



**ANNUAL REPORT 2018**

**Accelerating Innovation to Connect and Secure the World**





# ANNUAL REPORT 2018

Accelerating Innovation to Connect and Secure the World



Patent Owner Centripetal Networks, Inc. - Ex. 2012, p. 3

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To Our Stockholders,

2018 was a record year for Keysight. We delivered exceptional 22 percent revenue growth, or 13 percent on a non-GAAP core basis, and 54 percent growth in GAAP earnings per share. The strong results we achieved this year were built on the multi-year strategy to transform the company for growth and drive shareholder value that we put in place four years ago when we separated from Agilent.

To transform and ensure our success, we knew it would require both organic and inorganic investments to drive leadership in hardware, software and services across multiple end markets that are fueled by mega growth trends. While we have made modifications to our plan along the way, we have remained true to the direction of our strategy and steadfast in our commitment to create value for our customers, employees and shareholders. Our stock performed well during fiscal 2018 even as the broader market experienced increased volatility. Keysight shares increased 28 percent, significantly outperforming the S&P MidCap 400, and our enterprise value appreciated by 21 percent, which enabled Keysight's promotion to the S&P 500 in November. Additionally, for the calendar year 2018, Keysight's stock performed in the top 2 percent of S&P 500 companies.

Creating value by providing leading-edge technology solutions and insights that help customers be at the forefront of innovation is the cornerstone of our strategy and the Keysight Leadership Model (KLM). Our targeted investments in full solutions that include software and services in key areas of the market are delivering results. Keysight is leading and participating in select mega trends that are multi-year in nature, such as 5G, automotive and energy, IoT, aerospace and defense and high-speed datacenters.

Within 5G we have strong differentiation and exciting opportunities as mobile providers deploy services globally and equipment makers bring 5G enabled devices to market in the years to come. The vision of 5G networks represents a new era of high-speed connectivity and a significant transformation in mobile services. 5G will drive new applications in many of the areas where we are working to drive growth such as IoT and autonomous vehicles. With the acquisition of Anite in 2015, we enriched our wireless software protocol capabilities, which was instrumental to our efforts to gain leadership in 5G. Additionally, the acquisition of Ixia enables Keysight to deliver full end-to-end solutions across the total communications workflow, which we view as a significant differentiator as wireless and wireline technologies continue to converge and 5G moves into commercialization. In total, we more than doubled our orders for 5G solutions in fiscal year 2018.

The automotive market is also experiencing a massive evolution as more vehicles become increasingly electric, connected and autonomous. The car of the future will demand high-performance wireless, power and radar technologies, which play to Keysight's strengths and technologies that we have developed over several decades. Over the past several years, we have been intensifying our focus on this growing market opportunity including establishing automotive solution centers in key innovation hubs such as Detroit, Silicon Valley and Shanghai. Our 2017 acquisition of Scienlab strategically expanded our global Tier-1 automotive customer base and solutions portfolio, allowing end-to-end solutions for hybrid and electric vehicles and battery test solutions. Additionally, our acquisition of Ixia augmented our security capabilities for the connected car. In our automotive and energy end-market we delivered double-digit revenue growth this year with strong growth across multiple applications.

Software is becoming a larger part of our portfolio. Revenue for our software solutions grew strong double-digits in 2018 and represented more than 15 percent of our total revenue. Our PathWave software platform, which we introduced in January 2018, is the early framework for analytics and information flow throughout the customer design process. In addition to our industry-leading measurement technology, we are linking everything together, from simulation via electronic design automation to product validation and verification to manufacturing and on into operations. This innovative platform was made possible by our leadership in RF/microwave design automation software and test and measurement R&D and selected manufacturing test solutions, as well as the acquired capabilities in network operations we gained from Ixia.

Services are an increasingly important element of our solution-centric engagement model with customers and another area where we have been investing in our capabilities. It is important that we help our customers throughout the lifecycle of their assets and provide services for repair, calibration and asset management. We were pleased to see services revenue growth accelerate and grow 10 percent this year as we increased full solution sales in key end markets such as automotive and 5G.

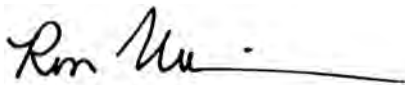
I couldn't be more pleased with our ability to achieve market-leading growth in 2018. However, I am most proud of our ability to deliver this growth while also expanding our profitability, which was a key commitment we made to investors when Keysight became independent. We have maintained our strong focus on financial discipline and operational excellence, using the KLM framework to operate and create value for both our customers and our shareholders. This focus is what drives us into 2019 as we set new goals to expand market leadership, operating margin and free cash flow.

Our ability to transform the business for growth while maintaining our operational discipline enabled the company to transition to a more balanced return of capital strategy this year. In March, the Board of Directors authorized a \$350 million share repurchase with the initial intent of offsetting the dilutive impact of our equity-based compensation programs. In 2018, we repurchased approximately 2 million shares of Keysight common stock at an average price of \$57.91, for a total consideration of \$120 million.

Corporate social responsibility, or CSR, is the core value in our KLM framework. In May we issued our CSR report that details the company's environmental, social, and governance initiatives worldwide. Keysight also set several impact goals to help build a better planet, strengthen communities, and foster education. While corporate social responsibility has always been a part of Keysight's DNA, these measures provide a beacon to drive our efforts, measure our progress, and support stakeholder expectations. In recognition of our achievements in this area, the company received several awards for workplace diversity, corporate social responsibility, and technology innovation in 2018, including being named in FORTUNE's 100 Best U.S. Workplaces for Diversity, and earning a top 25 position and industry leader in the 2018 America's Most JUST Companies List by Forbes and JUST Capital.

In summary, 2018 was a year of consistent execution, great success and strong revenue and earnings growth. As we look ahead, we believe Keysight is well-positioned to expand our leadership as our markets evolve. We have built a robust innovation engine and a broad portfolio of solutions that spans multiple segments. Our solution-centric approach to the market builds deep customer relationships that fuel innovation and customer success. We will continue to direct our investments in these key areas to drive innovation, create even more value for our customers and outgrow the market. We will also continue to maintain our focus on operational excellence and margin expansion, which leads to our ultimate goal of creating shareholder value as we accelerate innovation to connect and secure the world.

Thank you for your continued support.

A handwritten signature in black ink, appearing to read "Ron Nersesian", followed by a horizontal line.

Ron Nersesian  
President and Chief Executive Officer  
February 1, 2019

## Keysight at a Glance

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

We have a comprehensive sales strategy that uses our direct sales force, distributors, resellers and manufacturer's representatives. The strategy varies based on the size of customer, the complexity of solutions and geographical coverage. We generated \$3.9 billion, \$3.2 billion and \$2.9 billion of net revenue in 2018, 2017 and 2016, respectively. As of October 31, 2018, we had approximately 12,900 employees worldwide.

Net revenue, income from operations and assets by business segment as of and for the fiscal years ended October 31, 2018, 2017 and 2016 are shown in Note 19, "Segment Information," to our consolidated financial statements.

We had more than 17,000 direct customers for our solutions and services in fiscal year 2018 and greater than 32,000 customers including indirect channels. No single customer represented 10 percent or more of our net revenue. Many of our customers acquire solutions and services across multiple segments.

Operating Segments	2018 Net Revenue	Description
<b>Communications Solutions Group</b>	<b>\$2.0 billion</b>	<p><b>Summary:</b> The Communications Solutions Group serves customers spanning the worldwide commercial communications and aerospace, defense and government end markets. The group provides electronic design and test software, instruments and systems used in the simulation, design, validation, manufacturing, installation and optimization of electronic equipment.</p> <p><b>Markets:</b> The markets for our communications solutions group include the commercial communications market and the aerospace, defense and government market.</p> <p><u>Commercial Communications Market:</u> We market our electronic design and test solutions to network equipment manufacturers (“NEMs”), wireless device manufacturers and communications service providers, including the component manufacturers within the supply chain for these customers. Growth in mobile data traffic and increasing complexity in semiconductors and components are drivers of test demand across the communications market.</p> <p><u>Aerospace, Defense and Government Market:</u> 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. Electronic warfare and modernization of satellites, radars and surveillance systems worldwide are the drivers of test demand within the aerospace and defense market.</p> <p>Government customers include departments or ministries of defense and related agencies around the world. Contractors support the government and commercial customers by providing design and manufacturing capabilities for a variety of programs. We also sell to sub-contractors and component manufacturers within the supply chain.</p> <p><b>Solutions:</b> Our electronic design and test solutions include software-driven RF and microwave instruments, digital instruments and various other general purpose test instruments and targeted test solutions. We offer these products and related software in a variety of form factors, including feature-rich, modular and handheld solutions, depending on the specific requirements of the customer application.</p> <p><b>Customers:</b> Our customers include commercial companies and government agencies around the world. We have customers across the product lifecycle that design, develop, manufacture, install and monitor a variety of commercial and government communications networks. Commercial customers include original equipment and contract manufacturers of electronic components, semiconductors, wireless devices and network equipment, as well as network service providers that implement, maintain and manage communication networks and services. Other commercial customers include defense contractors and sub-contractors. Government customers include departments or ministries of defense, government</p>

agencies and related research institutes. Our customers use our solutions to conduct research and development to manufacture, and to install and maintain radio frequency, microwave frequency, digital, semiconductor and optical products and systems.

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

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**Electronic  
Industrial  
Solutions Group**

**\$965 million**

**Summary:** The Electronic Industrial Solutions Group provides test and measurement solutions across a broad set of electronic industrial end markets, focusing on high-value applications in the automotive and energy industry and measurement solutions for consumer electronics, education, general electronics design and manufacturing, and semiconductor design and manufacturing. The group provides electronic design and test software, instruments and systems used in the simulation, design, validation, manufacturing, installation and optimization of electronic equipment.

**Markets:** We market our electronic design and test solutions to customers with significant electronic content across a broad set of electronic industrial end markets. These industries 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. The components, printed circuit assemblies and functional devices for these products may be designed, developed and manufactured by electronic components companies, original equipment manufacturers ("OEMs") or contract manufacturers. Other industrial applications for our solutions include power, energy, automotive, medical, research and education.

**Product Areas:** Our software-driven electronic industrial solutions include design and design verification tools, a broad range of electronic test and measurement instruments, comprehensive manufacturing systems, material analysis and university education solutions to train the next generation of engineers and scientists.

**Customers:** Our customers include original equipment manufacturers and contract manufacturers of electronic industrial products and services. These customers use our solutions to perform research and development and to design, manufacture and support their products and services. Customer products include semiconductor devices, printed circuit assemblies, electronic modules and systems. 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 V2X that will enable EV/HEV vehicles to be fully autonomous.

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

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**Ixia Solutions  
Group****\$451 million**

**Summary:** The Ixia Solutions Group helps customers design, validate and optimize the performance and security resilience of their networks and associated components and applications. The test, visibility and security solutions help organizations and their customers strengthen their physical and virtual networks. The group's solutions consist of high-performance hardware platforms, software applications and services, including warranty and maintenance offerings.

**Markets:** We market our network test solutions and services, and our network visibility solutions to network equipment manufacturers, service providers, enterprises and governments worldwide. Our network test customers use our solutions to evaluate the performance of their equipment and networks during the design, manufacturing and pre-deployment stages, as well as after the equipment is deployed in a network. Our network visibility solutions improve the way our customers manage their data centers, save valuable IT time and maximize return on IT investments.

**Product Areas:** We offer a comprehensive suite of solutions consisting of software applications in conjunction with our network test hardware platforms that provide customers with the ability to perform a broad range of testing for layers 2-7 of the network stack. Additionally, our visibility solutions provide real-time, end-to-end visibility, insight and security into physical, virtual, Software Defined Networking and Network Functions Virtualization networks, delivering the control, coverage, intelligence and performance customers need in a seamless fashion to protect and improve crucial networking, data center and cloud business assets.

**Customers:** Our customers include NEMs, service providers, enterprises and governments. These customers seek to optimize networks and data centers in order to accelerate, secure and scale the delivery of these applications. NEMs, including chipset providers, deliver voice, video, and data and service infrastructure equipment to customer network operators, service providers and network users. Such users require high standards of functionality, performance, security and reliability and must ensure the quality of their products during development and manufacturing (prior to deployment). Service providers seek to deliver a growing variety of high quality, advanced network services ranging from traditional telecommunications and internet services to social networking, cloud storage and entertainment streaming. Enterprise and government organizations depend on their networks and data centers to get business done, and they devote significant resources to ensure applications and services run optimally and securely. These enterprise and government customers rely on our solutions to help evaluate equipment during selection, optimize and harden their network designs in labs prior to roll-out, and once rolled out, continuously monitor the production network to ensure optimal performance and security of the contents flowing through it. Our security solutions are also used by major organizations to train their staff on the new generation of cyber

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warfare and mitigation techniques to recognize and defend against massive cyber attacks.

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

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**Services Solutions    \$461 million  
Group**

**Summary:** The Services Solutions Group provides repair, calibration and consulting services, and resells used Keysight equipment. In addition to providing repair and calibration support for Keysight equipment, the group also calibrates non-Keysight equipment. The group serves the same markets as our Communications Solutions Group and Electronic Industrial Solutions Group, providing industry-specific services to deliver complete Keysight solutions and help customers reduce their total cost of ownership for their design and test equipment.

**Markets:** The Services Solutions Group broadly addresses the same markets as the Communications Solutions Group and Electronic Industrial Solutions Group, which includes commercial communications, aerospace, defense and government, automotive and energy, semiconductor manufacturing and general electronics and manufacturing industries.

**Product Areas:** Keysight offers the following general types of services and products under the Services Solutions Group:

*Accredited Product Support Services*—Comprehensive support services that include repair, parts, and accredited calibrations of Keysight and non-Keysight test equipment.

*Professional Services*—Training and engineering services to optimize equipment adoption, utilization, and design and test processes.

*Remanufactured Equipment*—Refurbished used equipment, including Keysight Premium Used, which ensures the same high quality as our new equipment.

*Asset Management Program*—A full-service solution to optimize a customer's asset tracking, servicing and utilization requirements throughout the product life cycle.

**Customers:** The customers for our Services Solutions Group include customers of the Communications Solutions Group and Electronic Industrial Solutions Group.

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

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## Senior Executives

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**Ronald S. Nersesian\***  
President and  
Chief Executive Officer

**Jay Alexander\***  
Senior Vice President, and  
Chief Technology Officer

**Satish Dhanasekaran\***  
Senior Vice President and  
President, Communications  
Solutions Group

**Neil Dougherty\***  
Senior Vice President and  
Chief Financial Officer

**Ingrid Estrada\***  
Senior Vice President,  
Chief People and  
Administrative Officer

**Soon Chai Gooi\***  
Senior Vice President and  
President, Electronic Industrial  
Solutions Group

**John Page\***  
Senior Vice President and  
President, Services Solutions  
Group

**Mark Pierpoint\***  
Senior Vice President and  
President, Ixia Solutions  
Group

**John Skinner\***  
Vice President,  
Corporate Controller and  
Principal Accounting Officer

**Mark Wallace\***  
Senior Vice President,  
Worldwide Sales

**Stephen D. Williams\***  
Senior Vice President, General  
Counsel and Secretary

## Directors

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**Paul N. Clark**  
Non-executive Chairman,  
Keysight Technologies, Inc.  
Former Chairman, President and  
CEO of ICOS Corporation

**Ronald S. Nersesian**  
President and Chief Executive  
Officer, Keysight Technologies,  
Inc.

**James G. Cullen**  
Non-executive Chairman,  
Agilent Technologies, Inc.  
Former President and Chief  
Operating Officer, Bell Atlantic

**Charles J. Dockendorff**  
Former Executive Vice  
President and Chief Financial  
Officer, Covidien, PLC

**Jean M. Halloran**  
Former Senior Vice President,  
Agilent Technologies, Inc.

**Richard Hamada**  
Former Chief Executive Officer,  
Avnet, Inc.

**Robert A. Rango**  
Chief Executive Officer,  
Enevate Corporation  
Former Executive Vice  
President, Mobile & Wireless  
Group, Broadcom Corporation

## Board Committees

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**Audit and Finance Committee**  
Charles J. Dockendorff,  
Chairperson  
Paul N. Clark  
Robert A. Rango

**Compensation Committee**  
James G. Cullen,  
Chairperson  
Richard Hamada

**Nominating and Corporate  
Governance Committee**  
Paul N. Clark  
Chairperson  
James G. Cullen  
Charles J. Dockendorff  
Richard Hamada  
Robert A. Rango

**Executive Committee**  
Paul N. Clark,  
Chairperson  
Ronald S. Nersesian

*\*These individuals are current executive officers of Keysight under Section 16 of the Securities Act of 1934*

Keysight's annual meeting of stockholders will take place on Thursday, March 21, 2019 at 8:00 a.m. at the Hyatt Regency Indian Wells, located at 44600 Indian Wells Lane, Indian Wells, California 92210.

## **Investor Information**

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Please see the full and audited financial statements and footnotes contained in this booklet. To receive paper copies of the annual report, proxy statement, Form 10-K, earnings announcements and other financial information, you should call (707) 577-6915. In addition, you can access this financial information at Keysight's Investor Relations Website. The address is <http://www/investor.keysight.com>. This information is also available by writing to the address provided under the Investor Contact heading below.

## **Corporate Governance, Business Conduct and Ethics**

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Keysight's Corporate Governance Standards, the charter of our Audit and Finance Committee, our Compensation Committee, our Executive Committee and our Nominating and Corporate Governance Committee, as well as our Standard of Business Conduct (including code of ethics provisions that apply to our principal executive officer, principal financial officer, principal accounting officer and senior financial officers) are available on our website at [www.investor.keysight.com](http://www.investor.keysight.com) under "Corporate Governance." These items are also available in print to any stockholder by calling (707) 577-6915. This information is also available by writing to the company at the address provided below.

## **Keysight Headquarters**

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Keysight Technologies, Inc.  
1400 Fountaingrove Parkway  
Santa Rosa, CA 95403  
Phone: (800) 829-4444

## **Transfer Agent and Registrar**

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Please contact our transfer agent, at the phone number or address listed below, with any questions about stock certificates, transfer of ownership or other matters pertaining to your stock account.

### **Written Request:**

Computershare  
P.O. Box 30170  
College Station, TX 77842-3170

### **Overnight Delivery:**

Computershare  
211 Quality Circle, Suite 210  
College Station, TX 77845

### **Telephone Inquiries:**

Within the U.S., Canada, or Puerto Rico: (877) 373-6374  
Non-U.S.: (781) 575-2879

**Investor Center Website:** [www-us.computershare.com/investor/contact](http://www-us.computershare.com/investor/contact)

**Email for Computershare:** [web.queries@computershare.com](mailto:web.queries@computershare.com)

## **Investor Contact**

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Keysight Technologies, Inc.  
Investor Relations Department  
1400 Fountaingrove Parkway  
Santa Rosa, CA 95403  
Email: [investor.relations@keysight.com](mailto:investor.relations@keysight.com)  
Phone: (707) 577-6915

## **Common Stock**

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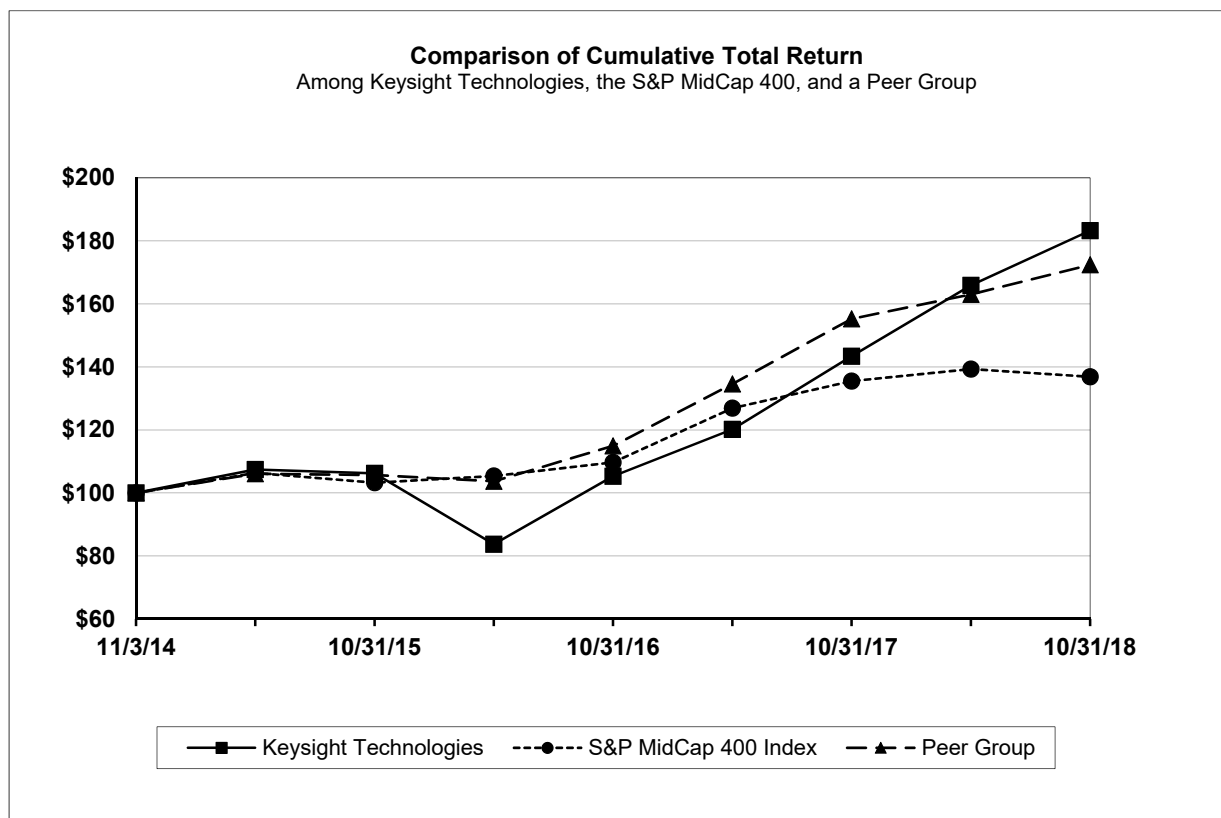
Our common stock is listed on the New York Stock Exchange ("NYSE") with the ticker symbol "KEYS."

There were 21,227 shareholders of record of Keysight common stock as of December 10, 2018.

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 deems relevant.

## Stock Price Performance Graph

The graph below shows the cumulative total stockholder return, assuming the investment of \$100 (and the reinvestment of any dividends thereafter) for the period beginning on November 3, 2014, and ending on October 31, 2018, on each of: Keysight's common stock; the S&P MidCap 400 Index; and our Peer Group which includes all companies in the S&P 500 Industrials Sector and the S&P 500 Information Technology Sector. A complete list of the companies in the Peer Group is provided below. Keysight's stock price performance shown in the following graph is not indicative of future stock price performance. The data for this performance graph was compiled for us by Standard and Poor's.



### Peer Group

(Companies in the S&P 500 Industrials Sector and the S&P 500 Information Technology Sector)

3M Co	ANSYS Inc.
A. O. Smith Corp	Apple Inc.
Accenture PLC	Applied Materials Inc.
Adobe Inc	Arconic Inc.
Advanced Micro Devices Inc.	Arista Networks Inc.
Akamai Technologies Inc.	Autodesk Inc.
Alaska Air Group Inc.	Automatic Data Processing Inc.
Allegion Plc	Boeing Co
Alliance Data Systems Corp	Broadcom Inc.
American Airlines Group Inc.	Broadridge Financial Solutions Inc.
AMETEK Inc.	C.H. Robinson Worldwide Inc.
Amphenol Corp	CA Inc.
Analog Devices Inc.	Cadence Design Systems Inc

Caterpillar Inc.  
 Cintas Corp  
 Cisco Systems Inc.  
 Citrix Systems Inc.  
 Cognizant Technology Solutions Corp  
 Copart Inc.  
 Corning Inc.  
 CSX Corp  
 Cummins Inc.  
 Deere & Co  
 Delta Air Lines Inc.  
 Dover Corp  
 DXC Technology Company  
 Eaton Corp Plc  
 Emerson Electric Co.  
 Equifax Inc.  
 Expeditors International of Washington Inc.  
 F5 Networks Inc.  
 Fastenal Co  
 FedEx Corp.  
 Fidelity National Information Services Inc.  
 Fiserv Inc.  
 FleetCor Technologies Inc.  
 FLIR Systems Inc.  
 Flowserve Corp.  
 Fluor Corp  
 Fortinet Inc.  
 Fortive Corp  
 Fortune Brands Home & Security Inc.  
 Gartner Inc.  
 General Dynamics Corp  
 General Electric Co  
 Global Payments Inc.  
 Grainger (W.W.) Inc.  
 Harris Corp  
 Hewlett Packard Enterprise Co  
 Honeywell International Inc.  
 HP Inc.  
 Huntington Ingalls Industries Inc.  
 IHS Markit Ltd  
 Illinois Tool Works Inc.  
 Ingersoll-Rand PLC  
 Intel Corp  
 International Business Machines Corp  
 Intuit Inc.  
 IPG Photonics Corp  
 J.B. Hunt Transport Services Inc.  
 Jacobs Engineering Group Inc.  
 Johnson Controls International Plc  
 Juniper Networks Inc.

Kansas City Southern  
 KLA-Tencor Corp  
 L3 Technologies Inc.  
 Lam Research Corp  
 Lockheed Martin Corp  
 Masco Corp  
 Mastercard Inc.  
 Microchip Technology Inc.  
 Micron Technology Inc.  
 Microsoft Corp  
 Motorola Solutions Inc.  
 NetApp Inc.  
 Nielsen Holdings plc  
 Norfolk Southern Corp  
 Northrop Grumman Corp  
 NVIDIA Corp  
 Oracle Corp  
 PACCAR Inc.  
 Parker-Hannifin Corp  
 Paychex Inc.  
 PayPal Holdings Inc.  
 Pentair plc  
 Qorvo Inc.  
 QUALCOMM Inc.  
 Quanta Services Inc.  
 Raytheon Co.  
 Red Hat Inc.  
 Republic Services Inc.  
 Robert Half International Inc.  
 Rockwell Automation Inc.  
 Rockwell Collins Inc.  
 Rollins Inc.  
 Roper Technologies Inc.  
 salesforce.com Inc.  
 Seagate Technology Plc  
 Skyworks Solutions Inc.  
 Snap-On Inc  
 Southwest Airlines Co.  
 Stanley Black & Decker Inc.  
 Stericycle Inc.  
 Symantec Corp  
 Synopsys Inc.  
 TE Connectivity Ltd  
 Texas Instruments Inc.  
 Textron Inc.  
 Total System Services Inc.  
 TransDigm Group Inc.  
 Union Pacific Corp  
 United Continental Holdings Inc.  
 United Parcel Service Inc.

United Rentals Inc.  
United Technologies Corp  
Verisign Inc.  
Verisk Analytics Inc.  
Visa Inc.  
Waste Management Inc.

Western Digital Corp  
Western Union Co  
Xerox Corp  
Xilinx Inc.  
Xylem Inc.

## **Additional Information**

This annual report, including the letter titled “To our stockholders,” contains forward-looking statements including, without limitation, statements regarding trends, seasonality, cyclicity and growth in, and drivers of, the markets we sell into, our strategic direction, our future effective tax rate and tax valuation allowance, 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, and our and the combined group's estimated or anticipated future results of operations, that 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 Item 1A and elsewhere in this Form 10-K for the year ended October 31, 2018.

The materials contained in this annual report are as of December 10, 2018, unless otherwise noted. The content of this annual report contains time-sensitive information that is accurate only as of this date. If any portion of this annual report is redistributed at a later date, Keysight will not be reviewing or updating the material in this report.

This annual report contains Keysight’s 2018 audited financial statements and notes thereto in the following section of this booklet with the tab “Annual Report Financials.” Within the Annual Report Financials, please refer to “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and “Risks, Uncertainties and Other Factors That May Affect Future Results” for more complete information on each of our businesses and Keysight as a whole.

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Patent Owner Centripetal Networks, Inc. - Ex. 2012, p. 19

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## TABLE OF CONTENTS

Selected Financial Data .....	18
Management’s Discussion and Analysis of Financial Conditions and Results of Operations.....	19
Quantitative and Qualitative Disclosure About Market Risk .....	38
Report of Independent Registered Public Accounting Firm.....	39
Combined and Consolidated Statement of Operations for each of the three years in the period ended October 31, 2016 .....	41
Combined and Consolidated Statement of Comprehensive Income for the three years in the period ended October 31, 2016....	42
Combined and Consolidated Balance Sheet at October 31, 2016 and 2015 .....	43
Combined and Consolidated Statement of Cash Flows for each of the three years in the period ended October 31, 2016 .....	44
Combined and Consolidated Statement of Equity for each of the three years in the period ended October 31, 2016 .....	45
Notes to Combined and Consolidated Financial Statements .....	46
Quarterly Summary (unaudited).....	91
Risks, Uncertainties and Other Factors That May Affect Future Results.....	92
Controls and Procedures.....	106

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**SELECTED FINANCIAL DATA**  
(unaudited)

The following table presents the selected combined and consolidated financial data, which should be read in conjunction with our consolidated financial statements and related notes and Management's Discussion and Analysis of Financial Condition and Results of Operations included elsewhere in this Form 10-K. We derived the selected financial data as of October 31, 2018 and for each of the fiscal years in the three-year period ended October 31, 2018 from our audited consolidated financial statements included elsewhere in this Form 10-K. We derived the selected financial data as of October 31, 2015 and October 31, 2014 from audited combined financial statements that are not included in this Form 10-K.

Our historical combined and consolidated financial statements before November 1, 2014 include certain expenses of Agilent that were allocated to us for certain functions, including general corporate expenses related to information technology, research and development, finance, legal, insurance, compliance and human resources activities. These costs may not be representative of the costs we have incurred or will incur as an independent public company. The historical financial information included here may not necessarily reflect our financial position and results of operations or what our financial position and results of operations would have been had we been an independent, publicly-traded company during the historical periods presented or be indicative of our future performance as an independent company.

	Years Ended October 31,					
	2018	2017	2016	2015	2014	
	(in millions, except per share data)					
Combined and Consolidated Statement of Operations Data: <sup>(a)</sup>						
Net revenue	\$ 3,878	\$ 3,189	\$ 2,918	\$ 2,856	\$ 2,933	
Income (loss) before taxes	\$ (411)	\$ 179	\$ 366	\$ 388	\$ 475	
Net income	\$ 165	\$ 102	\$ 335	\$ 513	\$ 392	
Net income per share <sup>(b)</sup>						
Basic	\$ 0.88	\$ 0.57	\$ 1.97	\$ 3.04	\$ 2.35	
Diluted	\$ 0.86	\$ 0.56	\$ 1.95	\$ 3.00	\$ 2.35	
Weighted average shares used in computing net income per share: <sup>(b)</sup>						
Basic	187	180	170	169	167	
Diluted	191	182	172	171	167	

<sup>(a)</sup> Fiscal years 2018 and 2017 financial data includes our acquisition of Ixia on April 18, 2017.

<sup>(b)</sup> On November 1, 2014, Agilent Technologies, Inc. distributed 167 million shares of Keysight common stock to existing holders of Agilent common stock. Basic and diluted net income per share for all periods through October 31, 2014 is calculated using the shares distributed on November 1, 2014. Refer to Note 6 of the consolidated financial statements for information regarding net income per share.

	October 31,				
	2018	2017	2016	2015	2014
	(in millions)				
Combined and Consolidated Balance Sheet Data: <sup>(a)</sup>					
Cash and cash equivalents and short-term investments	\$ 913	\$ 818	\$ 783	\$ 483	\$ 810
Working capital	\$ 916	\$ 1,358	\$ 1,210	\$ 893	\$ 1,081
Total assets	\$ 5,824	\$ 5,933	\$ 3,796	\$ 3,501	\$ 3,041
Long-term debt	\$ 1,291	\$ 2,038	\$ 1,093	\$ 1,092	\$ 1,090
Stockholders' equity	\$ 2,433	\$ 2,310	\$ 1,513	\$ 1,302	\$ 769

<sup>(a)</sup> Fiscal years 2018 and 2017 financial data reflect the impact of our acquisition of Ixia on April 18, 2017.

## **MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS**

You should read the following discussion in conjunction with the consolidated financial statements and notes thereto included elsewhere in this Annual Report on Form 10-K. This Management's Discussion and Analysis of Financial Condition and Results of Operations contains forward-looking statements. The forward-looking statements contained herein include, without limitation, statements regarding trends, seasonality, cyclicalities and growth in, and drivers of, the markets we sell into, our strategic direction, our future effective tax rate and tax valuation allowance, 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, and our and the combined group's estimated or anticipated future results of operations, that 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 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 providing electronic design and test solutions that are used in the design, development, manufacture, installation, deployment, validation, optimization and secure operation of electronics systems to communications, networking and electronics industries. We also offer customization, consulting and optimization services throughout the customer's product lifecycle, including start-up assistance, instrument productivity, application services and instrument calibration and repair.

We invest in product development to address the changing needs of the market and facilitate growth. We are investing in research and development to design measurement solutions that will satisfy the changing needs of our customers. These opportunities are being driven by evolving technology standards and the need for faster data rates and new form factors.

On April 18, 2017, we completed the acquisition of Ixia, which became a separate reportable operating segment, the Ixia Solutions Group. As a result, Keysight has four segments: Communications Solutions Group, Electronic Industrial Solutions Group, Ixia Solutions Group and Services Solutions Group. The Communications Solutions Group provides electronic design and test software, instruments, and systems spanning the worldwide commercial communications and aerospace, defense and government end markets. The Electronic Industrial Solutions Group provides test and measurement solutions across a broad set of electronic industrial end markets. The Ixia Solutions Group provides testing, visibility and security solutions, strengthening applications across physical and virtual networks for enterprises, service providers and network equipment manufacturers. The Services Solutions Group provides repair, calibration and consulting services, and resells used Keysight equipment. Also, our global team of experts provides startup assistance, consulting, optimization and application support across all our end markets.

#### *Years ended October 31, 2018, 2017 and 2016*

Keysight's total orders in 2018 were \$4,082 million, an increase of 20 percent when compared to 2017. Foreign currency movements had a favorable impact of 1 percentage point on the year-over-year comparison. Orders associated with acquisitions accounted for 7 percentage points of order growth for the year ended October 31, 2018 when compared to 2017. Total orders in 2017 were \$3,406 million, an increase of 15 percent when compared to 2016. Foreign currency movements had a negligible impact on the year-over-year comparison. Orders associated with acquisitions accounted for 9 percentage points of order growth for the year ended October 31, 2017 when compared to 2016.

Net revenue of \$3,878 million for the year ended October 31, 2018 increased 22 percent when compared to 2017. Foreign currency movements had a favorable impact of 2 percentage points on the year-over-year comparison. Revenue associated with acquisitions accounted for 6 percentage points of revenue growth for the year ended October 31, 2018 when compared to 2017. Revenue excluding acquisitions grew year over year, with growth in all our operating segments and across all our markets. Net revenue of \$3,189 million for the year ended October 31, 2017 increased 9 percent when compared to 2016. Foreign currency movements had a negligible impact on the year-over-year comparison. Revenue associated with acquisitions accounted for 7 percentage points of revenue growth for the year ended October 31, 2017 when compared to 2016. Revenue excluding acquisitions grew year over year, with growth in the Electronic Industrial Solutions Group driven by semiconductor measurement and automotive and energy markets, and growth in the Services Solutions Group. The Communications Solution Group revenue

was flat as gains in the commercial communications market were offset by declines in the aerospace, defense and government market.

Net income was \$165 million in 2018 compared to net income of \$102 million and \$335 million in 2017 and 2016, respectively. In 2018, 2017 and 2016, we generated operating cash flows of \$555 million, \$328 million and \$420 million, respectively. The increase in net income for the year ended October 31, 2018 when compared to 2017 was driven by higher revenue volume and a favorable tax impact from the new U.S. tax legislation and Singapore tax incentives, partially offset by an unfavorable impact from a goodwill impairment charge and increases in variable people-related costs. The decline in net income for the year ended October 31, 2017 when compared to 2016 is primarily driven by the unfavorable impact from amortization of acquisition-related balances.

#### *Impact of Northern California Wildfires*

During the week of October 8, 2017, wildfires in northern California adversely impacted the Keysight corporate headquarters site in Santa Rosa, CA. Our headquarters was under mandatory evacuation for more than three weeks, and while direct damage to our core facilities was limited, our buildings did experience some smoke and other fire-related impacts. Cleaning and restoration efforts are largely complete, and we have fully re-occupied the site. Keysight is insured for the damage caused by the fire.

For the years ended October 31, 2018 and 2017, we recognized costs of \$7 million and \$16 million, respectively, net of estimated insurance recoveries of \$90 million and \$2 million, respectively. Expenses were primarily for cleaning and restoration activities, write-off of damaged fixed assets and other direct costs related to recovery from this event.

As of October 31, 2018, we have received insurance proceeds of \$68 million and have a receivable of \$24 million for losses and expenses for which insurance reimbursement is probable. The receivable is included in other current assets in the consolidated balance sheet. In addition, for the year ended October 31, 2018, we made investments in property, plant and equipment related to fire recovery of \$27 million, which is expected to be covered by insurance. In many cases, our insurance coverage exceeds the amount of these covered losses, but no gain contingencies have been recognized as our ability to realize those gains remains uncertain for financial reporting purposes. We currently estimate total insurance recovery to range from \$125 million to \$135 million, which will substantially cover our total fire-related losses, expenses and investments in property, plant and equipment in excess of our \$10 million self-insured retention amount. There may be a difference in timing of costs incurred and the related insurance reimbursement.

#### *Outlook*

Looking forward, we believe our investments in R&D combined with our completed acquisitions, which have expanded our technology portfolio and the size of our addressable market, position Keysight for growth. We remain focused on delivering value through differentiated and first-to-market solutions targeted at faster growing markets where customers are investing in next-generation digital and electronic technologies. Internally, we are continuously working to improve operational efficiency within and across all functions. While current macro-economic and geopolitical uncertainties exist related to trade, tariffs, monetary and fiscal policies, we expect continued sales growth.

#### **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 hedging program is designed to hedge currency movements on a relatively short-term basis of up to a rolling twelve-month period. 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, 2018, 2017 and 2016

### Orders and Net Revenue

In general, recorded orders represent firm purchase commitments from our customers with established terms and conditions for products and services. Consistent with our strategy, we are seeing an increase in solution sales, which have a longer order-to-revenue conversion cycle; however, the majority of recorded orders will be delivered within six months.

Revenue reflects the delivery and acceptance of the products and services as defined on the customer's terms and conditions. Cancellations are recorded in the period received from the customer and historically have not been material.

	Year Ended October 31,			2018 over 2017 % Change	2017 over 2016 % Change
	2018	2017	2016		
	(in millions)				
Orders	\$ 4,082	\$ 3,406	\$ 2,953	20%	15%
Net revenue:					
Products	\$ 3,229	\$ 2,664	\$ 2,440	21%	9%
Services and other	649	525	478	24%	10%
Total net revenue	\$ 3,878	\$ 3,189	\$ 2,918	22%	9%
	Year Ended October 31,			2018 over 2017 % Change	2017 over 2016 % Change
	2018	2017	2016		
% of total net revenue:					
Products	83%	84%	84%	(1) ppt	—
Services and other	17%	16%	16%	1 ppt	—
Total	100%	100%	100%		

### Orders

Total orders for the year ended October 31, 2018 were \$4,082 million, an increase of 20 percent when compared to 2017. Foreign currency movements had a favorable impact of 1 percentage point on the year-over-year comparison. Orders associated with acquisitions accounted for 7 percentage points of order growth for the year ended October 31, 2018 when compared to 2017. Orders grew across all operating segments with growth in all regions. Total orders for the year ended October 31, 2017 were \$3,406 million, an increase of 15 percent when compared to 2016. Foreign currency movements had a negligible impact on the year-over-year comparison. Orders associated with acquisitions accounted for 9 percentage points of order growth for the year ended October 31, 2017 when compared to 2016. Orders grew across all operating segments with growth in all regions.

### Net Revenue

The following table provides the percent change in revenue for the years ended October 31, 2018 and 2017 by geographic region, including and excluding the impact of currency changes, as compared to the respective prior year.

Geographic Region	Year over Year % Change			
	2018 over 2017		2017 over 2016	
	actual	currency adjusted	actual	currency adjusted
Americas	28%	28 %	11%	11%
Europe	29%	25 %	6%	7%
Japan	—	(1)%	5%	6%
Asia Pacific ex-Japan	17%	16 %	11%	11%
Total revenue	22%	20 %	9%	10%

Net revenue for the year ended October 31, 2018 was \$3,878 million, an increase of 22 percent when compared to 2017. Foreign currency movements had a favorable impact of 2 percentage points on the year-over-year comparison. Revenue associated with acquisitions accounted for 6 percentage points of revenue growth for the year ended October 31, 2018 when compared to 2017.

Net revenue for the year ended October 31, 2017 was \$3,189 million, an increase of 9 percent when compared to 2016. Foreign currency movements had a negligible impact on the year-over-year comparison. Revenue associated with acquisitions accounted for 7 percentage points of revenue growth for the year ended October 31, 2017 when compared to 2016.

Revenue from the Communications Solutions Group represented approximately 52 percent of total revenue in 2018 and contributed 10 percentage points to the total revenue growth. Revenue grew 17 percent when compared to 2017 with growth in Americas, Asia Pacific excluding Japan and Europe, partially offset by declines in Japan. The Communications Solutions Group's revenue growth was primarily driven by growth in our 5G-related solutions across the wireless ecosystem, with strong demand for network access applications and steady investments in the network and data center markets. In 2017, revenue from the Communications Solutions Group represented approximately 54 percent of total revenue, and its contribution to the total revenue growth was negligible. Revenue was flat when compared to 2016, with growth in Japan and Asia Pacific excluding Japan offset by declines in the Americas and Europe. The strength in 5G and data center technologies was offset by decline in the aerospace, defense and government market.

Revenue from the Electronic Industrial Solutions Group represented approximately 25 percent of total revenue in 2018 and contributed 4 percentage points to the total revenue growth. Revenue grew 15 percent year over year when compared to the same period last year, driven by strong growth across all markets and regions. Revenue from the Electronic Industrial Solutions Group represented approximately 27 percent of total revenue in 2017 and contributed 2 percentage points to total revenue growth. Revenue grew 8 percent year over year when compared to 2016, driven by strong growth in the semiconductor measurement and automotive and energy markets. The growth in Asia Pacific excluding Japan and Europe was partially offset by declines in Japan, while revenue from the Americas remained flat.

Revenue from the Ixia Solutions Group represented approximately 11 percent of total revenue in 2018 and contributed 7 percentage points to total revenue growth. In 2017, revenue from the Ixia Solutions Group represented approximately 6 percent of total revenue and contributed 7 percentage points to total revenue growth. Revenue for 2017 included activity from the date of acquisition, April 18, 2017, through October 31, 2017.

Revenue from the Services Solutions Group represented approximately 12 percent of total revenue in 2018 and contributed 1 percentage point to the total revenue growth. Revenue grew 10 percent when compared to 2017, with growth in the Americas, Asia Pacific excluding Japan and Europe, partially offset by a decline in Japan. Revenue from the Services Solutions Group represented approximately 13 percent of total revenue in 2017, and its contribution to the total revenue growth was negligible. Revenue grew 4 percent year over year when compared to 2016, with growth in all regions.

## 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, and orders for goods that were shipped but not invoiced, awaiting acceptance by customers.

At October 31, 2018, our unfilled backlog was approximately \$1,275 million as compared to approximately \$950 million at October 31, 2017. Consistent with our strategy, we are seeing an increase in solution sales, which have a longer order-to-revenue conversion cycle; however, we expect that a majority of the unfilled backlog will 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.

## Costs and Expenses

	Year Ended October 31,			2018 over 2017 % Change	2017 over 2016 % Change
	2018	2017	2016		
Gross margin on products	55.4 %	54.7%	57.3%	1 ppt	(3) ppts
Gross margin on services and other	51.4 %	46.5%	47.4%	5 ppts	(1) ppt
Total gross margin	54.7 %	53.4%	55.7%	1 ppt	(2) ppts
Operating margin	(8.9)%	7.5%	13.9%	(16) ppts	(6) ppts

(in millions)

Research and development	\$	607	\$	498	\$	425	22%	17%
Selling, general and administrative	\$	1,185	\$	1,049	\$	818	13%	28%
Goodwill impairment	\$	709	\$	—	\$	—	—	—
Other operating expense (income), net	\$	(33)	\$	(84)	\$	(25)	(60)%	237%

Gross margin increased 1 percentage point in 2018 compared to 2017, primarily driven by gains related to revenue volume and favorable mix, partially offset by increases in variable people-related costs and amortization of acquisition-related balances. Gross margin declined 2 percentage points in 2017 compared to 2016, primarily driven by the unfavorable impacts from amortization of acquisition-related balances, northern California wildfire-related costs, an increase in people-related costs and an increase in warranty expense due to a lower compare as a result of a one-time reduction in the standard warranty accrual in 2016.

Excess and obsolete inventory charges were \$25 million in 2018, \$16 million in 2017 and \$17 million in 2016. In 2018, excess and obsolete inventory-related charges included \$7 million related to divestiture activity. Sales of previously written-down inventory were \$2 million in 2018, \$1 million in 2017 and \$2 million in 2016.

Research and development expense increased 22 percent in 2018 compared to 2017, primarily driven by the addition of acquisitions to our cost structure, an increase in variable people-related costs and our continued investment in research and development programs, partially offset by elimination of non-recurring acquisition-related compensation expense. As a percent of total revenue, research and development expenses were 16 percent in both 2018 and 2017. Research and development expense increased 17 percent in 2017 compared to 2016, primarily driven by the addition of acquisitions to the cost structure, an increase in people-related costs, acquisition-related compensation costs and our continued investment in research and development programs. As a percent of total revenue, research and development expense increased 1 percentage point to 16 percent in 2017 from 15 percent in 2016.

Selling, general and administrative expenses increased 13 percent for 2018 compared to the same period last year, primarily driven by the addition of acquisitions to our cost structure and increases in variable people-related, litigation and restructuring costs, partially offset by elimination of non-recurring acquisition-related compensation expense, separation and related costs, acquisition and integration costs and the unfavorable impact from northern California wildfire-related costs. Selling, general and administrative expenses increased 28 percent for 2017 compared to 2016, primarily driven by the addition of Ixia to our cost structure, increases in amortization of acquisition-related balances, acquisition and integration costs, acquisition-related compensation expense, investments in sales resources, people-related costs and the unfavorable impact from fire-related costs at our corporate headquarters and restructuring-related costs.

During the fourth quarter of 2018, we recorded a goodwill impairment charge of \$709 million for the Ixia Solutions Group, based on the results of our annual impairment test of goodwill. See Note 10, "Goodwill and Other Intangible Assets," to our consolidated financial statements for additional information.

Other operating expense (income), net for 2018 was income of \$33 million, which primarily includes income from business divestitures and rental income. Other operating expense (income), net for 2017 was income of \$84 million, which primarily includes a \$68 million gain from a settlement related to our Japan pension fund and rental income.

Operating margin decreased 16 percentage points in 2018 when compared to 2017, primarily driven by goodwill impairment and an increase in variable people-related costs, partially offset by gains related to revenue volume and favorable mix. Operating margin decreased 6 percentage points in 2017 when compared to 2016, primarily driven by increases in amortization of acquisition-related balances, acquisition and integration costs, investments in sales resources and people-related costs, partially offset by favorable impact from higher revenue and revenue mix.

Our headcount was approximately 12,900 at October 31, 2018 compared to 12,600 at October 31, 2017.

## Interest Expense

Interest expense for the years ended October 31, 2018 and 2017 was \$83 million and \$80 million, respectively, and primarily relates to interest on our senior notes issued in October 2014 and April 2017.

## Income Taxes

	Year Ended October 31,		
	2018	2017	2016
	(in millions)		
Provision (benefit) for income taxes	\$ (576)	\$ 77	\$ 31

For 2018, the effective tax rate was 140 percent, which is higher than the U.S. statutory rate primarily due to the impact of U.S. tax law changes, the Singapore restructuring and tax incentive modifications completed in 2018 in response to Singapore tax law changes, and the tax impact of goodwill impairment. The impact of the Singapore restructuring includes tax benefits associated with intra-entity asset transfers that were recognized in accordance with ASU 2016-16, *Intra-Entity Transfers of Assets Other Than Inventory*, which we elected to early adopt effective November 1, 2016.

For 2017, the effective tax rate was 43 percent, which is higher than the U.S. statutory rate primarily due to the payment of a prior year Malaysia tax assessment of \$68 million, including tax and penalties, which we are currently in the process of appealing to the Special Commissioners of Income Tax (“SCIT”) in Malaysia.

For 2016, the effective tax rate was 8 percent, which is lower than the U.S. statutory rate primarily due to a higher percentage of earnings in the non-U.S. jurisdictions taxed at lower statutory tax rates. Also, the tax rate was lower than the U.S. statutory rate due to a net tax benefit of \$45 million resulting from the repatriation of earnings from Japan, which includes a U.S. tax expense of \$27 million, offset by \$72 million of foreign tax credits recorded in connection with the repatriation.

We benefit from tax incentives in several different jurisdictions, most significantly in Singapore, and several jurisdictions have granted tax incentives that require renewal at various times in the future. The tax incentives provide lower rates of taxation on certain classes of income and require various thresholds of investment and employment or specific types of income in those jurisdictions. The tax incentives are due for renewal between 2024 and 2025. The impact of the tax incentives decreased income taxes by \$567 million, \$49 million and \$34 million in 2018, 2017, and 2016, respectively. The increase in the tax benefit from 2017 to 2018 is primarily due to the impact of our Singapore restructuring and tax incentive modifications that were completed in 2018 in response to Singapore tax law changes.

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. 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. Accrued interest and penalties are included on the related tax liability line in the consolidated balance sheet.

The open tax years for the IRS and most states are from November 1, 2014 through the current tax year. For the majority of our foreign entities, the open tax years are from August 1, 2014 through the current tax year. For certain foreign entities, the tax years remain open, at most, back to the year 2007. 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.

The company is being audited in Malaysia for the 2008 tax year. Although this tax year pre-dates our spin-off from Agilent, 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 2017, Keysight paid income taxes and penalties of \$68 million on gains related to intellectual property rights, although we are currently in the process of appealing to the SCIT in Malaysia. The company believes there are numerous defenses to the current assessment; the statute of limitations for the 2008 tax year 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.

On December 22, 2017, the U.S. government enacted comprehensive Federal tax legislation commonly known as the Tax Cuts and Jobs Act (the “Tax Act”). The Tax Act includes significant changes to the U.S. corporate income tax system, including but not limited to: the transition of U.S. international taxation from a worldwide tax system to a modified territorial tax system, which will result in a one-time U.S. tax liability on those earnings which have not previously been repatriated to the U.S. (the “Transition Tax”); creation of new minimum taxes, such as the Global Intangible Low Taxed Income (“GILTI”) tax and the base erosion anti-abuse tax; a federal corporate income tax rate reduction from 35 percent to 21 percent; and limitations on the deductibility of interest expense and executive compensation.

The corporate tax rate reduction is effective as of January 1, 2018. Since the company has a fiscal year rather than a calendar year, it is subject to rules relating to transitional tax rates. As a result, the company’s fiscal year 2018 federal statutory rate will be a blended rate of 23.34 percent.

Due to the complexities involved in accounting for the enactment of the Tax Act, the SEC staff has issued Staff Accounting Bulletin 118 (“SAB 118”) directing companies to consider the impact of the Tax Act as “provisional” when they do not have the necessary information available, prepared or analyzed (including computations) in reasonable detail to complete the accounting for the change in tax law. For the amounts that we were able to reasonably estimate, we recognized an income tax benefit of approximately \$89 million as of October 31, 2018. This benefit is made up of a one-time reduction in net deferred tax liabilities and corresponding income tax benefit of approximately \$304 million due to the re-measurement of U.S. income taxes recorded on the undistributed earnings of foreign subsidiaries that were not considered permanently reinvested. This was offset by approximately \$205 million of income tax expense and corresponding long-term income tax payable due to the one-time transition tax. We also estimated a one-time reduction in net deferred tax assets and corresponding income tax expense of approximately

\$10 million due to the re-measurement of the U.S. deferred tax assets at the lower 21 percent U.S. federal corporate income tax rate.

Due to the complexity of the new Tax Act rules, we are continuing to evaluate the GILTI provisions and whether such GILTI taxes are recorded as a current-period expense when incurred or whether such amounts should be factored into a company's measurement of its deferred taxes.

We are continuing to evaluate the Tax Act and its requirements, as well as its application to our business and its impact on our effective tax rate. In accordance with SAB 118, the estimated income tax benefit of \$89 million represents our best estimate based on interpretation of the Tax Act. We are able to make reasonable estimates of the impact of the Transition Tax, the remeasurement of the deferred tax liability recorded on the undistributed earnings of foreign subsidiaries that were not considered reinvested, the current year impact of GILTI, and the reduction in the U.S. corporate income tax rate. The final impact of the Tax Act may differ from these estimates due to, among other things, changes in our interpretations and assumptions based on additional guidance that may be issued by the U.S. Treasury and changes to U.S. state conformance to the U.S. federal tax law change. In addition, certain provisions of the new Tax Act are not applicable to Keysight until fiscal year 2019. These include the Foreign-derived Intangible Income Deduction ("FDII") and the Base Erosion and Anti-Abuse Tax ("BEAT") provisions. These impacts will be included in the tax provision estimates beginning in fiscal year 2019.

## Segment Overview

On April 18, 2017, we completed the acquisition of Ixia, which became a separate reportable operating segment, the Ixia Solutions Group. As a result, Keysight has four segments: Communications Solutions Group, Electronic Industrial Solutions Group, Ixia Solutions Group and Services Solutions Group. The Communications Solutions Group provides electronic design and test software, instruments, and systems spanning the worldwide commercial communications and aerospace, defense and government end markets. The Electronic Industrial Solutions Group provides test and measurement solutions across a broad set of electronic industrial end markets. The Ixia Solutions Group provides testing, visibility and security solutions, strengthening applications across physical and virtual networks for enterprises, service providers and network equipment manufacturers. The Services Solutions Group provides repair, calibration and consulting services, and remarkets used Keysight equipment. Also, our global team of experts provides startup assistance, consulting, optimization and application support across all our end markets.

The profitability of each segment is measured after excluding, among other things, charges related to the amortization of acquisition-related balances, the impact of restructuring and related costs, asset impairments, acquisition and integration costs, share-based compensation, separation and related costs, interest income and interest expense.

## Communications Solutions Group

The Communications Solutions Group serves customers spanning the worldwide commercial communications and aerospace, defense and government end markets. The group provides electronic design and test software, instruments, and systems used in the simulation, design, validation, manufacturing, installation and optimization of electronic equipment.

### Net Revenue

	Year Ended October 31,			2018 over 2017 % Change	2017 over 2016 % Change
	2018	2017	2016		
	(in millions)				
Total net revenue	\$ 2,037	\$ 1,738	\$ 1,752	17%	(1)%

The Communications Solutions Group's revenue in 2018 increased 17 percent when compared to 2017, primarily driven by strong growth in the commercial communications and the aerospace, defense and government markets. Revenue growth in the Americas, Asia Pacific excluding Japan, and Europe was partially offset by a decline in Japan. The Communications Solutions Group's revenue in 2017 decreased 1 percent when compared to 2016, primarily driven by a decline in the aerospace, defense and government market, partially offset by growth in the commercial communications market. Revenue declines in the Americas and Europe were partially offset by growth in Asia Pacific excluding Japan.

Revenue from the commercial communications market represented approximately 61 percent and 60 percent of total Communications Solutions Group revenue in 2018 and 2017, respectively, and increased 19 percent and 3 percent year over year, respectively. In 2018, revenue grew in Asia Pacific excluding Japan, the Americas and Europe, partially offset by a decline in Japan. The revenue growth was primarily driven by growth in our 5G-related solutions across the wireless ecosystem, with strong demand for network access applications and steady investments in the network and data center markets. In 2017, commercial communications market revenue grew in Asia Pacific excluding Japan, the Americas and Japan, partially offset by a decline in

Europe. Revenue from the commercial communications market grew year over year, driven by growth in 5G and next-generation data center technologies, partially offset by lower revenue associated with 4G-related investments.

Revenue from the aerospace, defense and government market represented approximately 39 percent of total Communications Solutions Group revenue in 2018 and increased 15 percent compared to 2017. In 2018, revenue grew in the Americas, Europe and Japan, partially offset by a decline in Asia Pacific excluding Japan. The growth was primarily driven by higher global defense spending and overall improvement in the global economy. Revenue from the aerospace, defense and government market represented approximately 40 percent of total Communications Solutions Group revenue in 2017 and declined 6 percent year over year. For the year ended October 31, 2017, revenue declines in the Americas and Asia Pacific excluding Japan were partially offset by growth in Europe and Japan. The declines were driven by continued weakness in the U.S. combined with lower spending in China.

### ***Gross Margin and Operating Margin***

The following table shows Communications Solutions Group margins, expenses and income from operations for 2018 versus 2017, and 2017 versus 2016.

	Year Ended October 31,			2018 over 2017 % Change	2017 over 2016 % Change
	2018	2017	2016		
Total gross margin	62.1%	61.5%	60.8%	1 ppt	1 ppt
Operating margin	22.3%	17.9%	17.9%	4 ppts	—
<b>(in millions)</b>					
Research and development	\$ 331	\$ 302	\$ 303	10%	—
Selling, general and administrative	\$ 486	\$ 463	\$ 457	5%	1%
Other operating expense (income), net	\$ (7)	\$ (7)	\$ (9)	4%	(27)%
Income from operations	\$ 454	\$ 311	\$ 314	46%	(1)%

Gross margin for the Communications Solutions Group in 2018 increased 1 percentage point compared to 2017, primarily due to higher revenue volume and favorable software mix. Gross margin in 2017 increased 1 percentage point compared to 2016, primarily due to a higher percentage of revenue from software, lower inventory charges and lower infrastructure-related costs, partially offset by higher warranty costs.

Research and development expense increased 10 percent when compared to 2017, primarily driven by increased investments in leading-edge technologies and key growth opportunities in our end markets, higher variable people-related costs and infrastructure-related costs. In 2017, research and development expense was flat when compared to 2016. Increased investments in leading-edge technologies and programs were offset by reductions in infrastructure-related costs and discretionary spending.

Selling, general and administrative expense in 2018 increased 5 percent when compared to 2017, primarily driven by higher infrastructure-related costs, variable people-related costs and investment in sales resources. Selling, general and administrative expense in 2017 increased 1 percent when compared to 2016, primarily driven by increased investment in sales resources.

Other operating expense (income) was income of \$7 million in each of the years ended October 31, 2018 and 2017, respectively.

### ***Income from Operations***

Income from operations for 2018 increased \$143 million on a corresponding revenue growth of \$299 million. Income from operations for 2017 decreased \$3 million on a corresponding revenue decline of \$14 million.

Operating margin in 2018 increased 4 percentage points when compared to 2017 as gains from revenue growth were partially offset by increases in variable people-related costs, infrastructure-related costs and investments in sales resources. Operating margin in 2017 was flat when compared to 2016, as improvement in gross margin was offset by increased investment in sales resources.

### ***Electronic Industrial Solutions Group***

The Electronic Industrial Solutions Group provides test and measurement solutions across a broad set of electronic industrial end markets, focusing on high-value applications in the automotive and energy industry and measurement solutions for semiconductor design and manufacturing, consumer electronics, education and general electronics design and manufacturing. The group provides electronic design and test software, instruments, and systems used in the simulation, design, validation, manufacturing, installation and optimization of electronic equipment.

## Net Revenue

	Year Ended October 31,			2018 over 2017 % Change	2017 over 2016 % Change
	2018	2017	2016		
	(in millions)				
Total net revenue	\$ 965	\$ 836	\$ 776	15%	8%

The Electronic Industrial Solutions Group's revenue in 2018 increased 15 percent when compared to 2017, driven by strong growth in general electronics measurement, automotive and energy and semiconductor measurement markets. Revenue associated with acquisitions accounted for 3 percentage points of revenue growth for the year ended October 31, 2018 when compared to 2017. Revenue grew across all regions. The Electronic Industrial Solutions Group's revenue in 2017 increased 8 percent when compared to 2016, driven by strong growth in semiconductor measurement, automotive and energy markets. Strong revenue growth in Asia Pacific excluding Japan and Europe was partially offset by declines in Japan and the Americas.

## Gross Margin and Operating Margin

The following table shows Electronic Industrial Solutions Group margins, expenses and income from operations for 2018 versus 2017, and 2017 versus 2016.

	Year Ended October 31,			2018 over 2017 % Change	2017 over 2016 % Change
	2018	2017	2016		
Total gross margin	61.1%	61.1%	59.2%	—	2 pts
Operating margin	25.0%	23.8%	21.8%	1 ppt	2 pts
(in millions)					
Research and development	\$ 141	\$ 121	\$ 108	16%	12%
Selling, general and administrative	\$ 212	\$ 194	\$ 186	9%	4%
Other operating expense (income), net	\$ (4)	\$ (3)	\$ (4)	15%	(13)%
Income from operations	\$ 241	\$ 199	\$ 169	21%	18%

Gross margin in 2018 was flat when compared to 2017 as gains from higher revenue were offset by unfavorable revenue mix. Gross margin in 2017 increased 2 percentage points compared to 2016, primarily driven by higher revenue and favorable revenue mix.

Research and development expense in 2018 increased 16 percent when compared to 2017, primarily driven by increased investments in leading-edge technologies and key growth opportunities in our end markets, the addition of ScienLab and higher variable people-related costs. Research and development expense in 2017 increased 12 percent when compared to 2016, primarily driven by increased investments in leading-edge technologies and key growth opportunities in our end markets. We remain committed to investment in research and development and have focused our development efforts on strategic opportunities in order to capture future growth.

Selling, general and administrative expense in 2018 increased 9 percent when compared to 2017, primarily driven by the addition of ScienLab and higher infrastructure-related costs, investment in sales resources and variable people-related costs. Selling, general and administrative expense in 2017 increased 4 percent when compared to 2016, primarily driven by our focus on solution selling and market expansion activities.

Other operating expense (income) in 2018 and 2017 was income of \$4 million and \$3 million, respectively.

## Income from Operations

Income from operations for 2018 increased \$42 million on a corresponding revenue increase of \$129 million. Income from operations for 2017 increased \$30 million on a corresponding revenue increase of \$60 million.

Operating margin increased 1 percentage point in 2018 compared to 2017, primarily driven by higher revenue volume, partially offset by increases in infrastructure-related costs, investments in sales resources and variable people-related costs. Operating margin increased 2 percentage points in 2017 compared to 2016, driven by higher gross margin.

## Ixia Solutions Group

The Ixia Solutions Group helps customers validate the performance and security resilience of their networks and associated applications. The test, visibility and security solutions help organizations and their customers strengthen their physical and virtual networks. Enterprises, service providers, network equipment manufacturers, and governments worldwide rely on the our solutions to validate new products before shipping and secure ongoing operation of their networks with better visibility and security. The group's solutions consist of our high-performance hardware platforms, software applications, and services, including warranty and maintenance offerings.

The Ixia Solutions Group's operating results in fiscal 2018 are not comparable with 2017, which only includes activity from the date of acquisition, April 18, 2017, through October 31, 2017.

The following table shows Ixia Solutions Group margins, expenses and income from operations for 2018 versus 2017, and 2017 versus 2016.

	Year Ended October 31,			2018 over 2017 % Change	2017 over 2016 % Change
	2018	2017	2016		
Total gross margin	74.3%	76.6%	—	n/a	n/a
Operating margin	4.7%	16.4%	—	n/a	n/a
<b>(in millions)</b>					
Net revenue	\$ 451	\$ 256	\$ —	n/a	n/a
Research and development	\$ 118	\$ 50	\$ —	n/a	n/a
Selling, general and administrative	\$ 196	\$ 103	\$ —	n/a	n/a
Other operating expense (income), net	\$ —	\$ —	\$ —	n/a	n/a
Income from operations	\$ 21	\$ 42	\$ —	n/a	n/a

During fiscal 2018, we completed an important phase of the Ixia integration, investing significant resources to upgrade their systems and processes for long-term value creation. This phase included the integration of our ERP, procurement, contract manufacturing, and trade and logistics activities and financial processes to leverage Keysight's scale. While we have continued to make progress in optimizing the Ixia Solutions Group's business post integration, weaker-than-expected market growth rates since acquisition and longer than expected contract manufacturing transition has negatively impacted Ixia Solutions Group's revenue and operating profit in fiscal 2018.

We remain confident in the long-term opportunities created by combining Ixia's strength in networking and Keysight's strength in wireless and physical-layer test. Our combined technologies enable us to deliver full end-to-end solutions across the total communications workflow, which we view as a significant differentiator as wireless and wireline technologies continue to converge and 5G moves into commercialization.

## Services Solutions Group

The Services Solutions Group provides repair, calibration and consulting services, and resells used Keysight equipment. In addition to providing repair and calibration support for Keysight equipment, we also calibrate non-Keysight equipment. The group serves the same markets as Keysight's Communications Solutions and Electronic Industrial Solutions Groups, providing industry-specific services to deliver complete Keysight solutions and help customers reduce their total cost of ownership for their design and test equipment.

### Net Revenue

	Year Ended October 31,			2018 over 2017	2017 over 2016
	2018	2017	2016	% Change	% Change
	(in millions)				
Total net revenue	\$ 461	\$ 419	\$ 402	10%	4%

The Services Solutions Group's revenue in 2018 grew 10 percent compared to 2017. Acquisitions accounted for approximately 2 percentage points of total revenue growth. Revenue increased from calibration services, sales of used equipment and repair services. Revenue growth in the Americas, Asia Pacific excluding Japan and Europe was partially offset by decline in Japan. The Services Solutions Group's revenue in 2017 grew 4 percent compared to 2016. Acquisitions accounted for approximately 1 percentage point of total revenue growth. An increase in revenue from sales of used equipment and calibration services was partially offset by a decline in revenue from repair services. Revenue grew in all regions, led by strong growth in Asia Pacific excluding Japan and the Americas.

### ***Gross Margin and Operating Margin***

The following table shows Services Solutions Group margins, expenses and income from operations for 2018 versus 2017, and 2017 versus 2016.

	Year Ended October 31,			2018 over 2017 % Change	2017 over 2016 % Change
	2018	2017	2016		
Total gross margin	40.5%	41.2%	40.9%	(1) ppt	—
Operating margin	14.7%	16.3%	15.6%	(2) ppts	1 ppt
<b>(in millions)</b>					
Research and development	\$ 3	\$ 2	\$ 5	64%	(67)%
Selling, general and administrative	\$ 118	\$ 105	\$ 99	12%	7%
Other operating expense (income), net	\$ (3)	\$ (3)	\$ (2)	(1)%	25%
Income from operations	\$ 68	\$ 68	\$ 63	(1)%	8%

Gross margin in 2018 declined 1 percent point compared to 2017, as higher variable people-related costs and higher expenses associated with investments in additional capacity to expand our multi-vendor calibration and asset management services were partially offset by revenue volume-related gains. Gross margin in 2017 was flat compared to 2016, as the benefit from higher volume and favorable revenue mix was offset by higher expenses associated with investments in additional capacity to expand our multi-vendor calibration and asset management services.

Research and development expense for the Services Solutions Group represents the segment's share of centralized investment. Research and development expense increased 64 percent when compared to 2017 and declined 67 percent in 2017 when compared to 2016. The increase in 2018 was driven by investments in a new software application to enable enhanced service offerings. The decline in 2017 is primarily driven by a change in the Services Solutions Group's share of centralized investments in research and development.

Selling, general and administrative expense increased 12 percent in 2018 compared to 2017 due to higher selling costs, infrastructure-related costs and variable people-related costs and investment in a platform for expanded service offerings. For 2017, selling, general and administrative expense increased 7 percent compared to 2016 due to increased investment in sales resources, higher people-related costs and acquisitions.

Other operating expense (income) was income of \$3 million in each of the years ended October 31, 2018 and 2017, respectively.

### ***Income from Operations***

Income from operations for 2018 was flat on a corresponding revenue increase of \$42 million. Income from operations for 2017 increased \$5 million on a corresponding revenue increase of \$17 million.

Operating margin decreased 2 percentage points in 2018 compared to 2017, primarily driven by lower gross margin, higher selling costs and increases in variable people-related and infrastructure-related costs. Operating margin increased 1 percentage point in 2017 compared to 2016, primarily driven by higher revenue and lower share in R&D expenses, partially offset by increased investment in sales resources.

## Financial Condition

### *Liquidity and Capital Resources*

Our financial position as of October 31, 2018 consisted of cash and cash equivalents of \$913 million as compared to \$818 million as of October 31, 2017.

As of October 31, 2018, approximately \$782 million of our cash and cash equivalents was held outside of the U.S. in our foreign subsidiaries. Our cash and cash equivalents mainly consist of short-term deposits held at major global financial institutions, investments in institutional money market funds, and similar short duration instruments with original maturities of 90 days 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 believe our cash and cash equivalents, cash generated from operations, and ability to access capital markets and credit lines will satisfy, for at least the next twelve months, our liquidity requirements, both globally and domestically, including the following: working capital needs, capital expenditures, business acquisitions, contractual obligations, commitments, principal and interest payments on debt, and other liquidity requirements associated with our operations.

#### *Net Cash Provided by Operating Activities*

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

Net cash provided by operating activities was \$555 million for the year ended October 31, 2018 as compared to \$328 million provided in 2017 and \$420 million provided in 2016.

- Net income in 2018 increased by \$63 million as compared to 2017. Non-cash adjustments in 2018 increased \$111 million compared to the same period last year, due to a \$709 million goodwill impairment, a \$74 million increase in amortization expense, a \$70 million increase from a prior-period pension curtailment and settlement gain, an \$11 million increase in depreciation expense and \$1 million from other miscellaneous non-cash activities, partially offset by \$742 million reduction in the adjustment for deferred tax benefits and \$12 million gain on the sale of assets and divestitures.
- The aggregate of accounts receivable, inventory and accounts payable used net cash of \$128 million during 2018, compared to net cash used of zero in 2017 and \$72 million in 2016. 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.
- The aggregate of employee compensation and benefits, income taxes payable, deferred revenue, and other assets and liabilities provided net operating cash of \$335 million during 2018 as compared to net cash provided of \$42 million and net cash used of \$22 million in 2017 and 2016, respectively. The difference between 2018 and 2017 activities is primarily due to an increase in the U.S. federal income tax payable due to the impact of new U.S. tax legislation, higher variable compensation accruals and other differences due to timing of accruals, collections and payments between the periods. In 2018, we received insurance proceeds of \$68 million for expenses associated with the northern California wildfires, which partially offset estimated insurance recoveries of \$90 million during the period. At October 31, 2018 our insurance receivable was \$24 million for known losses for which insurance reimbursement is probable. In addition, in 2018, we received insurance proceeds of \$26 million for losses incurred in a 2016 warehouse fire in Singapore.
- Net cash used for retirement and post-retirement benefits was \$127 million, \$15 million and \$32 million in 2018, 2017 and 2016, respectively. In 2018, we made an accelerated contribution of \$85 million to our U.S. Defined Benefit Plans to secure tax deductibility at the current corporate rate prior to new tax legislation taking effect, as compared to zero contributions in 2017 and 2016. We also contributed \$33 million to our non-U.S. defined benefit plans during 2018 compared to \$34 million in 2017 and \$38 million in 2016. We did not contribute to the U.S. Post-Retirement Benefit Plan in 2018 and 2017, and we contributed \$1 million in 2016.

### *Net Cash Used in Investing Activities*

Net cash used in investing activities was \$116 million, \$1,722 million and \$90 million in 2018, 2017 and 2016, respectively. Investments in property, plant and equipment were \$132 million, \$72 million and \$91 million in 2018, 2017 and 2016, respectively. 2018 capital spending includes \$27 million related to recovery from the northern California wildfires.

In 2018, we paid \$11 million for acquisitions and also received proceeds of \$29 million from divestitures. In 2017, we paid \$1,622 million, net of \$72 million of cash acquired, for the acquisition of Ixia, \$60 million for the acquisition of ScienLab, net of \$2 million of cash acquired, and \$20 million, net, for other acquisition activity. In 2016, we used \$10 million, net of cash acquired, for the acquisition of a small business and a contingent payment related to the Anite acquisition.

We received \$8 million of proceeds from the sale of land in 2017 compared to \$10 million in 2016. We also received \$45 million of proceeds from the sale of investments in 2017 as compared to \$1 million in 2016.

### *Net Cash Used in Financing Activities*

Net cash used by financing activities in 2018 was \$335 million compared to \$1,425 million provided in 2017 and \$29 million used in 2016. In 2018, we used \$335 million for financing activities primarily for a \$260 million repayment of term loan borrowings, \$120 million for treasury stock purchases and \$18 million of tax payments related to net share settlement of equity awards, partially offset by proceeds of \$64 million from issuance of common stock under employee stock plans.

On March 6, 2018, the Board of Directors approved a new stock repurchase program authorizing the purchase of up to \$350 million of the company's common stock, replacing a previously approved 2016 program authorizing the purchase of up to \$200 million of the company's common stock. 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 2017, net cash provided by financing activities was \$1,425 million primarily due to proceeds used to fund the acquisition of Ixia, including the issuance of long-term debt of \$1,069 million, short-term borrowings of \$212 million, and the issuance of common stock under public offering of \$444 million, net of issuance costs. We repaid \$323 million of the borrowings in 2017, including \$182 million of the revolving facility, \$140 million of the term loan and a \$1 million short-term loan acquired with the acquisition of ScienLab. In addition, during 2017, we issued common stock under employee stock plans of \$51 million and had \$12 million of tax payments related to net share settlement of equity awards.

In 2016, we used \$29 million for financing activities primarily due to \$62 million for treasury stock purchases and \$9 million of tax payments related to net share settlement of equity awards, partially offset by proceeds of \$43 million from issuance of common stock under employee stock plans.

## **Short-term debt**

### *Revolving Credit Facility*

On February 15, 2017, we entered into an amended and restated credit agreement (the "Revolving Credit Facility") that replaced our existing \$450 million unsecured credit facility dated September 15, 2014. The Revolving Credit Facility provides for a \$450 million, five-year unsecured revolving credit facility that will expire on February 15, 2022 and bears interest at an annual rate of LIBOR + 1.30%. In addition, the Revolving Credit Facility permits us to increase the total commitments under this credit facility by up to \$150 million in the aggregate on one or more occasions upon request. We may use amounts borrowed under the facility for general corporate purposes. During the year ended October 31, 2018, we borrowed and repaid \$40 million of borrowings outstanding under the Revolving Credit Facility. As of October 31, 2018, 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, 2018.

### *Bridge Facility*

On January 30, 2017, we entered into a commitment letter, pursuant to which certain lenders agreed to provide a senior unsecured 364-day bridge loan facility of up to \$1.684 billion ("the Bridge Facility") for the purpose of providing the financing to support Keysight's acquisition of Ixia. Under the terms of commitment letter, the Bridge Facility was automatically terminated upon the Ixia acquisition on April 18, 2017. For the year ended October 31, 2017, we incurred costs in connection with the Bridge Facility of \$9 million that were amortized to interest expense.

### *2019 Senior Notes*

In October 2014, the company issued an aggregate principal amount of \$500 million in senior notes ("2019 Senior Notes"). The 2019 Senior Notes were issued at 99.902 percent of their principal amount. The notes will mature on October 30, 2019, and bear

interest at a fixed rate of 3.30 percent per annum. The interest is payable semi-annually on April 30 and October 30 of each year. The 2019 senior notes are repayable within one year and have been reclassified to short-term debt.

## **Long-term debt**

### *2024 Senior Notes*

In October 2014, the company issued an aggregate principal amount of \$600 million in 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.

### *2027 Senior Notes*

In April 2017, the company issued an aggregate principal amount of \$700 million in 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 of \$1 million, are being amortized to interest expense over the term of the senior notes. The 2027 Senior Notes are unsecured and rank equally in right of payment with all of our other senior unsecured indebtedness.

### *Senior Unsecured Term Loan*

On February 15, 2017, we entered into a term credit agreement that provides for a three-year \$400 million senior unsecured term loan that bears interest at an annual rate of LIBOR + 1.50%. The term loan was drawn upon the closing of the Ixia acquisition. On February 27, 2018, we fully repaid borrowings outstanding under the term loan of \$260 million and terminated the term credit agreement. We had previously repaid \$140 million of the term loan during the year ended October 31, 2017.

### *Off Balance Sheet Arrangements and Other*

We have contractual commitments for non-cancellable operating leases. See Note 16, "Commitments and Contingencies," to our consolidated financial statements for further information on our non-cancellable operating leases.

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. Local government regulations may restrict our ability to move cash balances to meet cash needs under certain circumstances. We do not currently expect such regulations and restrictions to impact our ability to pay vendors and conduct operations throughout our global organization.

### *Contractual Commitments*

Our cash flows from operations are dependent on a number of factors, including fluctuations in our operating results, accounts receivable collections, inventory management, and the timing of tax and other payments. As a result, the impact of contractual obligations on our liquidity and capital resources in future periods should be analyzed in conjunction with such factors.

The following table summarizes our total contractual obligations at October 31, 2018 (in millions). The amounts presented in the table do not reflect \$120 million of liabilities for uncertain tax positions as of October 31, 2018. We are unable to accurately predict when these amounts will be realized or released. However, it is reasonably possible that there could be significant changes to our unrecognized tax benefits in the next 12 months due to either the expiration of a statute of limitations or a tax audit settlement.

	Total	Less than one year	One to three years (in millions)	Three to five years	More than five years
Debt obligations	\$ 1,800	\$ 500	\$ —	\$ —	\$ 1,300
Interest payments on debt	452	76	119	119	138
Operating lease commitments	191	44	65	36	46
Capital lease commitments	5	1	1	1	2
Commitments to contract manufacturers and suppliers	376	375	1	—	—
Retirement plans	33	33	—	—	—
US transition tax liability	89	4	15	15	55
Other purchase commitments	59	59	—	—	—
Total	<u>\$ 3,005</u>	<u>\$ 1,092</u>	<u>\$ 201</u>	<u>\$ 171</u>	<u>\$ 1,541</u>

*Interest on senior notes.* We have contractual obligations for interest payments on our senior notes. Interest rates and payment dates are detailed above under "Short-term debt" and "Long-term debt".

*Operating leases.* Commitments under operating leases relate primarily to leasehold property, See Note 16, "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 purchase commitments represent the commitments under open purchase orders with our suppliers that have not been received. However, our agreements with these suppliers usually provide us with the option to cancel, reschedule, and adjust our requirements based on business needs prior to firm orders being placed. We expect to fulfill most of our purchase commitments for inventory within one year.

In addition to the commitments to contract manufacturers and suppliers referenced above, we record a liability for firm, non-cancellable and unconditional purchase commitments for quantities in excess of our future demand forecasts consistent with our policy relating to excess inventory. As of October 31, 2018, the liability for our excess firm, non-cancellable and unconditional purchase commitments was \$17 million, compared to \$10 million as of October 31, 2017. These amounts are included in other accrued liabilities in our consolidated balance sheet.

*Retirement plans.* Commitments under the retirement plans relate to expected contributions to be made to our non-U.S. defined benefit plans for the next year only. Contributions beyond the next year are impractical to estimate.

We also have benefit payments due under our defined benefit retirement plans and post-retirement benefit plan that are not required to be funded in advance, but are paid in the same period that benefits are provided. See Item 8-Financial Statements and Supplementary Data, Note 14, "Retirement Plans and Post-Retirement Benefit Plans," for additional information.

*U.S. transition tax liability.* The obligation for the U.S. transition tax liability relates to the one-time U.S. tax on those earnings which have not previously been repatriated to the U.S. (the "Transition Tax"). Keysight has elected to pay the Transition Tax over 8 years. See Item 7. Management's Discussion and Analysis, "Income Taxes," for additional information on the Transition Tax.

*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, 2018, our contractual obligations with these suppliers was approximately \$59 million within the next fiscal year, as compared to approximately \$42 million as of October 31, 2017.

We had no material off-balance sheet arrangements as of October 31, 2018 or October 31, 2017.

## 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. 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.* We enter into agreements to sell products (hardware and/or software), services, and other arrangements (multiple-element arrangements) that include combinations of products and services. Revenue from product sales, net of trade discounts and allowances, is recognized provided that persuasive evidence of an arrangement exists, delivery has occurred, the price is fixed or determinable and collectability is reasonably assured. Delivery is considered to have occurred when title and risk of loss have transferred to the customer, for products, or when the service has been provided. Revenue is reduced for estimated product returns, when appropriate. For sales that include customer-specified acceptance criteria, revenue is recognized after the acceptance criteria have been met. For products that include installation, if the installation meets the criteria to be considered a separate element, product revenue is recognized upon delivery, and recognition of installation revenue occurs when the installation is complete. Otherwise, neither the product nor the installation revenue is recognized until the installation is complete. Revenue from services is deferred and recognized over the contractual period or as services are rendered. We allocate revenue to each element in our multiple-element arrangements based upon their relative selling prices. We determine the selling price for each deliverable based on a selling price hierarchy. The selling price for a deliverable is based on our vendor specific objective evidence ("VSOE") if available, third-party evidence ("TPE") if VSOE is not available, or estimated selling price ("ESP") if neither VSOE nor TPE is available. Revenue from the sale of software products that are not required to deliver the tangible product's essential functionality are accounted for under software revenue recognition rules. Revenue allocated to each element is then recognized when the basic revenue recognition criteria for that element have been met. The amount of product revenue recognized is affected by our judgments as to whether an arrangement includes multiple elements.

We use VSOE of selling price in the selling price allocation in all instances where it exists. VSOE of selling price for products and services is determined when a substantial majority of the selling prices fall within a reasonable range when sold separately. TPE of selling price can be established by evaluating largely interchangeable competitor products or services in standalone sales to similarly situated customers. As our products contain a significant element of proprietary technology and the solution offered differs substantially from that of competitors, it is difficult to obtain the reliable standalone competitive pricing necessary to establish TPE. ESP represents the best estimate of the price at which we would transact a sale if the product or service were sold on a standalone basis. We determine ESP for a product or service by using historical selling prices which reflect multiple factors including, but not limited to customer type, geography, market conditions, competitive landscape, gross margin objectives and pricing practices. The determination of ESP is made through consultation with and approval by management. We may modify or develop new pricing practices and strategies in the future. As these pricing strategies evolve, changes may occur in ESP. The aforementioned factors may result in a different allocation of revenue to the deliverables in multiple-element arrangements, which may change the pattern and timing of revenue recognition for these elements but will not change the total revenue recognized for the arrangement.

*Recent Updates to Revenue Recognition.* In May 2014, the Financial Accounting Standards Board issued Accounting Standard Update 2014-09, *Revenue from Contracts with Customers*, which became effective for us beginning November 1, 2018. For additional information on the new revenue recognition guidance and the expected impact of adoption, see Note 2, "New Accounting Pronouncements," to the consolidated financial statements.

*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 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. The fair value of share-based awards for employee stock option awards was estimated using the Black-Scholes option pricing model. Awards granted under the LTP Program are based on a variety of targets, such as total shareholder return ("TSR") or financial metrics such as operating margin, cost synergies and others. 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. Both the Black-Scholes and Monte Carlo simulation fair value models require the use of highly subjective and complex assumptions, including the option's expected life and the price volatility of the underlying stock. 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 2018, 2017 and 2016.

*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. Pension accounting is intended to reflect the recognition of future benefit costs over the employees' average expected future service to Keysight based on the terms of the plans and investment and funding decisions. To estimate the impact of these future payments and our decisions concerning funding of these obligations, we are required to make assumptions using actuarial concepts within the framework of accounting principles generally accepted in the U.S. 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.

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, 2018 and 2017 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, 2018 and 2017 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 \$6 million on U.S. net periodic benefit cost and \$11 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 \$7 million on U.S. net periodic benefit cost and \$15 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. We aggregated components of an operating segment that have similar economic characteristics into our reporting units. 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 guidance includes examples of events and circumstances that might indicate that a reporting unit's fair value is less than its carrying amount. These examples include macro-economic conditions such as deterioration in the entity's operating environment or industry or market considerations; entity-specific events such as increasing costs, declining financial performance, or loss of key personnel; or other events such as an expectation that a reporting unit will be sold or a sustained decrease in the stock price on either an absolute basis or relative to peers. The qualitative indicators replace those previously used to determine whether an interim goodwill impairment test is required. If it is determined, as a result of the qualitative assessment, that it is more-likely-than-not that the fair value of a reporting unit is less than its carrying amount, the provisions of authoritative guidance require that we perform a quantitative impairment test on goodwill.

In 2018, we performed our annual impairment test for all our reporting units. Based on the results of our testing, the fair value of each of our reporting units exceeded the carrying value, except for our ISG reporting unit. As a result, we recorded impairment losses of \$709 million for ISG. See Note 10, "Goodwill and Other Intangible Assets" of the consolidated financial statements for additional information. There was no impairment of goodwill during the years ended October 31, 2017 and 2016.

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 2 months to 10 years. No impairments of purchased intangible assets were recorded during the years ended October 31, 2018, 2017 and 2016.

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 2018 and 2017, we assessed impairment by performing a qualitative test and recorded an impairment charge of \$5 million and \$7 million, respectively, related to the cancellation of an IPR&D project. There were no impairments in fiscal year 2016.

*Warranty.* Effective December 1, 2017, Keysight warranties on products sold through direct sales channels are primarily for one year. Warranties for products sold through distribution channels continue to be 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 15 and 16 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. 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 credits, benefits and deductions, and in the calculation of certain tax assets and liabilities which arise from differences in the timing of recognition of revenue and expense for tax and financial statement purposes, as well as interest and penalties related to uncertain tax positions. 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, 2018, the company maintains a valuation allowance mainly related to deferred tax assets for California research credits, capital losses in the U.K., and net operating losses in the U.K. and Netherlands. 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 2, "New Accounting Pronouncements," to the consolidated financial statements for a description of new accounting pronouncements.

## 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, refer to Note 13, "Derivatives."

### *Currency exchange rate risk*

We are exposed to foreign currency exchange rate risks inherent in our sales commitments, anticipated sales, 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 up to twelve months in advance. Our exposure to exchange rate risks is managed on an enterprise-wide basis. This strategy utilizes derivative financial instruments, including option and 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.

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 such foreign exchange contracts as described above to substantially mitigate our currency risk. Approximately 76 percent in 2018 and 71 percent of our revenues in each of 2017 and 2016 were generated in U.S. dollars.

We 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, 2018 and 2017, 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*

As of October 31, 2018, we had \$1,800 million in principal amount of senior debt outstanding. The carrying amount of the fixed-rate senior notes was \$1,790 million, and the related fair value based on quoted prices was \$1,802 million. 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, 2018, 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 \$37 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.

## REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and Board of Directors 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, 2018 and October 31, 2017, 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, 2018, including the related notes and financial statement schedule of valuation and qualifying accounts for each of the three years in the period ended October 31, 2018 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, 2018 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, 2018 and October 31, 2017 and the results of its operations and its cash flows for each of the three years in the period ended October 31, 2018 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, 2018, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

### ***Change in Accounting Principle***

As discussed in Note 2 to the consolidated financial statements, the Company changed the manner in which it accounts for stock-based compensation in 2018.

### ***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 the accompanying Management’s Report on Internal Control over Financial Reporting 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.

/s/ PricewaterhouseCoopers LLP

San Jose, California  
December 18, 2018

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,		
	2018	2017	2016
Net revenue:			
Products	\$ 3,229	\$ 2,664	\$ 2,440
Services and other	649	525	478
Total net revenue	3,878	3,189	2,918
Costs and expenses:			
Cost of products	1,440	1,206	1,042
Cost of services and other	316	281	252
Total costs	1,756	1,487	1,294
Research and development	607	498	425
Selling, general and administrative	1,185	1,049	818
Goodwill impairment	709	—	—
Other operating expense (income), net	(33)	(84)	(25)
Total costs and expenses	4,224	2,950	2,512
Income (loss) from operations	(346)	239	406
Interest income	12	7	3
Interest expense	(83)	(80)	(47)
Other income (expense), net	6	13	4
Income (loss) before taxes	(411)	179	366
Provision (benefit) for income taxes	(576)	77	31
Net income	\$ 165	\$ 102	\$ 335
Net income per share:			
Basic	\$ 0.88	\$ 0.57	\$ 1.97
Diluted	\$ 0.86	\$ 0.56	\$ 1.95
Weighted average shares used in computing net income per share:			
Basic	187	180	170
Diluted	191	182	172

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

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

	<b>Year Ended October 31,</b>		
	<b>2018</b>	<b>2017</b>	<b>2016</b>
Net income	\$ 165	\$ 102	\$ 335
Other comprehensive income (loss):			
Unrealized gain (loss) on investments, net of tax benefit (expense) of \$3, \$(1) and \$2	(14)	4	(11)
Unrealized gain (loss) on derivative instruments, net of tax benefit (expense) of zero, \$(2) and \$2	—	4	(5)
Amounts reclassified into earnings related to derivative instruments, net of tax benefit (expense) of \$1, \$(1) and \$(4)	(3)	—	8
Foreign currency translation, net of tax benefit (expense) of zero	(21)	(10)	19
Net defined benefit pension cost and post retirement plan costs:			
Change in actuarial net gain (loss), net of tax benefit (expense) of \$(7), \$(68) and \$53	23	178	(135)
Change in net prior service credit, net of tax benefit of \$6, \$9 and \$10	(16)	(15)	(15)
Other comprehensive income (loss)	(31)	161	(139)
Total comprehensive income	<u>\$ 134</u>	<u>\$ 263</u>	<u>\$ 196</u>

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,	
		2018	2017
<b>ASSETS</b>			
Current assets:			
Cash and cash equivalents	\$	913	\$ 818
Accounts receivable, net		624	547
Inventory		619	588
Other current assets		222	224
Total current assets		2,378	2,177
Property, plant and equipment, net		555	530
Goodwill		1,171	1,882
Other intangible assets, net		645	855
Long-term investments		46	63
Long-term deferred tax assets		750	186
Other assets		279	240
Total assets	\$	5,824	\$ 5,933
<b>LIABILITIES AND EQUITY</b>			
Current liabilities:			
Short-term and current portion of long-term debt	\$	499	\$ 10
Accounts payable		242	211
Employee compensation and benefits		276	217
Deferred revenue		334	291
Income and other taxes payable		42	28
Other accrued liabilities		69	62
Total current liabilities		1,462	819
Long-term debt		1,291	2,038
Retirement and post-retirement benefits		224	309
Long-term deferred revenue		127	101
Other long-term liabilities		287	356
Total liabilities		3,391	3,623
Commitments and contingencies (Note 16)			
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; 191 million shares at October 31, 2018, and 188 million shares at October 31, 2017 issued		2	2
Treasury stock at cost; 4.4 million shares at October 31, 2018 and 2.3 million shares at October 31, 2017		(182)	(62)
Additional paid-in-capital		1,889	1,786
Retained earnings		1,212	1,041
Accumulated other comprehensive loss		(488)	(457)
Total stockholders' equity		2,433	2,310
Total liabilities and equity	\$	5,824	\$ 5,933

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

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

	<b>Year Ended October 31,</b>		
	<b>2018</b>	<b>2017</b>	<b>2016</b>
Cash flows from operating activities:			
Net income	\$ 165	\$ 102	\$ 335
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation	103	92	85
Amortization	207	133	49
Share-based compensation	59	56	49
Debt issuance expense	—	9	—
Deferred tax expense (benefit)	(789)	(47)	17
Excess and obsolete inventory related charges	25	16	17
Gain on sale of assets and divestitures	(20)	(8)	(10)
Goodwill impairment	709	—	—
Pension curtailment and settlement loss (gain)	1	(69)	—
Other non-cash expenses, net	15	17	4
Changes in assets and liabilities:			
Accounts receivable	(89)	(11)	(42)
Inventory	(61)	(4)	(22)
Accounts payable	22	15	(8)
Employee compensation and benefits	63	(1)	16
Deferred revenue	75	90	15
Income taxes payable	181	3	(9)
Retirement and post-retirement benefits	(127)	(15)	(32)
Other assets and liabilities	16	(50)	(44)
Net cash provided by operating activities	<u>555</u>	<u>328</u>	<u>420</u>
Cash flows from investing activities:			
Purchases of property, plant and equipment	(132)	(72)	(91)
Proceeds from the sale of assets and divestitures	29	8	10
Acquisitions of businesses and intangible assets, net of cash acquired	(11)	(1,702)	(10)
Proceeds from the sale of investments	—	45	1
Other investing activities	(2)	(1)	—
Net cash used in investing activities	<u>(116)</u>	<u>(1,722)</u>	<u>(90)</u>
Cash flows from financing activities:			
Issuance of common stock under employee stock plans	64	51	43
Issuance of common stock under public offerings	—	444	—
Payment of taxes related to net share settlement of equity awards	(18)	(12)	(9)
Treasury stock repurchases	(120)	—	(62)
Proceeds from issuance of long-term debt	—	1,069	—
Debt issuance costs	—	(16)	—
Proceeds from short-term borrowings	40	212	—
Repayment of debt and credit facility	(300)	(323)	(1)
Other financing activities	(1)	—	—
Net cash provided by/(used in) financing activities	<u>(335)</u>	<u>1,425</u>	<u>(29)</u>
Effect of exchange rate movements	<u>(9)</u>	<u>4</u>	<u>(1)</u>
Net increase in cash and cash equivalents	95	35	300
Cash and cash equivalents at beginning of year	818	783	483
Cash and cash equivalents at end of year	<u>\$ 913</u>	<u>\$ 818</u>	<u>\$ 783</u>

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					
	Number of Shares	Par Value	Additional Paid-in Capital	Number of Shares	Treasury Stock at Cost	Retained Earnings	Accumulated Other Comprehensive Income/(Loss)	Total Stockholders' Equity	
<b>Balance as of October 31, 2015</b>	169,591	\$ 2	\$ 1,165	—	\$ —	\$ 614	\$ (479)	\$ 1,302	
Net income	—	—	—	—	—	335	—	335	
Other comprehensive loss, net of tax	—	—	—	—	—	—	(139)	(139)	
Issuance of common stock	2,696	—	34	—	—	—	—	34	
Share-based compensation	—	—	48	—	—	—	—	48	
Tax deficiency from share-based awards issued	—	—	(5)	—	—	—	—	(5)	
Repurchase of common stock	—	—	—	(2,289)	(62)	—	—	(62)	
<b>Balance as of October 31, 2016</b>	172,287	2	1,242	(2,289)	(62)	949	(618)	1,513	
Adjustment due to adoption of ASU 2016-16	—	—	—	—	—	(10)	—	(10)	
Net income	—	—	—	—	—	102	—	102	
Other comprehensive income, net of tax	—	—	—	—	—	—	161	161	
Issuance of common stock	2,880	—	41	—	—	—	—	41	
Public offering of common stock	13,143	—	444	—	—	—	—	444	
Share-based compensation	—	—	56	—	—	—	—	56	
Tax benefits from share-based awards issued	—	—	3	—	—	—	—	3	
<b>Balance as of October 31, 2017</b>	188,310	2	1,786	(2,289)	(62)	1,041	(457)	2,310	
Adjustment due to adoption of ASU 2016-09	—	—	—	—	—	6	—	6	
Net income	—	—	—	—	—	165	—	165	
Other comprehensive loss, net of tax	—	—	—	—	—	—	(31)	(31)	
Issuance of common stock	2,894	—	44	—	—	—	—	44	
Share-based compensation	—	—	59	—	—	—	—	59	
Repurchase of common stock	—	—	—	(2,075)	(120)	—	—	(120)	
<b>Balance as of October 31, 2018</b>	191,204	\$ 2	\$ 1,889	(4,364)	\$ (182)	\$ 1,212	\$ (488)	\$ 2,433	

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 providing electronic design and test solutions that are used in the design, development, manufacture, installation, deployment, validation, optimization and secure operation of electronics systems to communications, networking and electronics industries. In addition, we provide testing, visibility, and security solutions, strengthening applications across physical and virtual networks. We also offer customization, consulting and optimization services throughout the customer's product lifecycle, including start-up assistance, instrument productivity, 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 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. 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.

*Acquisitions.* On April 18, 2017 we acquired all of the outstanding common stock of Ixia for \$1,622 million, net of \$72 million of cash acquired. On August 31, 2017 we acquired all of the outstanding common stock of ScienLab for \$60 million, net of \$2 million of cash acquired. See Note 3, "Acquisitions," for further discussion of the company's acquisitions.

*Revenue recognition.* We enter into agreements to sell products (hardware and/or software), services and other arrangements (multiple-element arrangements) that include combinations of products and services.

We recognize revenue, net of trade discounts and allowances, provided that (1) persuasive evidence of an arrangement exists, (2) delivery has occurred, (3) the price is fixed or determinable and (4) collectability is reasonably assured. Delivery is considered to have occurred when title and risk of loss have transferred to the customer, for products, or when the service has been provided. We consider the price to be fixed or determinable when the price is not subject to refund or adjustments. We consider arrangements with extended payment terms not to be fixed or determinable, and accordingly we defer revenue until amounts become due. At the time of the transaction, we evaluate the creditworthiness of our customers to determine the appropriate timing of revenue recognition.

*Product revenue.* Our product revenue is generated predominantly from the sales of various types of test equipment and associated software. Product revenue, including sales to resellers and distributors, is reduced for estimated returns, when appropriate. For sales or arrangements that include customer-specified acceptance criteria, including those where acceptance is required upon achievement of performance milestones, revenue is recognized after the acceptance criteria have been met. For products that include installation, if the installation meets the criteria to be considered a separate element, product revenue is recognized upon delivery, and recognition of installation revenue is delayed until the installation is complete. Otherwise, neither the product nor the installation revenue is recognized until the installation is complete.

Where software is licensed separately, revenue is recognized when the software is delivered and has been transferred to the customer or, in the case of electronic delivery of software, when the customer is given access to the licensed software programs.

We also evaluate whether collection of the receivable is probable, the fee is fixed or determinable and whether any other undelivered elements of the arrangement exist on which a portion of the total fee would be allocated based on vendor-specific objective evidence ("VSOE"). When VSOE is not available, we use third-party evidence ("TPE") or management's best estimate of selling price ("ESP").

*Service revenue.* Revenue from services includes repair and calibration services, extended warranty, customer and software support, consulting, training and education. Service revenue is deferred and recognized over the contractual period or as services are rendered and accepted by the customer. For example, customer support contracts are recognized ratably over the contractual period, while training revenue is recognized as the training is provided to the customer. In addition, the four revenue recognition criteria described above must be met before service revenue is recognized.

*Revenue recognition for arrangements with multiple deliverables.* Our multiple-element arrangements are generally comprised of a combination of measurement instruments, installation or other start-up services, and/or software and/or support or services. Hardware and software elements are typically delivered at the same time, and revenue is recognized upon delivery and acceptance, if required, once title and risk of loss pass to the customer. Delivery of installation, start-up services and other services varies based on the complexity of the equipment, staffing levels in a geographic location and customer preferences, and can range from a few days to a few months. Service revenue is deferred and recognized over the contractual period or as services are rendered and accepted by the customer. Revenue from the sale of software products that are not required to deliver the tangible product's essential functionality are accounted for under software revenue recognition rules, which require VSOE of fair value to allocate revenue in a multiple-element arrangement. Our arrangements generally do not include any provisions for cancellation, termination or refunds that would significantly impact recognized revenue.

We evaluate the deliverables in our multiple-element arrangements and conclude that they are separate units of accounting if it is determined the delivered item or items have value to the customer on a standalone basis. For arrangements that include a general right of return relative to the delivered item(s), delivery or performance of the undelivered item(s) has been determined to be probable and substantially in our control. We allocate revenue to each element in our multiple-element arrangements based on their relative selling prices. We determine the selling price for each deliverable based on a selling price hierarchy. The selling price for a deliverable is based on VSOE if available, TPE if VSOE is not available, or ESP if neither VSOE nor TPE is available. Revenue allocated to each element is then recognized when the basic revenue recognition criteria for that element have been met.

Within our Ixia Solutions Group, when an arrangement contains software and non-software deliverables, we use a two-step process to allocate revenue to each element in the arrangement. First, we allocate the total arrangement fee to the separate non-software and software deliverables as a group based on their relative selling prices. Then, we allocate revenue within the software group utilizing the residual method with revenue allocated to the undelivered elements based on VSOE and the residual amount allocated to the delivered elements.

We use VSOE of selling price in the selling price allocation in all instances where it exists. VSOE of selling price for products and services is determined when a substantial majority of the selling prices fall within a reasonable range when sold separately. TPE of selling price can be established by evaluating largely interchangeable competitor products or services in standalone sales to similarly situated customers. As our products contain a significant element of proprietary technology and the solution offered differs substantially from that of competitors, it is difficult to obtain the reliable standalone competitive pricing necessary to establish TPE. ESP represents the best estimate of the price at which we would transact a sale if the product or service were sold on a standalone basis. We determine ESP for a product or service by using historical selling prices that reflect multiple factors including, but not limited to, customer type, geography, market conditions, competitive landscape, gross margin objectives and pricing practices. The determination of ESP is made through consultation with and approval by management. We may modify or develop new pricing practices and strategies in the future. As these pricing strategies evolve, changes may occur in ESP. The aforementioned factors may result in a different allocation of revenue to the deliverables in multiple-element arrangements, which may change the pattern and timing of revenue recognition for these elements but will not change the total revenue recognized for the arrangement.

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

*Deferred revenue.* Deferred revenue 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 elements in multiple-element arrangements. We limit the revenue recognized to the amount that is not contingent on the future delivery of products or services or meeting other specified performance conditions.

*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 doubtful accounts, 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 doubtful accounts was approximately \$2 million and \$3 million as of October 31, 2018 and 2017, respectively. We do not have any off-balance-sheet credit exposure related to our customers. Accounts receivable are also recorded net of estimated product returns.

*Share-based compensation.* We account for share-based awards made to our employees and directors, including restricted stock units, employee stock purchases made under Keysight's Employee Stock Purchase Plan ("Keysight's ESPP"), employee stock option awards, and performance share awards under Keysight Technologies, Inc. Long-Term Performance ("Keysight's LTP") Program, using the estimated grant date fair value method of accounting. We recorded compensation expense for all share-based awards of \$59 million in 2018, \$56 million in 2017 and \$49 million in 2016.

*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.* Effective December 1, 2017, the Keysight warranties on products sold through direct sales channels are primarily for one year. Warranties for products sold through distribution channels continue to be 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 15, "Guarantees."

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. 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 2018, we performed our annual impairment test for all our reporting units. Based on the results of our testing, the fair value of each of our reporting units exceeded the carrying value, except for our Ixia Solutions Group ("ISG") reporting unit. The primary factors contributing to a reduction in fair value of ISG were weaker-than-expected market growth rates since

acquisition and significant integration efforts resulting in lower revenue and profitability trends included in our long-term financial forecasts. As a result, we recorded an impairment loss of \$709 million for ISG for the year ended October 31, 2018. There were no impairments of goodwill during the years ended October 31, 2017 and 2016. Refer to Note 3, "Acquisitions," and Note 10, "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 2 months to 10 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, 2018, 2017 and 2016.

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 2018 and 2017, we assessed impairment by performing a qualitative test and recorded impairment charges of \$5 million and \$7 million, respectively, related to cancellations of IPR&D projects. There were no impairments in 2016.

*Advertising.* Advertising costs are expensed as incurred and were \$21 million in 2018, \$22 million in 2017 and \$19 million in 2016.

*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.

*Sales taxes.* Sales taxes collected from customers and remitted to governmental authorities are not included in our revenue.

*Investments.* Cost method investments, consisting of non-marketable equity securities, are accounted for at historical cost. Trading securities are reported at fair value, with gains or losses resulting from changes in fair value recognized currently in earnings. Investments designated as available-for-sale are reported at fair value, with unrealized gains and losses, net of tax, included in accumulated other comprehensive income. 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 2018 and 2017. In 2016, cost method investments with a carrying amount of \$2 million were written down to their fair value of zero, resulting in an impairment charge of \$2 million, which is included in other income (expense).

*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 restricted stock units. 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, 2018, approximately \$782 million of our cash and cash equivalents was held outside of the U.S. in our foreign subsidiaries. Under U.S. tax legislation that was enacted on December 22, 2017, certain earnings currently held outside of the U.S. are deemed to be repatriated to the U.S., with foreign cash balances generally subject to an effective U.S. tax rate of 15.5 percent and certain cumulative foreign earnings in excess of foreign cash balances subject to an effective U.S. tax rate of 8 percent. Our cash and cash equivalents mainly consist of short-term deposits held at major global financial institutions, investments in institutional money market funds, and similar short duration instruments with original maturities of 90 days or less. We continuously monitor the creditworthiness of the financial institutions in which we invest our funds.

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.

*Restricted cash.* As of October 31, 2018, restricted cash of approximately \$4 million consisted primarily of deposits held as collateral against bank guarantees, of which \$2 million is classified within other current assets and \$2 million is classified within other assets in the consolidated balance sheet. As of October 31, 2017, restricted cash of approximately \$2 million consisted of deposits held as collateral against bank guarantees and is classified within other assets in the consolidated balance sheet.

*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 cost or equity method, 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, exceeded the carrying value by approximately \$3 million and \$91 million as of October 31, 2018 and 2017, 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 12, "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 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, 2018 or 2017.

*Derivative instruments.* We are exposed to global foreign currency exchange rate risk in the normal course of business. We enter into foreign exchange hedging contracts, primarily forward contracts and purchased options 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. For option contracts, we exclude time value from the measurement of effectiveness. 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 hedging contracts generally mature within 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. Changes in the fair value of the ineffective portion of derivative instruments are recognized in earnings in the current period. 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 and amortization are removed from our general ledger, and the resulting gain or loss is reflected in the consolidated statement of operations. Buildings and improvements are depreciated over the lesser of their useful lives or the remaining term of the lease and machinery and equipment, which is generally over three to ten years. We use the straight-line method to depreciate assets.

*Leases.* We lease buildings, machinery and equipment under operating leases for original terms ranging generally from one to twenty-five years. Certain leases contain renewal options for periods up to ten years.

*Capitalized software.* We capitalize certain internal and external costs incurred to acquire or create internal use software. Capitalized software is included in property, plant and equipment and is depreciated over three years once development is complete.

*Impairment of long-lived assets.* We continually monitor events and changes in circumstances that could indicate carrying amounts of long-lived assets, including intangible 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. 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 \$80 million and \$72 million as of October 31, 2018 and 2017, 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 transactions are reported in other income (expense) and were a \$4 million gain in 2018, a \$1 million gain in 2017, and zero in 2016.

*Retirement plans and post-retirement benefit plan assumptions.* Pension accounting is intended to reflect the recognition of future benefit costs over the employees' average expected future service to Keysight based on the terms of the plans and investment and funding decisions. To estimate the impact of these future payments and our decisions concerning funding of these obligations, 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 portfolio composition. We evaluate these assumptions at least annually. See Note 14, "Retirement Plans and Post-Retirement Benefit Plans."

## **2. NEW ACCOUNTING PRONOUNCEMENTS**

*Accounting Standards Update ("ASU") 2014-09, Revenue From Contracts With Customers.* In May 2014, the Financial Accounting Standards Board ("FASB") issued guidance which will replace numerous requirements in GAAP, including industry-specific requirements, and provide companies with a single revenue recognition model for recognizing revenue from contracts with customers. The core principle of the new standard is that a company should recognize revenue to show the transfer of promised goods or services to customers in an amount that reflects the consideration to which the company expects to be entitled in exchange for those goods or services. In July 2015, the FASB deferred the effective date by one year to December 15, 2017 for annual reporting periods beginning after that date. The FASB also permitted early adoption of the standard, but not before the original effective date of December 15, 2016. During 2016, the FASB issued several amendments to the standard, including clarification to the guidance on reporting revenues as a principal versus an agent, identifying performance obligations, accounting for intellectual property licenses, assessing collectability, presentation of sales taxes, impairment testing for contract costs and disclosure of performance obligations.

The two permitted transition methods under the new standard are (1) the full retrospective method, in which case the standard would be applied to each prior reporting period presented, and the cumulative effect of applying the standard would be recognized

at the earliest period shown, or (2) the modified retrospective method, in which case the cumulative effect of applying the standard would be recognized at the date of initial application. We will adopt the new standard effective November 1, 2018 under the modified retrospective method, by recognizing the cumulative effect of initially applying the new standard as an increase to the opening balance of retained earnings. We expect this adjustment to be approximately \$70 million to \$80 million, with an immaterial impact to our net income on an ongoing basis.

The most significant impact of the standard relates to our accounting for software license revenue, as under the new standard we expect to recognize software license revenue at the time of delivery rather than over the contractual term since control of the software license is transferred and our performance obligation is satisfied at that point in time. The new standard will also require certain costs, primarily sales-related commissions on contracts, to be capitalized rather than expensed. The new standard will also require additional disclosures intended to provide users of financial statements comprehensive information about the nature, amount, timing and uncertainty of revenue and cash flows from customer contracts, including disclosure of judgments used and assets recognized from costs incurred to obtain or fulfill a contract. We are in the process of finalizing changes to our business processes, systems and controls to support recognition and disclosure under the new revenue standard.

*ASU 2016-01, Recognition and Measurement of Financial Assets and Financial Liabilities.* In January 2016, the FASB issued guidance that amends various aspects of the recognition, measurement, presentation, and disclosure for financial instruments. The standard generally requires companies to measure investments in other entities, except those accounted for under the equity method, at fair value and recognize any changes in fair value in earnings. We will adopt the standard effective November 1, 2018 under a modified retrospective approach, with prospective adoption for amendments related to equity securities without readily determinable fair values. Our assets and liabilities subject to this standard are not material.

*ASU 2016-02, Leases.* In February 2016, the FASB issued guidance that will require organizations that lease assets to recognize assets and liabilities for leases with lease terms of more than 12 months. Consistent with current GAAP, the recognition, measurement, and presentation of expenses and cash flows arising from a lease by a lessee primarily will depend on its classification as a finance or operating lease. However, unlike current GAAP, which requires only capital leases to be recognized on the balance sheet, the new guidance will require both types of leases to be recognized on the balance sheet. We expect our leases designated as operating leases in Note 16, "Commitments and Contingencies," will be reported in the consolidated balance sheet upon adoption. The standard is effective for fiscal years beginning after December 15, 2018 and interim periods within those fiscal years. Early adoption is permitted. We are evaluating the impact of adopting this guidance on our consolidated financial statements.

*ASU 2016-09, Improvements to Employee Share-Based Payment Accounting.* In March 2016, the FASB issued guidance that amends the accounting for stock-based compensation and requires excess tax benefits and deficiencies to be recognized as a component of income tax expense rather than equity. The inclusion of excess tax benefits and deficiencies as a component of income tax expense will increase volatility within our provision for income taxes as the amount of excess tax benefits or deficiencies from stock-based compensation awards depends on our stock price at the date the awards vest. This guidance also requires excess tax benefits and deficiencies to be presented as an operating activity in the statement of cash flows and allows an entity to make an accounting policy election to either estimate expected forfeitures or to account for them as they occur. We adopted this guidance during the first quarter of 2018 and elected to recognize forfeitures as they occur. As a result, a \$6 million cumulative-effect adjustment was recorded directly to retained earnings as of November 1, 2017, the beginning of the annual period of adoption, with a corresponding reduction to deferred tax liabilities. Additionally, we reported an income tax benefit of \$5 million for the year ended October 31, 2018 due to recognition of excess tax benefits from share-based compensation.

We elected to apply the presentation requirements for cash flows related to excess tax benefits and employee taxes paid for withheld shares retrospectively to all periods presented, which resulted in the following change to our previously reported consolidated statement of cash flows for the years ended October 31, 2017 and 2016:

	Year Ended October 31,					
	2017			2016		
	As Originally Reported	As Adjusted	Change	As Originally Reported	As Adjusted	Change
	(in millions)					
Net cash provided by operating activities	\$ 313	\$ 328	\$ 15	\$ 416	\$ 420	\$ 4
Net cash provided by/(used in) financing activities	\$ 1,440	\$ 1,425	\$ (15)	\$ (25)	\$ (29)	\$ (4)

*ASU 2017-04, Simplifying the Test for Goodwill Impairment.* In January 2017, the FASB issued guidance that eliminates the requirement to calculate the implied fair value of goodwill to measure a goodwill impairment charge. Instead, entities will record

an impairment charge based on the excess of a reporting unit's carrying amount over its fair value. The standard is effective for annual or any interim goodwill impairment tests in fiscal years beginning after December 15, 2019. Early adoption is permitted. We adopted this guidance during the fourth quarter of 2018.

*ASU 2017-07, Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost.* In March 2017, the FASB issued guidance that requires the service cost component of net periodic pension cost and net periodic postretirement benefit cost to be included in operating expenses (together with other employee compensation costs) and the other components of the cost to be presented in the statement of operations separately from the service cost component and outside of income from operations. The standard is effective for annual and interim periods beginning after December 31, 2017, and retrospective application is required. Early adoption is permitted. Had this standard been adopted in prior periods, reported operating profit would have been \$48 million and \$91 million lower and other income (expense) would have been \$48 million and \$91 million higher than reflected in the consolidated statement of operations for the years ended October 31, 2018 and 2017, respectively.

*ASU 2017-09, Scope of Modification Accounting.* In May 2017, the FASB issued guidance that clarifies when changes to the terms or conditions of a share-based payment award must be accounted for as modifications. Specifically, an entity would not apply modification accounting if the fair value, vesting conditions and classification of the awards are the same immediately before and after the modification. The standard is effective for fiscal years beginning after December 31, 2017 and interim periods within those fiscal years. Early adoption is permitted. We do not expect a material impact to our consolidated financial statements due to adoption of this guidance.

*ASU 2017-12, Targeted Improvements to Accounting for Hedging Activities.* In August 2017, the FASB issued guidance to enable entities to better portray the economics of their risk management activities in the financial statements and enhance transparency and understandability of hedge results. The standard is effective for fiscal years beginning after December 15, 2018 and interim periods within those fiscal years. Early adoption is permitted. We currently anticipate adopting this guidance on November 1, 2018 and do not expect a material impact to our consolidated financial statements due to adoption of this guidance.

*ASU 2018-02, Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income.* In February 2018, the FASB issued guidance that allows a reclassification from accumulated other comprehensive income to retained earnings for stranded tax effects resulting from the Tax Cuts and Jobs Act (the "Act") enacted in December 2017. The standard is effective for fiscal years beginning after December 15, 2018. Early adoption is permitted. We currently anticipate adopting this guidance retrospectively on November 1, 2018. The company maintains a portfolio approach accounting policy related to the income tax effects of accumulated other comprehensive income. We intend to elect to retain the income tax effects of the Act as a component of accumulated other comprehensive income. Given this election, the adoption of this guidance is not expected to have a material impact on our consolidated financial statements.

*ASU 2018-07, Improvements to Nonemployee Share-Based Payment Accounting.* In June 2018, the FASB issued guidance to simplify the accounting for share-based payments to nonemployees by aligning it with the accounting for share-based payments to employees, with certain exceptions. The standard is effective for fiscal years beginning after December 15, 2018 and interim periods within those fiscal years. Early adoption is permitted. We do not expect a material impact to our consolidated financial statements due to adoption of this guidance.

*ASU 2018-15, Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract.* In August 2018, the FASB issued guidance that requires a customer in a cloud computing arrangement (i.e., hosting arrangement) that is a service contract to follow the internal-use software guidance to determine which implementation costs to defer and recognize as an asset and aligns the recognition of implementation costs to those incurred in an arrangement that includes an internal-use software license. Further, new disclosures about implementation costs for both internal-use software and hosting arrangements are required. The standard is effective for fiscal years beginning after December 15, 2019 and interim periods within those fiscal years. Early adoption is permitted. We are evaluating the impact of adopting this guidance on our consolidated financial statements.

Other amendments to GAAP that have been issued by the FASB or other standards-setting bodies that do not require adoption until a future date are not expected to have a material impact on our consolidated financial statements upon adoption.

### **3. ACQUISITIONS**

#### **Acquisition of Ixia**

On April 18, 2017, pursuant to the terms of an Agreement and Plan of Merger dated January 30, 2017, between Keysight and Ixia (the "Merger Agreement"), we acquired all of the outstanding common stock of Ixia for \$1,622 million, net of \$72 million of cash acquired, pursuant to an exchange offer for \$19.65 per share (the "Merger Consideration"). Pursuant to the Merger Agreement,

any outstanding and unexercised Ixia stock options with an exercise price below the Merger Consideration and any outstanding Ixia restricted stock awards were cancelled and converted into the right to receive a cash payment equal to the merger consideration of \$19.65 per share (minus the exercise price for the Ixia stock options). The vested portion of the awards associated with prior service of Ixia employees represented approximately \$47 million of the total consideration. We funded the acquisition with a combination of cash and proceeds from debt and equity financings. As a result of the acquisition, Ixia has become a wholly-owned subsidiary of Keysight. Accordingly, the results of Ixia are included in Keysight's consolidated financial statements from the date of the acquisition and are reported in the Ixia Solutions Group operating segment.

The Ixia acquisition was accounted for in accordance with the authoritative accounting guidance. The acquired assets and assumed liabilities were recorded by Keysight at their estimated fair values. Keysight determined the estimated fair values with the assistance of appraisals or valuations performed by third party specialists, discounted cash flow analysis, and estimates made by management. We expect to leverage and expand the existing sales channels and product development resources, and utilize the assembled workforce. The company also anticipates opportunities for growth through expanded geographic and customer segment diversity and the ability to leverage additional products and capabilities. These factors, among others, contributed to a purchase price in excess of the estimated fair value of Ixia's net identifiable assets acquired (see summary of net assets below), and, as a result, we have recorded goodwill in connection with this transaction.

All goodwill, approximately \$48 million of which is deductible for tax purposes, was assigned to the Ixia Solutions Group.

A portion of the overall purchase price was allocated to acquired intangible assets. Amortization expense associated with acquired intangible assets is not deductible for tax purposes. Therefore, a deferred tax liability of approximately \$186 million was established primarily for the future amortization of these intangibles and is included in "other long-term liabilities" in the table below.

The following table summarizes the allocation of the purchase price to the estimated fair values of the assets acquired and liabilities assumed on the closing date of April 18, 2017 (in millions):

Cash and cash equivalents	\$	72
Short-term investments		44
Accounts receivable		91
Inventory		107
Other current assets		34
Property, plant and equipment		50
Goodwill		1,117
Other intangible assets		744
Other assets		4
Total assets acquired		2,263
Accounts payable		(10)
Employee compensation and benefits		(32)
Deferred revenue		(35)
Income and other taxes payable		(1)
Other accrued liabilities		(32)
Other long-term liabilities		(459)
Net assets acquired	\$	1,694

The fair values of cash and cash equivalents, short-term investments, accounts receivable, other current assets, accounts payable, employee compensation and benefits, and other accrued liabilities were generally determined using historical carrying values given the short-term nature of these assets and liabilities. The fair values for acquired inventory, property, plant and equipment, intangible assets, and deferred revenue were determined with the input from third-party valuation specialists. The fair values of certain other assets and certain other liabilities were determined internally using historical carrying values and estimates made by management.

#### ***Valuation of Intangible Assets Acquired***

The components of intangible assets acquired in connection with the Ixia acquisition were as follows (in millions):

	<b>Estimated Fair Value</b>	<b>Estimated useful life</b>
Developed product technology	\$ 423	4 years
Customer relationships	234	7 years
Tradenames and trademarks	12	3 years
Backlog	8	90 days
Total intangible assets subject to amortization	677	
In-process research and development	67	
Total intangible assets	<u>\$ 744</u>	

As noted above, the intangible assets were valued with input from valuation specialists using the income approach, which includes the discounted cash flow, cost-savings, and relief from royalty methods. The in-process research and development was valued using the multi-period excess earnings method under the income approach by discounting forecasted cash flows directly related to the products expecting to result from the projects, net of returns on contributory assets. A discount rate of 14% was used to value the research and development projects, adjusted to reflect additional risks inherent in the acquired projects. The primary in-process projects acquired relate to next generation products which will be released in the near future. Total costs to complete for all Ixia in-process research and development were estimated at approximately \$12 million as of the close date.

### **Acquisition of ScienLab**

On August 31, 2017, we acquired all of the outstanding common stock of ScienLab for \$60 million, net of \$2 million of cash acquired. ScienLab is a Germany-based company that provides test solutions to automotive original equipment manufacturers and Tier 1 suppliers in the automotive and energy markets. This acquisition complements our portfolio, allowing end-to-end solutions for hybrid electric vehicles, electric vehicles, and battery test solutions that address e-mobility market dynamics. We funded the acquisition using existing cash. As a result of the acquisition, ScienLab has become a wholly-owned subsidiary of Keysight. Accordingly, the results of ScienLab are included in Keysight's consolidated financial statements from the date of the acquisition and are reported in the Electronic Industrial Solutions Group operating segment. For the period from September 1, 2017 to October 31, 2017, ScienLab's net revenue and net loss were \$1 million and \$2 million, respectively.

The ScienLab acquisition was accounted for in accordance with the authoritative accounting guidance. The acquired assets and assumed liabilities were recorded by Keysight at their estimated fair values. Keysight determined the estimated fair values with the assistance of appraisals or valuations performed by third party specialists, discounted cash flow analysis, and estimates made by management. We expect to leverage and expand the existing sales channels and product development resources, and utilize the assembled workforce. The company also anticipates opportunities for growth through expanded geographic and customer segment diversity and the ability to leverage additional products and capabilities. These factors, among others, contributed to a purchase price in excess of the estimated fair value of ScienLab's net identifiable assets acquired (see summary of net assets below), and, as a result, we have recorded goodwill in connection with this transaction.

All goodwill was assigned to the Electronic Industrial Solutions Group. We do not expect the goodwill recognized or any potential impairment charges in the future to be deductible for income tax purposes.

A portion of the overall purchase price was allocated to acquired intangible assets. Amortization expense associated with acquired intangible assets is not deductible for tax purposes. Therefore, a deferred tax liability of approximately \$13 million was established primarily for the future amortization of these intangibles and is included in "other long-term liabilities" in the table below.

The following table summarizes the allocation of the purchase price to the estimated fair values of the assets acquired and liabilities assumed on the closing date of August 31, 2017 (in millions):

Cash and cash equivalents	\$	2
Accounts receivable		3
Inventory		16
Other current assets		1
Goodwill		23
Other intangible assets		40
Total assets acquired		85
Accounts payable		(1)
Deferred revenue		(3)
Income and other taxes payable		(2)
Current portion of long-term debt		(1)
Other long-term liabilities		(16)
Net assets acquired	\$	62

The fair values of cash and cash equivalents, accounts receivable, other current assets, accounts payable, deferred revenue, and current portion of long-term debt were generally determined using historical carrying values given the short-term nature of these assets and liabilities. The fair values for acquired inventory and intangible assets were determined with the input from third-party valuation specialists. The fair values of certain other liabilities were determined internally using historical carrying values and estimates made by management.

#### ***Valuation of Intangible Assets Acquired***

The components of intangible assets acquired in connection with the ScienLab acquisition were as follows (in millions):

	<b>Estimated Fair Value</b>	<b>Estimated useful life</b>
Developed product technology	\$ 33	6 years
Customer relationships	4	5 years
Non-compete agreements	1	3 years
Tradenames and trademarks	1	3 years
Backlog	1	6 months
Total intangible assets	\$ 40	

As noted above, the intangible assets were valued with input from valuation specialists using the income approach, which includes the discounted cash flow, cost-savings, and relief from royalty methods.

#### ***Supplemental Pro Forma Information (Unaudited)***

The following represents pro forma operating results as if Ixia had been included in the company's consolidated statements of operations as of the beginning of fiscal 2017 and 2016, respectively (in millions, except per share amounts):

	Year Ended October 31,	
	2017	2016
Net revenue	\$ 3,462	\$ 3,413
Net income	\$ 116	\$ 231
Net income per share - Basic	\$ 0.63	\$ 1.26
Net income per share - Diluted	\$ 0.62	\$ 1.25

The unaudited pro forma financial information for the years ended October 31, 2017 and 2016 combine the historical results of Keysight and Ixia for the years ended October 31, 2017 and 2016, assuming that the companies were combined as of November 1, 2015. The unaudited pro forma financial information includes business combination accounting effects from the acquisition including amortization and depreciation charges from acquired intangible assets, property plant and equipment, interest expense on the financing transactions used to fund the Ixia acquisition and acquisition-related transaction costs and tax-related effects. Pro forma results of operations for ScienLab have not been presented because the effects of the acquisition were not material to the company's financial results.

The pro forma information as presented above is for informational purposes only and is not indicative of the results of operations that would have been achieved if the acquisition had taken place at the beginning of fiscal 2016 for Ixia.

#### 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 Restricted Stock Units ("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 Long-Term Performance ("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 the Board of Directors ("the Board") on July 16, 2014, subsequently amended and restated by the Board on September 29, 2014 and on January 22, 2015 and became effective as of November 1, 2014 (the "Effective Date"). The Board 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 Plan was further amended and restated by the Board on November 16, 2017 to increase the maximum aggregate number of shares that may be issued under the Plan to 21.8 million shares. The 2014 Stock Plan provides for the grant of awards in the form of stock options, SARs, 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, 2018, approximately 9 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 and generally have 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.

Effective November 1, 2014, the Compensation Committee of the Board of Directors approved the performance awards, part of the Long-Term Performance ("LTP") Program 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 the contractual period if specified performance targets are met. The maximum contractual period for awards under the performance awards program is three years. These awards can be based on a variety of targets, such as total shareholder return ("TSR") or financial metrics, such as operating margin, cost synergies and others. The final award may vary from zero to 200 percent of the target award based on the actual performance. For TSR-based performance awards, the peer group comparisons are set at the beginning of the performance period. We consider the dilutive impact of this program in our diluted net income per share calculation only to the extent that the performance conditions are met.

Restricted stock units 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. Restricted stock units generally vest, with some exceptions, at a rate of 25 percent per year over a period of four years from the date of grant.

Effective November 1, 2014, the company adopted the Employee Stock Purchase Plan. The ESPP allows eligible employees to contribute up to ten 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 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 885,110 shares for \$36 million in 2018, 1,085,382 shares for \$32 million in 2017 and 1,234,111 shares for \$30 million in 2016. As of October 31, 2018, common stock authorized and available for issuance under our ESPP was 21,302,108 shares, which includes shares issued in November 2018 to participants in consideration of the aggregate contribution of \$23 million as of October 31, 2018.

### 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 results was as follows:

	Year Ended October 31,		
	2018	2017	2016
	(in millions)		
Cost of products and services	\$ 11	\$ 11	\$ 11
Research and development	10	9	8
Selling, general and administrative	38	36	30
Total share-based compensation expense	\$ 59	\$ 56	\$ 49

At October 31, 2018 and 2017 no share-based compensation expense was capitalized within inventory. The income tax benefit (deficiency) realized from exercised stock options and similar awards recognized was \$5 million in 2018 recorded as a component of income tax expense, \$3 million in 2017 and \$(5) million in 2016 recorded as a component of equity.

### Valuation Assumptions

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

	Year Ended October 31,		
	2018	2017	2016
Volatility of Keysight shares	25%	27%	25%
Volatility of index/peer group	14%	15%	14%-54%
Price-wise correlation with selected peers	57%	57%	38%

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 is determined based on the market price of Keysight's common stock on the grant date.

We did not grant stock option awards in 2018, 2017 and 2016. The fair value of share-based awards for employee stock options granted before 2016 was estimated using the Black-Scholes option pricing model.

### Share-based Payment Award Activity

*Employee Stock Options:* The following table summarizes 2018 activity related to stock option awarded to our employees and directors:

	Options Outstanding (in thousands)	Weighted Average Exercise Price
Outstanding at October 31, 2017	2,354	\$ 27
Granted	—	\$ —
Exercised	(1,048)	\$ 26
Forfeited and expired	—	\$ —
Outstanding at October 31, 2018	1,306	\$ 27

There were no forfeited or expired options in 2018.

The options outstanding and exercisable at October 31, 2018 were as follows:

Range of Exercise Prices	Options Outstanding				Options Exercisable			
	Number Outstanding	Weighted Average Remaining Contractual Life	Weighted Average Exercise Price	Aggregate Intrinsic Value	Number Exercisable	Weighted Average Remaining Contractual Life	Weighted Average Exercise Price	Aggregate Intrinsic Value
	(in thousands)	(in years)		(in thousands)	(in thousands)	(in years)		(in thousands)
\$0 - 25	415	3.1	\$ 20	\$ 15,505	415	3.1	\$ 20	\$ 15,505
\$25.01 - 30	288	5.1	\$ 30	7,836	288	5.1	\$ 30	7,836
\$30.01 - 40	603	6.0	\$ 31	15,740	363	6.0	\$ 31	9,476
	<u>1,306</u>	<u>4.9</u>	<u>\$ 27</u>	<u>\$ 39,081</u>	<u>1,066</u>	<u>4.6</u>	<u>\$ 26</u>	<u>\$ 32,817</u>

The aggregate intrinsic value provided above represents the total pre-tax intrinsic value, based on Keysight's closing stock price of \$57.08 at October 31, 2018, that would have been received by award holders had all award holders exercised their awards that were in-the-money as of that date. The total number of in-the-money awards exercisable at October 31, 2018 was approximately 1.1 million.

The following table summarizes the aggregate intrinsic value of options exercised in 2018, 2017 and 2016:

	Aggregate Intrinsic Value (in thousands)	Weighted Average Exercise Price
Options exercised in fiscal 2016	\$ 5,656	\$ 19
Options exercised in fiscal 2017	\$ 16,385	\$ 20
Options exercised in fiscal 2018	\$ 28,985	\$ 26

As of October 31, 2018, the unrecognized share-based compensation costs for outstanding stock option awards was zero. See Note 5, "Income Taxes," for the tax impact on share-based award exercises.

### Non-vested Awards

The following table summarizes non-vested award activity in 2018 primarily for our LTP Program and restricted stock unit awards:

	Shares	Weighted Average Grant Date Fair Value
	(in thousands)	
Non-vested at October 31, 2017	3,640	\$ 33
Granted	1,335	\$ 46
Vested	(1,354)	\$ 33
Forfeited	(155)	\$ 38
LTP Program decremental	(107)	\$ 31
Non-vested at October 31, 2018	3,359	\$ 36

As of October 31, 2018, the unrecognized share-based compensation cost for non-vested restricted stock awards was approximately \$53 million, which is expected to be amortized over a weighted average period of 2.1 years. The total fair value of restricted stock awards vested was \$55 million for 2018, \$43 million for 2017 and \$33 million for 2016.

## 5. INCOME TAXES

The domestic and foreign components of income (loss) before taxes are:

	Year Ended October 31,		
	2018	2017	2016
	(in millions)		
U.S. operations	\$ (532)	\$ (147)	\$ (30)
Non-U.S. operations	121	326	396
Total income (loss) before taxes	\$ (411)	\$ 179	\$ 366

The provision (benefit) for income taxes is comprised of:

	Year Ended October 31,		
	2018	2017	2016
	(in millions)		
U.S. federal taxes:			
Current	\$ 131	\$ 21	\$ (15)
Deferred	46	(56)	(13)
Non-U.S. taxes:			
Current	75	101	32
Deferred	(832)	9	28
State taxes, net of federal benefit:			
Current	7	2	(1)
Deferred	(3)	—	—
Total provision (benefit) for income taxes	\$ (576)	\$ 77	\$ 31

Due to the adoption of ASU 2016-09, excess tax benefits and deductions associated with our various share-based award plans are included as components of income tax expense for fiscal year 2018. The income tax provision for fiscal years 2017 and 2016 does not reflect potential future tax savings resulting from excess deductions associated with our various share-based award plans.

The significant components of deferred tax assets and deferred tax liabilities included in the consolidated balance sheet are:

	October 31,			
	2018		2017	
	Deferred Tax Assets	Deferred Tax Liabilities	Deferred Tax Assets	Deferred Tax Liabilities
	(in millions)			
Inventory	\$ 14	\$ —	\$ 16	\$ (3)
Intangibles	664	(66)	55	(158)
Property, plant and equipment	14	(23)	16	(20)
Warranty reserves	11	(1)	17	(1)
Pension benefits	47	(67)	90	(58)
Employee benefits, other than retirement	27	(1)	29	(1)
Net operating loss, capital loss, and credit carryforwards	120	—	257	—
Unremitted earnings of foreign subsidiaries	—	(5)	—	(305)
Share-based compensation	14	—	26	—
Deferred revenue	37	(1)	24	(3)
Other	11	(1)	10	(10)
Subtotal	959	(165)	540	(559)
Tax valuation allowance	(79)	—	(63)	—
Total deferred tax assets or deferred tax liabilities	\$ 880	\$ (165)	\$ 477	\$ (559)

The increase in 2018 as compared to 2017 for the deferred tax assets primarily relates to the Singapore restructuring completed in 2018 in response to Singapore tax law changes, which resulted in an increase in intangible assets, offset with a decrease in net operating losses and a decrease in future pension liabilities in the U.S. pension. The decrease in 2018 as compared to 2017 for deferred tax liabilities primarily relates to a decrease in U.S. income taxes on the undistributed earnings of foreign subsidiaries due to U.S. tax reform, a decrease in acquired intangibles due to amortization or impairment and a decrease in future pension liabilities in the U.K.

Prior to the December 2017 enactment of comprehensive Federal tax legislation commonly known as the Tax Cuts and Jobs Act (the "Tax Act"), we recorded U.S. income taxes on the undistributed earnings of foreign subsidiaries unless the subsidiaries' earnings were considered indefinitely reinvested outside the U.S. As a result of the Tax Act, U.S. income taxes are no longer due when earnings are distributed from foreign subsidiaries, so the deferred taxes on undistributed earnings of foreign subsidiaries has significantly reduced. As of October 31, 2018, there was a deferred tax liability of \$5 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, 2018, the cumulative amount of undistributed earnings considered indefinitely reinvested was \$91 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 \$79 million valuation allowance as of October 31, 2018 is mainly related to California research credits, capital losses in the U.K. and net operating losses in the U.K. and Netherlands. The \$63 million valuation allowance as of October 31, 2017 was mainly related to capital losses in the U.K., California research credits and net operating losses in the U.K. and Netherlands. The increase in valuation allowance from October 31, 2017 to October 31, 2018 is primarily due to an increase in the valuation allowance on California research credits and U.S. state net operating losses that were acquired in the Ixia acquisition and an increase in the valuation allowance on Netherlands net operating losses. We will maintain a valuation allowance until sufficient positive evidence exists to support reversal.

At October 31, 2018, we had U.S. federal net operating loss carryforwards of approximately \$11 million, U.S. capital loss carryforwards of approximately \$3 million, and U.S. state net operating loss carryforwards, primarily acquired in the Ixia acquisition, of approximately \$98 million. The U.S. federal net operating losses will expire in years beginning 2029 through 2036 if not utilized, and the capital loss carryforwards will expire in years beginning in 2022 if not utilized. The U.S. state net operating

loss carryforwards will begin to expire in 2019 if not utilized. At October 31, 2018, we had California research credit carryforwards of approximately \$23 million. The California research credits can be carried forward indefinitely. The U.S. federal and state net operating losses and tax credit carryforwards are subject to change of ownership limitations provided by the Internal Revenue Code and similar state provisions. At October 31, 2018, we also had foreign net operating loss carryforwards of approximately \$508 million, \$128 million of which will expire in years beginning 2023 through 2027 if not utilized. The remaining \$380 million has an indefinite life. At October 31, 2018, we had foreign capital loss carryforwards of approximately \$146 million with an indefinite life and \$3 million of tax credits in foreign jurisdictions with an indefinite life. Some of the foreign losses are subject to annual loss limitation rules. These annual loss limitations in foreign jurisdictions may result in the expiration or reduced utilization of the net operating losses.

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

	Year Ended October 31,		
	2018	2017	2016
	(in millions)		
Profit before tax times statutory rate	\$ (96)	\$ 63	\$ 128
State income taxes, net of federal benefit	2	1	(1)
U.S. federal statutory tax rate change	10	—	—
Non-U.S. income taxed at different rates	16	(83)	(88)
Singapore tax incentives and amortization	(591)	—	—
U.S. transition tax and repatriation of foreign earnings	210	5	(42)
Foreign earnings not considered indefinitely reinvested	5	3	39
Re-measurement of deferred taxes on foreign earnings not considered indefinitely reinvested	(304)	—	—
Change in unrecognized tax benefits	86	23	1
U.S. research credits	(10)	(7)	(5)
Share-based compensation	(1)	7	5
Goodwill impairment	99	—	—
Malaysia tax assessment	—	68	—
Other, net	(2)	(3)	(6)
Provision (benefit) for income taxes	\$ (576)	\$ 77	\$ 31
Effective tax rate	140%	43%	8%

We benefit from tax incentives in several jurisdictions, most significantly in Singapore, that have granted us tax incentives that 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 or specific types of income in those jurisdictions. The Singapore tax incentive is due for renewal in fiscal 2024. The impact of the tax incentives decreased income taxes by \$567 million, \$49 million and \$34 million in 2018, 2017, and 2016, respectively. The benefit of the tax incentives on net income per share (diluted) was approximately \$2.97, \$0.27 and \$0.20 in 2018, 2017 and 2016, respectively. The increase in the benefit from 2017 to 2018 is primarily due to our Singapore restructuring and tax incentive modifications completed in 2018 in response to Singapore tax law changes. Of the \$2.97 benefit of the tax incentives on net income per share (diluted) in 2018, \$2.75 of the benefit relates to one-time items from the Singapore restructuring. The increase in the benefit from the tax incentive from 2016 to 2017 is primarily due to an increase in pre-tax book income earned in Singapore.

For 2018, the effective tax rate was 140 percent, which is higher than the U.S. statutory rate primarily due to the impact of U.S. tax law changes, the Singapore restructuring and tax incentive modifications completed in 2018 in response to Singapore tax law changes, and the tax impact of goodwill impairment. The impact of the Singapore restructuring includes tax benefits associated with intra-entity asset transfers that were recognized in accordance with ASU 2016-16, *Intra-Entity Transfers of Assets Other Than Inventory*, which we elected to early adopt effective November 1, 2016.

For 2017, the effective tax rate was 43 percent, which is higher than the U.S. statutory rate primarily due to the payment of a prior year Malaysia tax assessment of \$68 million, including tax and penalties, which we are currently in the process of appealing to the Special Commissioners of Income Tax (“SCIT”) in Malaysia.

For 2016, the effective tax rate was 8 percent, which is lower than the U.S. statutory rate primarily due to a higher percentage of earnings in the non-U.S. jurisdictions taxed at lower statutory tax rates. Also, the tax rate was lower than the U.S. statutory rate due to the net tax benefit of \$45 million resulting from the repatriation of earnings from Japan, which includes a U.S. tax expense of \$27 million offset by \$72 million of foreign tax credits recorded in connection with the repatriation.

The breakdown between current and long-term income tax assets and liabilities, excluding deferred tax assets and liabilities, was as follows for the years 2018 and 2017:

	October 31,	
	2018	2017
	(in millions)	
Current income tax assets (included within other current assets)	\$ 32	\$ 40
Current income tax liabilities (included within income and other taxes payable)	(18)	(7)
Long-term income tax assets (included within other assets)	—	—
Long-term income tax liabilities (included within other long-term liabilities)	(205)	(39)
Total	<u>\$ (191)</u>	<u>\$ (6)</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. 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.

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

	2018	2017	2016
	(in millions)		
Balance, beginning of year	\$ 146	\$ 51	\$ 50
Additions due to acquisition	—	22	—
Additions for tax positions related to the current year	93	31	5
Additions for tax positions from prior years	2	52	1
Reductions for tax positions from prior years	(1)	(9)	(4)
Settlements with taxing authorities	(12)	—	—
Statute of limitations expirations	(1)	(1)	(1)
Balance, end of year	<u>\$ 227</u>	<u>\$ 146</u>	<u>\$ 51</u>

As of October 31, 2018, we had \$249 million of unrecognized tax benefits, including interest and penalties that, if recognized, would affect our effective tax rate. However, approximately \$1 million of the unrecognized tax benefits were related to state income tax positions that, if recognized, would be in the form of a deferred tax asset that would likely not affect our effective tax rate due to a valuation allowance.

We recognized tax expense of \$2 million, \$18 million, and \$1 million of interest and penalties related to unrecognized tax benefits in 2018, 2017 and 2016, respectively. Cumulatively, interest and penalties accrued as of the end of October 31, 2018, 2017 and 2016 were \$22 million, \$20 million and \$2 million, respectively. The increase in interest and penalties from October 31, 2016 to October 31, 2017 is primarily due to \$18 million of penalties paid for the Malaysia tax assessment relating to the 2008 tax year.

The open tax years for the IRS and most states are from November 1, 2014 through the current tax year. For the majority of our foreign entities, the open tax years are from August 1, 2014 through the current tax year. For certain foreign entities, the tax years

remain open, at most, back to the year 2007. 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.

The company is being audited in Malaysia for the 2008 tax year. Although this tax year pre-dates our spin-off from Agilent, 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 2017, Keysight paid income taxes and penalties of \$68 million on gains related to intellectual property rights, although we are currently in the process of appealing to the Special Commissioners of Income Tax ("SCIT") in Malaysia. The company believes there are numerous defenses to the current assessment; the statute of limitations for the 2008 tax year in Malaysia is 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.

## 6. NET INCOME PER SHARE

The following is a reconciliation of the numerator and denominator of the basic and diluted net income per share computations.

	Year Ended October 31,		
	2018	2017	2016
	(in millions)		
Numerator:			
Net income	\$ 165	\$ 102	\$ 335
Denominator:			
Basic weighted-average shares	187	180	170
Potential common shares— stock options and other employee stock plans	4	2	2
Diluted weighted-average shares	191	182	172

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 restricted stock units. 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. The increase in diluted weighted average shares for the years ended October 31, 2018 and October 31, 2017 includes 5 million and 8 million shares, respectively, attributed to the weighted impact of 13 million shares of common stock issued in March 2017.

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 year ended 2018, 2017 and 2016, we excluded zero shares, zero shares and 1.7 million shares, respectively, 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 and restricted stock awards, whose combined exercise price, unamortized fair value and excess tax benefits collectively were greater than the average market price of our common stock because their effect would also be anti-dilutive. For the years ended October 31, 2018, 2017 and 2016, we excluded 2,803 shares, 7,760 shares and 26,200 shares, respectively, from the calculation of diluted earnings per share.

## 7. SUPPLEMENTAL CASH FLOW INFORMATION

Net cash paid for income taxes was \$27 million in 2018, \$121 million in 2017 and \$23 million in 2016. The 2017 payments include \$68 million paid to the Malaysia tax authority associated with a tax assessment on gains related to intellectual property transfers that we are currently in the process of appealing to the Special Commissioners of Income Tax in Malaysia.

Cash paid for interest was \$79 million in 2018, \$64 million in 2017 and \$44 million in 2016. In 2017, we also paid fees of \$9 million in connection with a bridge loan facility that were amortized to interest expense and classified as a financing activity in our consolidated statement of cash flows.

The following table summarizes our non-cash investing activities that are not reflected in the consolidated statement of cash flows:

	Year Ended October 31,		
	2018	2017	2016
	(in millions)		
<b>Non-cash investing activities:</b>			
Increase (decrease) in unpaid capital expenditures	\$ 10	\$ (4)	\$ (11)
Increase in capital lease liabilities	—	4	1
	<u>\$ 10</u>	<u>\$ —</u>	<u>\$ (10)</u>

## 8. INVENTORY

	October 31,	
	2018	2017
	(in millions)	
Finished goods	\$ 283	\$ 286
Purchased parts and fabricated assemblies	336	302
Total inventory	<u>\$ 619</u>	<u>\$ 588</u>

Inventory-related excess and obsolescence charges recorded in total cost of products were \$25 million in 2018, \$16 million in 2017 and \$17 million in 2016. In 2018, excess and obsolete inventory-related charges includes \$7 million due to divestiture-related activity. We record excess and obsolete inventory charges for inventory at our sites as well as inventory at our contract manufacturers and suppliers, where we have non-cancellable purchase commitments.

## 9. PROPERTY, PLANT AND EQUIPMENT, NET

	October 31,	
	2018	2017
	(in millions)	
Land	\$ 63	\$ 63
Buildings and leasehold improvements	695	678
Machinery and equipment	1,074	1,008
Total property, plant and equipment	1,832	1,749
Accumulated depreciation and amortization	(1,277)	(1,219)
Property, plant and equipment, net	<u>\$ 555</u>	<u>\$ 530</u>

Asset impairments were zero in 2018, 2017 and 2016. Depreciation expense was \$103 million in 2018, \$92 million in 2017 and \$85 million in 2016. Buildings and leasehold improvements include assets held under capital lease of \$4 million and \$4 million at October 31, 2018 and 2017, respectively.

In 2014 we entered into a binding contract to sell land in the United Kingdom that resulted in the transfers of three separate land tracts from 2014 through 2017 totaling approximately \$34 million. In 2017 and 2016, we recognized gains of \$8 million and \$10 million, respectively, on the sale of the land tracts in other operating expense (income).

## 10. GOODWILL AND OTHER INTANGIBLE ASSETS

The goodwill balances as of October 31, 2018, 2017 and 2016 and the movements in 2018 and 2017 for each of our reportable segments were as follows:

	Communications Solutions Group	Electronic Industrial Solutions Group	Ixia Solutions Group	Services Solutions Group	Total
	(in millions)				
<b>Goodwill at October 31, 2016</b>	\$ 456	\$ 216	\$ —	\$ 64	\$ 736
Foreign currency translation impact	(15)	1	—	1	(13)
Goodwill arising from acquisitions	—	23	1,117	19	1,159
<b>Goodwill at October 31, 2017</b>	441	240	1,117	84	1,882
Foreign currency translation impact	(2)	(2)	(1)	—	(5)
Goodwill arising from acquisitions	—	—	—	6	6
Impairment losses	—	—	(709)	—	(709)
Divestitures	(2)	(1)	—	—	(3)
<b>Balance at October 31, 2018</b>	<u>\$ 437</u>	<u>\$ 237</u>	<u>\$ 407</u>	<u>\$ 90</u>	<u>\$ 1,171</u>
Goodwill	\$ 437	\$ 237	\$ 1,116	\$ 90	\$ 1,880
Accumulated impairment losses	—	—	(709)	—	(709)
<b>Balance at October 31, 2018</b>	<u>\$ 437</u>	<u>\$ 237</u>	<u>\$ 407</u>	<u>\$ 90</u>	<u>\$ 1,171</u>

Other intangible assets as of October 31, 2018 and 2017 consisted of the following:

	Other Intangible Assets as of October 31, 2018			Other Intangible Assets as of October 31, 2017		
	Gross Carrying Amount	Accumulated Amortization and Impairments	Net Book Value	Gross Carrying Amount	Accumulated Amortization and Impairments	Net Book Value
	(in millions)					
Developed technology	\$ 835	\$ 415	\$ 420	\$ 808	\$ 252	\$ 556
Backlog	13	13	—	13	12	1
Trademark/Tradename	33	14	19	33	8	25
Customer relationships	304	100	204	304	61	243
Non-compete agreements	1	—	1	1	—	1
Total amortizable intangible assets	1,186	542	644	1,159	333	826
In-Process R&D	1	—	1	29	—	29
Total	<u>\$ 1,187</u>	<u>\$ 542</u>	<u>\$ 645</u>	<u>\$ 1,188</u>	<u>\$ 333</u>	<u>\$ 855</u>

In 2018, we recorded additions to goodwill of \$6 million due to an acquisition and a \$3 million reduction due to divestiture-related activity. There was \$1 million foreign exchange translation impact to other intangible assets in 2018. In 2018, we transferred \$23 million from in-process R&D to developed technology as projects were successfully completed and recorded an impairment charge of \$5 million related to the cancellation of an in-process R&D project.

In 2017, we recorded additions to goodwill and other intangible assets of \$1,159 million and \$785 million, respectively, due to the acquisition of Ixia and other acquisitions. There was no foreign exchange translation impact to other intangible assets in 2017. In 2017, we transferred \$43 million from in-process R&D to developed technology as projects were successfully completed and recorded an impairment charge of \$7 million related to the cancellation of an in-process R&D project.

Amortization of other intangible assets was \$204 million in 2018, \$131 million in 2017, and \$43 million in 2016. Future amortization expense related to existing finite-lived purchased intangible assets is estimated to be \$203 million in 2019, \$196 million in 2020, \$128 million in 2021, \$52 million in 2022, \$44 million in 2023, and \$21 million thereafter.

We test goodwill for impairment annually in the fourth quarter of each year, after the annual update to our long-term financial forecasts during our strategic planning cycle, using data as of September 30 of that year. 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. 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 2018, we performed our annual impairment test of goodwill for all our reporting units using a qualitative approach, except for our Ixia Solutions Group ("ISG") reporting unit, for which the test was performed using a quantitative approach since their revenue and earnings have not been consistent with originally projected results, thus requiring a reduction of our long-term financial forecasts included in our revised strategic plan. The income and market approaches were used to determine the fair value of the ISG reporting unit. With respect to the income approach, the discounted cash flow method was used, which included an eight year future cash flow projection and an estimated terminal value. The market approach used revenue and EBITDA multiples to develop an estimate of fair value. A weighting of 60 percent and 40 percent was applied to the income and market approaches, respectively, to determine the fair value of the ISG reporting unit. The income approach was applied a larger weighting based on the underlying detailed financial projections prepared during the strategic planning cycle which reflect the financial and operational facts and circumstances specific to ISG as of the valuation date. Based on the results of our testing, the fair value of our ISG reporting unit did not exceed the carrying value. The primary factors contributing to a reduction in fair value of ISG were weaker-than-expected market growth rates since acquisition and significant integration efforts in the current year resulting in lower revenue and profitability trends included in our long-term financial forecasts. As a result, we recorded an impairment loss of \$709 million for ISG.

As of October 31, 2018, we believe that no other goodwill impairment exists based on the qualitative approach, apart from the impairment charge discussed above, and that the remaining goodwill is recoverable for all of our reporting units; however, there can be no assurance that additional 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 reasonably possible that the judgments and estimates described above could change in future periods.

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. As a result of our revised strategic plan, we performed an impairment test of ISG's intangible assets and concluded that no impairment charge was required.

## 11. INVESTMENTS

Net book value of investments as of October 31, 2018 and 2017 were as follows:

	October 31,	
	2018	2017
	(in millions)	
<b>Long-Term</b>		
Cost method investments	\$ 16	\$ 16
Trading securities	13	13
Available-for-sale investments	17	34
Total	<u>\$ 46</u>	<u>\$ 63</u>

Cost method investments consist of non-marketable equity securities and are accounted for at historical cost. Trading securities are reported at fair value, with gains or losses resulting from changes in fair value recognized currently in earnings. Investments designated as available-for-sale consists of equity securities and are reported at fair value, with unrealized gains and losses, net of tax, included in accumulated other comprehensive income (loss).

Investments in available-for-sale securities at estimated fair value were as follows:

	October 31, 2018				October 31, 2017			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
	(in millions)							
<b>Long-Term</b>								
Equity securities	\$ 15	\$ 2	\$ —	\$ 17	\$ 15	\$ 19	\$ —	\$ 34

All of our investments, excluding trading securities, are subject to periodic impairment review. The impairment analysis requires significant judgment to identify events or circumstances that would likely have a significant adverse effect on the future value of the investment. We consider various factors in determining whether an impairment is other-than-temporary, including the severity and duration of the impairment, forecasted recovery, the financial condition and near-term prospects of the investee, and our ability and intent to hold the investment for a period of time sufficient to allow for any anticipated recovery in market value. There was no impairment recognized in the years ended 2018 and 2017. In 2016, cost method investments with a carrying amount of \$2 million were written down to their fair value of zero, resulting in an impairment charge of \$2 million, which is included in other income (expense).

Realized gains or losses on the sale of available-for-sale or cost method securities were zero in 2018, 2017 and 2016. Net unrealized gains on our trading securities portfolio was zero in 2018, \$2 million in 2017 and zero in 2016.

## 12. 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, 2018 and 2017 were as follows:

	Fair Value Measurements as of October 31, 2018				Fair Value Measurements as of October 31, 2017			
	Total	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3
(in millions)								
<b>Assets:</b>								
<i>Short-term</i>								
Cash equivalents								
Money market funds	\$ 484	\$ 484	\$ —	\$ —	\$ 403	\$ 403	\$ —	\$ —
Derivative instruments (foreign exchange contracts)	6	—	6	—	6	—	6	—
<i>Long-term</i>								
Trading securities	13	13	—	—	13	13	—	—
Available-for-sale investments	17	17	—	—	34	34	—	—
Total assets measured at fair value	<u>\$ 520</u>	<u>\$ 514</u>	<u>\$ 6</u>	<u>\$ —</u>	<u>\$ 456</u>	<u>\$ 450</u>	<u>\$ 6</u>	<u>\$ —</u>
<b>Liabilities:</b>								
<i>Short-term</i>								
Derivative instruments (foreign exchange contracts)	\$ 6	\$ —	\$ 6	\$ —	\$ 1	\$ —	\$ 1	\$ —
<i>Long-term</i>								
Deferred compensation liability	13	—	13	—	13	—	13	—
Total liabilities measured at fair value	<u>\$ 19</u>	<u>\$ —</u>	<u>\$ 19</u>	<u>\$ —</u>	<u>\$ 14</u>	<u>\$ —</u>	<u>\$ 14</u>	<u>\$ —</u>

Our money market funds, trading securities, and available-for-sale investments are generally valued using quoted market prices and therefore are classified within Level 1 of the fair value hierarchy. 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.

Trading securities (which are earmarked to pay the deferred compensation liability) and deferred compensation liability are reported at fair value, with gains or losses resulting from changes in fair value recognized currently in earnings. Investments designated as available-for-sale and certain derivative instruments are reported at fair value, with unrealized gains and losses, net of tax, included in accumulated other comprehensive income (loss). Realized gains and losses from the sale of these instruments are recorded in earnings.

### ***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 for our Ixia Solutions Group reporting unit. Refer to Note 10, "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. We considered 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.

### 13. DERIVATIVES

We are exposed to foreign currency exchange rate fluctuations and interest rate changes in the normal course of our business. As part of risk management strategy, we use derivative instruments, primarily forward contracts and purchased options 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 between one and 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 effective portion of the derivative instrument are recognized in accumulated other comprehensive income. Amounts associated with cash flow hedges are reclassified to cost of sales in the consolidated statement of operations when the forecasted transaction occurs. 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 to other income (expense) in the current period. Changes in the fair value of the ineffective portion of derivative instruments are recognized in earnings in the consolidated statement of operations in the current period. We record the premium paid (time value) of an option on the date of purchase as an asset. For options designated as cash flow hedges, changes in the time value are excluded from the assessment of hedge effectiveness and are recognized in other income (expense) over the life of the option contract. The ineffectiveness for the years ended October 31, 2018, 2017 and 2016 was not significant.

#### *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) 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.

A number of our derivative agreements contain threshold limits to the net liability position with counterparties and are dependent on our corporate credit rating determined by the major credit rating agencies. The counterparties to the derivative instruments may request collateralization, in accordance with derivative agreements, on derivative instruments in net liability positions.

The aggregate fair value of all derivative instruments with credit-risk-related contingent features that were in a net liability position as of October 31, 2018 was \$4 million. The credit-risk-related contingent features underlying these agreements had not been triggered as of October 31, 2018.

There were 159 foreign exchange forward contracts open as of October 31, 2018 and designated as cash flow hedges. There were 63 foreign exchange forward contracts and zero foreign exchange option contract open as of October 31, 2018 not designated as hedging instruments. The aggregated notional amounts by currency and designation as of October 31, 2018 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	\$	14	\$	95
British Pound		—		(28)
Singapore Dollar		15		1
Malaysian Ringgit		79		1
Japanese Yen		(86)		(1)
Other currencies		3		6
	\$	25	\$	74

Derivative instruments are subject to master netting arrangements and are disclosed gross in the consolidated balance sheet. The gross fair values and balance sheet presentation of derivative instruments held as of October 31, 2018 and 2017 were as follows:

Fair Values of Derivative Instruments									
Asset Derivatives			Liability Derivatives						
Balance Sheet Location	Fair Value		Balance Sheet Location	Fair Value					
	October 31, 2018	October 31, 2017		October 31, 2018	October 31, 2017				
		(in millions)							
Derivatives designated as hedging instruments:									
Cash flow hedges									
Foreign exchange contracts									
Other current assets	\$	5	\$	5	Other accrued liabilities	\$	4	\$	—
Derivatives not designated as hedging instruments:									
Foreign exchange contracts									
Other current assets		1		1	Other accrued liabilities		2		1
Total derivatives	\$	6	\$	6		\$	6	\$	1

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:

	2018	2017	2016
	(in millions)		
<b>Derivatives designated as hedging instruments:</b>			
<i>Cash flow hedges</i>			
Foreign exchange contracts:			
Gain (loss) recognized in accumulated other comprehensive income	\$ —	\$ 6	\$ (7)
Gain (loss) reclassified from accumulated other comprehensive income into cost of products	\$ 4	\$ (1)	\$ (12)
<b>Derivatives not designated as hedging instruments:</b>			
Gain (loss) recognized in other income (expense), net	\$ 4	\$ 6	\$ (10)

The estimated amount of net gain at October 31, 2018 expected to be reclassified from accumulated other comprehensive income to cost of products within the next twelve months is zero.

#### 14. 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 which 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.

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."

As of October 31, 2018, the fair value of plan assets of the DPSP for U.S. employees was \$268 million. The obligation for the DPSP eligible employees equals the fair value of the DPSP assets due to the benefit payable under the RP being the greater of the RP and DPSP.

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.

*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. Under the 401(k) Plan, we provide matching contributions to employees up to a maximum of 4 percent of an employee's annual eligible compensation. The maximum contribution to the 401(k) Plan is 50 percent of an employee's annual eligible compensation, subject to regulatory limitations. Employees hired on or after August 1, 2015 are not eligible to participate in the RP or the U.S. Post-Retirement Benefit Plan. We provide matching contributions to these employees under the 401(k) Plan up to a maximum of 6 percent of the employee's annual eligible compensation. The 401(k) Plan employer expense included in income from operations was \$23 million in 2018, \$16 million in 2017 and \$14 million in 2016.

*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 Keysight Technologies, Inc. Health Plan for Retirees ("U.S. Post-Retirement Benefit Plan"). Eligible retirees who were less than age 50 as of January 1, 2005 and who retire after age 55 with 15 or more years of service (age 54 with 14 or more years of service for workforce managed terminations) are eligible for a fixed amount that can be utilized to pay for premiums under a Keysight sponsored pre-Medicare medical plan, non-Keysight sponsored medical, dental and vision plans purchased in the individual insurance market, as well as Medicare Part A, Medicare Part B, prescription drug premiums, and eligible premiums paid for coverage under another employer's retiree medical, retiree vision and retiree dental plan provided such premiums were not paid on a pre-tax basis. Eligible retirees who were at least age 50 as of January 1, 2005 and who retire after age 55 with 15 or more years of service (age 54 with 14 or more years of service for workforce managed terminations) currently choose from managed-care or indemnity options, with the company subsidization level or stipend dependent on a number of factors, including eligibility and length of service. Grandfathered retirees receive a

fixed monthly subsidy toward pre-65 premium costs (subsidy capped at 2011 levels) and a fixed monthly stipend post-65. The subsidy amounts will not increase.

*Components of net periodic benefit cost.* 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.

On October 26, 2018, the High Court of Justice in the United Kingdom (the "High Court") ruled that Lloyds Bank plc was required to equalize benefits payable to men and women under its U.K. defined benefit pension plans by amending those plans to increase the pension benefits payable to participants that accrued such benefits during the period from 1990 to 1997. The inequalities arose from statutory differences in the retirement ages and rates of accrual of benefits for men and women related to Guaranteed Minimum Pension ("GMP") benefits that are included in U.K. defined benefit pension plans. We are evaluating the applicability of the High Court's ruling to our U.K. defined benefit pension plans. As of October 31, 2018, no amounts have been recorded as specifics related to these calculations have been deferred to future hearings. Our estimate of the potential impact is less than 1 percent of the projected benefit obligation and is not material to our financial statements.

On December 15, 2016, we transferred a portion of the assets and obligations of our Japanese Employees' Pension Fund ("EPF") to the Japanese government. The remaining portion of the EPF was transferred to a new Keysight Japan corporate defined benefit pension plan. The difference between the obligations settled with the government of \$142 million and the assets transferred to the government of \$51 million resulted in an increase in the funded status of the new defined benefit pension plan of \$91 million. The settlement resulted in a gain of \$68 million which is included in other operating expense (income) in the consolidated statement of operations. Previously accrued salary progression of \$4 million was derecognized at the time of settlement.

For the years ended October 31, 2018, 2017 and 2016, 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					
	2018	2017	2016	2018	2017	2016	2018	2017	2016
	(in millions)								
<b>Net periodic benefit cost (benefit)</b>									
Service cost — benefits earned during the period	\$ 24	\$ 22	\$ 21	\$ 14	\$ 18	\$ 19	\$ 1	\$ 1	\$ 1
Interest cost on benefit obligation	25	21	22	23	23	32	7	7	9
Expected return on plan assets	(37)	(33)	(37)	(85)	(74)	(74)	(13)	(11)	(14)
Amortization:									
Net actuarial loss	12	15	9	25	33	27	16	21	20
Prior service credit	(7)	(8)	(7)	(1)	(1)	(1)	(14)	(15)	(17)
Net periodic benefit cost (benefit)	17	17	8	(24)	(1)	3	(3)	3	(1)
Curtailments and settlements	—	—	—	1	(69)	—	—	—	—
Net periodic benefit cost (benefit)	<u>\$ 17</u>	<u>\$ 17</u>	<u>\$ 8</u>	<u>\$ (23)</u>	<u>\$ (70)</u>	<u>\$ 3</u>	<u>\$ (3)</u>	<u>\$ 3</u>	<u>\$ (1)</u>
<b>Other changes in plan assets and benefit obligations recognized in other comprehensive (income) loss</b>									
Net actuarial loss (gain)	\$ (11)	\$ 4	\$ 60	\$ 41	\$ (145)	\$ 188	\$ (1)	\$ (16)	\$ 5
Amortization:									
Net actuarial loss	(12)	(15)	(9)	(25)	(33)	(27)	(16)	(21)	(20)
Prior service credit	7	8	7	1	1	1	14	15	17
Settlement	—	—	—	(1)	(24)	—	—	—	—
Curtailment	—	—	—	—	1	—	—	—	—
Foreign currency	—	—	—	(5)	1	(5)	—	—	—
Total recognized in other comprehensive (income) loss	<u>\$ (16)</u>	<u>\$ (3)</u>	<u>\$ 58</u>	<u>\$ 11</u>	<u>\$ (199)</u>	<u>\$ 157</u>	<u>\$ (3)</u>	<u>\$ (22)</u>	<u>\$ 2</u>
Total recognized in net periodic benefit cost (benefit) and other comprehensive (income) loss	<u>\$ 1</u>	<u>\$ 14</u>	<u>\$ 66</u>	<u>\$ (12)</u>	<u>\$ (269)</u>	<u>\$ 160</u>	<u>\$ (6)</u>	<u>\$ (19)</u>	<u>\$ 1</u>

*Funded status.* As of October 31, 2018 and 2017, 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	
	2018	2017	2018	2017	2018	2017
	(in millions)					
Change in fair value of plan assets:						
Fair value — beginning of year	\$ 515	\$ 464	\$ 1,440	\$ 1,317	\$ 182	\$ 171
Actual return on plan assets	6	72	2	136	3	26
Employer contributions	85	—	33	34	—	—
Settlements	—	—	(6)	(51)	—	—
Benefits paid	(31)	(21)	(42)	(42)	(13)	(15)
Currency impact	—	—	(35)	46	—	—
Fair value — end of year	<u>\$ 575</u>	<u>\$ 515</u>	<u>\$ 1,392</u>	<u>\$ 1,440</u>	<u>\$ 172</u>	<u>\$ 182</u>
Change in benefit obligation:						
Benefit obligation — beginning of year	\$ 675	\$ 610	\$ 1,338	\$ 1,508	\$ 207	\$ 214
Service cost	24	22	14	18	1	1
Interest cost	25	21	23	23	7	7
Settlements	—	—	(6)	(142)	—	—
Curtailements	—	—	—	(12)	—	—
Actuarial loss (gain)	(43)	43	(43)	(69)	(12)	—
Benefits paid	(31)	(21)	(42)	(42)	(13)	(15)
Currency impact	—	—	(35)	54	—	—
Benefit obligation — end of year	<u>\$ 650</u>	<u>\$ 675</u>	<u>\$ 1,249</u>	<u>\$ 1,338</u>	<u>\$ 190</u>	<u>\$ 207</u>
Overfunded (Underfunded) status of PBO	<u>\$ (75)</u>	<u>\$ (160)</u>	<u>\$ 143</u>	<u>\$ 102</u>	<u>\$ (18)</u>	<u>\$ (25)</u>
Amounts recognized in the consolidated balance sheet consist of:						
Other assets	\$ —	\$ —	\$ 257	\$ 211	\$ —	\$ —
Employee compensation and benefits	(1)	(1)	—	—	—	—
Retirement and post-retirement benefits	(74)	(159)	(114)	(109)	(18)	(25)
Net asset (liability) <sup>(a)</sup>	<u>\$ (75)</u>	<u>\$ (160)</u>	<u>\$ 143</u>	<u>\$ 102</u>	<u>\$ (18)</u>	<u>\$ (25)</u>
Amounts recognized in accumulated other comprehensive income (loss):						
Actuarial losses	\$ 112	\$ 135	\$ 396	\$ 385	\$ 28	\$ 45
Prior service credits	(4)	(11)	(1)	(1)	(28)	(42)
Total	<u>\$ 108</u>	<u>\$ 124</u>	<u>\$ 395</u>	<u>\$ 384</u>	<u>\$ —</u>	<u>\$ 3</u>

<sup>(a)</sup> *Certain of our immaterial defined benefit plans are not included in these disclosures.*

The amounts in accumulated other comprehensive income expected to be amortized into net periodic benefit cost (benefit) during 2019 are as follows:

	U.S. Defined Benefit Plans	Non-U.S. Defined Benefit Plans	U.S. Post-Retirement Benefit Plan
	(in millions)		
Amortization of net prior service credit	\$ (4)	\$ (1)	\$ (14)
Amortization of actuarial net loss	\$ 10	\$ 28	\$ 9

*Investment policies and strategies as of October 31, 2018.* In the U.S., our RP and U.S. Post-Retirement Benefit Plan target asset allocations are approximately 70 percent to equities 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 assumption of a reasonable 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 20 to 60 percent to equities, from 40 to 80 percent to fixed income investments, from zero to 20 percent to real estate investments and from zero to 14 percent to cash, depending on the plan. All plans' assets are broadly diversified. Due to fluctuations in capital markets, our actual allocations of plan assets as of October 31, 2018, 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.

*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 12, "Fair Value Measurements."

Cash and Cash Equivalents - Cash and cash equivalents consist of short-term investment funds. The funds also invest 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 classified as Level 1 investments except when the cash and cash equivalents are held in commingled funds, which have a daily net asset value ("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 measure at NAV. Commingled funds which have quoted prices in active markets are classified as Level 1 investments.

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

Other Investments - Other investments include property-based pooled vehicles which invest in real estate. Market NAVs are regularly published in the financial press or on corporate websites; therefore, these investments are classified as Level 3 investments or assets measured at NAV.

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, 2018 and 2017:

	October 31, 2018	Fair Value Measurement as of October 31, 2018 Using			
		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
		(in millions)			
Cash and cash equivalents	\$ 4	\$ —	\$ 4	\$ —	\$ —
Equity	392	120	1	—	271
Fixed income	179	14	94	—	71
Other investments	—	—	—	—	—
Total assets measured at fair value	\$ 575	\$ 134	\$ 99	\$ —	\$ 342

	Fair Value Measurement as of October 31, 2017 Using				
	October 31, 2017	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
			(in millions)		
Cash and cash equivalents	\$ 5	\$ —	\$ 5	\$ —	\$ —
Equity	371	114	1	—	256
Fixed income	139	16	75	—	48
Other investments	—	—	—	—	—
Total assets measured at fair value	<u>\$ 515</u>	<u>\$ 130</u>	<u>\$ 81</u>	<u>\$ —</u>	<u>\$ 304</u>

For U.S. Defined Benefit Plans, there was no activity relating to assets measured at fair value using significant unobservable inputs (Level 3) during 2018 and 2017.

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, 2018 and 2017:

	Fair Value Measurement as of October 31, 2018 Using				
	October 31, 2018	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
			(in millions)		
Cash and cash equivalents	\$ 1	\$ —	\$ 1	\$ —	\$ —
Equity	120	37	—	—	83
Fixed income	51	4	27	—	20
Other investments	—	—	—	—	—
Total assets measured at fair value	<u>\$ 172</u>	<u>\$ 41</u>	<u>\$ 28</u>	<u>\$ —</u>	<u>\$ 103</u>

	Fair Value Measurement as of October 31, 2017 Using				
	October 31, 2017	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
			(in millions)		
Cash and cash equivalents	\$ 3	\$ 1	\$ 2	\$ —	\$ —
Equity	132	41	—	—	91
Fixed income	47	5	25	—	17
Other investments	—	—	—	—	—
Total assets measured at fair value	<u>\$ 182</u>	<u>\$ 47</u>	<u>\$ 27</u>	<u>\$ —</u>	<u>\$ 108</u>

For U.S. Post-Retirement Benefit Plan, there was no activity relating to assets measured at fair value using significant unobservable inputs (Level 3) during 2018 and 2017.

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, 2018 and 2017:

Fair Value Measurement as of October 31, 2018 Using				
October 31, 2018	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
(in millions)				
Cash and cash equivalents	\$ —	\$ —	\$ —	\$ —
Equity	791	135	—	656
Fixed income	595	—	208	387
Other investments	6	—	3	3
Total assets measured at fair value	\$ 1,392	\$ 135	\$ 3	\$ 1,046

Fair Value Measurement as of October 31, 2017 Using				
October 31, 2017	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
(in millions)				
Cash and cash equivalents	\$ —	\$ —	\$ —	\$ —
Equity	757	156	—	599
Fixed income	677	—	200	477
Other investments	6	—	3	3
Total assets measured at fair value	\$ 1,440	\$ 156	\$ 3	\$ 1,079

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 2018 and 2017:

		Year Ended October 31,	
		2018	2017
		(in millions)	
Balance, beginning of year		\$ 3	\$ 3
Realized gains		—	—
Unrealized gains/(losses)		—	—
Purchases, sales, issuances, and settlements		—	—
Transfers in (out)		—	—
Balance, end of year		\$ 3	\$ 3

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, 2018 and 2017:

	2018		2017	
	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	\$ 650	\$ 575	\$ 675	\$ 515
U.S. defined benefit plans where fair value of plan assets exceeds PBO	—	—	—	—
Total	\$ 650	\$ 575	\$ 675	\$ 515
Non-U.S. defined benefit plans where PBO exceeds or is equal to the fair value of plan assets	\$ 363	\$ 249	\$ 378	\$ 269
Non-U.S. defined benefit plans where fair value of plan assets exceeds PBO	886	1,143	960	1,171
Total	\$ 1,249	\$ 1,392	\$ 1,338	\$ 1,440
	ABO		ABO	
U.S. defined benefit plans where ABO exceeds the fair value of plan assets	\$ 609	\$ 575	\$ 629	\$ 515
U.S. defined benefit plans where the fair value of plan assets exceeds ABO	—	—	—	—
Total	\$ 609	\$ 575	\$ 629	\$ 515
Non-U.S. defined benefit plans where ABO exceeds or is equal to the fair value of plan assets	\$ 351	\$ 249	\$ 364	\$ 269
Non-U.S. defined benefit plans where fair value of plan assets exceeds ABO	879	1,143	952	1,171
Total	\$ 1,230	\$ 1,392	\$ 1,316	\$ 1,440

*Contributions and estimated future benefit payments.* In 2018, we made an accelerated contribution of \$85 million to our U.S. Defined Benefit Plans to secure tax deductibility at the current corporate rate prior to new tax legislation taking effect. During 2019, we do not expect to contribute to the U.S. Defined Benefit Plans or the U.S. Post-Retirement Benefit Plan, and we expect to contribute \$33 million to the 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)		
2019 \$	39	\$ 32	\$ 18
2020 \$	41	\$ 36	\$ 18
2021 \$	46	\$ 39	\$ 17
2022 \$	48	\$ 41	\$ 16
2023 \$	52	\$ 44	\$ 16
2024 - 2028	\$ 275	\$ 238	\$ 71

*Assumptions.* The assumptions used to determine the benefit obligations and expense 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, 2018 and 2017 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, 2018 and 2017 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. 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) for the year ended October 31, 2018 and 2017 were as follows:

	For years ended October 31,	
	2018	2017
<b>U.S. Defined Benefit Plans:</b>		
Discount rate	3.75%	3.50%
Average increase in compensation levels	3.00%	3.00%
Expected long-term return on assets	7.50%	7.50%
<b>Non-U.S. Defined Benefit Plans:</b>		
Discount rate	0.59-2.52%	0.40-2.63%
Average increase in compensation levels	2.50-3.25%	2.50-3.50%
Expected long-term return on assets	4.00-6.50%	4.00-6.50%
<b>U.S. Post-Retirement Benefits Plan:</b>		
Discount rate	3.50%	3.50%
Expected long-term return on assets	7.50%	7.50%
Current medical cost trend rate	6.00%	6.00%
Ultimate medical cost trend rate	3.50%	3.50%
Medical cost trend rate decreases to ultimate rate in year	2029	2029

Assumptions used to calculate the benefit obligation as of October 31, 2018 and 2017 were as follows:

	As of the years ended October 31,	
	2018	2017
<b>U.S. Defined Benefit Plans:</b>		
Discount rate	4.50%	3.75%
Average increase in compensation levels	3.00%	3.00%
<b>Non-U.S. Defined Benefit Plans:</b>		
Discount rate	0.83-2.83%	0.59-2.52%
Average increase in compensation levels	2.50-3.00%	2.50-3.25%
<b>U.S. Post-Retirement Benefits Plan:</b>		
Discount rate	4.25%	3.50%
Current medical cost trend rate	6.00%	6.00%
Ultimate medical cost trend rate	4.00%	3.50%
Medical cost trend rate decreases to ultimate rate in year	2029	2029

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, 2018 and 2017.

## 15. GUARANTEES

### *Standard Warranty*

Effective December 1, 2017, Keysight warranties on products sold through direct sales channels are primarily for one year. Warranties for products sold through distribution channels continue to be 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.

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,	
	2018	2017
	(in millions)	
Beginning balance	\$ 45	\$ 44
Accruals for warranties, including change in estimates	36	33
Settlements made during the period	(36)	(32)
Ending balance	45	45
Accruals for warranties due within one year	\$ 25	\$ 24
Accruals for warranties due after one year	20	21
Ending balance	\$ 45	\$ 45

### *Indemnifications to Agilent*

In connection with our separation from Agilent, we agreed to indemnify Agilent against certain damages and expenses that it might incur in the future. These indemnifications primarily cover damages relating to liabilities of the electronic measurement business of Agilent which was contributed to Keysight. Additionally, if the distribution of Keysight common stock to the Agilent shareholders were determined to be taxable for U.S. federal income tax purposes, Agilent and its shareholders that are subject to U.S. federal income tax could incur significant U.S. federal income tax liabilities. If such determination is the result of our taking or failing to take certain actions, then under the agreement between Agilent and Keysight pertaining to tax matters, as finalized at the time of separation, we are generally required to indemnify Agilent against such tax liabilities. Pursuant to the agreement pertaining to tax matters, we may also be required to indemnify Agilent for other contingent tax liabilities, which could materially adversely affect our financial position. In our opinion, the fair value of these indemnification obligations was not material as of October 31, 2018.

### *Indemnifications to Avago*

In connection with the sale of Agilent's semiconductor products business in December 2005, Agilent agreed to indemnify Avago, its affiliates and other related parties against certain damages and expenses that it might incur in the future. The continuing indemnifications primarily cover damages and expenses relating to liabilities of the businesses that Agilent retained and did not transfer to Avago, as well as pre-closing taxes and other specified items. In connection with our separation from Agilent, we have agreed to indemnify Agilent in connection with the indemnification obligations of Agilent with respect to Avago. In our opinion, the fair value of these indemnification obligations was not material as of October 31, 2018.

### *Indemnifications to Verigy*

In connection with the spin-off of Verigy, Agilent agreed to indemnify Verigy and its affiliates against certain damages which it might incur in the future. These indemnifications primarily cover damages relating to liabilities of the businesses that Agilent did not transfer to Verigy, liabilities that might arise under limited portions of Verigy's IPO materials that relate to Agilent, and costs and expenses incurred by Agilent or Verigy to effect the IPO, arising out of the distribution of Agilent's remaining holding in Verigy ordinary shares to Agilent's stockholders, or incurred to effect the separation of the semiconductor test solutions business from Agilent to the extent incurred prior to the separation on June 1, 2006. On July 4, 2011, Verigy announced the completion by Advantest Corporation of its acquisition of Verigy. Verigy operates as a wholly-owned subsidiary of Advantest and Agilent's indemnification obligations to Verigy should be unaffected. In connection with our separation from Agilent, we have agreed to

indemnify Agilent in connection with the indemnification obligations of Agilent with respect to Verigy. In our opinion, the fair value of these indemnification obligations was not material as of October 31, 2018.

#### ***Indemnifications to HP Inc.***

Agilent has given multiple indemnities to HP Inc. ("HP") in connection with Agilent's activities prior to its spin-off from HP for the businesses that constituted Agilent prior to the spin-off. These indemnifications cover a variety of aspects of Agilent's business, including, but not limited to, employee, tax, intellectual property and environmental matters. The agreements containing these indemnifications have been previously disclosed as exhibits to Agilent's registration statement on Form S-1 filed on August 16, 1999. As part of our separation from Agilent, we have agreed to assume these indemnification obligations of Agilent relating to the electronic measurement business with respect to HP. In our opinion, the fair value of these indemnification obligations was not material as of October 31, 2018.

#### ***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 which provide for indemnification of these directors and officers under similar circumstances and under additional circumstances. The indemnification obligations are more fully described in the by-laws and the indemnification agreements. 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. Historically, we have not made payments related to these obligations, and the fair value for these indemnification obligations was not material as of October 31, 2018.

#### ***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 the associated estimated fair value of the liability was not material as of October 31, 2018.

In connection with the previous sales of several of Agilent's businesses, Agilent agreed to indemnify the buyers of such businesses, their respective affiliates and other related parties against certain damages that they might incur in the future. The continuing indemnifications primarily cover damages relating to liabilities of the businesses that Agilent retained and did not transfer to the buyers, as well as other specified items. In connection with our separation from Agilent, we agreed to assume the indemnification obligations of Agilent to the extent that the retained businesses were part of the electronic measurement business. In our opinion, the fair value of these indemnification obligations was not material as of October 31, 2018.

## **16. COMMITMENTS AND CONTINGENCIES**

*Operating Lease Commitments.* We lease certain real and personal property from unrelated third parties under non-cancellable operating leases. Future minimum lease payments under operating leases as of October 31, 2018 were \$44 million in 2019, \$38 million in 2020, \$27 million in 2021, \$22 million in 2022, \$14 million in 2023 and \$46 million thereafter. Future minimum sublease income under leases as of October 31, 2018 was \$2 million in 2019, \$1 million in 2020, \$1 million in 2021, zero in 2022, zero in 2023 and none thereafter. Certain leases require us to pay property taxes, insurance and routine maintenance, and include escalation clauses. Total rent expense was \$60 million in 2018, \$51 million in 2017 and \$45 million in 2016.

*Capital Lease Commitments.* We had capital lease obligations of \$4 million as of October 31, 2018 and October 31, 2017. The current portion of the total obligation is included in other accrued liabilities and the remaining long-term portion is included in other long-term liabilities on the consolidated balance sheet. Future minimum lease payments, including financing charges, under capital leases as of October 31, 2018 were \$1 million in 2019, zero in 2020, \$1 million in 2021, zero in 2022, \$1 million in 2023

and \$2 million thereafter. Assets held under capital leases are included in net property, plant, and equipment on the consolidated balance sheet.

*Litigation and Contingencies.* We are involved in lawsuits, claims, investigations and proceedings, including, but not limited to, patent, commercial and environmental matters, which arise in the ordinary course of business. There are no matters pending that we currently believe are reasonably possible of having a material impact to our business, consolidated financial condition, results of operations or cash flows.

On July 20, 2017, Centripetal Networks, Inc. ("Centripetal") filed a complaint in the United States District Court for the Eastern District of Virginia, Centripetal Networks, Inc. v. Keysight Technologies, Inc. and Ixia, Case No. 17-cv-00383-HCM-LRL (E.D. Va), alleging the infringement of Centripetal patents related to certain of Ixia's products. Through July 31, 2018, we had accrued an immaterial amount, which represented a settlement offer made early in the litigation. At that time, we did not believe that a loss was probable or reasonably estimable, nor did we believe there was a reasonable possibility of a material loss. No settlement demands were made, nor were estimates of damages provided prior to court-ordered mediation.

Mediation was held in September 2018 but did not result in resolution of the case. On October 2, 2018, trial started before a jury. During the trial, the parties agreed to settle the case for a worldwide, royalty-bearing, non-transferable, irrevocable, non-terminable, non-exclusive license to Centripetal's worldwide patent portfolio that ends on December 31, 2021, as well as a monetary, one-time payment of \$25 million for past damages that was recognized in selling, general and administrative expense in the consolidated statement of operations. The complaint was dismissed on October 12, 2018. The payment for past damages was recognized and paid as of October 31, 2018.

## 17. DEBT

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

	October 31,	
	2018	2017
	(in millions)	
2019 Senior Notes at 3.30% (\$500 face amount less unamortized costs of \$1 and \$2)	\$ 499	\$ 498
2024 Senior Notes at 4.55% (\$600 face amount less unamortized costs of \$3 and \$4)	597	596
2027 Senior Notes at 4.60% (\$700 face amount less unamortized costs of \$6 and \$6)	694	694
Senior Unsecured Term loan	—	260
<b>Total Debt</b>	<b>1,790</b>	<b>2,048</b>
Less: Short-term and current portion of long-term debt	499	10
<b>Long-Term Debt</b>	<b>\$ 1,291</b>	<b>\$ 2,038</b>

### Short-Term Debt

#### *Revolving Credit Facility*

On February 15, 2017, we entered into an amended and restated credit agreement (the "Revolving Credit Facility") that replaced our existing \$450 million unsecured credit facility dated September 15, 2014. The Revolving Credit Facility provides for a \$450 million, five-year unsecured revolving credit facility that will expire on February 15, 2022 and bears interest at an annual rate of LIBOR + 1.30%. In addition, the Revolving Credit Facility permits us to increase the total commitments under this credit facility by up to \$150 million in the aggregate on one or more occasions upon request. We may use amounts borrowed under the facility for general corporate purposes. During the year ended October 31, 2018, we borrowed and repaid \$40 million of borrowings outstanding under the Revolving Credit Facility. As of October 31, 2018, 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, 2018.

#### *2019 Senior Notes*

In October 2014, the company issued an aggregate principal amount of \$500 million in unsecured senior notes ("2019 Senior Notes"). The 2019 Senior Notes were issued at 99.902 percent of their principal amount. The notes will mature on October 30, 2019, and bear interest at a fixed rate of 3.30 percent per annum. The interest is payable semi-annually on April 30 and October 30 of each year. We incurred issuance costs of \$4 million in connection with the 2019 Senior Notes that are being

amortized to interest expense over the term of the senior notes. The 2019 senior notes are repayable within one year and have been reclassified to short-term debt.

## **Long-Term Debt**

### *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 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 of \$1 million, are being amortized to interest expense over the term of the senior notes.

The above senior notes are unsecured and rank equally in right of payment with all of our other senior unsecured indebtedness.

### *Senior Unsecured Term Loan*

On February 15, 2017, we entered into a term credit agreement that provides for a three-year \$400 million senior unsecured term loan that bears interest at an annual rate of LIBOR + 1.50%. The term loan was drawn upon the closing of the Ixia acquisition. On February 27, 2018, we fully repaid borrowings outstanding under the term loan of \$260 million and terminated the credit agreement. We had previously repaid \$140 million of the term loan during the year ended October 31, 2017.

### *Letters of Credit*

As of October 31, 2018 and October 31, 2017, we had \$26 million and \$26 million, respectively, of outstanding letters of credit unrelated to the credit facility that were issued by various lenders.

## **18. STOCKHOLDERS' EQUITY**

### **Stock Repurchase Program**

On March 6, 2018, the Board of Directors approved a new stock repurchase program authorizing the purchase of up to \$350 million of the company's common stock, replacing a previously approved 2016 program authorizing the purchase of up to \$200 million of the company's common stock. Under the new 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 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.

For the year ended October 31, 2018, we repurchased 2,075,460 shares of common stock for \$120 million. For the year ended October 31, 2017, we did not repurchase any shares of common stock under the stock repurchase program. All such shares and related costs are held as treasury stock and accounted for at trade date using the cost method.

## Accumulated other comprehensive loss

The following table summarizes the components of our accumulated other comprehensive loss as of October 31, 2018 and 2017, net of tax effect:

	October 31,	
	2018	2017
	(in millions)	
Unrealized gain on equity securities, net of tax (expense) of \$(2) and \$(5)	\$ —	\$ 14
Foreign currency translation, net of tax (expense) of \$(63) and \$(63)	(60)	(39)
Unrealized losses on defined benefit plans, net of tax benefit of \$81 and \$82	(426)	(433)
Unrealized losses on derivative instruments, net of tax benefit (expense) of \$(1) and \$(2)	(2)	1
Total accumulated other comprehensive loss	<u>\$ (488)</u>	<u>\$ (457)</u>

Changes in accumulated other comprehensive income (loss) by component and related tax effects for the years ended October 31, 2018 and 2017 were as follows:

			Net defined benefit pension cost and post retirement plan costs:			
	Unrealized gain (loss) on equity securities	Foreign currency translation	Actuarial Losses	Prior service credits	Unrealized gains (losses) on derivatives	Total
	(in millions)					
At October 31, 2016	\$ 10	\$ (29)	\$ (646)	\$ 50	\$ (3)	\$ (618)
Other comprehensive income (loss) before reclassifications	5	(10)	177	—	6	178
Amounts reclassified out of accumulated other comprehensive income	—	—	69	(24)	1	46
Tax (expense) benefit	(1)	—	(68)	9	(3)	(63)
Other comprehensive income (loss) for the twelve months ended October 31, 2017	4	(10)	178	(15)	4	161
At October 31, 2017	14	(39)	(468)	35	1	(457)
Other comprehensive income (loss) before reclassifications	(17)	(21)	(23)	—	—	(61)
Amounts reclassified out of accumulated other comprehensive income	—	—	53	(22)	(4)	27
Tax (expense) benefit	3	—	(7)	6	1	3
Other comprehensive income (loss) for the twelve months ended October 31, 2018	(14)	(21)	23	(16)	(3)	(31)
At October 31, 2018	\$ —	\$ (60)	\$ (445)	\$ 19	\$ (2)	\$ (488)

Reclassifications out of accumulated other comprehensive loss for the years ended October 31, 2018 and 2017 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,		
	2018	2017	
	(in millions)		
Unrealized gain (loss) on derivatives	\$ 4	\$ (1)	Cost of products
	(1)	1	Provision for income tax
	3	—	Net of Income Tax
Net defined benefit pension cost and post retirement plan costs:			
Net actuarial loss	(53)	(69)	
Prior service credit	22	24	
	(31)	(45)	Total before income tax
	9	14	Provision for income tax
	(22)	(31)	Net of income tax
Total reclassifications for the period	\$ (19)	\$ (31)	

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

Reclassifications of prior service benefit and actuarial net loss in respect of retirement plans and post retirement pension plans are included in the computation of net periodic cost (see Note 14, "Retirement Plans and Post Retirement Pension Plans").

## 19. SEGMENT INFORMATION

We provide electronic design and test instruments and systems and related software, software design tools, and related services that are used in the design, development, manufacture, installation, deployment and operation of electronics equipment. Related services include start-up assistance, instrument productivity and application services and instrument calibration and repair. Additionally, we provide test, security and visibility solutions that validate, secure and optimize networks and applications from engineering concept to live deployment. We also offer customization, consulting and optimization services throughout the customer's product life cycle.

On April 18, 2017, we completed the acquisition of Ixia, which became a separate reportable operating segment, the Ixia Solutions Group. As a result, Keysight has four segments: Communications Solutions Group, Electronic Industrial Solutions Group, Ixia Solutions Group and Services Solutions Group.

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 four reportable segments are as follows:

The Communications Solutions Group serves customers spanning the worldwide commercial communications end market, which includes internet infrastructure, and the aerospace, defense and government end market. The group provides electronic design and test software, instruments, and systems used in the simulation, design, validation, manufacturing, installation and optimization of electronic equipment.

The Electronic Industrial Solutions Group provides test and measurement solutions across a broad set of electronic industrial end markets, focusing on high-growth applications in the automotive and energy industry and measurement solutions for semiconductor design and manufacturing, consumer electronics, education and general electronics manufacturing. The group provides electronic design and test software, instruments, and systems used in the simulation, design, validation, manufacturing, installation and optimization of electronic equipment.

The Ixia Solutions Group helps customers validate the performance and security resilience of their networks and associated applications. The test, visibility and security products help organizations and their customers strengthen their physical and virtual

networks. Enterprises, service providers, network equipment manufacturers, and governments worldwide rely on the group's solutions to validate new products before shipping and secure ongoing operation of their networks with better visibility and security. The group's product solutions consist of high-performance hardware platforms, software applications, and services, including warranty and maintenance offerings.

The Services Solutions Group provides repair, calibration and consulting services, and remarkets used Keysight equipment. In addition to providing repair and calibration support for Keysight equipment, we also calibrate non-Keysight equipment. The group serves the same markets as Keysight's Communications Solutions and Electronic Industrial Solutions Groups, providing industry-specific services to deliver complete Keysight solutions and help customers reduce their total cost of ownership for their design and test equipment.

A significant portion of the segments' expenses, other than the Ixia Solutions Group expenses, arise from shared services and infrastructure that we have historically provided to the segments in order to realize economies of scale and to efficiently optimize resources. These expenses, collectively called corporate charges, include costs of centralized research and development, legal, accounting, real estate, insurance services, information technology services, treasury and other corporate infrastructure expenses. Charges are allocated to the segments, and the allocations have been 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. The Ixia Solutions Group has not been allocated these shared services and infrastructure charges, with the exception of net periodic benefit costs, for the current fiscal year.

The following tables reflect the results of our reportable segments under our management reporting system. These results are not necessarily in conformity with 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, restructuring and related costs, amortization of acquisition-related balances, acquisition and integration costs, acquisition-related compensation expense, separation and related costs, pension curtailment and settlement loss (gains), northern California wildfire-related costs, goodwill impairment, legal settlement, gain on divestitures, interest income, interest expense and other items as noted in the reconciliations below.

	Communications Solutions Group	Electronic Industrial Solutions Group	Ixia Solutions Group	Services Solutions Group	Total Segments
	(in millions)				
<b>Year ended October 31, 2018:</b>					
Total net revenue	\$ 2,036	\$ 965	\$ 416	\$ 461	\$ 3,878
Amortization of acquisition-related balances	1	—	35	—	36
Total segment revenue	\$ 2,037	\$ 965	\$ 451	\$ 461	\$ 3,914
Segment income from operations	\$ 454	\$ 241	\$ 21	\$ 68	\$ 784
Depreciation expense	\$ 51	\$ 20	\$ 16	\$ 16	\$ 103
<b>Year ended October 31, 2017:</b>					
Total net revenue	\$ 1,737	\$ 836	\$ 197	\$ 419	\$ 3,189
Amortization of acquisition-related balances	1	—	59	—	60
Total segment revenue	\$ 1,738	\$ 836	\$ 256	\$ 419	\$ 3,249
Segment income from operations	\$ 311	\$ 199	\$ 42	\$ 68	\$ 620
Depreciation expense	\$ 52	\$ 20	\$ 7	\$ 13	\$ 92
<b>Year ended October 31, 2016:</b>					
Total net revenue	\$ 1,740	\$ 776	\$ —	\$ 402	\$ 2,918
Amortization of acquisition-related balances	12	—	—	—	12
Total segment revenue	\$ 1,752	\$ 776	\$ —	\$ 402	\$ 2,930
Segment income from operations	\$ 314	\$ 169	\$ —	\$ 63	\$ 546
Depreciation expense	\$ 53	\$ 20	\$ —	\$ 12	\$ 85

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

	Year Ended October 31,		
	2018	2017	2016
	(in millions)		
<b>Total reportable segments' income from operations</b>	\$ 784	\$ 620	\$ 546
Share-based compensation expense	(59)	(56)	(49)
Restructuring and related costs	(17)	(11)	—
Amortization of acquisition-related balances	(265)	(256)	(56)
Acquisition and integration costs	(49)	(57)	(18)
Acquisition-related compensation expense	—	(28)	—
Separation and related costs	(2)	(20)	(24)
Pension curtailment and settlement loss (gain)	(1)	69	—
Northern California wildfire-related costs	(7)	(16)	—
Goodwill impairment	(709)	—	—
Legal settlement	(25)	—	—
Gain on divestitures	20	—	—
Other	(16)	(6)	7
<b>Income (loss) from operations, as reported</b>	<b>(346)</b>	<b>239</b>	<b>406</b>
Interest income	12	7	3
Interest expense	(83)	(80)	(47)
Other income (expense), net	6	13	4
<b>Income (loss) before taxes, as reported</b>	<b>\$ (411)</b>	<b>\$ 179</b>	<b>\$ 366</b>

*Major customers.* No customer represented 10 percent or more of our total net revenue in 2018, 2017 or 2016.

The following table presents assets and capital expenditures directly managed by each segment. Unallocated assets primarily consist of cash and cash equivalents, investments, long-term and other receivables and other assets.

	Communications Solutions Group	Electronic Industrial Solutions Group	Ixia Solutions Group	Services Solutions Group	Total Segments
	(in millions)				
<b>As of October 31, 2018:</b>					
Assets	\$ 1,854	\$ 811	\$ 1,327	\$ 338	\$ 4,330
Capital expenditures	\$ 63	\$ 27	\$ 10	\$ 32	\$ 132
<b>As of October 31, 2017:</b>					
Assets	\$ 1,739	\$ 799	\$ 2,063	\$ 304	\$ 4,905
Capital expenditures	\$ 36	\$ 15	\$ 7	\$ 14	\$ 72

The following table reconciles segment assets to our total assets:

	October 31,	
	2018	2017
	(in millions)	
Total reportable segments' assets	\$ 4,330	\$ 4,905
Cash and cash equivalents	913	818
Prepaid expenses	106	113
Other current assets	9	7
Investments	46	63
Long-term and other receivables	118	118
Other	302	(91)
Total assets	\$ 5,824	\$ 5,933

The other category primarily includes pension assets and also represents the difference between how segments report deferred taxes and intangible assets at the initial purchased amount.

The following table presents summarized information for net revenue and long-lived assets by geographic region. Revenues from external customers are generally attributed to countries based upon the location of the Keysight sales representative. Long lived assets consist of property, plant, and equipment, long-term receivables and other long-term assets excluding intangible assets. The rest of the world primarily consists of rest of Asia and Europe.

	United States	China	Japan	Rest of the World	Total
	(in millions)				
Net revenue:					
Year ended October 31, 2018	\$ 1,398	\$ 710	\$ 342	\$ 1,428	\$ 3,878
Year ended October 31, 2017	\$ 1,054	\$ 608	\$ 338	\$ 1,189	\$ 3,189
Year ended October 31, 2016	\$ 1,009	\$ 572	\$ 323	\$ 1,014	\$ 2,918

	United States	Japan	Malaysia	UK	Rest of the World	Total
	(in millions)					
Long-lived assets:						
October 31, 2018	\$ 310	\$ 222	\$ 72	\$ 145	\$ 121	\$ 870
October 31, 2017	\$ 280	\$ 234	\$ 73	\$ 106	\$ 126	\$ 819

## 20. IMPACT OF NORTHERN CALIFORNIA WILDFIRES

During the week of October 8, 2017, wildfires in northern California adversely impacted the Keysight corporate headquarters site in Santa Rosa, CA. Our headquarters was under mandatory evacuation for more than three weeks, and while direct damage to our core facilities was limited, our buildings did experience some smoke and other fire-related impacts. Cleaning and restoration efforts are largely complete, and we have fully re-occupied the site. Keysight is insured for the damage caused by the fire.

For the year ended October 31, 2018 and 2017, we recognized costs of \$7 million and \$16 million, respectively, net of estimated insurance recoveries of \$90 million and \$2 million, respectively. Expenses were primarily for cleaning and restoration activities, write-off of damaged fixed assets and other direct costs related to recovery from this event.

A summary of the net charges in the consolidated statement of operations resulting from the impact of the fire is shown below:

	Year Ended October 31, 2018	Year Ended October 31, 2017
	(in millions)	
Cost of products and services	\$ 5	\$ 5
Research and development	1	1
Selling, general and administrative	1	8
Other operating expense (income), net	—	2
Total	\$ 7	\$ 16

As of October 31, 2018, we have received insurance proceeds of \$68 million and have a receivable of \$24 million for losses and expenses for which insurance reimbursement is probable. The receivable is included in other current assets in the consolidated balance sheet. In addition, for the year ended October 31, 2018, we made investments in property, plant and equipment related to fire recovery of \$27 million, which is expected to be covered by insurance. In many cases, our insurance coverage exceeds the amount of these covered losses, but no gain contingencies have been recognized as our ability to realize those gains remains uncertain for financial reporting purposes. We currently estimate total insurance recovery to range from \$125 million to \$135 million, which will substantially cover our total fire-related losses, expenses and investments in property, plant and equipment in excess of our \$10 million self-insured retention amount. There may be a difference in timing of costs incurred and the related insurance reimbursement.

## 21. SUBSEQUENT EVENT

In the first quarter of fiscal year 2019, we completed an organizational change to better align our services business with our customers and end markets. As a result of this realignment and in recognition of the end-to-end nature of Keysight solutions, beginning with our first quarter, we will have three reportable operating segments, Communications Solutions Group (“CSG”), Electronic Industrial Solutions Group (“EISG”) and Ixia Solutions Group (“ISG”). Our services business, previously Services Solutions Group (“SSG”), is now included in CSG and EISG and will be reported in the specific industry segments in which they are delivered, just as software and hardware solutions are today.

# QUARTERLY SUMMARY

(Unaudited)

	Three Months Ended			
	January 31,	April 30,	July 31,	October 31,
	(in millions, except per share data)			
2018				
Net revenue	\$ 837	\$ 990	\$ 1,004	\$ 1,047
Gross profit	\$ 427	\$ 543	\$ 565	\$ 587
Income (loss) from operations	\$ (5)	\$ 100	\$ 128	\$ (569)
Net income (loss)	\$ 94	\$ 64	\$ 121	\$ (114)
Net income (loss) per share:				
Basic	\$ 0.50	\$ 0.34	\$ 0.64	\$ (0.61)
Diluted	\$ 0.50	\$ 0.34	\$ 0.63	\$ (0.61)
Weighted average shares used in computing net income (loss) per share:				
Basic	187	188	188	187
Diluted	189	190	191	187
2017				
Net revenue	\$ 726	\$ 753	\$ 832	\$ 878
Gross profit	\$ 404	\$ 413	\$ 411	\$ 474
Income (loss) from operations	\$ 162	\$ 42	\$ (4)	\$ 39
Net income (loss)	\$ 109	\$ 49	\$ (18)	\$ (38)
Net income (loss) per share:				
Basic	\$ 0.64	\$ 0.28	\$ (0.10)	\$ (0.20)
Diluted	\$ 0.63	\$ 0.27	\$ (0.10)	\$ (0.20)
Weighted average shares used in computing net income (loss) per share:				
Basic	171	177	186	186
Diluted	173	179	186	186

## **RISKS, UNCERTAINTIES AND OTHER FACTORS THAT MAY AFFECT FUTURE RESULTS**

### **Risks Related to Our 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 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 the 5G technology, in the automotive and battery industries, in the Internet of Things, and in 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 gain sufficient market share, if demand for our solutions is lower than we expect, or if our income related to the innovative technologies is lower than we anticipate. For example, when the 5G standards are published, we may not be able to produce a satisfactory return on investment if our strategic vision and the resources that we are spending on developing our presence in the 5G technology industry turn out to be misaligned with such standards.

***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 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. During a market upturn, we may not be able to purchase sufficient supplies or components to meet increasing product demand, which could materially affect our results. In the past, 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.

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

Our overall performance depends largely upon domestic and international economic and political conditions. Many of our suppliers, vendors, partners, and other entities with whom we do business have strong ties to doing business in China and their ability to supply materials to us or otherwise work with us is strongly affected by their ability to do business in China. If the U.S.'s relationship with China deteriorates or results in 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 operations may be adversely affected due to such changes in the economic and political ecosystem in which our suppliers, vendors, partners, and other entities with whom we do business operate.

We have significant operations, including a large number of employees, manufacturing facilities, and operations centers in the United States, the United Kingdom, the European Union, Singapore, Malaysia and China among other countries. Nationalistic economic policies and political trends in these territories, such as opposition to globalization and free trade, sanctions or trade restrictions, withdrawal from or re-negotiation of global trade agreements, tax policies that favor domestic industries and interests, the anticipated exit of the United Kingdom from the European Union (known as Brexit), the distancing or potential exit of other 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 in international markets, and inability to conduct our operations as they have been conducted historically. Each of these factors may adversely affect our business.

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

Because we 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, job functions 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:

- 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 consequences from changes in tax laws;
- difficulty in protecting intellectual property;
- interruption 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. These processes include general accounting, inventory cost accounting, accounts payable and accounts receivables functions. 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.

***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, the markets we serve do not always 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. The broader semiconductor market is one of the drivers for our business, and therefore, a decrease in the semiconductor market could harm our business. Also, 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. Also, 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.

***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 or depression may impact our business, resulting in:

- reduced demand for our solutions, delays in the shipment of orders or increases in order cancellations;
- increased risk of excess and obsolete inventories;
- 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, reduced access to credit, 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 and inventory issues. Economic risks related to accounts receivable could result in delays in collection and greater bad debt expense.

***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 outsourcees 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 does not meet our expectations, our manufacturing capacity will likely exceed our production requirements. During a general market upturn or an upturn in our business, 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.***

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 for us if we fail to provide the quantity and quality of product at the required delivery times. While we attempt to contractually limit our potential liability under such contracts, we may have to agree to some or all of these types of provisions to secure these orders and to continue to 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 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. 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. Further, such 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 and business infrastructure. We may have difficulty developing, manufacturing and marketing the products of a newly acquired company in a way that enhances the performance of our businesses or product lines to 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 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 or engage in certain types of sale and leaseback transactions. 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.

***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.***

Third parties may claim 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. Any dispute or litigation regarding patents or other intellectual property could be 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. A claim 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 and sale 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 have applied for trademarks related to our 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 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, 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 or shutdowns due to power outages, hardware failures, telecommunication failures, user errors, 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. 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 rise 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, such as the U.S., the European Union, or Singapore, 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.

We currently benefit from tax incentives extended to certain of our foreign subsidiaries to encourage investment or employment, the most significant of which being Singapore. The Singapore tax incentives require that specific conditions be satisfied, which include achieving thresholds of employment, ownership of certain assets, as well as specific types of investment activities within Singapore. 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.

Our Singapore tax incentives are due for renewal in fiscal 2024, but we cannot guarantee that Singapore will not revoke the tax incentives earlier. Our taxes could increase if the existing Singapore incentives are not renewed upon revocation or expiration. We cannot guarantee that we will qualify for any new incentive regime that may exist in fiscal 2024, 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. 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 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 that we operate. However, there is also intense competition for certain highly technical specialties in geographic areas in which we operate, and it may become more difficult to retain key employees. If we fail to retain and hire a sufficient number of these personnel, 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 suffer a loss to our factories, facilities or distribution system due to a catastrophic event, our operations could be significantly harmed.***

Our factories, facilities and distribution system are subject to catastrophic loss due to fire, flood, terrorism or other natural or man-made disasters. In particular, 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. If such a disruption were to occur, we could breach our agreements, our reputation could be harmed and our business and operating results could be adversely affected. 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 decision 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.

***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, health and safety, packaging, data privacy, product content, labor and import/export regulations. These regulations are complex, change frequently and have tended to become more stringent over time. We may be required to incur significant expenses to comply with these regulations or to remedy violations of these regulations. Any 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.

In response to changes in data privacy regulations, such as the General Data Protection Regulation (“GDPR”) in the European Union, which became effective on May 25, 2018, we are modifying our data handling practices and devoting resources to keeping up with the changing regulatory environment on data privacy in the jurisdictions where we do business. New laws, amendments, or interpretations of regulations, industry standards, and contractual obligations relating to privacy or data 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 high 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. 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 are devoting 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 are undergoing 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.

In connection with the separation from Agilent, Agilent also agreed to indemnify us for any liability associated with contamination from past operations at all properties transferred from Agilent to Keysight. We cannot be sure that Agilent will fulfill its indemnification obligations.

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 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; and
- general economic conditions 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 could adversely affect 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 the board 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 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.

## **Risks Related to the Acquisition of Ixia**

*We may not realize all of the anticipated benefits of the acquisition of Ixia or those benefits may take longer to realize than expected. We may also encounter significant unexpected difficulties in integrating the two businesses.*

Our ability to realize the anticipated benefits of the acquisition of Ixia (the "Merger") will depend, to a large extent, on our ability to integrate our and Ixia's businesses. The combination of two independent businesses is a complex, costly and time-consuming process. As a result, we will be required to devote significant management attention and resources to integrating Ixia's business practices and operations with our existing business practices and operations. The integration process may disrupt the businesses and, if implemented ineffectively or if impacted by unforeseen negative economic or market conditions or other factors, we may not realize the full anticipated benefits of the Merger. Our failure to meet the challenges involved in integrating the two businesses to realize the anticipated benefits of the Merger could cause an interruption of, or a loss of momentum in, our activities and could adversely affect our results of operations.

In addition, the overall integration of the businesses may result in material unanticipated problems, expenses, liabilities, competitive responses, loss of customer relationships, and diversion of management's attention. The difficulties of combining the operations of the companies include but are not limited to:

- the diversion of management's attention to integration matters;
- difficulties in achieving anticipated cost savings, synergies, business opportunities and growth prospects from combining Ixia's business with our business;
- difficulties entering new markets or manufacturing in new geographies where we have no or limited direct prior experience;
- difficulties in the integration of operations and systems;
- difficulties in the assimilation of employees;
- difficulties in managing the expanded operations of a significantly larger and more complex company;
- successfully managing relationships with our strategic partners and supplier and customer base; and
- challenges in maintaining existing, and establishing new, business relationships.

Many of these factors will be outside of our control and any one of them could result in increased costs, decreases in the amount of expected revenues and diversion of management's time and energy, which could materially impact the business, financial condition and our results of operations. In addition, even if the operations of our business and Ixia's business are integrated successfully, we may not realize the full benefits of the Merger, including the synergies, cost savings or sales or growth opportunities that we expect. These benefits may not be achieved within the anticipated time frame, or at all. Furthermore, additional unanticipated costs may be incurred in the integration of the businesses. 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. All of these factors could decrease or delay the expected accretive effect of the Merger and negatively impact us. As a result, we cannot be certain that the combination of our and Ixia's businesses will result in the realization of the full benefits anticipated from the Merger.

## **Risks Related to the Spin-off from Agilent**

*We are subject to continuing contingent liabilities of Agilent.*

After our spin-off from Agilent on November 1, 2014, there are several significant areas where the liabilities of Agilent may become our obligations. For example, under the Internal Revenue Code and the related rules and regulations, each corporation that was a member of the Agilent U.S. consolidated group during a taxable period or portion of a taxable period ending on or before the effective time of the distribution is severally liable for the U.S. federal income tax liability of the entire Agilent U.S. consolidated group for that taxable period. Consequently, if Agilent is unable to pay the consolidated U.S. federal income tax liability for a prior period, we could be required to pay the entire amount of such tax, which could be substantial and in excess of the amount allocated to it as agreed between us and Agilent at the time of separation. Other provisions of federal law establish similar liability for other matters, including laws governing tax-qualified pension plans, as well as other contingent liabilities.

***There could be significant liability if the distribution is determined to be a taxable transaction.***

A condition to the spin-off is that Agilent received an opinion of Baker & McKenzie LLP, tax counsel to Agilent, regarding the qualification of the separation and the distribution as a reorganization within the meaning of Sections 355(a) and 368(a)(1)(D) of the Code. The opinion relies on certain facts, assumptions, representations and undertakings from Agilent and Keysight, including those regarding the past and future conduct of the companies' respective businesses and other matters. If any of these facts, assumptions, representations or undertakings are incorrect or not satisfied, Agilent and its shareholders may not be able to rely on the opinion, and could be subject to significant tax liabilities. Notwithstanding the opinion of tax counsel, the IRS could determine on audit that the distribution is taxable if it determines that any of these facts, assumptions, representations or undertakings are not correct or have been violated or if it disagrees with the conclusions in the opinion.

If the distribution were determined to be taxable for U.S. federal income tax purposes, Agilent and its shareholders that are subject to U.S. federal income tax could incur significant U.S. federal income tax liabilities. For example, if the distribution failed to qualify for tax-free treatment, Agilent would for U.S. federal income tax purposes be treated as if it had sold the Keysight common stock in a taxable sale for its fair market value, and Agilent's shareholders, who are subject to U.S. federal income tax, would be treated as receiving a taxable distribution in an amount equal to the fair market value of the Keysight common stock received in the distribution. In addition, if the separation and distribution failed to qualify for tax-free treatment under federal, state and local tax law and/or foreign tax law, Agilent and Keysight could each incur significant tax liabilities under U.S. federal, state, local and/or foreign tax law.

Under the agreement between Agilent and Keysight pertaining to tax matters, as finalized at the time of separation, we are generally required to indemnify Agilent against taxes incurred by Agilent that arise as a result of our taking or failing to take, as the case may be, certain actions that result in the distribution failing to meet the requirements of a tax-free distribution under Section 355 of the Code. Under the agreement between Agilent and Keysight, as finalized at the time of separation, we may also be required to indemnify Agilent for other contingent tax liabilities, which could materially adversely affect our financial position.

## 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, 2018, 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, 2018, 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, 2018. During the year ended October 31, 2018, a majority of Ixia Solutions Group's financial activity was integrated into the existing Keysight internal control structure.

The effectiveness of our internal control over financial reporting as of October 31, 2018 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report which 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 that occurred during our last fiscal quarter that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

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