 31, 2021.

The effectiveness of our internal control over financial reporting as of October 31, 2022 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report that appears in Item 8 of this Annual Report on Form 10-K.

Changes in Internal Control Over Financial Reporting

There were no changes in our internal control over financial reporting during the fourth quarter of 2022 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information

None.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections

Not applicable.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

The information required under Item 10 regarding our directors will appear under “Proposal No. 1 - Election of Directors” in our Proxy Statement. The information regarding our executive officers required under Item 10 will appear in Item 1 of this Annual Report on Form 10-K under “Executive Officers of the Registrant.” The information required under Item 10 regarding our Audit and Finance Committee and our Audit and Finance Committee's financial expert will appear under “Committees of the Board of Directors-Audit and Finance Committee” and “Audit and Finance Committee Report” in our Proxy Statement. Those portions of the Proxy Statement are incorporated by reference into this Annual Report on Form 10-K.

There were no material changes to the procedures by which security holders may recommend nominees to our board of directors. The information required under Item 10 regarding our code of ethics applicable to our principal executive officer, our principal financial officer, our controller and other senior financial officers is contained in our SBC and appears in Item 1 of this report under “Investor Information.” We will post amendments to or waivers from a provision of the SBC with respect to those persons on our website at www.investor.keysight.com.

Compliance with Section 16(a) of the Exchange Act

With regard to the information required under Item 10 relating to compliance with Section 16(a) of the Exchange Act, we will provide disclosure of delinquent Section 16(a) reports, if any, in Keysight’s Proxy Statement under “Delinquent Section 16(a) Reports,” and such disclosure, if any, is incorporated herein by reference.

Item 11. Executive Compensation

The information relating to the compensation of our named executive officers and directors required under Item 11 will appear under “Executive Compensation” and “Compensation of Non-Employee Directors” in the Proxy Statement. The Compensation and Human Capital Committee Report and the information about Compensation and Human Capital Committee interlocks and insider participation required under Item 11, will appear under “Compensation and Human Capital Committee Report” and “Compensation and Human Capital Committee Interlocks and Insider Participation,” respectively, in the Proxy Statement. Those portions of the Proxy Statement are incorporated by reference into this Annual Report on Form 10-K.

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

The information about the security ownership of certain beneficial owners and management required under Item 12 will appear under "Common Stock Ownership of Certain Beneficial Owners and Management" in the Proxy Statement. That portion of the Proxy Statement is incorporated by reference into this Annual Report on Form 10-K.

EQUITY COMPENSATION PLAN INFORMATION

The following table summarizes information about our equity compensation plans as of October 31, 2022. All outstanding awards relate to our common stock.

Plan Category	Number of Securities to be Issued upon Exercise of Outstanding Options, Warrants and Rights (a)	Weighted-average Exercise Price of Outstanding Options, Warrants and Right (b)	Number of Securities Remaining Available for Future Issuance under Equity Compensation Plans (Excluding Securities Reflected in Column (a)) (c)
Equity compensation plans approved by security holders (1)(2)(3)	2,275,429	\$ 30	23,541,746
Equity compensation plans not approved by security holders	—	—	—
Total	2,275,429	\$ 30	23,541,746

- (1) The number of securities remaining available for future issuance in column (c) includes 18,860,237 shares of common stock authorized and available for issuance under the Keysight Technologies, Inc. employee stock purchase plan under Section 423(b) of the Internal Revenue Code ("ESPP"). The number of shares authorized for issuance under the ESPP is subject to an automatic annual increase of the lesser of one percent of the outstanding common stock of Keysight or an amount determined by the Compensation and Human Capital Committee of our board of directors. Under the terms of the ESPP, in no event shall the aggregate number of shares issued under the ESPP exceed 75 million shares. The number of securities remaining available for future issuance in column (c) is before the issuance of shares of common stock to participants in consideration of the aggregate participant contribution under the ESPP totaling \$31 million as of October 31, 2022.
- (2) We issue securities under our equity compensation plans in forms other than options, warrants or rights. Those are issued under the 2014 Stock Plan, which was originally adopted by our board of directors on July 16, 2014, subsequently amended and restated by our board of directors on September 29, 2014 and January 22, 2015 and became effective as of November 1, 2014. The 2014 Stock Plan was further amended and restated by our board of directors on November 16, 2017. The 2014 Stock Plan provides for the grant of awards in the form of stock options, stock appreciation rights, restricted stock, restricted stock units ("RSUs"), performance shares and performance units with performance-based conditions to vesting or exercisability, and cash awards. The 2014 Stock Plan has a term of ten years. As of October 31, 2022, 4,681,509 shares were available for future awards under the 2014 Stock Plan.
- (3) We issue securities under our equity compensation plans in forms that do not require a payment by the recipient to us at the time of exercise or vesting, including restricted stock, RSUs and performance units. Accordingly, the weighted-average exercise price in column (b) does not take these awards into account.

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

The information about certain relationships and related transactions required under Item 13 will appear under “Related Person Transactions Policy and Procedures” in the Proxy Statement. Information about director independence required under Item 13 will appear under the heading "Director Independence” in the Proxy Statement. Each of those portions of the Proxy Statement is incorporated by reference into this Annual Report on Form 10-K.

Item 14. *Principal Accounting Fees and Services*

The information about principal accountant fees and services and related pre-approval policies appears required under Item 14 will appear under "Fees Paid to PricewaterhouseCoopers LLP" and "Audit and Finance Committee Preapproval Policy" in the Proxy Statement. Those portions of the Proxy Statement are incorporated by reference into this Annual Report on Form 10-K.

PART IV

Item 15. *Exhibits and Financial Statement Schedules*

(a) The following documents are filed as part of this Annual Report on Form 10-K:

1. **Financial Statements.**
See Index to Consolidated Financial Statements under Item 8 of this Annual Report on Form 10-K.

2. **Financial Statement Schedule.**

The following additional financial statement schedule should be considered in conjunction with our consolidated financial statements. All other schedules have been omitted because the required information is either not applicable or not sufficiently material to require submission of the schedule.

SCHEDULE II

VALUATION AND QUALIFYING ACCOUNTS

Description	Balance at Beginning of Period	Additions Charged to Expenses or Other Accounts*	Deductions Credited to Expenses or Other Accounts**	Balance at End of Period
	(in millions)			
2022				
Tax valuation allowance	\$ 231	\$ —	\$ (7)	\$ 224
2021				
Tax valuation allowance	\$ 238	\$ 11	\$ (18)	\$ 231
2020				
Tax valuation allowance	\$ 240	\$ 3	\$ (5)	\$ 238

* Additions include current-year additions charged to expense and current-year build due to increases in net deferred tax assets, return to provision true-ups, other adjustments and Other Comprehensive Income ("OCI") impact to deferred taxes.

** Deductions include current-year releases credited to expense and current-year reductions due to decreases in net deferred tax assets, return to provision true-ups, other adjustments and OCI impact to deferred taxes.

3. Exhibits.

Exhibits are incorporated herein by reference or are filed with this Annual Report on Form 10-K as indicated below (numbered in accordance with Item 601 of Regulation S-K):

Exhibit Number	Description	Incorporation by Reference			
		Form	Date	Exhibit Number	Filed Herewith
2.1	Separation and Distribution Agreement, dated August 1, 2014, by and between Agilent Technologies, Inc. and Keysight Technologies, Inc.**	10-12B/A	8/13/2014	2.1	
3.1	Amended and Restated Certificate of Incorporation of Keysight Technologies, Inc.	8-K	11/3/2014	3.1	
3.2	Amended and Restated Bylaws of Keysight Technologies, Inc.	8-K	11/3/2014	3.2	
4.1	Indenture, dated as of October 15, 2014, between Keysight Technologies, Inc. and U.S. Bank National Association, as Trustee	8-K	10/17/2014	4.1	
4.2	First Supplemental Indenture, dated as of October 15, 2014, to the Indenture dated as of October 15, 2014, between Keysight Technologies, Inc. and U.S. Bank National Association, as Trustee	8-K	10/17/2014	4.2	
4.3	Second Supplemental Indenture, dated as of April 6, 2017, to the Indenture dated as of October 15, 2014, between Keysight Technologies, Inc. and U.S. Bank National Association, as Trustee.	8-K	4/6/2017	4.2	
4.4	Third Supplemental Indenture, dated as of October 22, 2019, to the Indenture dated as of October 15, 2014 between Keysight Technologies, Inc. and U.S. Bank National Association, as Trustee	8-K	10/22/2019	4.2	
4.5	Description of Keysight Technologies, Inc. Registered Securities				X
10.1	Tax Matters Agreement, dated August 1, 2014, by and between Agilent Technologies, Inc. and Keysight Technologies, Inc.	10-12B/A	8/13/2014	10.2	
10.2	Intellectual Property Matters Agreement, dated August 1, 2014, by and between Agilent Technologies, Inc. and Keysight Technologies, Inc.	10-12B/A	8/13/2014	10.4	
10.3	Trademark License Agreement, dated August 1, 2014, by and between Agilent Technologies, Inc. and Keysight Technologies, Inc.	10-12B/A	8/13/2014	10.5	
10.4	Real Estate Matters Agreement, dated August 1, 2014, by and between Agilent Technologies, Inc. and Keysight Technologies, Inc.	10-12B/A	8/13/2014	10.6	
10.5	Form of Indemnification Agreement	10-12B/A	7/18/2014	10.7	
10.6	Keysight Technologies, Inc. Employee Stock Purchase Plan*	10-12B/A	7/18/2014	10.8	
10.7	Form of Keysight Technologies, Inc. Global Performance Award Agreement*	10-12B/A	7/18/2014	10.11	
10.8	Form of Keysight Technologies, Inc. Global Stock Option Award Agreement*	10-12B/A	7/18/2014	10.12	
10.9	Form of Keysight Technologies, Inc. Non-Employee Director Stock Option Award Agreement*	10-12B/A	7/18/2014	10.13	
10.10	Form of Keysight Technologies, Inc. Non-Employee Director Stock Award Agreement*	10-12B/A	7/18/2014	10.14	
10.11	Form of Keysight Technologies, Inc. 2014 Deferred Compensation Plan*	10-12B/A	7/18/2014	10.15	

10.12	Form of Keysight Technologies, Inc. 2014 Frozen Deferred Compensation Plan*	10-12B/A	7/18/2014	10.16	
10.13	Form of Keysight Technologies, Inc. Excess Benefit Retirement Plan*	10-12B/A	7/18/2014	10.17	
10.14	Form of Keysight Technologies, Inc. Supplemental Benefit Retirement Plan*	10-12B/A	7/18/2014	10.18	
10.15	Form of Change of Control Severance Agreement*	8-K	11/3/2014	10.1	
10.16	Form of Keysight Technologies, Inc. Deferral Election for Stock Award*	8-K	11/3/2014	10.3	
10.17	Keysight Technologies, Inc. Officer and Executive Severance Plan (Established Effective March18, 2015)*	8-K	3/24/2015	10.1	
10.18	Keysight Technologies, Inc. 2015 Performance-based Compensation Plan for covered employees (As Adopted on September 29, 2014)*	DEF 14A	2/6/2015	APPENDIX B	
10.19	Form of Keysight Technologies, Inc. Global Stock Award Agreement as Amended on November 15, 2016*	10-K	12/19/2016	10.32	
10.20	Amended and Restated Credit Agreement, dated July 30, 2021, between Keysight Technologies, Inc. and the Lenders Party Thereto*	8-K	8/4/2021	10.1	
10.21	Keysight Technologies, Inc. 2014 Equity and Incentive Compensation Plan (As Amended and Restated on November 16, 2017)*	DEF 14A	2/9/2018	APPENDIX A	
10.22	Keysight Technologies, Inc. Deferred Compensation Plan for Non-Employee Directors*	10-K	12/17/2021	10.22	
10.23	Amendment Number 1 to the Keysight Technologies, Inc. Deferred Compensation Plan*	10-K	12/17/2021	10.23	
10.24	Amendment Number 1 to the Keysight Technologies, Inc. 2014 Deferred Compensation Plan*	10-K	12/17/2021	10.24	
10.25	Keysight Technologies, Inc. Officer and Executive Severance Plan (Amended and Restated Effective as of May 17, 2017).*	10-K	12/17/2021	10.25	
10.26	Keysight Technologies, Inc. 2014 Equity and Incentive Compensation Plan Global Stabilization Performance Award Agreement	10-Q	6/1/2022	10.1	
21.1	Subsidiaries of Keysight Technologies, Inc.				X
23.1	Consent of Independent Registered Public Accounting Firm.				X
24.1	Powers of Attorney. Contained in the signature page of this Annual Report on Form 10-K.				X
31.1	Certification of Chief Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.				X
31.2	Certification of Chief Financial Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.				X
32.1	Certification of Chief Executive Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.				X
32.2	Certification of Chief Financial Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.				X
99.1	Information Statement of Keysight Technologies, Inc., dated October 8, 2014.	8-K	11/3/2014	99.1	
101.INS	Inline XBRL Instance Document - the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.				X
101.SCH	Inline XBRL Schema Document				X
101.CAL	Inline XBRL Calculation Linkbase Document				X

101.LAB	Inline XBRL Labels Linkbase Document	X
101.PRE	Inline XBRL Presentation Linkbase Document	X
101.DEF	Inline XBRL Definition Linkbase Document	X
104	Inline XBRL Cover Page Interactive Data File	X
* Indicates management contract or compensatory plan, contract or arrangement.		
** Certain schedules and exhibits have been omitted pursuant to Item 601(b)(2) of Regulation S-K. Keysight will furnish supplemental copies of any such schedules or exhibits to the U.S. Securities and Exchange Commission upon request.		

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.

KEYSIGHT TECHNOLOGIES, INC.

By: /s/ Neil Dougherty
Neil Dougherty
Executive Vice President and Chief Financial Officer

Date: December 15, 2022

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Jeffrey K. Li and JoAnn Juskie, or any of them, his or her attorneys-in-fact, for such person in any and all capacities, to sign any amendments to this report and to file the same, with exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, hereby ratifying and confirming all that any of said attorneys-in-fact, or substitute or substitutes, may do or cause to be done by virtue hereof. 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 and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<div>/s/ RONALD S. NERSESIAN</div> <div>Ronald S. Nersesian</div>	Chairman of the Board	December 15, 2022
<div>/s/ SATISH C. DHANASEKARAN</div> <div>Satish C. Dhanasekaran</div>	President and Chief Executive Officer (Principal Executive Officer)	December 15, 2022
<div>/s/ NEIL P. DOUGHERTY</div> <div>Neil P. Dougherty</div>	Executive Vice President and Chief Financial Officer (Principal Financial Officer)	December 15, 2022
<div>/s/ JOHN C. SKINNER</div> <div>John C. Skinner</div>	Vice President and Corporate Controller (Principal Accounting Officer)	December 15, 2022
<div>/s/ JAMES G. CULLEN</div> <div>James G. Cullen</div>	Director	December 15, 2022
<div>/s/ CHARLES J. DOCKENDORFF</div> <div>Charles J. Dockendorff</div>	Director	December 15, 2022
<div>/s/ RICHARD P. HAMADA</div> <div>Richard P. Hamada</div>	Director	December 15, 2022
<div>/s/ MICHELLE J. HOLTHAUS</div> <div>Michelle J. Holthaus</div>	Director	December 15, 2022
<div>/s/ PAUL A. LACOUTURE</div> <div>Paul A. Lacouture</div>	Director	December 15, 2022
<div>/s/ JEAN M. NYE</div> <div>Jean M. Nye</div>	Director	December 15, 2022
<div>/s/ JOANNE B. OLSEN</div> <div>Joanne B. Olsen</div>	Director	December 15, 2022
<div>/s/ ROBERT A. RANGO</div> <div>Robert A. Rango</div>	Director	December 15, 2022
<div>/s/ KEVIN A. STEPHENS</div> <div>Kevin A. Stephens</div>	Director	December 15, 2022