Motorola Solutions, Inc.
Form 10-K
February 15, 2019

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

FORM 10-K

ý ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended December 31, 2018
or
¨ TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the transition period from to
Commission File number 1-7221

MOTOROLA SOLUTIONS, INC.
(Exact name of registrant as specified in its charter)

DELAWARE	36-1115800
(State of Incorporation)	(I.R.S. Employer Identification No.)

500 West Monroe Street, Chicago, Illinois 60661
(Address of principal executive offices)
(847) 576-5000
(Registrant's telephone number)
Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class	Name of Each Exchange on Which Registered
Common Stock, $.01 Par Value per Share	New York Stock Exchange

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

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ý No ¨
Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934. Yes ¨ No ý
Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ý No ¨
Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ý No ¨
Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ¨
Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated

filer”, “smaller reporting company” and "emerging growth company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer x	Accelerated filer ¨	Non-accelerated filer ¨	Smaller reporting company ¨	Emerging growth company ¨
	(Do not check if a smaller reporting company)			

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

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

The aggregate market value of voting and non-voting common equity held by non-affiliates of the registrant as of June 30, 2018 (the last business day of the Registrant’s most recently completed second quarter) was approximately $14.9 billion.

The number of shares of the registrant’s Common Stock, $.01 par value per share, outstanding as of February 1, 2019 was 163,871,288.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant’s definitive Proxy Statement to be delivered to stockholders in connection with its Annual Meeting of Stockholders to be held on May 13, 2019, are incorporated by reference into Part III.

PART I

Throughout this 10-K report we “incorporate by reference” certain information in parts of other documents filed with the Securities and Exchange Commission (the “SEC”). The SEC allows us to disclose important information by referring to it in that manner. Please refer to such information.

We are making forward-looking statements in this report. In “Item 1A: Risk Factors” we discuss some of the risk factors that could cause actual results to differ materially from those stated in the forward-looking statements.

“Motorola Solutions” (which may be referred to as the “Company,” “we,” “us,” or “our”) means Motorola Solutions, Inc. or Motorola Solutions, Inc. and its subsidiaries, or one of our segments, as the context requires. MOTOROLA, MOTO, MOTOROLA SOLUTIONS and the Stylized M Logo, as well as iDEN are trademarks or registered trademarks of Motorola Trademark Holdings, LLC and are used under license.

Item 1: Business

General

Motorola Solutions is a leading global provider of mission-critical communications. Our technology platforms in communications, software, video, and services make cities safer and help communities and businesses thrive. At Motorola Solutions, we are ushering in a new era in public safety and security. Public safety and commercial customers globally depend on our solutions to keep them connected, from everyday to extreme moments. We serve more than 100,000 customers in more than 100 countries and have a rich heritage of innovation spanning more than 90 years.

We are incorporated under the laws of the State of Delaware as the successor to an Illinois corporation, Motorola, Inc., organized in 1928. We changed our name from Motorola, Inc. to Motorola Solutions, Inc. on January 4, 2011. Our principal executive offices are located at 500 W. Monroe Street, Chicago, Illinois 60661.

Recent Acquisitions

On January 7, 2019, we announced that we acquired VaaS International Holdings, Inc. ("VaaS"), a "video analysis as a service" company that is a leading global provider of data and image analytics for vehicle location for a purchase price of $445 million. This acquisition expands our command center software portfolio.

On March 28, 2018, we completed the acquisition of Avigilon Corporation ("Avigilon"), a provider of advanced security and video solutions including video analytics, network video management hardware and software, video cameras and access control solutions for a purchase price of $974 million.

On March 7, 2018, we completed the acquisition of Plant Holdings, Inc. ("Plant"), the parent company of Airbus DS Communications for a purchase price of $237 million. This acquisition expands our software portfolio in the command center with additional solutions for Next Generation 9-1-1.

On August 28, 2017, we completed the acquisition of Kodiak Networks, a provider of broadband push-to-talk for commercial customers, for a purchase price of $225 million.

On March 13, 2017, we completed the acquisition of Interexport, a managed service provider of communications systems to public safety and commercial customers in Chile, for a purchase price of $98 billion Chilean pesos, or approximately $147 million.

On November 10, 2016, we completed the acquisition of Spillman Technologies ("Spillman"), a provider of comprehensive law enforcement and public safety software solutions, for a purchase price of $221 million. The acquisition expands our command center services and software portfolio and enables us to offer a full suite of solutions to a broader customer base.

On February 19, 2016, we completed the acquisition of Guardian Digital Communications Limited ("GDCL"), a holding company of Airwave Solutions Limited ("Airwave"), the largest private operator of a public safety network in the world. All of the outstanding equity of GDCL was acquired for the sum of £1, after which we invested into GDCL £698 million, net of cash acquired, or approximately $1.0 billion, to settle all third party debt.

Business Organization

During the second quarter of 2018, we modified our internal reporting structure to better align the way financial information is reported to and analyzed by executive leadership in part as a result of recent acquisitions contributing to the growth within the newly-aligned Services and Software segment. Previously, we had two reporting segments:

Products and Services. The changes in reporting structure consist of Systems Integration-related revenue and costs moving from the old Services segment into the newly-presented Products and Systems Integration segment and software-related revenue and costs moving from the old Products segment into the newly-presented Services and Software segment.

Products and Systems Integration Segment

The Products and Systems Integration segment offers an extensive portfolio of infrastructure, devices, accessories, video solutions, and the implementation, optimization, and integration of such systems, devices, and applications. The primary customers of the Products and Systems Integration segment are government, public safety and first-responder agencies, municipalities, and commercial and industrial customers who operate private communications networks and video solutions. In 2018, the segment's net sales were $5.1 billion, representing 69% of our consolidated net sales. The Products and Systems Integration segment has the following two principal product lines:

Devices: Devices includes two-way portable and vehicle-mounted radios, accessories, software features, and upgrades. Devices also includes video cameras. Devices represented 63% of the net sales of the Products and Systems Integration segment in 2018.

Systems and Systems Integration: Systems and Systems Integration include customized radio networks, video solutions and implementation, optimization, and integration of networks, devices, software, and applications. Systems and Systems Integration represented 37% of the net sales of the Products and Systems Integration segment in 2018.

Our Devices and Systems and Systems Integration are based on the following industry technology standards:

Land Mobile Radio Standards

Industry standard definition	The Association of Public Safety Communications Officials Project 25 standard ("APCO-25")	The European Telecommunications Standards Institute (“ETSI”) Terrestrial Trunked Radio standard ("TETRA")	ETSI, Digital mobile radio ("DMR") and professional commercial radio ("PCR") standards
Industry standard name	APCO P25	TETRA	DMR
Motorola Solutions product name	ASTRO	Dimetra IP	PCR MOTOTRBO (Digital)
Primary end users	Government, Public Safety	Government, Public Safety	Commercial
Primary geographic region of use	North America, Latin America, Asia, Middle East, Africa	Europe, Asia, Latin America, Middle East, Africa	All regions

Services and Software Segment

The Services and Software segment provides a broad range of solution offerings for government, public safety and commercial customers. In 2018, the segment’s net sales were $2.2 billion, representing 31% of our consolidated net sales. The Services and Software segment has the following principal product lines:

Services	Services includes a continuum of service offerings beginning with repair, technical support, and maintenance. More advanced offerings include monitoring, software updates, and cybersecurity services. Managed services range from partial or full operation of customer-owned networks to operation of Motorola Solutions-owned networks. Services represented 81% of the net sales of the Services and Software segment in 2018.
Software	Software includes a public safety and enterprise command center software suite, unified communications applications, and video software solutions, delivered both on premise and “as a service” and represented 19% of the net sales of the Services and Software segment in 2018.

Strategy and Focus Areas

In 2018, Motorola Solutions marked 90 years as a communications technology provider. Since Motorola was founded in 1928, our commitment to innovation has been at the heart of our company. Today, we design and deliver solutions that are purpose-built for the unique needs of our customers, who work in coal mines, run into burning buildings, teach in classrooms, and everything in between. We offer comprehensive solutions that include infrastructure, devices, software applications, video cameras and analytics, and services that help our customers work safely and efficiently.

Our strategy for long-term growth and the evolution of our business includes organic and inorganic investments in the following four areas:

(i)Continued innovation in standards-based voice and data solutions spanning APCO 25, TETRA, DMR, and Long-term Evolution ("LTE") technologies. Our dedication, focus, and innovation for public safety and commercial solutions built the foundation of our land mobile radio ("LMR") platform business, which is reflected in our install base of over 13,000 systems deployed in 100+ countries around the world. These systems have a multi-year and often multi-decade life span which helps drive demand for additional device sales, software upgrades, infrastructure refresh and expansion, as well as additional services to maintain, monitor, and manage these complex networks and solutions.

We believe our government and commercial customers will continue to require next-generation systems, enhanced software features and analytics, as well as incremental services to drive operational efficiencies.

(ii)Services offerings that leverage our large global install base and allow our customers to improve performance across their systems, devices, and applications for greater safety and productivity. Our comprehensive suite of services - from repair, technical support, security, and system monitoring to operation of customer-owned networks or Motorola Solutions-owned networks, ensures continuity and reduces risks for continued critical communications operations. Today, agency procurement models are primarily capital expenditure investments in customer-owned and operated solutions with long-term contracts. As agencies seek budget predictability, increased flexibility, and outcome-based solutions, there continues to be a shift to alternative consumption models. We feel our suite of services positions us well for this change and allows us to provide incremental, value-added services for our customers.

(iii) Command center software solutions to support public safety workflow - from a citizen's emergency call and dispatching first responders to communicating with personnel in the field and managing records and evidence. Today, the public safety workflow is addressed by a variety of point solutions. Motorola Solutions is building a command center software offering that provides a unified suite of solutions across the public safety workflow. As the public safety market continues to embrace software offerings to enhance their workflows, we are able to sell cloud-first software as a service ("SaaS") offering in addition to on-premise solutions with ancillary implementation and managed services.
(iv)Video analytics, network video management software and hardware, video cameras, and access control solutions for government and commercial customers. We have video solutions installed at thousands of customer sites, including school campuses, transportation systems, healthcare centers, public venues, critical infrastructure, prisons, factories, casinos, airports, financial institutions, government facilities, and retailers.

Our Customers and Contracts

We serve government agencies, state and local public safety and first-responder agencies, as well as commercial and industrial customers who utilize private communications networks, often to manage a mobile workforce. Our customer base is fragmented and widespread when considering the many levels of governmental and first-responder decision-makers that procure and use our products and services. Serving this global customer base spanning federal, state, county, province, territory, municipal, and departmental independent bodies, along with our commercial and industrial customers, requires a significant go-to-market investment.

Our sales model includes both direct sales by our in-house sales force, which tend to focus on our largest accounts, and sales through our channel partner program. Our trained channel partners include independent dealers, distributors, and software vendors around the world. The dealers and distributors each have their own sales organizations that complement and extend the reach of our sales force. The independent software vendors offer customized applications that meet specific needs in the verticals we serve.

Our largest customers are the United States ("U.S.") federal government (through multiple contracts with its various branches and agencies, including the armed services) and the Home Office of the United Kingdom, representing approximately 8% and 7% of our consolidated net sales in 2018, respectively. The loss of these customers could have a material adverse effect on our revenue and earnings over several quarters as many of our contracts with these governments are long-term in nature. All contracts with the U.S. federal government, and certain other government agencies within the U.S., are subject to cancellation at the customer’s convenience. For a discussion of risks related to government contracting requirements, please refer to “Item 1A. Risk Factors.”

Net sales in the Americas region continued to comprise a significant portion of our business, accounting for 69%, 68% and 68% of our consolidated net sales in 2018, 2017, and 2016, respectively.

Payment terms with our customers vary worldwide. Generally, contractual payment terms range from 30 to 45 days from the invoice date within North America and typically do not exceed 90 days from the invoice date in regions outside of North America. A portion of our contracts include implementation milestones, such as delivery, installation, and system acceptance, which generally take 30 to 180 days to complete. Invoicing the customer is dependent on completion of the milestones. We generally do not grant extended payment terms. As required for competitive reasons, we may provide long-term financing in connection with equipment purchases. Financing may cover all or a portion of the purchase price.

Generally, our contracts do not include a right of return, other than for standard warranty provisions. Due to customer purchasing patterns and the cyclical nature of the markets we serve, our sales tend to be somewhat higher in the second half of the year, with the fourth quarter being the highest.

Competition

The markets in which we operate are highly competitive. Key competitive factors include: performance, features, quality, availability, warranty, price, vendor financing, availability of service, company reputation and financial strength, partner community, and relationships with customers. Our strong reputation with customers and partners, trusted brand, technology leadership, breadth of portfolio, product performance, and specialized support services position us well for success.

We experience widespread competition from a growing number of existing and new competitors, including large system integrators and manufacturers of private and public wireless network equipment and devices. Traditional LMR competitors include: Harris, Hytera, Airbus, and Kenwood.

As demand for fully-integrated voice, data, and broadband systems continue to grow, we may face additional competition from public telecommunications carriers and telecommunications equipment providers. As we continue to evolve our services strategy, we may work with other companies on a consortium or joint venture basis as customers' delivery needs become more complex to fulfill.

Our continued focus on growing our command center software suite and video solutions has added additional competitors such as: West Corporation, Intergraph, Central Square, Axis, Hikvision, Dahua, and Zetron.

Several other competitive factors may have an impact on our future business including: evolving spectrum mandates by government regulators and increasing investment by broadband and IP solution providers.

Other Information
Backlog
Our backlog includes all product and service orders that have been received and are believed to be firm. As of December 31, 2018 and December 31, 2017, our backlog was as follows:

	December 31	
(In millions)	2018	2017
Products and Systems Integration	$3,199	$3,314
Services and Software	7,401	6,298
	$10,600	$9,612

Approximately 52% of the Products and Systems Integration segment backlog and 21% of the Services and Software segment backlog is expected to be recognized as revenue during 2019. The forward-looking estimate of the firmness of such orders is subject to future events that may cause the amount recognized to change.
Research and Development
We continue to prioritize investments in R&D to expand and improve our portfolio of products through both new product introductions and continuous enhancements to our core products. Our R&D programs are focused on the development of: (i) new public safety devices, infrastructure, software and solutions, (ii) command center software applications that include voice, data, and video, (iii) public safety broadband solutions based on LTE technology, and (iv) video devices and software applications.
R&D expenditures were $637 million in 2018, $568 million in 2017, and $553 million in 2016. As of December 31, 2018, we had approximately 5,000 employees engaged in R&D activities. In addition, we engage in R&D activities with joint development and manufacturing partners and outsource certain activities to engineering firms to further supplement our internal spend.
Intellectual Property Matters
Patent protection is an important aspect of our operations. We have a portfolio of U.S. and foreign utility and design patents relating to our products, systems, and technologies, including research developments in radio frequency technology and circuits, wireless network technologies, over-the-air protocols, mission-critical communications, software and services, next-generation public safety, and video solutions. We have filed new patent applications with the U.S. Patent and Trademark Office and foreign patent offices.
We license some of our patents to third-parties, but licensing revenue is not a significant source of revenue. We are also licensed to use certain patents owned by others. Royalty and licensing fees vary from year-to-year and are subject to the terms of the agreements and sales volumes of the products subject to the license. Motorola Solutions has a royalty-free license under all of the patents and patent applications assigned to Motorola Mobility at the time of the separation of the two businesses in 2011.
We actively participate in the development of standards for interoperable, mission-critical digital two-way radio systems. Our patents are used in standards in which our products and services are based. We offer standards-based licenses to those patents on fair, reasonable, and non-discriminatory terms.
We believe that our patent portfolio will continue to provide us with a competitive advantage in our core product areas as well as provide leverage in the development of future technologies. While we are not dependent upon a single patent or even a few patents, we do have patents that protect features and functionality of our products and services. While these patents are important, our success also depends upon our extensive know-how, innovative culture, technical leadership, and distribution channels. We do not rely solely on patents or other intellectual property rights to protect or establish our market position; however, we will enforce our intellectual property rights in certain technologies when it is necessary to protect our innovation, or in some cases where attempts to negotiate mutually agreeable licenses are not successful.
We seek to obtain patents and trademarks to protect our proprietary positions whenever possible and wherever practical. As of December 31, 2018, we owned approximately 5,320 granted patents in the U.S. and in foreign countries. As of December 31, 2018, we had approximately 1,630 U.S. and foreign patent applications

pending. Foreign patents and patent applications are mostly counterparts of our U.S. patents. During 2018, we were granted approximately 550 patents in the U.S. and in foreign countries.

We no longer own certain logos and other trademarks, trade names and service marks, including MOTOROLA, MOTO, MOTOROLA SOLUTIONS and the Stylized M logo and all derivatives thereof (“Motorola Marks”) and we license the Motorola Marks from Motorola Mobility, which is currently owned by Lenovo.

Inventory and Raw Materials
Our practice is to carry reasonable amounts of inventory to meet customers' delivery requirements. We provide custom products that require the stocking of inventories and a large variety of piece parts and replacement parts in order to meet delivery and warranty requirements. To the extent suppliers' product life cycles are shorter than ours; stocking of lifetime buy inventories is required to meet long-term warranty and contractual requirements. In addition, replacement parts are stocked for delivery on customer demand within a short delivery cycle.
Availability of required materials and components is generally dependable; however, fluctuations in supply and market demand could cause selective shortages and affect our results of operations. We currently procure certain materials and components from single-source vendors. A material disruption from a single-source vendor may have a material adverse impact on our results of operations. If certain single-source suppliers were to become capacity constrained or insolvent, it could result in a reduction or interruption in supplies, or an increase in the price of supplies, and adversely impact our financial results.
Natural gas, electricity and, to a lesser extent, oil are the primary sources of energy for our manufacturing operations. Each of these resources is currently in adequate supply for our operations. The cost to operate our facilities and freight costs are dependent on world oil prices and external third-party logistics rates for inbound and outbound air lanes. Labor is generally available in reasonable proximity to our manufacturing facilities and the manufacturing facilities of our largest outsourced manufacturing suppliers. Difficulties in obtaining any of the aforementioned resources, or a significant cost increase, could affect our financial results.
Environmental Quality
Some of our operations use substances regulated under various federal, state, local, and international laws governing the environment and worker health and safety, including those governing the discharge of pollutants into the ground, air, and water, the management and disposal of hazardous substances and wastes, and the cleanup of contaminated sites, as well as relating to the protection of the environment. Certain products of ours are subject to various federal, state, local, and international laws governing chemical substances in electronic products. During 2018, compliance with these U.S. federal, state and local, and international laws did not have a material effect on our capital expenditures, or competitive position; however, we recorded a $57 million charge once we became aware of additional remediation requirements for the designated Superfund site under the Comprehensive Environmental Response, Compensation and Liability Act (commonly known as the "Superfund Act") incurred by a legacy business. The charge was primarily due to: (i) changes in the expected timeline of the remediation activities to 30 years and (ii) additional costs for further remediation efforts, increasing the reserve to $107 million.
Regulatory Matters
Radio spectrum is required to provide wireless voice, data, and video communications service. The allocation of spectrum is regulated in the U.S. and other countries and limited spectrum space is allocated to wireless services and specifically to public safety users. In the U.S., the Federal Communications Commission ("FCC") and the National Telecommunications and Information Administration ("NTIA") regulate spectrum use by non-federal entities and federal entities, respectively. Similarly, every country around the world has one or more regulatory bodies that define and implement the rules for use of radio spectrum, pursuant to their respective national laws and international coordination under the International Telecommunications Union ("ITU").
We manufacture and market products in spectrum bands already allocated by regulatory bodies. These include voice and data infrastructure, mobile radios, and portable or hand-held devices. Consequently, our results could be positively or negatively affected by the rules and regulations adopted by the FCC, NTIA, ITU, or regulatory agencies in other countries. Our products operate both on licensed and unlicensed spectrum. The availability of additional radio spectrum may provide new business opportunities. Conversely, the loss of available radio spectrum may result in the loss of business opportunities. Regulatory changes in current spectrum bands (e.g., the sharing of previously dedicated or other spectrum) may also provide opportunities or may require modifications to some of our products so they can continue to be manufactured and marketed.
As television transmission and reception technology transitions from analog to more efficient digital modes, various countries around the world are examining, and in some cases already pursuing, the redevelopment of portions of the

television spectrum. In the U.S., spectrum historically used for broadcast television, known as the 700MHz band, has been redeveloped and deployed for new uses (the so-called “digital dividend” spectrum), including broadband and narrowband wireless communications. In 2016, this trend continued in the U.S. and additional TV spectrum in the 600MHz band was auctioned for broadband communications (part of the “Broadcast Incentive Auction”). This auction closed in April 2017, but auction winners will not get access to the spectrum for several years.

Internationally, the ITU World Radio Conference ("WRC") is held every three to four years to discuss and promote global agreement on the use and cooperation of spectrum usage. The most recent WRC-15 was held in November 2015. During this conference, leaders from United Nations member countries considered a number of initiatives, including whether to allocate additional spectrum for commercial broadband use as well as whether to allocate spectrum dedicated for public safety broadband. The WRC agreed to support countries making individual decisions to allocate spectrum for public safety broadband in the 700MHz and 800MHz spectrum bands. Based on the results of WRC-15, ITU has published recommendations on how much spectrum and to which parts of the spectrum range the spectrum should be allocated for public safety broadband (taking into account regional and global harmonization to the extent practicable). The next WRC is scheduled to be held in October-November 2019. WRC-19 will focus on 5G, harmonizing the internet of things ("IOT"), and satellite coordination. Motorola Solutions continues to work with its customers and governments around the world to advocate for future allocations of dedicated broadband spectrum for public safety which will provide new business opportunities for us in the future and to reinforce the importance of LMR spectrum and services.

Several major markets including: Canada, the U.S., the UAE, Mexico, Singapore, and South Korea have already set aside broadband spectrum for use by public safety and the wider first-responder communities. We believe this trend will continue over time and the planned implementation of broadband public safety networks provides new opportunities for our broadband portfolio and services growth strategy. In addition, certain countries, in response to increasing security concerns, already have spectrum landscapes that permit country administrations to allocate public safety spectrum quickly without a protracted process or agreement. Some other markets including Australia and the UK are launching broadband public safety networks drawing on basic LTE infrastructure built by the carriers. These trends also provide opportunities for our broadband and services portfolio.

Employees

At December 31, 2018, and December 31, 2017 we had approximately 16,000 and 15,000 employees, respectively.

Material Dispositions

None

Financial Information About Geographic Areas

The response to this section of Item 1 incorporates by reference Note 11, “Commitments and Contingencies” and Note 12, “Information by Segment and Geographic Region” of Part II, "Item 8: Financial Statements and Supplementary Data" of this document, the “Results of Operations—2018 Compared to 2017” and “Results of Operations—2017 Compared to 2016” sections of Part II, “Item 7: Management’s Discussion and Analysis of Financial Condition and Results of Operations” and “Item 1A: Risk Factors” of this document.

Financial Information About Segments

The response to this section of Item 1 incorporates by reference Note 12, “Information by Segment and Geographic Region,” of Part II, "Item 8: Financial Statements and Supplementary Data" of this document.

Available Information

We make available free of charge through our website, www.motorolasolutions.com/investors, our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, proxy statements, other reports filed under the Securities Exchange Act of 1934 (“Exchange Act”), and all amendments to those reports simultaneously or as soon as reasonably practicable after such material is electronically filed with, or furnished to, the SEC. Our reports are also available free of charge on the SEC’s website, www.sec.gov. Also available free of charge on our website are the following corporate governance documents:

- Motorola Solutions, Inc. Restated Certificate of Incorporation with Amendments
- Conformed Restated Certificate of Incorporation of Motorola Solutions, Inc. (amended Jan. 4, 2011)
- Certificate of Amendment to the Restated Certificate of Incorporation of Motorola, Inc. (effective Jan. 4, 2011)
- Certificate of Ownership and Merger of Motorola Name Change Corporation into Motorola, Inc. (effective Jan. 4, 2011)
- Motorola Solutions, Inc. Amended and Restated Bylaws
- Board Governance Guidelines
- Director Independence Guidelines
- Principles of Conduct for Members of the Motorola Solutions, Inc. Board of Directors
- Motorola Solutions Code of Business Conduct, which is applicable to all Motorola Solutions employees, including the principal executive officers, the principal financial officer and the controller (principal accounting officer)
- Audit Committee Charter
- Compensation and Leadership Committee Charter
- Governance and Nominating Committee Charter

All of our reports and corporate governance documents may also be obtained without charge by contacting Investor Relations, Motorola Solutions, Inc., Corporate Offices, 500 W. Monroe Street, Chicago, IL 60661, E-mail: investors@motorolasolutions.com. This annual report on Form 10-K and Definitive Proxy Statement are available on the Internet at www.motorolasolutions.com/investors and may also be requested in hardcopy by completing the on-line request form available on our website at www.motorolasolutions.com/investors. Our internet website and the information contained therein or incorporated therein are not intended to be incorporated into this Annual Report on Form 10-K.

Item 1A: Risk Factors
We face a number of risks related to current global economic and political conditions, including low economic growth rates in certain markets, the impact of currency fluctuations, commodity price volatility, and unstable political conditions that have and could continue to unfavorably impact our business.
Global economic and political conditions continue to be challenging for many of our government and commercial markets, as economic growth in many countries, particularly in parts of Latin America and in other emerging markets, has remained low or declined, currency fluctuations have impacted profitability, credit markets have remained tight for certain counterparties of ours and some of our customers are dependent on government grants to fund purchases of our products and services. Although we do not anticipate a significant impact to the business at this time, the possibility of a partial federal government shutdown in the U.S. could potentially delay award of contracts and timing of payments.
In addition, conflicts in the Middle East and elsewhere have created many economic and political uncertainties that continue to impact worldwide markets. The length of time these adverse economic and political conditions may persist is unknown. These global economic and political conditions have impacted and could continue to impact our business, financial condition, results of operations, and cash flows in a number of ways, including:
•Requests by Customers for Vendor Financing by Motorola Solutions: Certain customers of ours, particularly, but not limited to, those who purchase large infrastructure systems, request that their suppliers provide financing in connection with equipment purchases and/or the provision of solutions and services, particularly as the size and length of these types of contracts increases and as we increase our business in developing countries. Requests for vendor financing continue to increase in volume and scope, including in response to reduced tax revenue at the state and local government level and tightening of credit for certain commercial customers. Motorola Solutions has continued to provide vendor financing to both our government and commercial customers. We have been faced with and expect to continue to be faced with choosing between further increasing our level of vendor financing or potentially losing sales, as some of our competitors, particularly those in Asia, have been more willing to provide vendor financing to customers around the world, particularly customers in Africa and Latin America. To the extent we are unable to sell these receivables on terms acceptable to us we may retain exposure to the credit quality of our customers who we finance.
•Customers' Inability to Obtain Financing to Make Purchases from Motorola Solutions and/or Maintain Their Business: Some of our customers require substantial financing, including public financing or government grants, in order to fund their operations and make purchases from us. The inability of these customers to obtain sufficient credit or other funds, including as a result of lower tax revenues, increases in interest rates, currency fluctuations or unavailability of government grants, to finance purchases of our products and services and/or to meet their payment obligations to us could have, and in some cases has had, a negative impact on our financial results. This risk increases as the size and length of our contracts increase. In addition, if global economic conditions result in insolvencies for our customers, it will negatively impact our financial results.
•Challenges in Budgeting and Forecasting: It is difficult to estimate changes in various parts of the U.S. and world economy, including the markets in which we participate. Components of our budgeting and forecasting are dependent upon estimates of demand for our products and estimates of foreign exchange rates. The prevailing economic uncertainties render estimates of future income and expenditures challenging.
•Potential Deferment or Cancellation of Purchases and Orders by Customers: Uncertainty about current and future global economic conditions may cause, and in some cases has caused, businesses and governments to defer or cancel purchases in response to tighter credit, decreased cash availability and de-prioritization of communications equipment within the budgeting process. If future demand for our products declines due to economic conditions, it will negatively impact our financial results.
•Inability to Operate and Grow in Certain Markets: We operate in a number of markets with a risk of intensifying political instability, including Europe (including the impact of Brexit discussed below), Russia, Brazil, the Middle East and Africa. If political instability continues in these markets and in other parts of the world in which we operate it could have a significant impact on our ability to grow and, in some cases, operate in those locations, which will

negatively impact our financial results.
We are subject to laws and regulations regarding privacy, data protection and information security, and our actual or perceived failure to comply with such legal obligations could adversely affect our business.
The European Union ("E.U.") adopted the General Data Protection Regulation ("GDPR") which took effect on May 25, 2018 harmonizing data protection laws across the E.U. The GDPR strengthens individual privacy rights and enhances data protection obligations for processors and controllers of personal data. This includes expanded disclosures about how personal information is to be used, limitations on retention of information and mandatory data breach notification requirements. Non-compliance with the GDPR can trigger fines of up to €20 million or 4% of total worldwide annual revenue, whichever is greater.
Also, U.S. federal, state and other foreign governments and agencies have adopted or are considering adopting laws and regulations regarding the collection, storage, use, processing and disclosure of personal data. State governments within the U.S. are starting to enact their own versions of “GDPR- like” privacy legislation which will create additional compliance challenges, risk, and administrative burden. Even though comprehensive U.S. Federal Privacy legislation is being discussed seriously by lawmakers and other stakeholders, it is possible that a one-size fits all compliance program may be difficult to achieve/manage globally.

Because the interpretation and application of privacy and data protection laws are still uncertain, it is possible that these laws may be interpreted and applied in a manner that is inconsistent with our existing practices or the features of our products, services and software.

Any failure or perceived failure by us, our business partners, or third party service providers to comply with GDPR, other federal, state or international privacy-related or data protection laws and regulations, or the privacy commitments contained in contracts could result in proceedings against us by governmental entities or others and significant fines, which could have a material adverse effect on our business and operating results and harm our reputation.

In addition, some countries are considering legislation requiring local storage and processing of data that, if enacted, could increase the cost and complexity of offering our products, services and software or maintaining our business operations in those jurisdictions.

A security breach or other significant disruption of our IT systems, those of our outsource partners, suppliers or those we manufacture, install, and in some cases operate and maintain for our customers, caused by cyber attack or other means, could have a negative impact on our operations, sales, and operating results.

All information technology systems are potentially vulnerable to damage, unauthorized access or interruption from a variety of sources, including but not limited to, cyber attack, cyber intrusion, computer viruses, security breach, energy blackouts, natural disasters, terrorism, sabotage, war, insider trading, and telecommunication failures. As a provider of mission-critical communications systems for customers in critical infrastructure sectors of the U.S. and globally, including systems that we operate and maintain for certain customers of ours, we face additional risk as a target of sophisticated attacks aimed at compromising both our company’s and our customers’ sensitive information and intellectual property, through means referred to as advanced persistent threats. This risk is heightened because these systems may contain sensitive governmental information or personally identifiable or other protected information. While we employ a number of countermeasures and security controls, including training, audits, and utilization of commercial information security threat-sharing networks to protect against such attacks, we, along with the industry, have experienced a gradual and steady increase in the sophistication of these threats, most noticeably through well-crafted social engineering and phishing attempts. We cannot guarantee that all threat attempts will be successfully thwarted even with these countermeasures and we are therefore investing more in detection and response capabilities to minimize potential impacts. Further, we are dependent, in certain instances, upon our outsourced business partners, suppliers, and customers to adequately protect our IT systems and those IT systems that we manage for our customers. In addition, some of our customers are exploring broadband solutions that use public carrier networks on which our solutions would operate. We do not have direct oversight or influence over how public carrier networks manage the security, quality, or resiliency of their networks, and because they are an attractive high value target due to their role in critical infrastructure, they expose customers to an elevated risk over our private networks. Although we maintain insurance related to cybersecurity risks, there can be no assurance that our insurance coverage will cover the particular cyber incident at issue or that such coverage will be sufficient.

Our company outsources certain business operations, including, but not limited to IT, HR information systems, manufacturing, repair, distribution, and engineering services. These arrangements are governed by various contracts and agreements which reference and mandate Company and international standards of information protection, as appropriate. In addition, we maintain certain networked equipment at customer locations and are reliant on those customers to protect and maintain that equipment. The “attack surface” for us to protect against our adversaries is thus often extended to these partners and customers, as well as our suppliers, and we have some dependency upon their cybersecurity capabilities as well as their willingness to exchange threat and response information with us.

A cyber attack or other significant disruption involving our IT systems or those of our outsource partners, suppliers or our customers could result in the unauthorized release of proprietary, confidential or sensitive information of ours or our customers. Such unauthorized access to, or release of, this information could: (i) allow others to unfairly compete with us, (ii) compromise safety or security, given the mission-critical nature of our customers’ systems, (iii) subject us to claims for breach of contract, tort, and other civil claims, and (iv) damage our reputation. We could face regulatory penalties, enforcement actions, remediation obligations and/or private litigation by parties whose data is improperly disclosed or misused. In addition, there has been a sharp increase in laws in Europe, the U.S. and elsewhere, imposing requirements for the handling of personal data, including data of employees, consumers and business contacts, as well as imposing requirements for remediation action, including specific timing and method of notification. There is a risk that our company, directly or as the result of some third-party service provider we use, could be found to have failed to comply with the laws or regulations of some country regarding the collection, consent, handling, transfer, retention or disposal of such personal data, and therefore subject us to fines or other sanctions. The European Courts invalidation of Safe Harbor as a mechanism to legitimize cross border data flows increases the risk that our company, directly or through some third-party service provider that we use, may inappropriately transfer E.U. personal data. Any or all of the foregoing could have a negative impact on our business, financial condition, results of operations, and cash flow.

A significant amount of our international business is transacted in local currency and a significant percentage of our cash and cash equivalents are held outside of the United States, which exposes us to risk relating to currency fluctuations, changes in foreign exchange regulations and repatriation delays and costs, which could negatively impact our sales, profitability and financial flexibility.

We have sizable sales and operations in Canada, Europe, Middle East, Africa, Asia, and Latin America.
A significant amount of this business is transacted in local currency. As a result, our financial performance is impacted by currency fluctuations. We are also experiencing increased pressure to agree to established currency conversion rates and cost of living adjustments as a result of foreign currency fluctuations or the requirement to transact business in local currencies.

A significant percentage of our cash and cash equivalents is currently held outside the U.S. and we continue to generate profits outside of the U.S., while many of our liabilities, such as our public debt, the majority of our pension liabilities and certain other cash payments, such as dividends and share repurchases, are payable in the U.S. While we have regularly repatriated funds with minimal adverse impact, repatriation of some of the funds has been and could continue to be subject to delay for local country approvals and could have potential adverse tax consequences. In addition, foreign exchange regulations may limit our ability to convert or repatriate foreign currency. As a result of having a lower amount of cash and cash equivalents in the U.S., our financial flexibility may be reduced.

We face uncertainty in the global geopolitical landscape that may impede the implementation of our strategy outside the United States.

In June 2016, the United Kingdom (the “U.K.”) held a referendum in which voters approved the country’s exit from the E.U., commonly referred to as Brexit. The U.K. government has so far been unable to secure a parliamentary majority for the withdrawal agreement. Continued uncertainty, or a U.K. exit without any agreement on terms, would risk significant disruption to U.K./E.U. trade. The prospect of Brexit has already caused global stock market volatility and currency exchange rate fluctuations that resulted in strengthening of the U.S. dollar relative to other foreign currencies in which we conduct business. The U.K.’s final withdrawal, especially without any deal on terms, may bring global economic uncertainty, which could cause our customers to closely monitor their costs and reduce their spending budgets. There may also be broader uncertainty over the position the United States will take with respect to certain treaty and trade relationships with other countries. This uncertainty may impact (i) the ability or willingness of non-U.S. companies to transact business in the United States, including with our company, (ii) regulation and trade agreements affecting U.S. companies, (iii) global stock markets and (iv) general global economic conditions. All of these factors are outside of our control, but may cause us to adjust our strategy in order to compete effectively in global markets and could adversely affect our business, financial condition, operating results and cash flows.

A portion of our business is dependent upon U.S. government contracts and grants, which are highly regulated and subject to oversight audits by U.S. government representatives and subject to cancellations. Such audits could result in adverse findings and negatively impact our business.

Our U.S. government business is subject to specific procurement regulations with numerous compliance requirements. In addition, U.S. federal legislation including the National Defense Authorization Act and various "buy American" programs may impose limitations on the ability of the federal government or other parties to contract with certain foreign entities. These requirements, although customary in government contracting in the U.S., increase our performance and compliance costs. These costs may increase in the future, thereby reducing our margins, which could have an adverse effect on our financial condition. Failure to comply with these regulations or other compliance requirements could lead to suspension or debarment from U.S. government contracting or subcontracting for a period of time. Among the causes for debarment are violations of various laws or policies, including those related to procurement integrity, export control, U.S. government security regulations, employment practices, protection of criminal justice data, protection of the environment, accuracy of records, proper recording of costs, foreign corruption, Trade Act Agreement, Buy American Act, and the False Claims Act.

Generally, in the U.S., government contracts and grants are subject to oversight audits by government representatives. Such audits could result in adjustments to our contracts. Any costs found to be improperly allocated to a specific contract may not be allowed, and such costs already reimbursed may have to be refunded. Future audits and adjustments, if required, may materially reduce our revenues or profits upon completion and final negotiation of audits. Negative audit findings could also result in investigations, termination of a contract or grant, forfeiture of profits or reimbursements, suspension of payments, fines and suspension or prohibition from doing business with the U.S. government. All contracts with the U.S. government are subject to cancellation at the convenience of the U.S. government.

In addition, contacts with government officials and participation in political activities are areas that are tightly controlled by federal, state, local and international laws. Failure to comply with these laws could cost us opportunities to seek certain government sales opportunities or even result in fines, prosecution, or debarment.

Government regulation of radio frequencies may limit the growth of public safety broadband systems or reduce barriers to entry for new competitors.

Radio frequencies are required to provide wireless services. The allocation of frequencies is regulated in the U.S. and other countries and limited spectrum is allocated to wireless services and specifically to public safety users. The growth of public safety broadband communications systems may be affected: (i) by regulations relating to the access to allocated spectrum for public safety users, (ii) if adequate frequencies are not allocated, or (iii) if new technologies are not developed to better utilize the frequencies currently allocated for such use. Industry growth may also be affected by new licensing fees required to use frequencies.

The U.S. leads the world in allocating spectrum to enable wireless communications including LTE. Other countries have also allocated spectrum to allow deployment of these and other technologies. This changing landscape may introduce new competition and new opportunities for us.

MSI's opportunities to sell LTE equipment and related software and services in the U.S may be substantially impacted by: (i) AT&T's success in satisfying FirstNet contract requirements and milestones, including, among others, subscriber adoption rate, mandatory payments to FirstNet, and coverage, (ii) Verizon and other commercial broadband carriers providing services for public safety, and (iii) fiscal, public, and regulatory policies and/or special interest politics that risk delaying deployment.

We derive a portion of our revenue from government customers who award business through competitive bidding which can involve significant upfront costs and risks. This effort may not result in awards of business or we may fail to accurately estimate the costs to fulfill contracts awarded to us, which could have adverse consequences on our future profitability.

Many government customers, including most U.S. government customers, award business through a competitive bidding process, which results in greater competition and increased pricing pressure. The competitive bidding process involves significant cost and managerial time to prepare bids for contracts that may not be awarded to us. Even if we are awarded contracts, we may fail to accurately estimate the resources and costs required to fulfill a contract, or to resolve problems with our subcontractors or suppliers, which could negatively impact the profitability of any contract awarded to us, particularly in the case of fixed price contracts. In addition, following the award of a contract, we have experienced and may continue to experience significant expense or delay, contract modification or contract rescission as a result of customer delay or our competitors protesting or challenging contracts awarded to us in competitive bidding.

We enter into fixed-price contracts that could subject us to losses in the event we fail to properly estimate our costs or hedge our risks associated with currency fluctuations.

We enter into a number of firm fixed-price contracts. If our initial cost estimates are incorrect, we can lose money on these contracts. Because certain of these contracts involve new technologies and applications, require us to engage subcontractors and/or can last multiple years, unforeseen events, such as technological difficulties, fluctuations in the price of raw materials, problems with our subcontractors or suppliers and other cost overruns, can result in the contract pricing becoming less favorable or even unprofitable to us and have an adverse impact on our financial results. In addition, a significant increase in inflation rates or currency fluctuations could have an adverse impact on the profitability of longer-term contracts.

The expansion of our software business creates a greater risk than we have been exposed to in the past that we may not be able to properly assess or mitigate.

The process of developing new software products and enhancing existing software products is complex, costly and uncertain, and any failure by us to anticipate customers' changing needs and emerging technological trends accurately could significantly harm our market share, results of operations and financial condition. Any failure to accurately predict technological and business trends, control research and development costs or execute our innovation strategy could harm our business and financial performance. Our research and development initiatives may not be successful in whole or in part, including research and development projects which we have prioritized with respect to funding and/or personnel.

As part of our growth strategy, we may seek to acquire new software technologies. The process of integrating acquired assets into our operations may result in unforeseen operating difficulties and expenditures and may absorb significant management attention that would otherwise be available for the ongoing development of our business. We may allocate a significant portion of our available working capital to finance all or a portion of the purchase price relating to possible acquisitions. Any future acquisition or investment opportunity may require us to obtain additional financing to complete the transaction. The anticipated benefits of any acquisitions may not be realized. In addition, future acquisitions by us could result in potentially dilutive issuances of equity securities, the incurrence of debt and contingent liabilities and amortization expenses related to intangible assets, any of which could materially adversely affect our operating results and financial position.

The expansion of our services business creates increased areas of risk that we may not be able to properly assess or mitigate.

We plan to continue to expand our services business by offering additional and expanded managed services for existing and new types of customers, such as designing, building, operating, managing and in some cases owning a public-safety system or other commercial system. The offering of managed services involves the integration of multiple services, multiple vendors and multiple technologies, requiring that we partner with other solutions and services providers, often on multi-year projects.

Additionally, our managed services business includes the hosting of software applications. This allows the customers to “consume” the software “as a service” and avoid the costs and complexities of acquiring and operating the software. We may face increasing competition from traditional system integrators, the defense industry, and commercial software companies as services contracts become larger and more complicated.

Expansion will bring us into contact with new regulatory requirements and restrictions, such as data security or data residency/localization obligations, with which we will have to comply and may increase the costs of doing business, reduce margins and delay or limit the range of new solutions and services which we will be able to offer.

We may be required to agree to specific performance metrics that meet the customer's requirements for network security, availability, reliability, maintenance and support and, in some cases, if these performance metrics are not met we may not be paid.

We expect to continue to make strategic acquisitions of other companies or businesses and these acquisitions introduce significant risks and uncertainties, including risks related to integrating the acquired businesses and achieving benefits from the acquisitions.

In order to position ourselves to take advantage of growth opportunities or to meet other strategic needs such as product or technology gaps, we have made, and expect to continue to make, strategic acquisitions that involve significant risks and uncertainties. These risks and uncertainties include: (i) the difficulty or inability in integrating newly-acquired businesses and operations in an efficient and effective manner, including ensuring proper integration of acquired businesses' legal and regulatory compliance programs, (ii) risks associated with integrating financial reporting and internal control systems, (iii) difficulties in integrating information technology systems and other business processes to accommodate the acquired businesses, (iv) challenges in integrating acquired businesses to create the operating platform for public safety, (v) the challenges in achieving strategic objectives, cost savings and other benefits from acquisitions, (vi) the risk that our contractual relationships or the markets served do not evolve as anticipated and that the technologies acquired do not prove to be those needed to be successful in those markets, (vii) the potential loss of key employees of the acquired businesses, (viii) the risk of diverting the attention of senior management from our operations, (ix) the risks of entering new markets in which we have limited experience, and (x) future impairments of goodwill of an acquired business. In particular, failure to achieve targeted cost and revenue synergies could negatively impact our business performance.

Certain acquisition candidates in the industries in which we participate may carry higher relative valuations (based on revenues, earnings, cash flow, or other relevant multiples) than we do. This is particularly evident in software and certain services businesses. Acquiring a business that has a higher relative valuation than Motorola Solutions may be dilutive to our earnings. In addition, we may not pursue opportunities that are highly dilutive to near-term earnings.

Key employees of acquired businesses may receive substantial value in connection with a transaction in the form of cash payments for their ownership interest, particularly in the case of founders and other shareholder employees, or as a result of change-in-control agreements, acceleration of stock options and the lifting of restrictions on other equity-based compensation rights. To retain such employees and integrate the acquired business, we may offer additional retention incentives, but it may still be difficult to retain certain key employees.

We may not continue to have access to the capital markets for financing on acceptable terms and conditions, particularly if our credit ratings are downgraded, which could limit our ability to repay our indebtedness and could cause liquidity issues.

From time-to-time we access the capital markets to obtain financing. Our access to the capital markets and the bank credit markets at acceptable terms and conditions are impacted by many factors, including: (i) our credit ratings, (ii) the liquidity of the overall capital markets, (iii) strength and credit availability in the banking markets, and (iv) the current state of the global economy. In addition, we frequently access the credit markets to obtain performance bonds, bid bonds, standby letters of credit and surety bonds, as well as to hedge foreign exchange risk and sell receivables. Furthermore, there can be no assurances we will be able to refinance our existing indebtedness (i) on commercially reasonable terms, (ii) on terms, including with respect to interest rates, as favorable as our current debt, or (iii) at all. There can be no assurances that we will continue to have access to the capital markets or bank credit markets on terms acceptable to us and if we are unable to repay or refinance our debt, we cannot guarantee that we will be able to generate enough cash flows from operations or that we will be able to obtain enough capital to service our debt, fund our planned capital expenditures or pay future dividends.

We are rated investment grade by all three national rating agencies. Any downward changes by the rating agencies to our credit rating may negatively impact the value and liquidity of both our debt and equity securities. Under certain circumstances, an increase in the interest rate payable by us under our revolving credit facility, if any amounts are borrowed under such facility, could negatively affect our operating cash flows. In addition, a downgrade in our credit ratings could limit our ability to: (i) access the capital markets or bank credit markets, (ii) provide performance bonds, bid bonds, standby letters of credit and surety bonds, (iii) hedge foreign exchange risk, (iv) fund our foreign affiliates, and (v) sell receivables. A downgrade in our credit rating could also result in less favorable trade terms with suppliers. In addition, any downgrades in our credit ratings may affect our ability to obtain additional financing in the future and may affect the terms of any such financing. Any future disruptions, uncertainty or volatility in the capital markets may result in higher funding costs for us and adversely affect our ability to access funds and other credit related products. In addition, we may avoid taking actions that would otherwise benefit us or our stockholders, such as engaging in certain acquisitions or engaging in stock repurchases, that would negatively impact our credit rating.

Our future operating results depend on our ability to purchase at acceptable prices a sufficient amount of materials, parts, and components, as well as services and software, to meet the demands of our customers and any disruption to our suppliers or significant increase in the price of supplies could have a negative impact on our results of operations.

Our ability to meet customers' demands depends, in part, on our ability to timely obtain an adequate delivery of quality materials, parts, and components, as well as services and software from our suppliers. In addition, certain supplies, including for some of our critical components, services and software solutions, are available only from a single source or limited sources and we may not be able to diversify sources in a timely manner. If demand for our products or services increases from our current expectations or if suppliers are unable to meet our demand for other reasons, including as a result of natural disasters or financial issues, we could experience an interruption in supply or a significant increase in the price of supply, including as a result of having to move to an alternative source, that could have a negative impact on our business as a result of increased cost or delay in or inability to deliver our products or services. This risk may increase as a result of consolidation of certain suppliers of ours. We have experienced shortages in the past that have negatively impacted our results of operations and may experience such shortages in the future. In addition, credit constraints at our suppliers could cause us to accelerate payment of accounts payable by us, impacting our cash flow.

We have seen increases in the price of certain supplies as we no longer qualify for certain volume discounts compared to other customers of our suppliers given technology changes, our evolving portfolio and lower volumes than customers in other commercial industries. For certain supplies we have also experienced less support and focus from our suppliers as our spend has diminished relative to their other customers, making it more difficult for us to resolve gaps in supply due to unforeseen changes in forecast and demand. In addition, certain suppliers have and others may cancel or not extend contractual arrangements, which will not afford us with sufficient protection against a reduction or interruption in supplies. Moreover, in the event any of these suppliers breach their contracts with us, our legal remedies associated with such a breach may be insufficient to compensate us for any damages we may suffer.

Over the last several years we have outsourced portions of certain business operations like IT, HR information systems, manufacturing, repair, distribution and engineering services and expect to outsource additional business operations. This outsourcing limits our control over these business operations and exposes us to additional risk as a result of the actions of our outsource partners.

As we outsource more of our business operations we are not able to directly control these activities. Our outsource partners may not prioritize our business over that of their other customers and they may not meet our desired level of quality, performance, service, cost reductions or other metrics. Failure to meet key performance indicators may result in our being in default with our customers. In addition, we may rely on our outsource partners to secure materials from our suppliers with whom our outsource partners may not have existing relationships and we may be required to continue to manage these relationships even after we outsource certain business operations.

As we outsource business operations we become dependent on the IT systems of our outsource partners, including to transmit demand and purchase orders to suppliers, which can result in a delay in order placement. In addition, in an effort to reduce costs and limit their liabilities, our outsource partners may not have robust systems or make commitments in as timely a manner as we require.

In some cases the actions of our outsource partners may result in our being found to be in violation of laws or regulations like import or export regulations. As many of our outsource partners operate outside of the U.S., our outsourcing activity exposes us to information security vulnerabilities and increases our global risks. In addition, we are exposed to the financial viability of our outsource partners. Once a business activity is outsourced we may be contractually prohibited from or may not practically be able to bring such activity back within the Company or move it to another outsource partner. The actions of our outsource partners could result in reputational damage to us and could negatively impact our business, financial conditions, results of operations, and cash flows.

Our sales within a quarter are not linear, with a substantial percentage of products shipping in the final month of the quarter. This lack of linearity creates inefficiencies in our business performance and any interruption during this final month could have a substantial impact on our quarterly financial results.

On average, a substantial percentage of our quarterly sales ship in the final month of a quarter. Any interruption in our ability to ship products during this final month, such as unavailability of critical components, disruption to our manufacturing capabilities or disruptions in our distribution channel, will have a disproportionately large impact on our quarterly financial results, as we may be unable to recover in time to ship the products and recognize revenue in that quarter.

In addition, this lack of linearity results in inefficiencies in our financial performance, as we must invest in capacity and resources to support this business model, meaning we have underutilized operations during the first two months of the quarter. We also must maintain additional component inventory and engage in pre-builds of finished goods to mitigate the impact of this lack of linearity and meet potential last month demand. This could result in our carrying excess inventory, which is costly and may result in increased inventory obsolescence over time.

We face many risks relating to intellectual property rights.

Our business will be harmed if: (i) we, our customers and/or our suppliers are found to have infringed intellectual property rights of third-parties, (ii) the intellectual property indemnities in our supplier agreements are inadequate to cover damages and losses due to infringement of third-party intellectual property rights by supplier products, (iii) we are required to provide broad intellectual property indemnities to our customers, (iv) our intellectual property protection is inadequate to protect against threats of misappropriation from internal or external sources or otherwise inadequate to protect our proprietary rights, or (v) our competitors negotiate significantly more favorable terms for licensed intellectual property. We may be harmed if we are forced to make publicly available, under the relevant open-source licenses, certain internally developed software-related intellectual property as a result of either our use of open-source software code or the use of third-party software that contains open-source code.

Since our products are comprised of complex technology, much of which we acquire from suppliers through the purchase of components or licensing of software, we are often involved in or impacted by assertions, including both requests for licenses and litigation, regarding patent and other intellectual property rights. Third-parties have asserted, and in the future may assert, intellectual property infringement claims against us and against our customers and suppliers. Many of these assertions are

brought by non-practicing entities whose principle business model is to secure patent licensing-based revenue from product manufacturing companies. The patent holders often make broad and sweeping claims regarding the applicability of their patents to our products, seeking a percentage of sales as licenses fees, seeking injunctions to pressure us into taking a license, or a combination thereof. Defending claims may be expensive and divert the time and efforts of our management and employees. Increasingly, third-parties have sought broad injunctive relief which could limit our ability to sell our products in the U.S. or elsewhere with intellectual property subject to the claims. If we do not succeed in any such litigation, we could be required to expend significant resources to pay damages, develop non-infringing products or to obtain licenses to the intellectual property that is the subject of such litigation, each of which could have a negative impact on our financial results. However, we cannot be certain that any such licenses, if available at all, will be available to us on commercially reasonable terms. In some cases, we might be forced to stop delivering certain products if we or our customer or supplier are subject to a final injunction.
We attempt to negotiate favorable intellectual property indemnities with our suppliers for infringement of third-party intellectual property rights. However, there is no assurance that we will be successful in our negotiations or that a supplier's indemnity will cover all damages and losses suffered by us and our customers due to the infringing products or that a supplier will choose to accept a license or modify or replace its products with non-infringing products which would otherwise mitigate such damages and losses. Further, we may not be able to participate in intellectual property litigation involving a supplier and may not be able to influence any ultimate resolution or outcome that may negatively impact our sales if a court enters an injunction that enjoins the supplier's products or if the International Trade Commission issues an exclusionary order that blocks our products from importation into the U.S. Intellectual property disputes involving our suppliers have resulted in our involvement in International Trade Commission proceedings from time to time. These proceedings are costly and entail the risk that we will be subjected to a ban on the importation of our products into the U.S. solely as a result of our use of a supplier's components.
In addition, our customers increasingly demand that we indemnify them broadly from all damages and losses resulting from intellectual property litigation against them. These demands stem from the increasing trend of the non-practicing entities that engage in patent enforcement and litigation targeting the end users of our products. End users are targeted so the non-practicing entities can seek royalties and litigation judgments in proportion to the value of the use of our products, rather than in proportion to the cost of our products. Such demands can amount to many times the selling price of our products. Our patent and other intellectual property rights are important competitive tools and may generate income under license agreements. We regard our intellectual property as proprietary and attempt to protect it with patents, copyrights, trademarks, trade secret laws, confidentiality agreements and other methods. We also generally restrict access to and distribution of our proprietary information. Despite these precautions, it may be possible for a third-party to obtain and use our proprietary information or develop similar technology independently. In addition, effective patent, copyright, trademark and trade secret protection may be unavailable or limited in certain foreign countries. Unauthorized use of our intellectual property rights by third-parties and the cost of any litigation necessary to enforce our intellectual property rights could have a negative impact on our financial results.
As we expand our business, including through acquisitions, and compete with new competitors in new markets, the breadth and strength of our intellectual property portfolio in those new markets may not be as developed as in our longer-standing businesses. This may expose us to a heightened risk of litigation and other challenges from competitors in these new markets. Further, competitors may be able to negotiate significantly more favorable terms for licensed intellectual property than we are able to, which puts them at a competitive advantage.
We no longer own certain logos and other trademarks, trade names and service marks, including MOTOROLA, MOTO, MOTOROLA SOLUTIONS and the Stylized M logo and all derivatives and formatives thereof (“Motorola Marks”) and we license the Motorola Marks from Motorola Trademark Holdings, LLC (“MTH”), which is currently owned by Motorola Mobility, a subsidiary of Lenovo. Our joint use of the Motorola Marks could result in product and market confusion and negatively impact our ability to expand business under the Motorola brand. In addition, if we do not comply with the terms of the license agreement we could lose our rights to the Motorola Marks. Because of the change of control of Motorola Mobility, which is now owned by Lenovo, we may find that an incompatible third-party owns the Motorola Marks.

We have a worldwide, perpetual and royalty-free license from MTH to use the Motorola Marks as part of our corporate name and in connection with the manufacture, sale, and marketing of our current products and services. The license of the Motorola Marks is important to us because of the reputation of the Motorola brand for our products and services. There are risks associated with both Motorola Mobility and the Company using the Motorola Marks and with this loss of ownership. As both Motorola Mobility and the Company will be using the Motorola Marks, confusion could arise in the market, including customer confusion regarding the products offered by and the actions of the two companies. Motorola Mobility was acquired by Lenovo in 2014, which resulted in Lenovo having effective control over the Motorola Marks. This risk could increase as both Motorola Mobility's and our products continue to converge. This risk could increase under Lenovo's control if they expand their use of the Motorola Marks. Also, any negative publicity associated with either company in the future could adversely affect the public image of the other. In addition, because our license of the Motorola Marks will be limited to products and services within our specified fields of use, we will not be permitted to use the Motorola Marks in other fields of use without the approval of Motorola Mobility, which is now controlled by Lenovo. In the event that we desire to expand our business into any other fields of use, we may need to do so with a brand other than the Motorola brand. Developing a brand as well-known and with as much brand equity as Motorola could take considerable time and expense. The risk of needing to develop a second brand increases as Motorola Mobility's and our products continue to converge and if our business expands into other fields of use. In addition, we could lose our rights to use the Motorola Marks if we do not comply with the terms of the license agreement. Such a loss could negatively affect our business, results of operations and financial condition. Furthermore, MTH has the right to license the brand to third-parties and either Motorola Mobility or licensed third-parties may use the brand in ways that make the brand less attractive for customers of Motorola Solutions, creating increased risk that Motorola Solutions may need to develop an alternate or additional brand. In 2013 Motorola Mobility modified certain Motorola Marks used by the Company. Motorola Mobility may require the Company to adopt the use of the modified Motorola Marks, which would result in the Company incurring the costs of rebranding.

In addition, neither Motorola Mobility nor Lenovo are prohibited from selling the Motorola Marks. In the event of a liquidation of Motorola Mobility or the then owner of the Motorola Marks, it is possible that a bankruptcy court would permit the Motorola Marks to be assigned to a third-party. While our right to use the Motorola Marks under our license should continue in our specified field of use in such situations, it is possible that we could be party to a license arrangement with a third-party whose interests are incompatible with ours, thereby potentially making the license arrangement difficult to administer, and increasing the costs and risks associated with sharing the Motorola Marks. In addition, there is a risk that, in the event of a bankruptcy of Motorola Mobility or the then owner of the Motorola Marks, Motorola Mobility, the then owner or its bankruptcy trustee may attempt to reject the license, or a bankruptcy court may refuse to uphold the license or certain of its terms. Such a loss could negatively affect our business, results of operations and financial condition.

We utilize the services of subcontractors to perform under many of our contracts and the inability of our subcontractors to perform in a timely and compliant manner could negatively impact our ability to comply with our performance obligations as the prime contractor.

We engage subcontractors, including third-party integrators, on many of our contracts and as we expand our solutions and services business our use of subcontractors has and will continue to increase. Our subcontractors may further subcontract performance and may supply third-party products and software from a number of smaller companies. We may have disputes with our subcontractors, including disputes regarding the quality and timeliness of work performed by the subcontractor or its subcontractors and the functionality, warranty and indemnities of products, software and services supplied by our subcontractor. We are not always successful in passing down customer requirements to our subcontractors, and thus in some cases may be required to absorb contractual risks from our customers without corresponding back-to-back coverage from our subcontractor. Even when we are able to pass down customer requirements to our subcontractors, sometimes those subcontractors have less financial resources than we do, and a customer may look to us to cover a loss or damage. Our subcontractors may not be able to acquire or maintain the quality of the materials, components, subsystems and services they supply, or secure preferred warranty and indemnity coverage from their suppliers which might result in greater product returns, service problems, warranty claims and costs and regulatory compliance issues. Any of the foregoing could harm our business, financial condition and results of operations.

Failure of our suppliers, subcontractors, distributors, resellers and representatives to use acceptable legal or ethical business practices and adhere to our Supplier Code of Conduct or our Human Rights Policy could negatively impact our business.

It is our policy to require our suppliers, subcontractors, distributors, resellers, and third-party sales representatives (“TPSRs”) to operate in compliance with applicable laws, rules and regulations regarding working conditions, employment practices, environmental compliance, anti-corruption and trademark and copyright licensing. However, we do not control their labor and other business practices. If one of our suppliers, subcontractors, brokers, distributors, resellers, or TPSRs violates labor or other laws or implements labor or other business practices that are regarded as unethical, the shipment of finished products to us could be interrupted, orders could be canceled, relationships could be terminated and our reputation could be damaged. If one of our suppliers or subcontractors fails to procure necessary license rights to trademarks, copyrights or patents, legal action could be taken against us that could impact the salability of our products and expose us to financial obligations to a third-party. Any of these events could have a negative impact on our sales and results of operations.

Our employees, customers, suppliers and outsource partners are located throughout the world and, as a result, we face risks that other companies that are not global may not face.

Our customers and suppliers are located throughout the world. In 2018, 41% percent of our revenue was generated outside the U.S. In addition, we have a number of research and development, administrative and sales facilities outside the U.S. and 55% of our employees are employed outside the U.S. Most of our suppliers' operations are outside the U.S. and a significant portion of our products are manufactured outside the U.S., both internally and by third-parties. Most of our products that are manufactured by or for us outside the U.S. are manufactured in Malaysia. If manufacturing in our facility, or a facility manufacturing products for us, in Malaysia is disrupted, our overall capacity would be significantly reduced and our business, financial condition, results of operation, and cash flows could be negatively impacted.

Because we have sizable sales and operations, including outsourcing and procurement arrangements, outside of the U.S., we have more complexity in our operations and are exposed to a unique set of global risks that could negatively impact our business, financial condition, results of operations, and cash flows, including but not limited to: (i) currency fluctuations, (ii) import/export regulations, tariffs, trade barriers and trade disputes, customs classifications and certifications, including but not limited to changes in classifications or errors or omissions related to such classifications and certifications, (iii) changes in U.S. and non-U.S. rules related to trade, environmental, health and safety, technical standards, consumer and intellectual property and consumer protection, (iv) longer payment cycles, (v) tax issues, such as tax law changes, variations in tax laws from country to country and as compared to the U.S., obligations under tax incentive agreements, difficulties in repatriating cash generated or held abroad in a tax-efficient manner and difficulties in securing local country approvals for cash repatriations, (vi) changes in foreign exchange regulations, (vii) challenges in collecting accounts receivable, (viii) cultural and language differences, (ix) employment regulations and local labor conditions, (x) privacy and data protection regulations and restrictions, (xi) difficulties protecting intellectual property in foreign countries, (xii) instability in economic or political conditions, including inflation, recession and actual or anticipated military or political conflicts and terrorism, (xiii) natural disasters, (xiv) public health issues or outbreaks, (xv) changes in laws or regulations that negatively impact benefits being received by us or that require costly modifications in products sold or operations performed in such countries, (xvi) litigation in foreign court systems and foreign enforcement or administrative proceedings, and (xvii) applicability of anti-corruption laws including the Foreign Corrupt Practices Act ("FCPA") and the U.K. Bribery Act.

We have a number of employees, contractors, representatives and agents in, and sell our products and services throughout, the Middle East and our operations, as well as demand for our products and services, could be negatively impacted by political conflicts and hostilities in this region. The potential for future unrest, terrorist attacks, increased global conflicts, hostility against U.S.-based multinational companies and the escalation of existing conflicts has created worldwide uncertainties that have negatively impacted, and may continue to negatively impact, demand for certain products of ours.

We also are subject to risks that our operations could be impacted by our employees, contractors, representatives or agents in ways that violate the FCPA, the U.K. Bribery Act, or other similar anti-corruption laws. While we have policies and procedures to comply with these laws, our employees, contractors, representatives and agents may take actions that violate our policies. Any such violations could have a negative impact on our business. Moreover, we face additional risks that our anti-corruption policies and procedures may be violated by TPSRs or other third-parties that help sell our products or provide other solutions and services, because such TPSRs and other third-parties are not our employees, and, it is therefore more difficult to oversee and control their conduct.

Many of our components and some of our products, including software, are developed and/or manufactured by third-parties and in some cases designed by third-parties and if such third-parties lack sufficient quality control, change the design of components or if there are significant changes in the financial or business condition of such third-parties, it may have a negative impact on our business.

We rely on third-parties to develop and/or manufacture many of our components and some of our finished products, and to design certain components and finished products, as well as provide us with software necessary for the operation of those products and we may increase our reliance on such third-parties in the future. We could have difficulties fulfilling our orders and our sales and profits could decline if: (i) we are not able to engage such third-parties with the capabilities or capacities required by our business, (ii) such third-parties lack sufficient quality control or fail to deliver quality components, products, services or software on time and at reasonable prices, or deliver products, services or software that do not meet regulatory or industry standards or requirements, (iii) if there are significant changes in the financial or business condition of such third-parties, (iv), our third party providers fail to comply with legal or regulatory requirements, or (v) if we have difficulties transitioning operations to such third-parties.

Because of the long life-cycle of many of our products, we need access to limited quantities of components for manufacturing and repair and suppliers have been and may continue to be unwilling to manufacture such components or may only do so at high prices. Certain key component suppliers are reducing the expected lifetime of key components, in particular semiconductor and electrical components, on some of our products. This could result in the need for more frequent product redesigns and increased engineering costs on some products or costly last time buys, which may negatively impact our financial performance. In addition, we may be unable to meet our repair obligations to our customers.

We are exposed to risks under large, multi-year system and services contracts that may negatively impact our business.

We enter into large, multi-year system and services contracts with large municipal, state, and nationwide government and commercial customers. In some cases we may not be the prime contractor and may be dependent on other third-parties such as commercial carriers or systems integrators. This exposes us to risks, including among others: (i) technological risks, especially when the contracts involve new technology, (ii) risk of defaults by third-parties on whom we are relying for products or services as part of our offering or who are the prime contractors, (iii) financial risks, including the estimates inherent in projecting costs associated with large, long-term contracts, the impact of currency fluctuations, inflation, and the related impact on operating results, (iv) cybersecurity risk, especially in managed services contracts with public safety and commercial customers that process data, and (v) political risk, especially related to the contracts with government customers. In addition, multi-year awards from governmental customers may often only receive partial funding initially and may typically be cancelable on short notice with limited penalties. Recovery of front loaded capital expenditures in long-term managed services contracts is dependent on the continued viability of such customers. The termination of funding for a government program or insolvency of commercial customer could result in a loss of anticipated future revenue attributable to that program, which could have an adverse impact on our profitability.

Our success depends in part on our timely introduction of new products and technologies and our results can be impacted by the effectiveness of our significant investments in new products and technologies.

The markets for certain products of ours are characterized by changing technologies and evolving industry standards. In some cases it is unclear what specific technology will be adopted in the market or what delivery model will prevail, including whether public safety broadband (LTE and 5G) will be delivered via private networks, public carriers or some combination thereof. In addition, new technologies such as voice over LTE and 5G or push-to-talk clients over LTE and 5G could reduce sales of our traditional products. The shift to smart public safety and the prevalence of data in our customer use cases results in our competing in a more fragmented marketplace. In addition, new technologies and new competitors continue to enter our markets at a faster pace than we have experienced in the past, resulting in increased competition from non-traditional suppliers, including public carriers, telecom equipment providers, consumer device manufacturers and software companies. New products are expensive to develop and bring to market and additional complexities are added when this process is outsourced as we have done in certain cases or as we increase our reliance on third-party content and technology. Our success depends, in substantial part, on the timely and successful introduction of new products, upgrades and enhancements of current products to comply with emerging industry standards, laws and regulations, including country specific proprietary technology requirements, and to address competing technological and product developments carried out by our competitors. Developing new technologies to compete in a specific market may not be financially viable, resulting in our inability to compete in that market. The R&D of new, technologically-advanced products is a complex and uncertain process requiring high levels of innovation and investment, as well as the accurate anticipation of technology and market trends. Many of our products and systems are complex and we may experience delays in completing development and introducing new products or technologies in the future. We may focus our resources on technologies that do not become widely accepted or are not commercially viable or involve compliance obligations with additional areas of regulatory requirements.

Our results are subject to risks related to our significant investment in developing and introducing new products. These risks include among others: (i) difficulties and delays in the development, production, testing and marketing of products, particularly when such activities are done through third-parties, (ii) customer acceptance of products, (iii) the development of, approval of, and compliance with industry standards and regulatory requirements, (iv) the significant amount of resources we must devote to the development of new technologies, and (v) the ability to differentiate our products and compete with other companies in the same markets.

If the quality of our products does not meet our customers' expectations or regulatory or industry standards, then our sales and operating earnings, and ultimately our reputation, could be negatively impacted.

Some of the products we sell may have quality issues resulting from the design or manufacture of the product, or from the software used in the product. Sometimes, these issues may be caused by components we purchase from other manufacturers or suppliers. Often these issues are identified prior to the shipment of the products and may cause delays in shipping products to customers, or even the cancellation of orders by customers. Sometimes, we discover quality issues in the products after they have been shipped to our customers, requiring us to resolve such issues in a timely manner that is the least disruptive to our customers, particularly in light of the mission-critical nature of our communications products. Such pre-shipment and post-shipment quality issues can have legal, financial and reputational ramifications, including: (i) delays in the recognition of revenue, loss of revenue or future orders, (ii) customer-imposed penalties for failure to meet contractual requirements, (iii) increased costs associated with repairing or replacing products, and (iv) a negative impact on our goodwill and brand name reputation.

In some cases, if the quality issue affects the product's performance, safety or regulatory compliance, then such a “defective” product may need to be “stop-shipped” or recalled. Depending on the nature of the quality issue and the number of products in the field, it could cause us to incur substantial recall or corrective field action costs, in addition to the costs associated with the potential loss of future orders and the damage to our goodwill or brand reputation. In addition, we may be required, under certain customer contracts, to pay damages for failed performance that might exceed the revenue that we receive from the contracts. Recalls and field actions involving regulatory non-compliance could also result in fines and additional costs. Recalls and field actions could result in third-party litigation by persons or companies alleging harm or economic damage as a result of the use of the products.

We completed a number of large divestitures in the past and could have potential liabilities associated with those transactions and the businesses we divested. In addition, these divestitures have resulted in less diversity of our business and our customer base, which could negatively impact our financial results in the event of a downturn in our mission-critical communications business.

In the past, we have spun-off or sold a number of large businesses, including Motorola Mobility, our Networks business and our Enterprise business. In connection with our divestitures we typically remain liable for certain pre-closing liabilities associated with the divested business, such as pension liabilities, taxes, employment, environmental liabilities and litigation. Even though we establish reserves for any expected ongoing liability associated with divested businesses, those reserves may not be sufficient if unexpected liabilities arise and this could negatively impact our financial condition and future results of operations.

Because we are now singularly focused on mission-critical communications for public safety and commercial customers we have less diversity in our business and our customer base. A downturn in this business could have a greater negative impact on our financial results than when we were a more diversified communications provider.

We may not have the ability to settle the remaining principal amount of $800 million of the 2% Senior Convertible Notes (the "Senior Convertible Notes") in cash in the event of conversion or to repurchase the Senior Convertible Notes upon the occurrence of a fundamental change, which could have a material effect on our reported financial results.

Our Senior Convertible Notes are convertible any time. In the event of conversion, the Company currently intends to settle the principal amount of the Senior Convertible Notes in cash.

Under certain circumstances, convertible debt instruments (such as the Senior Convertible Notes) that may be settled entirely or partially in cash are evaluated for their impact on earnings per share utilizing the treasury stock method, the effect of which is that the shares issuable upon conversion of the Senior Convertible Notes are not included in the calculation of diluted earnings per share except to the extent that the conversion value of the Senior Convertible Notes exceeds their principal amount. Under the treasury stock method the number of shares outstanding for purposes of calculating diluted earnings per share includes the number of shares that would be required to settle the excess of the conversion value of the Senior Convertible Notes, if any, over the principal amounts of the Senior Convertible Notes (which would be settled in cash). The conversion value of the Senior Convertible Notes will exceed the principal amount of the notes to the extent the trading price of a share of our stock exceeds the effective conversion price as of the conversion date.

If we do not have adequate cash available, either from cash on hand, funds generated from operations or existing financing arrangements, or we cannot obtain additional financing arrangements, we may not be able to settle the principal amount of the Senior Convertible Notes in cash and, in the case of settlement of conversion elections, will be required to settle the principal amount of the Senior Convertible Notes in stock. If we settle any portion of the principal amount of the Senior Convertible Notes in stock, it will result in immediate, and possibly material, dilution to the interests of existing security holders.

Following any conclusion that we no longer have the ability to settle the Senior Convertible Notes in cash, we will be required on a going forward basis to change our accounting policy for earnings per share from the treasury stock method to the if-converted method. Earnings per share will most likely be significantly lower under the if-converted method as compared to the treasury stock method.

Our ability to repurchase the Senior Convertible Notes in cash upon the occurrence of a fundamental change or make any other required payments may be limited by law or the terms of other agreements relating to our indebtedness outstanding at the time. Our failure to repurchase the Senior Convertible Notes when required would result in an event of default with respect to the Senior Convertible Notes and may constitute an event of default or prepayment under, or result in the acceleration of the maturity of, our then-existing indebtedness.

Tax matters could have a negative impact on our financial condition and results of operations.

We are subject to income taxes in the U.S. and numerous foreign tax jurisdictions. Our provision for income taxes and cash tax liability may be negatively impacted by: (i) changes in the mix of earnings taxable in jurisdictions with different statutory tax rates, (ii) changes in tax laws and accounting principles, (iii) changes in the valuation of our deferred tax assets and liabilities, (iv) failure to meet commitments under tax incentive agreements, (v) discovery of new information during the course of tax return preparation, (vi) increases in non-deductible expenses, or (vii) difficulties in repatriating cash held abroad in a tax-efficient manner.

As of December 22, 2017 the U.S. enacted wide-sweeping tax law changes that will impact our provision for income taxes. Certain provisions included in the legislation, primarily related to the taxation of non-U.S. income, do not contain sufficient details for us to determine the specific financial impact on the Company in future years. The future guidance or interpretations of the new law could result in an increase to our U.S. tax liability and a resulting negative impact on our future operating results.

Tax audits may also negatively impact our business, financial condition and results of operations. We are subject to continued examination of our income tax returns, and tax authorities may disagree with our tax positions and assess additional tax. We regularly evaluate the likelihood of adverse outcomes resulting from these examinations to determine the adequacy of our provision for income taxes. There can be no assurance that the outcomes from these continuing examinations will not have a negative impact on our future financial condition and operating results.

Certain tax policy efforts, including the Organisation for Economic Co-operation and Development’s ("OECD") Base Erosion and Profit Shifting ("BEPS") Project, the European Commission’s state aid investigations, and other initiatives could have an adverse effect on the taxation of international businesses. Furthermore, many of the countries where we are subject to taxes, including the U.S, are independently evaluating their tax policy and we may see significant changes in legislation and regulations concerning taxation. Certain countries have already enacted legislation which could affect international businesses, and other countries have become more aggressive in their approach to audits and enforcement of their applicable tax laws. Such changes, to the extent they are brought into tax legislation, regulations, policies, or practices, could increase our effective tax rates in many of the countries where we have operations and have an adverse effect on our overall tax rate, along with increasing the complexity, burden and cost of tax compliance, all of which could impact our operating results, cash flows and financial condition.

Our success depends in part upon our ability to attract, retain and prepare succession plans for senior management and key employees.

The performance of our CEO, senior management and other key employees is critical to our success. If we are unable to retain talented, highly-qualified senior management and other key employees or attract them when needed, it could negatively impact our business. We rely on the experience of our senior management, most of whom have been with the Company for many years and as a result have specific knowledge relating to us and our industry that is difficult to replace and competition for management with experience in the communications industry is intense. A loss of the CEO, a member of senior management or key employee particularly to a competitor could also place us at a competitive disadvantage. Further, if we fail to adequately plan for the succession of our CEO, senior management and other key employees, our business could be negatively impacted.

It may be difficult for us to recruit and retain the types of engineers and other highly-skilled employees that are necessary to remain competitive and layoffs of such skilled employees as a result of divestitures, restructuring activities or cost reductions may benefit our competitors.

Competition for key technical personnel in high-technology industries is intense. As we expand our solutions and services business, we now have increased demand for technical personnel in areas like software development, which is an area of particularly high demand for skilled employees. We believe that our future success depends in large part on our continued ability to hire, assimilate, retain and leverage the skills of qualified engineers and other highly-skilled personnel needed to develop successful new products or services. We may not be as successful as our competitors at recruiting, assimilating, retaining and utilizing these highly-skilled personnel, which could have a negative impact on our business. In addition, as we have divested businesses and restructured our operations we have, in some cases, had to layoff engineers and other highly-skilled employees. If these employees were to go to work for our competitors it could have a negative impact on our business.

Returns on pension and retirement plan assets and interest rate changes could affect our earnings and cash flows in future periods.

Although we made a voluntary contribution into the U.S. pension plan in early 2018, we continue to have large underfunded pension obligations, in part resulting from the fact that we retained almost all of the U.S. pension liabilities and a major portion of our non-U.S. pension liabilities following our divestitures, including the distribution of Motorola Mobility, the sale of our Networks business and the sale of our Enterprise business. The funding position of our pension plans is affected by the performance of the financial markets, particularly the equity and debt markets, and the interest rates used to calculate our pension obligations for funding and expense purposes. Minimum annual pension contributions are determined by government regulations and calculated based upon our pension funding status, interest rates, and other factors. If the financial markets perform poorly, we have been and could be required to make additional large contributions. The equity and debt markets can be volatile, and therefore our estimate of future contribution requirements can change dramatically in relatively short periods of time. Similarly, changes in interest rates can affect our contribution requirements. In volatile capital market environments, the uncertainty of material changes in future minimum required contributions increases.

Changes in our operations or sales outside the U.S. markets could result in lost benefits in impacted countries and increase our cost of doing business.

We have entered into various agreements with non-U.S. governments, agencies or similar organizations under which we receive certain benefits relating to its operations and/or sales in the jurisdiction. If our circumstances change, and operations or sales are not at levels originally anticipated, we may be at risk of having to reimburse benefits already granted, and losing some or all of these benefits and increasing our cost of doing business.

We transferred a significant portfolio of intellectual property rights, including patents, to Motorola Mobility and Zebra and we are unable to leverage these intellectual property rights as we did prior to the distribution of Motorola Mobility or the sale of our Enterprise business.

We contributed approximately 17,200 granted patents and approximately 8,000 pending patent applications worldwide to Motorola Mobility in connection with the distribution. We also transferred approximately 2,700 granted patents and approximately 800 pending patent applications to Zebra in connection with the sale of the Enterprise business. Although we have a worldwide, perpetual, royalty-free license to these patents and other intellectual property rights, we no longer own them. As a result we are unable to leverage these intellectual property rights for purposes of generating licensing revenue or entering into favorable licensing arrangements with third-parties. As a result we may incur increased license fees or litigation costs. Although we cannot predict the extent of such unanticipated costs, it is possible such costs could negatively impact our financial results.

We are subject to a wide range of product regulatory and safety, consumer, worker safety and environmental laws that continue to expand and could impact our ability to grow our business, could subject us to unexpected costs and liabilities and could impact our financial performance.

Our operations and the products we manufacture are subject to a wide range of product regulatory and safety, consumer, worker safety and environmental laws. Compliance with such existing or future laws could subject us to future costs or liabilities, impact our production capabilities, constrict our ability to sell, expand or acquire facilities, restrict what products and services we can offer, and generally impact our financial performance. Some of these laws are environmental and relate to the use, disposal, clean up of, and exposure to certain substances. For example, in the U.S., laws often require parties to fund remedial studies or actions regardless of fault and often times in response to action or omissions that were legal at the time they occurred. We continue to incur disposal costs and have ongoing remediation obligations. Changes to environmental laws or our discovery of additional obligations under these laws could have a negative impact on our financial performance.

Laws focused on: (i) the energy efficiency of electronic products and accessories, (ii) recycling of both electronic products and packaging, (iii) reducing or eliminating certain hazardous substances in electronic products, and (iv) the use and transportation of batteries continue to expand significantly. Laws pertaining to accessibility features of electronic products, standardization of connectors and power supplies, the use and transportation of lithium-ion batteries and other aspects of our products are also proliferating. There are also demanding and rapidly changing laws around the globe related to issues such as product safety, radio interference, radio frequency radiation exposure, medical related functionality, use of products with video functionality, and consumer and social mandates pertaining to use of wireless or electronic equipment. These laws, and changes to these laws, could have a substantial impact on whether we can offer certain products, solutions and services, on product costs, and on what capabilities and characteristics our products or services can or must include.

These laws could impact our products and negatively affect our ability to manufacture and sell products competitively. We expect these trends to continue. In addition, we anticipate that we will see increased demand to meet voluntary criteria related to reduction or elimination of certain constituents from products, increasing energy efficiency, and providing additional accessibility.

We may be unable to obtain components and parts that are verified to be Democratic Republic of Congo ("DRC") Conflict-Free, which could result in reputational damage if we disclose that our products include minerals that have been identified as “not found to be DRC Conflict-Free” or if we disclose that we are unable to determine whether such minerals are included in our products.

The Dodd-Frank Wall Street Reform and Consumer Protection Act included disclosure requirements regarding the use of tin, tantalum, tungsten and gold (which are defined as “conflict minerals”) in our products and if the origin of these materials were from the DRC or an adjoining country. If the minerals originated from the DRC or an adjoining country then a company must disclose the measures it has taken to exercise due diligence and chain of custody to prevent the sourcing of such minerals that have been found to be financing conflict in the DRC. There is a limited pool of suppliers who can provide verifiable DRC Conflict-Free components and parts, particularly since our supply chain is complex. As a result, we may be required to publicly disclose that we are not currently able to determine if the products we manufactured in 2018 are DRC Conflict-Free. For future reporting years, if the industry systems that we are relying on are not mature enough for us to make a definitive Conflict-Free determination, we may have to declare our products as “not found to be DRC Conflict-Free,” or such other definitional standard as determined by the SEC and/or the judicial system and we may face reputational challenges with our customers, other stockholders and the activist community as a result. In addition, the E.U. has passed conflict minerals legislation which may have an impact on our reporting obligations and compliance programs in Europe.

Any system or network disruption could have a negative impact on our operations, sales and operating results.

We rely extensively on our information systems to manage our business operations. Our systems are subject to damage or interruption from various sources, including power outages, computer and telecommunications failures, computer viruses, cybersecurity breaches, vandalism, severe weather conditions, catastrophic events, terrorism, and human error, and our disaster recovery planning cannot account for all eventualities. If our systems are damaged, fail to function properly, or otherwise become compromised or unavailable, we may incur substantial costs to repair or replace them, and we may experience loss of critical data and interruptions or delays in our ability to perform critical functions, which could adversely affect our business and operating results. While we have significantly reduced our reliance on a number of older legacy information systems that are harder to maintain we could negatively impact our operations and financial results. In addition, as we have outsourced more of our business operations we have increased our dependence on the IT systems of our outsourced business partners which are not under our direct management or control. Any disruption to either those outsourced systems or the communication links between Motorola Solutions and the outsourced supplier, may negatively impact our ability to manufacture, distribute, or repair products. We may incur additional costs to remedy the damages caused by these disruptions.

Item 1B: Unresolved Staff Comments

None.

Item 2: Properties

Motorola Solutions' Global Headquarters office is located at 500 W. Monroe Street, Chicago, Illinois 60661. Motorola Solutions also operates manufacturing facilities and sales offices in other U.S. locations and in many other countries. As of December 31, 2018, we: (i) owned two facilities (manufacturing and office), both of which were located in Europe, (ii) leased 239 facilities, 132 of which were located in the Americas region and 107 of which were located in other countries and (iii) primarily utilized three major facilities for the manufacturing and distribution of our products, located in: Penang, Malaysia; Elgin, Illinois; and Berlin, Germany. Motorola Solutions sold its Penang, Malaysia facility and manufacturing operations to Sanmina Corporation ("Sanmina") on February 1, 2016.

We generally consider the productive capacity of our manufacturing facilities to be adequate and sufficient for our requirements. The extent of utilization of each manufacturing facility varies throughout the year.

In 2018, approximately 40% of our products were manufactured in Illinois and approximately 55% of our products were manufactured in Penang. We rely on third-party providers in order to enhance our ability to lower costs and deliver products that meet demand. If manufacturing in Penang or Illinois were disrupted, our overall productive capacity could be significantly reduced.

Item 3: Legal Proceedings

We are a defendant in various lawsuits, claims, and actions, which arise in the normal course of business. In the opinion of management, the ultimate disposition of these matters will not have a material adverse effect on our consolidated financial position, liquidity, or results of operations. However, an unfavorable resolution could have a material adverse effect on our consolidated financial position, liquidity, or results of operations in the periods in which the matters are ultimately resolved, or in the periods in which more information is obtained that changes management's opinion of the ultimate disposition.

Item 4: Mine Safety Disclosures

Not applicable.

Executive Officers of the Registrant

The following are the persons who were the executive officers of Motorola Solutions, their ages, and their current titles as of February 15, 2019 and the positions they have held during the last five years with the Company or as otherwise noted:

Gregory Q. Brown; age 58; Chairman and Chief Executive Officer since May 3, 2011.

Gino A. Bonanotte; age 54; Executive Vice President and Chief Financial Officer since November 13, 2013.

Mark S. Hacker; age 47; Executive Vice President, General Counsel and Chief Administrative Officer since January 21, 2015; and Senior Vice President and General Counsel from June 2013 to January 2015.

Kelly S. Mark; age 47; Executive Vice President, Services & Software since August 28, 2018; Senior Vice President, Managed & Support Services from July 2017 to August 2018; Corporate Vice President, Managed & Support Services from August 2015 to July 2017; and Corporate Vice President, Strategy from May 2011 to August 2015.

John P. "Jack" Molloy; age 47; Executive Vice President, Products & Sales since August 28, 2018; Executive Vice President, Worldwide Sales and Services from July 2017 to August 2018; Executive Vice President, Worldwide Sales from January 2016 to July 2017; Executive Vice President, Americas Sales & Services from November 2015 to January 2016; Senior Vice President, The Americas Sales & Marketing from September 2015 to November 2015; and Senior Vice President, North America Sales from January 2014 to August 2015.

Rajan S. Naik; age 47; Senior Vice President, Chief Strategy & Innovation Officer since December 2017; Corporate Vice President, Chief Strategy Officer from March 2016 to December 2017; and Senior Vice President, Chief Strategy Officer, Advanced Micro Devices, Inc. from January 2012 to February 2015.

Daniel G. Pekofske; age 42; Corporate Vice President and Chief Accounting Officer since September 10, 2018; Vice President and Treasurer from January 2016 to September 2018; Vice President and Assistant Treasurer from March 2015 to January 2016; Vice President and Assistant Controller from February 2014 to March 2015; and Senior Director, Finance from December 2012 to February 2014.

Cynthia M. Yazdi; age 54; Senior Vice President, Chief of Staff, Marketing & Communications and Motorola Solutions Foundation since August 28, 2018; Corporate Vice President, Chief of Staff to the Chairman and CEO, Global Marketing and Communications from February 2018 to August 2018; Vice President, Chief of Staff, Global Marketing and Communications from September 2016 to February 2018; Vice President, Chief of Staff from August 2015 to September 2016; and Senior Director, Sales Operations for Asia Pacific from January 2013 to August 2015.

The above executive officers will serve as executive officers of Motorola Solutions until the regular meeting of the Board of Directors in May 2019 or until their respective successors are elected. There is no family relationship between any of the executive officers listed above.

PART II

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

Motorola Solutions' common stock is listed on the New York Stock Exchange. The number of stockholders of record of its common stock on February 1, 2019 was 26,760.

Information regarding securities authorized for issuance under equity compensation plans is incorporated by reference to the information under the caption “Equity Compensation Plan Information” of Motorola Solutions’ Proxy Statement for the 2019 Annual Meeting of Stockholders. The remainder of the response to this Item incorporates by reference Note 16, “Quarterly and Other Financial Data (unaudited)” of the notes to consolidated financial statements appearing under “Item 8: Financial Statements and Supplementary Data.’’

The following table provides information with respect to acquisitions by the Company of shares of its common stock during the quarter ended December 31, 2018.

ISSUER PURCHASES OF EQUITY SECURITIES

Period	(a) Total Number of Shares Purchased	(b) Average Price Paid per Share [1]	(c) Total Number of Shares Purchased as Part of Publicly Announced Plans or Program [2]	(d) Approximate Dollar Value of Shares that May Yet Be Purchased Under the Plans or Program [2]
09/27/18 to 10/24/18	—	$—	—	$1,642,593,206
10/25/18 to 11/20/18	485,945	$125.97	485,945	$1,581,377,757
11/21/18 to 12/27/18	40,254	$124.23	40,254	$1,576,377,038
Total	526,199	$125.84	526,199	

(1) Average price paid per share of common stock repurchased is the execution price, including commissions paid to brokers.

(2) Through a series of actions, the board of directors has authorized the Company to repurchase an aggregate amount of up to $14.0 billion of its outstanding shares of common stock (the “share repurchase program”). The share repurchase program does not have an expiration date. As of December 31, 2018, the Company had used approximately $12.4 billion, including transaction costs, to repurchase shares.

PERFORMANCE GRAPH

The following graph compares the five-year cumulative total returns of Motorola Solutions, Inc., the S&P 500 Index and the S&P Communications Equipment Index.

This graph assumes $100 was invested in the stock or the indices on December 31, 2013 and reflects the payment of dividends.

Item 6: Selected Financial Data

	Years Ended December 31				
(In millions, except per share amounts)	2018	2017	2016	2015	2014
Operating Results					
Net sales	$7,343	$6,380	$6,038	$5,695	$5,881
Operating earnings	1,255	1,284	1,048	916	900
Earnings (loss) from continuing operations, net of tax*	966	(155)	560	640	(697)
Per Share Data (in dollars)					
Diluted earnings (loss) from continuing operations per common share*	$5.62	$(0.95)	$3.24	$3.17	$(2.84)
Earnings (loss) per diluted common share*	5.62	(0.95)	3.24	3.02	5.29
Diluted weighted average common shares outstanding (in millions)	172.0	162.9	173.1	201.8	245.6
Dividends declared per share	$2.13	$1.93	$1.70	$1.43	$1.30
Balance Sheet					
Total assets	$9,409	$8,208	$8,463	$8,346	$10,423
Total debt	5,320	4,471	4,396	4,349	3,400
Other Data					
Capital expenditures	$197	$227	$271	$175	$181
% of sales	2.7 %	3.6 %	4.5 %	3.1 %	3.1 %
Research and development expenditures	$637	$568	$553	$620	$681
% of sales	8.7 %	8.9 %	9.2 %	10.9 %	11.6 %

* Amounts attributable to Motorola Solutions, Inc. common shareholders.

Item 7: Management’s Discussion and Analysis of Financial Condition and Results of Operations

The following is a discussion and analysis of our financial position as of December 31, 2018 and 2017 and results of operations for each of the three years in the period ended December 31, 2018. This commentary should be read in conjunction with our consolidated financial statements and the notes thereto appearing under “Item 8: Financial Statements and Supplementary Data.”

During the second quarter of 2018, we modified our internal reporting structure to better align the way financial information is reported to and analyzed by executive leadership in part as a result of recent acquisitions contributing to the growth within the newly-aligned Services and Software segment. Previously, we had two reporting segments: Products and Services. The changes in reporting structure consist of Systems Integration-related revenue and costs moving from the old Services segment into the newly-presented Products and Systems Integration segment and software-related revenue and costs moving from the old Products segment into the newly-presented Services and Software segment.

Executive Overview

Recent Acquisitions and Developments

On January 7, 2019, we announced that we acquired VaaS International Holdings, Inc. ("VaaS"), a "video analysis as a service" company that is a leading global provider of data and image analytics for vehicle location for a purchase price of $445 million. This acquisition expands our command center software portfolio.

We have reached an agreement with the U.K. Home Office on terms for the new direction of the U.K. Emergency Services Network (“ESN”) that we expect to sign in early 2019. During the fourth quarter of 2018, we signed an agreement to extend the Airwave contract through 2022 with substantially similar terms to the prior agreement.

On March 28, 2018, we completed the acquisition of Avigilon Corporation ("Avigilon"), a provider of advanced security and video solutions including video analytics, network video management hardware and software, video cameras and access control solutions for a purchase price of $974 million.

On March 7, 2018, we completed the acquisition of Plant Holdings, Inc. ("Plant"), the parent company of Airbus DS Communications for a purchase price of $237 million. This acquisition expands our software portfolio in the command center with additional solutions for Next Generation 9-1-1.

On August 28, 2017, we completed the acquisition of Kodiak Networks, a provider of broadband push-to-talk for commercial customers, for a purchase price of $225 million.

On March 13, 2017, we completed the acquisition of Interexport, a managed service provider of communications systems to public safety and commercial customers in Chile, for a purchase price of $98 billion Chilean pesos, or approximately $147 million.

On November 10, 2016, we completed the acquisition of Spillman Technologies ("Spillman"), a provider of comprehensive law enforcement and public safety software solutions, for a purchase price of $221 million. The acquisition expands our command center services and software portfolio and enables us to offer a full suite of solutions to a broader customer base.

On February 19, 2016, we completed the acquisition of Guardian Digital Communications Limited ("GDCL"), a holding company of Airwave Solutions Limited ("Airwave"), the largest private operator of a public safety network in the world. All of the outstanding equity of GDCL was acquired for the sum of £1, after which we invested into GDCL £698 million, net of cash acquired, or approximately $1.0 billion, to settle all third party debt.

Our Business

Motorola Solutions is a leading global provider of mission-critical communications. Our technology platforms in communications, software, video, and services make cities safer and help communities and businesses thrive. At Motorola Solutions, we are ushering in a new era in public safety and security. We serve our customers with a global footprint of sales in more than 100 countries and 16,000 employees worldwide based on our industry leading innovation and a deep portfolio of products and services.

We conduct our business globally and manage it by two segments:

Products and Systems Integration: The Products and Systems Integration segment offers an extensive portfolio of infrastructure, devices, accessories, video solutions, and the implementation, optimization, and integration of such

systems, devices, and applications, including the Company’s: (i) “ASTRO” products, which meet the Association of Public Safety Communications Officials Project 25 standard, (ii) “Dimetra” products which meet the European Telecommunications Standards Institute Terrestrial Trunked Radio “TETRA” standard, (iii) Professional and Commercial Radio (“PCR”) products, (iv) broadband technology products, such as Long-Term Evolution (“LTE”), and (v) video solutions, such as video cameras. The primary customers of the Products and Systems Integration segment are government, public safety and first-responder agencies, municipalities, and commercial and industrial customers who operate private communications networks and video solutions typically managing a mobile workforce. In 2018, the segment’s net sales were $5.1 billion, representing 69% of our consolidated net sales.
Services and Software: The Services and Software segment provides a broad range of solution offerings for government, public safety and commercial communication networks. Services includes a continuum of service offerings

beginning with repair, technical support and maintenance. More advanced offerings include monitoring, software updates and cybersecurity services. Managed services range from partial to full operation of customer or Motorola Solutions-owned networks. Software includes a public safety and enterprise command center software suite, unified communications applications, and video software solutions, delivered both on premise and “as a service.” In 2018, the segment’s net sales were $2.2 billion, representing 31% of our consolidated net sales.

2018 Financial Results

- Net sales were $7.3 billion in 2018 compared to $6.4 billion in 2017 and grew in the Americas and EMEA.
- Operating earnings were $1.3 billion in both 2018 and 2017.
- Earnings attributable to Motorola Solutions, Inc. were $966 million, or $5.62 per diluted common share in 2018, compared to losses of $155 million, or $(0.95) per diluted common share in 2017.
- Our operating cash flow decreased $271 million to $1.1 billion in 2018. The decrease is driven by the $500 million contribution to our U.S. pension plan, partially offset by higher earnings.
- We returned $469 million of capital in the form of $132 million in share repurchases and $337 million in dividends in 2018 and invested $1.2 billion in acquisitions.
- We increased our quarterly dividend by 10% to $0.57 per share in November 2018.
- Ended 2018 with a backlog position of $10.6 billion, up $988 million compared to 2017.

Segment Financial Highlights

- In the Products and Systems Integration segment, net sales were $5.1 billion in 2018, an increase of $587 million, or 13%, compared to $4.5 billion in 2017. On a geographic basis, net sales increased in the Americas and EMEA, partially offset by AP. Operating earnings were $854 million in 2018, compared to $969 million in 2017. Operating margin decreased in 2018 to 16.7% from 21.5% in 2017 driven by costs related to the closure of certain supply chain operations in Europe, an increase to an existing environmental reserve related to a legacy business, and higher expenses related to acquisitions.
- In the Services and Software segment, net sales were $2.2 billion in 2018, an increase of $376 million, or 20%, compared to $1.9 billion in 2017. On a geographic basis, net sales increased in every region. The increase in net sales was driven by growth excluding acquisitions in both Services and Software and also including the acquisitions of Plant, Kodiak Networks, and Interexport. Operating earnings were $401 million in 2018, compared to $315 million in 2017. Operating margin increased in 2018 to 17.9% from 16.9% in 2017 on higher sales and gross margin.

Looking Forward

Entering 2019, we believe we are well-positioned for continued leadership in mission-critical communications. Our technology platforms in communications, video, services, and software help make cities safer and enable communities and businesses to thrive. At Motorola Solutions, we are ushering in a new era in public safety and security. We are a leading provider of solutions that enable first responders, federal and local governments, as well as commercial customers, to communicate in everyday and extreme situations.

Our land mobile radio ("LMR") solutions are uniquely designed, built, and delivered for our customers’ specific needs, and we continue to expect LMR to be the preferred solution for our customers in the years ahead.

Our services and software business supplements our LMR business. As communication networks have become increasingly complex, software-centric, and data-driven, we have expanded our services offering to maintain, monitor, secure and manage our customers' networks. We expect continued growth for our value-added services going forward. Additionally, we have command center software solutions for the public safety workflow to serve the 6,000+ emergency call centers in North America. We have invested organically and via the acquisitions of Plant, Kodiak Networks and Spillman in 2018, 2017 and 2016, respectively, to add new capabilities to our command center software offering. These investments help improve efficiency for first responders by enabling them to make use of rich data content such as pictures, video, and text messages. From shorter response times to new applications such as proactive incident management, we are providing new capabilities with command center software solutions increasingly delivered as a service. Next Generation 9-1-1 is an important and growing movement that the U.S. and other countries are expected to continue prioritizing for investment. We expect our overall revenue mix to continue to shift towards services and software over time.

Our largest investment in 2018 was the acquisition of Avigilon and its video and analytics solutions, which are an increasingly powerful tool for first responders. Video devices, video management, video analytics software, and access control solutions for both government and commercial customers is a large and expanding market. There are video cameras deployed across airports, rail, streets, and public and private buildings that use advanced tools including artificial intelligence and machine learning to capture, analyze, and use all of this content in a meaningful way. Our offerings, including high-definition cameras, advanced video analytics, and video management solutions provide a scalable architecture that allow for easier and faster deployments than other point solutions that are in the marketplace today.

We remain committed to driving shareholder value with revenue growth, operating leverage, cash flow generation, and efficient capital deployment. Our framework for efficient capital deployment of cash flow from operations consists of approximately: (i) 50% for acquisitions or share repurchases, (ii) 30% for dividends, and (iii) 20% for investments in the business through capital expenditures. We expect to continue a balanced approach in allocating capital through this framework. Our share repurchase program has approximately $1.6 billion of authority available as of December 31, 2018.

Results of Operations

	Years ended December 31					
(Dollars in millions, except per share amounts)	2018	% of Sales **	2017	% of Sales **	2016	% of Sales **
Net sales from products	$4,463		$3,772		$3,649	
Net sales from services	2,880		2,608		2,389	
Net sales	7,343		6,380		6,038	
Costs of product sales	2,035	45.6 %	1,686	44.7 %	1,649	45.2 %
Costs of services sales	1,828	63.5 %	1,670	64.0 %	1,520	63.6 %
Costs of sales	3,863	52.6 %	3,356	52.6 %	3,169	52.5 %
Gross margin	3,480	47.4 %	3,024	47.4 %	2,869	47.5 %
Selling, general and administrative expenses	1,254	17.1 %	1,025	16.1 %	1,044	17.3 %
Research and development expenditures	637	8.7 %	568	8.9 %	553	9.2 %
Other charges	334	4.5 %	147	2.3 %	224	3.7 %
Operating earnings	1,255	17.1 %	1,284	20.1 %	1,048	17.4 %
Other income (expense):						
Interest expense, net	(222)	(3.0)%	(201)	(3.2)%	(205)	(3.4)%
Gains (losses) on sales of investments and businesses, net	16	0.2 %	3	— %	(6)	(0.1)%
Other	53	0.7 %	(10)	(0.2)%	7	0.1 %
Total other expense	(153)	(2.1)%	(208)	(3.3)%	(204)	(3.4)%
Net earnings before income taxes	1,102	15.0 %	1,076	16.9 %	844	14.0 %
Income tax expense	133	1.8 %	1,227	19.2 %	282	4.7 %
Net earnings (loss)	969	13.2 %	(151)	(2.4)%	562	9.3 %
Less: Earnings attributable to noncontrolling interests	3	— %	4	0.1 %	2	— %
Net earnings (loss)*	$966	13.2 %	$(155)	(2.4)%	$560	9.3 %
Earnings (loss) per diluted common share*:						
Earnings per diluted common share*	$5.62		$(0.95)		$3.24	

* Amounts attributable to Motorola Solutions, Inc. common shareholders.

** Percentages may not add due to rounding.

Geographic Market Sales by Locale of End Customer

	2018	2017	2016
Americas	69 %	68 %	68 %
EMEA	22 %	21 %	21 %
AP	9 %	11 %	11 %
	100%	100%	100%

Results of Operations—2018 Compared to 2017

Net Sales

(In millions)	Years ended December 31 2018	2017	% Change
Net sales from Products and Systems Integration	$5,100	$4,513	13 %
Net sales from Services and Software	2,243	1,867	20 %
Net sales	$7,343	$6,380	15 %

The Products and Systems Integration segment's net sales represented 69% of our consolidated net sales in 2018, compared to 71% in 2017. The Services and Software segment's net sales represented 31% of our consolidated net sales in 2018, compared to 29% in 2017.

Net sales were up $963 million, or 15%, compared to 2017. The increase in net sales was driven by the Americas and EMEA with a 13% increase in the Products and Systems Integration segment and a 20% increase in the Services and Software segment. This growth includes:

- $507 million of incremental revenue from the acquisitions of Avigilon and Plant in 2018 and Kodiak Networks and Interexport which were acquired during 2017;
- $83 million from the adoption of Accounting Standards Codification ("ASC") 606 (see Note 1 of our consolidated financial statements); and
- $32 million from favorable currency rates.

Regional results include:

- the Americas grew 17% across all products within both the Products and Systems Integration and the Services and Software segments, inclusive of incremental revenue from acquisitions;
- EMEA grew 18% on broad-based growth within all offerings within our Products and Systems Integration and Services and Software segments, inclusive of incremental revenue from acquisitions; and
- AP was relatively flat with growth in the Services and Software segment offset by lower Products and Systems Integration revenue.

Products and Systems Integration

The 13% growth in the Products and Systems Integration segment was driven by the following:

- $318 million of incremental revenue from the acquisitions of Avigilon in 2018 and Interexport during 2017;
- $78 million from the adoption of ASC 606;
- Devices revenues were up significantly due to the acquisition of Avigilon along with strong demand in the Americas and EMEA; and
- Systems and Systems Integration revenues increased 10% in 2018, as compared to 2017 driven by incremental revenue from Avigilon, as well as system deployments in EMEA and AP.

Services and Software

The 20% growth in the Services and Software segment was driven by the following:

- $189 million of incremental revenue primarily from the acquisitions of Plant and Avigilon in 2018 and Kodiak Networks and Interexport during 2017;
- $5 million from the adoption of ASC 606;
- Services were up $174 million, or 9%, driven by growth in both maintenance and managed service revenues, and incremental revenue from the acquisitions of Interexport and Plant; and
- Software was up $202 million, or 89%, driven primarily by incremental revenue from the acquisitions of Plant, Avigilon, and Kodiak Networks, and growth in our command center software suite.

Gross Margin

	Years ended December 31		
(In millions)	2018	2017	% Change
Gross margin	$3,480	$3,024	15 %

Gross margin was 47.4% of net sales in both 2018 and 2017. The primary drivers of increases, with offsetting decreases, are as follows:

- higher margins within the Services and Software segment primarily driven by operational improvements and efficiencies in service delivery costs of our Services portfolio and higher margin contribution within our Software portfolio from acquisitions;
- lower margins in the Products and Systems Integration segment primarily driven by lower margin in Systems and Systems Integration due to certain large projects where we have taken an integrator role, partially offset by higher Devices volumes; and
- $50 million of additional reorganization of business charges (see further detail in “Reorganization of Businesses” section) primarily associated with costs related to the closure of certain supply chain operations in Europe in 2018 as compared to 2017.

Selling, General and Administrative Expenses

	Years ended December 31		
(In millions)	2018	2017	% Change
Selling, general and administrative expenses	$1,254	$1,025	22 %

SG&A expenses increased 22% compared to 2017. SG&A expenses were 17.1% of net sales compared to 16.1% of net sales in 2017.

The increase in SG&A expenditures is primarily due to increased expenses associated with acquired businesses, $72 million related to the change in classification of our third-party sales commissions from the adoption of ASC 606, and higher incentive compensation.

Research and Development Expenditures

	Years ended December 31		
(In millions)	2018	2017	% Change
Research and development expenditures	$637	$568	12 %

R&D expenditures increased 12%. R&D expenditures were 8.7% of net sales compared to 8.9% of net sales in 2017. The increase in R&D expenditures is primarily due to increased expenses associated with acquired businesses.

Other Charges

	Years ended December 31	
(In millions)	2018	2017
Other charges	$334	$147

The Other charges in 2018 as compared to 2017 can be summarized as follows:

- $188 million of amortization of intangibles in 2018 compared to $151 million in 2017, driven by 2018 acquisitions;
- $61 million of net reorganization of business charges in 2018 as compared to $33 million in 2017, with higher charges coming in 2018 as we continue to integrate acquisitions (see further detail in “Reorganization of Businesses” section);
-

- a $57 million charge in 2018 related to ongoing remediation efforts for an environmental clean-up incurred by a legacy business (see Note 3 of our consolidated financial statements);
- a gain of $47 million in 2017, related to the recovery of financial receivables owed to us by a former customer of a legacy business; and

- $24 million of charges for acquisition-related transaction fees in 2018 as compared to $1 million in 2017.

Operating Earnings

	Years ended December 31	
(In millions)	2018	2017
Operating earnings from Products and Systems Integration	$854	$969
Operating earnings from Services and Software	401	315
Operating earnings	$1,255	$1,284

Operating earnings were down $29 million, or 2%, compared to 2017. The decrease in Operating earnings was due to:

- Products and Systems Integration was down $115 million from 2017 to 2018, driven by: (i) $69 million more reorganization of business expenses, (ii) environmental reserve expenses of $40 million in 2018, (iii) $28 million more intangible amortization driven by acquisitions, and (iv) $12 million of acquisition-related transaction fees; and
- partially offset by the Services and Software segment, which was up $86 million from 2017 to 2018, driven by higher sales and partially offset by: (i) environmental reserve expenses of $17 million in 2018, (ii) $9 million more reorganization of business expenses, (iii) $9 million more intangible amortization from 2018 acquisitions, and (iv) $11 million more of acquisition-related transactions fees.

Net Interest Expense

	Years ended December 31	
(In millions)	2018	2017
Interest expense, net	$(222)	$(201)

The increase in net interest expense in 2018 compared to 2017 was a result of increases in outstanding debt:

- $500 million of Senior notes due in 2028, that were used to make a voluntary contribution to the U.S. pension plan, issued during the first quarter of 2018;
- $400 million term loan due in 2021 ("the Term Loan") that was issued during the first quarter of 2018 and was used to complete the acquisition of Avigilon;
- $400 million borrowed under our revolving credit facility at the end of the first quarter of 2018 and repaid throughout the year; and
- $200 million of follow-on Senior notes due in 2028, issued in the third quarter of 2018, which were used to repurchase $200 million of Convertible Notes.

Gains (losses) on Sales of Investments and Businesses, net

	Years ended December 31	
(In millions)	2018	2017
Gains (losses) on sales of investments and businesses, net	$ 16	$ 3

The net gains in 2018 and 2017 were primarily related to the sales of various equity investments.

Other

	Years ended December 31	
(In millions)	2018	2017
Other income (expense)	$53	$(10)

The net Other income in 2018 as compared to 2017 was primarily comprised of:

- $75 million of net periodic pension and postretirement benefit in 2018 as compared to $46 million in 2017;

- $48 million of losses on settlements within our U.K. defined benefit plan during 2017 with no activity in 2018;
- $11 million of favorable fair value adjustments to investments;

- a $6 million gain from the repurchase of $200 million of our Convertible Notes in 2018,
- foreign currency losses of $24 million in 2018 as compared to $31 million of losses in 2017; and
- a $14 million loss on derivative instruments in 2018, as compared to a gain of $15 million in 2017.

Effective Tax Rate

	Years ended December 31	
(In millions)	2018	2017
Income tax expense	$133	$1,227

Income tax expense decreased by $1.1 billion compared to 2017, for an effective tax rate of 12%. Our effective tax rate for 2018 was lower than the current U.S. federal statutory rate of 21% primarily due to:

- a $79 million benefit related to updates of the provisional amounts on the impact of the Tax Act; and
- a $30 million benefit due to the recognition of excess tax benefits on share-based compensation.

Our effective tax rate in 2017 was 114% primarily due to the implementation of Tax Act. As a result of the Tax Act we recorded $874 million of non-recurring charges, primarily related to:

- a $471 million valuation allowance against U.S. foreign tax credit carryforwards; and
- income tax expense of $366 million from the remeasurement of our deferred tax balances at the lower federal tax rate of 21%.

Excluding the income tax effects from the Tax Act, our effective tax rate was lower than the 2017 U.S. statutory tax rate of 35% (see Note 6 of our consolidated financial statements).

Results of Operations—2017 Compared to 2016

Net Sales

	Years ended December 31		
(In millions)	2017	2016	% Change
Net sales from Products and Systems Integration	$4,513	$4,394	3 %
Net sales from Services and Software	1,867	1,644	14 %
Net sales	$6,380	$6,038	6 %

The Products and Systems Integration segment's net sales represented 71% of our consolidated net sales in 2017, compared to 73% in 2016. The Services and Software segment's net sales represented 29% of our consolidated net sales in 2017, compared to 27% in 2016.

Net sales were up $342 million, or 6%, compared to 2016. The increase in net sales is reflective of growth in every region with a 3% increase in the Products and Systems Integration segment and a 14% increase in the Services and Software segment. The growth includes:

- $186 million of incremental revenue from the acquisitions of Interexport and Kodiak Networks in 2017 and Spillman and Airwave which were acquired during 2016; and
- $8 million from favorable currency rates.

Regional results include:

- the Americas grew 7% due to increases in the Services and Software segment, inclusive of incremental revenue from acquisitions, as well as in Systems and System Integration, offset by a slight decrease in Device revenues;
- EMEA grew 5% across all portfolios within our Products and Systems Integration segment, as well as within our Services and Software segment, inclusive of incremental revenues from Airwave; and
- AP grew 1% due to increases in both Devices and Systems and Systems Integration within our Products and Systems Integration segment, partially offset by a slight decrease in our Services and Software segment.

Products and Systems Integration

The 3% growth in the Products and Systems Integration segment was driven by the following:

- Systems and Systems Integration revenues increased 5% in 2017 as compared to 2016 driven by system deployments in the Americas and $19 million of incremental revenue from the acquisition of Interexport in 2017; and

- an increase in Devices in every region.

Services and Software

The 14% growth in the Services and Software segment was driven by the following:

- $167 million of incremental revenue from the acquisitions of Interexport and Kodiak Networks in 2017 and Spillman and Airwave in 2016;
- Services were up $128 million, or 8%, driven by incremental revenue from the acquisitions of Interexport and Airwave as well as growth in maintenance services and managed service revenues; and
- Software was up $95 million, or 72%, driven primarily by incremental revenue from the acquisitions of Spillman and Kodiak Networks, in addition to higher command center software sales not attributed to acquisitions.

Gross Margin

	Years ended December 31		
(In millions)	2017	2016	% Change
Gross margin	$3,024	$2,869	5 %

Gross margin was 47.4% of net sales compared to 47.5% of net sales in 2016. The primary drivers of the decrease are:

- lower margins within the Services and Software segment driven by the acquisition of Interexport which is a managed services provider with lower gross margins than the segment total; partially offset by higher gross margin associated with the Spillman acquisition; and
- lower margins within the Products and Systems Integration segment driven by a slight decline in our Devices margins due to product mix, partially offset by higher margins within our Systems and Systems Integration portfolio due to a favorable mix of projects.

Selling, General and Administrative Expenses

	Years ended December 31		
(In millions)	2017	2016	% Change
Selling, general and administrative expenses	$1,025	$1,044	(2)%

SG&A expenses decreased 2% compared to 2016. SG&A expenses were 16.1% of net sales compared to 17.3% of net sales in 2016.

The decrease in SG&A expenses is primarily due to cost savings initiatives, partially offset by higher expenses associated with acquired businesses.

Research and Development Expenditures

	Years ended December 31		
(In millions)	2017	2016	% Change
Research and development expenditures	$568	$553	3 %

R&D expenditures increased 3% compared to 2016. R&D expenditures were 8.9% of net sales compared to 9.2% of net sales in 2016. The increase in R&D expenditures is primarily due to higher expenses associated with acquired businesses.

Other Charges

	Years ended December 31	
(In millions)	2017	2016

Other charges $ 147 $ 224

The decrease in Other charges in 2017 as compared to 2016 can be summarized as follows:

- $33 million of reorganization of business charges in 2017 as compared to $97 million including a $17 million building impairment and a $3 million impairment of our corporate aircraft in 2016;
- a gain of $47 million in 2017 related to the recovery of financial receivables owed to us by a former customer of a legacy business;

- $1 million of acquisition related transaction fees in 2017 as compared to $13 million in 2016; and
- partially offset by $151 million of amortization of intangibles in 2017 compared to $113 million in 2016, driven primarily by 2017 acquisitions.

Operating Earnings

	Years ended December 31	
(In millions)	2017	2016
Operating earnings from Products and Systems Integration	$969	$762
Operating earnings from Services and Software	315	286
Operating earnings	$1,284	$1,048

Operating earnings were up $236 million, or 23%, compared to 2016. The increase in Operating earnings was due to the following:

- Products and Systems Integration was up $207 million from 2016 to 2017, primarily driven by: (i) $73 million less reorganization of business expenses, (ii) $33 million of income related to the recovery of financial receivables owed to us by a former customer of a legacy business, (iii) higher earnings, and (iv) lower SG&A and R&D expenses; and
- Services and Software was up $29 million from 2016 to 2017, primarily driven by: (i) higher earnings, (ii) $23 million less reorganization of business expenses, (iii) $14 million of income related to the recovery of financial receivables owed to us by a former customer of a legacy business, and (iv) $12 million less acquisition-related transaction fees, partially offset by $37 million more intangible amortization driven by acquisitions.

Net Interest Expense

	Years ended December 31	
(In millions)	2017	2016
Interest expense, net	$(201)	$(205)

The decrease in net interest expense in 2017 compared to 2016 was a result of lower average outstanding debt balances in 2017 as compared to 2016, as a result of the repayment of our $675 million term loan in December 2016.

Gains (losses) on Sales of Investments and Businesses, net

	Years ended December 31	
(In millions)	2017	2016
Gains (losses) on sales of investments and businesses, net	$ 3	$ (6)

The net gains in 2017 were primarily related to the sales of various equity investments. The net losses in 2016 consisted primarily of:

- a $19 million loss on the sale of an investment in U.K. treasury securities liquidated in order to purchase Airwave;
- a $7 million loss from the sale of our Malaysia manufacturing operations; and
- partially offset by $20 million of gains on the sales of equity investments.

Other

	Years ended December 31	
(In millions)	2017	2016
Other income (expense)	$ (10)	$ 7

The increase in net Other income (expense) in 2017 as compared to 2016 was primarily comprised of:

- $48 million of losses on settlements within our U.K. defined benefit plan in 2017 compared to $26 million in 2016;
- foreign currency losses of $31 million in 2017 compared to $46 million of gains in 2016;
- a $46 million net periodic pension and postretirement benefit in 2017 compared to $45 million in 2016;
- a $15 million gain on derivative instruments in 2017 compared to a $56 million loss in 2016; and
- a $10 million foreign currency loss on British Pounds purchased and held in anticipation of the acquisition of Airwave in 2016.

Effective Tax Rate

	Years ended December 31	
(In millions)	2017	2016
Income tax expense	$ 1,227	$ 282

Income tax expense increased by $945 million compared to 2016, for an effective tax rate of 114% primarily due to the effects of the Tax Act. As a result of the Tax Act we recorded $874 million of non-recurring charges that included the following:

- a $471 million valuation allowance against U.S. foreign tax credit carryforwards; and
- income tax expense of $366 million from the remeasurement of our deferred tax balances at the lower federal tax rate of 21%.

Excluding the income tax effects from the Tax Act, our effective tax rate was lower than the U.S. statutory tax rate of 35%.

Our effective tax rate of 33% in 2016 was lower than the U.S. statutory tax rate of 35% primarily due to lower tax rates on non-U.S. income (see Note 6 of our consolidated financial statements).

Reorganization of Businesses

In 2018, we recorded net reorganization of business charges of $120 million relating to the separation of 1,200 employees, of which 700 were indirect employees and 500 were direct employees. The $120 million of charges included $59 million recorded to Cost of sales and $61 million recorded to Other charges. Included in the aggregate $120 million are charges of $122 million for employee separation costs and $16 million for exit costs, partially offset by $18 million of reversals for accruals no longer needed.

During 2017, we recorded net reorganization of business charges of $42 million relating to the separation of 400 employees, of which 300 were indirect employees and 100 were direct employees. The $42 million of charges included $9 million recorded to Cost of sales and $33 million recorded to Other charges. Included in the aggregate $42 million are charges of$43 million for employee separation costs and $8 million for exit costs, partially offset by $9 million of reversals for accruals no longer needed.

During 2016, we recorded net reorganization of business charges of $140 million relating to the separation of 1,300 employees, of which 900 were indirect employees and 400 were direct employees. The $140 million of charges included $43 million recorded to Cost of sales and $97 million recorded to Other charges. Included in the aggregate $140 million are charges of: (i) $120 million for employee separation costs, (ii) $20 million for impairments, including $17 million for a building impairment and $3 million for the impairment of corporate aircraft, and (iii) $5 million for exit costs, partially offset by $5 million of reversals for accruals no longer needed.

During 2018, 2017, and 2016 we continued to implement various productivity improvement plans aimed at achieving long-term, sustainable profitability by driving efficiencies and reducing operating costs. As a result, we communicated our plan to close one of our manufacturing facilities in Europe during the fourth quarter of 2018, resulting in a charge of $44 million and impacting 165 employees primarily within the Products and Systems Integration segment. The remainder of the initiatives impacted both of our segments and affected employees located in all geographic regions.

The following table displays the net charges incurred by business segment:

Years ended December 31	2018	2017	2016
Products and Systems Integration	$101	$ 32	$107
Services and Software	19	10	33
	$120	$ 42	$140

Cash payments for exit costs and employee severance in connection with the reorganization of business plans were $65 million, $93 million, and $79 million in 2018, 2017, and 2016, respectively. The reorganization of business accruals at December 31, 2018 were $105 million, of which $84 million relates to employee separation costs that are expected to be paid within one year and $21 million relates primarily to lease termination obligations that are expected to be paid over a number of years.

Liquidity and Capital Resources

	Years Ended December 31		
	2018	2017	2016
Cash flows provided by (used for):			
Operating activities	$1,075	$1,346	$1,165
Investing activities	(1,266)	(448)	(1,002)
Financing activities	220	(722)	(1,042)
Effect of exchange rates on cash, cash equivalents, and restricted cash	(40)	62	(71)
Increase (decrease) in cash, cash equivalents, and restricted cash	$(11)	$238	$(950)

Cash and Cash Equivalents

At December 31, 2018, $750 million of the $1.3 billion cash and cash equivalents balance was held in the U.S. and $507 million was held by us or our subsidiaries in other countries, with approximately $147 million held in the United Kingdom. Restricted cash was approximately $11 million at December 31, 2018 and $63 million at December 31, 2017. During the year ended December 31, 2018, restricted cash decreased from $63 million to $11 million due to the completion of a settlement related to our legacy Networks business.

In 2018, we repatriated approximately $502 million in cash to the U.S. from international jurisdictions. Undistributed earnings that we intend to reinvest indefinitely, and for which no U.S. income taxes have been provided for, except the tax effect of the Tax Act deemed repatriation, aggregate to $1.5 billion at December 31, 2018. We currently have no plans to repatriate the foreign earnings permanently reinvested. If circumstances change and it becomes apparent that some or all of the permanently reinvested earnings will be remitted to the U.S. in the foreseeable future, an additional income tax charge may be necessary.

Where appropriate, we may also pursue capital reduction activities; however, such activities can be involved and lengthy. While we regularly repatriate funds, and a portion of offshore funds can be repatriated with minimal adverse financial impact, repatriation of some of these funds may be subject to delay for local country approvals and could have potential adverse cash tax consequences.

Operating Activities

The decrease in operating cash flows from 2017 to 2018 was driven by (see additional discussion under "Sales of Receivables" below):

- a $500 million debt-funded voluntary contribution to our U.S. pension plan in the first quarter of 2018, compared to no material contributions to our U.S. pension plans in 2017;
- a $51 million payment out of restricted cash related to a settlement arising from a legacy business in 2018, as compared to the recovery of $47 million of financial receivables owed to us by a former customer of a legacy business in 2017;
- $28 million of higher interest payments driven by additional debt issued in 2018 as compared to 2017; and
- partially offset by higher earnings in 2018 as compared to 2017.

The increase in operating cash flows from 2016 to 2017 was driven by:

- higher operating earnings in 2017 as compared to 2016;
- improved net working capital in 2017 as compared to 2016; and

- partially offset by $56 million of higher tax payments in 2017 as compared to 2016 when we received certain refunds in the U.S. and foreign jurisdictions.

We do not expect to make any material contributions to our pension plans in 2019.

Investing Activities

The increase in net cash used by investing activities from 2017 to 2018 was primarily due to:

- a $760 million increase in acquisitions and investments, primarily driven by the purchases of Avigilon and Plant Holdings for $903 million, and $237 million, respectively, as compared to 2017 when we made acquisitions of Kodiak Networks and Interexport for $225 million and $55 million, respectively; and
- $88 million of lower proceeds from sales of investments and businesses, driven by the $60 million of excess cash withdrawn from company-sponsored life insurance investments in 2018, as compared to $183 million of cash received from short-term government securities that were previously maintained in foreign countries in 2017; and
- partially offset by $30 million lower capital expenditures in 2018 as compared 2017, due to lower information technology ("IT") spend as we completed our ERP implementation in 2017, as well as lower facilities spend.

The decrease in net cash used by investing activities from 2016 to 2017 was primarily due to:

- a $1.1 billion decrease in acquisitions and investments, driven by the purchase of Airwave for $1.0 billion and $217 million for Spillman in 2016, as compared to 2017 when we made acquisitions of Kodiak Networks and Interexport for $225 million and $55 million, respectively;
- a $487 million decrease in sales of investments and businesses, driven by the liquidation of $382 million of short-term government securities used to acquire Airwave, the sale of $242 million of short-term debt and equity securities, and $46 million from the sale of our Penang, Malaysia supply chain operations to an outsourced manufacturer in 2016, as compared to the sale of $183 million of short-term government securities previously maintained in foreign countries;
- a decrease in capital spending in 2017 from 2016 driven by lower facilities spend as we completed refresh activities around our regional and corporate headquarters, lower spend on customer networks, and partially offset by higher IT expenditures as we worked towards the completion of our ERP implementation in 2017; and
- a decrease in sales of property, plant, and equipment driven by proceeds received in 2016 of $73 million from the sale of buildings and land associated with the sale of our Schaumburg campus and the sale of our aging corporate aircraft.

Financing Activities

The increase in cash provided by financing activities in 2018 as compared to 2017 was driven by (also see further discussion in "Debt," "Credit Facilities," "Share Repurchase Program" and "Dividends" below):

- the issuance of $500 million of 4.60% Senior notes due 2028 in the first quarter of 2018, of which the proceeds were contributed to our U.S. pension plan;
- we entered into the Term Loan for $400 million in the first quarter of 2018 with a maturity date of March 26, 2021 to complete the acquisition of Avigilon;
- $400 million borrowing from our revolving credit facility in the first quarter of 2018 to complete the acquisition of Avigilon, repaying the full $400 million throughout 2018;
- in the third quarter of 2018, we issued an additional $200 million on the outstanding 4.60% Senior notes due in 2028, of which the proceeds were used to repurchase $200 million of our outstanding convertible note with Silver Lake Partners;
- $169 million of cash was used during the third quarter of 2018 to pay the conversion premium on the repurchase of our convertible note with Silver Lake Partners;
- $76 million used in the fourth quarter of 2018 to pay a contractually-defined deferred purchase price of Airwave;
- $168 million of net proceeds from the issuance of common stock in connection with our employee stock option and employee stock purchase plans in 2018, as compared to $82 million in 2017;
- $337 million of cash used for the payment of dividends in 2018 as compared to $307 million in 2017; and
- partially offset by $132 million used for purchases under our share repurchase program in 2018 as compared to $483 million in 2017.

The decrease in cash used for financing activities in 2017, as compared to 2016 was driven by:

- $483 million used for purchases under our share repurchase program in 2017, as compared to $842 million in 2016;
- a $675 million term loan issued in 2016 to complete the purchase of Airwave, of which the entire term loan was repaid by the end of 2016; and

partially offset by $307 million of cash used for the payment of dividends in 2017, as compared to $280 million in 2016.

Sales of Receivables

We may choose to sell accounts receivable and long-term receivables to third-parties under one-time arrangements. We may or may not retain the obligation to service the sold accounts receivable and long-term receivables. Servicing obligations are limited to collection activities for sold accounts receivable and long-term receivables.

The following table summarizes the proceeds received from sales of accounts receivable and long-term receivables for the years ended December 31, 2018, 2017, and 2016:

Years ended December 31	2018	2017	2016
Accounts receivable sales proceeds	$77	$193	$51
Long-term receivables sales proceeds	270	284	289
Total proceeds from receivable sales	$347	$477	$340

The proceeds of our receivable sales are included in "Operating Activities" within our Consolidated Statements of Cash Flows.

At December 31, 2018, the Company had retained servicing obligations for $970 million of long-term receivables, compared to $873 million of long-term receivables at December 31, 2017. Servicing obligations are limited to collection activities related to the sales of accounts receivables and long-term receivables.

Debt

We had outstanding long-term debt of $5.3 billion and $4.5 billion, including the current portions of $31 million and $52 million, at December 31, 2018 and December 31, 2017, respectively.

To complete the acquisition of Avigilon during the quarter ended March 31, 2018, we entered into a Term Loan for $400 million with a maturity date of March 26, 2021. Interest on the Term Loan is variable, indexed to London Inter-bank Offered Rate ("LIBOR"), and paid monthly. The weighted average borrowing rate for amounts outstanding during the year ended December 31, 2018 was 3.47%. No additional borrowings are permitted and amounts borrowed and repaid or prepaid may not be re-borrowed.

In February of 2018, we issued $500 million of 4.60% Senior notes due in 2028. After debt issuance costs and debt discounts, we recognized net proceeds of $497 million. These proceeds were then used to make a $500 million contribution to our U.S. pension plan.

On August 25, 2015, we entered into an agreement with Silver Lake Partners to issue $1.0 billion of 2.0% Senior Convertible Notes which mature in September 2020. The notes became fully convertible as of August 25, 2017. The notes are convertible based on a conversion rate of 14.8252, as may be adjusted for dividends declared, per $1,000 principal amount (which is currently equal to a published conversion price of $67.45 per share). The exercise price adjusts automatically for dividends. On September 5, 2018, we agreed with Silver Lake Partners to repurchase $200 million in principal amount of the Senior Convertible Notes for aggregate consideration of $369 million in cash, inclusive of the conversion premium. As of December 31, 2018, we paid $369 million of cash to Silver Lake Partners. Of the $369 million paid to Silver Lake Partners, $169 million was paid during the third quarter of 2018 using cash on the balance sheet and the remaining $200 million was paid on October 15, 2018. The $200 million that was paid during the fourth quarter was from the additional $200 million issued on the outstanding 4.60% Senior notes due in 2028. We settled the issuance of the additional Senior notes on October 5, 2018 and received net proceeds of $196 million. In the event of an additional conversion, the notes may be settled in either cash or stock, at our discretion. We intend to settle the principal amount of the Senior Convertible Notes in cash.

In connection with the completion of the acquisition of Airwave, we entered into a term loan with an initial principal amount of $675 million. We repaid all amounts borrowed under this term loan as of December 31, 2016.

Credit Facilities

As of December 31, 2018, we had a $2.2 billion unsecured revolving credit facility scheduled to mature in April 2022, which can be used for borrowing and letters of credit (the "2017 Motorola Solutions Credit Agreement"). As of March 31, 2018, we borrowed $400 million under the facility to complete the Avigilon acquisition. The entire $400 million was re-paid during the year ended December 31, 2018. The 2017 Motorola Solutions Credit Agreement includes a

$500 million letter of credit sub-limit with $450 million of fronting commitments. Borrowings under the facility bear interest at the prime rate plus the applicable margin, or at a spread above LIBOR, at our option. An annual facility fee is payable on the undrawn amount of the credit line. The interest rate and facility fee are subject to adjustment if our credit rating changes. We must comply with certain customary covenants including a maximum leverage ratio, as defined in the 2017 Motorola Solutions Credit Agreement. We were in compliance with our financial covenants as of December 31, 2018. No letters of credit were issued under the revolving credit facility as of December 31, 2018.

Share Repurchase Program

Through a series of actions, the board of directors has authorized an aggregate share repurchase amount of up to $14.0 billion of our outstanding shares of common stock (the "share repurchase program"). The share repurchase program does not have an expiration date. As of December 31, 2018, we have used approximately $12.4 billion of the share repurchase authority, including transaction costs, to repurchase shares, leaving approximately $1.6 billion of authority available for future repurchases.

Our share repurchases, including transaction costs, for 2018, 2017, and 2016 can be summarized as follows:

Year	Shares Repurchased (in millions)	Average Price	Aggregate Amount (in millions)
2018	1.2	$112.42	$ 132
2017	5.7	85.32	483
2016	12.0	70.28	842

Subsequent to the year ended December 31, 2018, the Company paid an aggregate of $125 million, including transaction costs, to repurchase 1.1 million shares at an average purchase price of $116.04 per share, leaving approximately $1.5 billion of authority available for future repurchases.

Dividends

We paid cash dividends to holders of our common stock of $337 million in 2018, $307 million in 2017, and $280 million in 2016. Subsequent to quarter end, we paid an additional $93 million in cash dividends to holders of our common stock.

Adequate Internal Funding Resources

We believe that we have adequate internal resources available to fund expected working capital and capital expenditure requirements for the next twelve months as supported by the level of cash and cash equivalents in the U.S., the ability to repatriate funds from foreign jurisdictions, cash provided by operations, as well as liquidity provided by our $2.2 billion revolving credit facility.

Contractual Obligations and Other Purchase Commitments

Summarized in the table and text below are our obligations and commitments to make future payments under long-term debt obligations, lease obligations, purchase obligations and tax obligations as of December 31, 2018.

	Payments Due by Period							
(in millions)	Total	2019	2020	2021	2022	2023	Uncertain Timeframe	Thereafter
Long-term debt obligations, gross	$5,382	$31	$801	$810	$767	$604	$ —	$ 2,369
Lease obligations	722	131	120	112	101	54	—	204
Purchase obligations*	124	92	16	12	3	1	—	—
Tax obligations	76	11	—	—	—	—	65	—
Total contractual obligations	$6,304	$265	$937	$934	$871	$659	$ 65	$ 2,573

*Amounts included represent firm, non-cancelable commitments.

Lease Obligations: We lease certain office, factory and warehouse space, land, and other equipment, principally under non-cancelable operating leases. Our future minimum lease obligations, net of minimum sublease rentals, totaled $722 million. Rental expense, net of sublease income, was $108 million in 2018, $94 million in 2017, and $84 million in 2016.

Purchase Obligations: During the normal course of business, in order to manage manufacturing lead times and help ensure adequate component supply, we enter into agreements with contract manufacturers and suppliers that either allow them to procure inventory based upon criteria as defined by us or establish the parameters defining our requirements. In addition, we have entered into software license agreements which are firm commitments and are not cancelable. We had entered into firm, non-cancelable, and unconditional commitments under such arrangements through 2023. The total payments expected to be made under these agreements are $124 million, of which $113 million relate to take-or-pay obligations from arrangements with suppliers for the sourcing of inventory supplies and materials. We do not anticipate the cancellation of any of our take or pay agreements in the future and estimate that purchases from these suppliers will exceed the minimum obligations during the agreement periods.

Tax Obligations: We have approximately $76 million of unrecognized income tax benefits relating to multiple tax jurisdictions and tax years. Based on the potential outcome of our global tax examinations, or the expiration of the statute of limitations for specific jurisdictions, it is reasonably possible that the unrecognized tax benefits will change within the next twelve months. The associated net tax impact on the effective tax rate, exclusive of valuation allowance changes, is estimated to be in the range of a $10 million tax charge to a $30 million tax benefit, with cash payments not expected to exceed $20 million.

Commitments Under Other Long-Term Agreements: We have entered into certain long-term agreements to purchase software, components, supplies and materials from suppliers which are not "take-or-pay" in nature. Most of the agreements extend for periods of one to three years (three to five years for software). Generally, these agreements do not obligate us to make any purchases, and many permit us to terminate the agreement with advance notice (usually ranging from 60 to 180 days). If we were to terminate these agreements, we generally would be liable for certain termination charges, typically based on work performed and supplier on-hand inventory and raw materials attributable to canceled orders. Our liability would only arise in the event we terminate the agreements for reasons other than “cause.”

We outsource certain corporate functions, such as benefit administration and information technology-related services, under third-party contracts, the longest of which is expected to expire in 2023. Our remaining payments under these contracts are approximately $114 million over the remaining life of the contracts; however, these contracts can be terminated. Termination would result in penalties substantially less than the remaining annual contract payments. We would also be required to find another source for these services, including the possibility of performing them in-house.

As is customary in bidding for and completing certain projects and pursuant to a practice we have followed for many years, we have a number of performance bonds, bid bonds, standby letters of credit and surety bonds outstanding (collectively, referred to as “Performance Bonds”), primarily relating to projects with our government customers. These Performance Bonds normally have maturities of multiple years and are standard in the industry as a way to give customers a convenient mechanism to seek resolution if a contractor does not satisfy certain requirements under a contract. Typically, a customer can draw on the Performance Bond only if we do not fulfill all terms of a project contract. If such an occasion occurred, we would be obligated to reimburse the institution that issued the Performance Bond for the amounts paid. In our long history, it has been rare for us to have a Performance Bond drawn upon. At December 31, 2018, outstanding Performance Bonds totaled approximately $2.5 billion, compared to $2.4 billion at December 31, 2017. Any future disruptions, uncertainty, or volatility in bank, insurance or capital markets, or a change in our credit ratings could adversely affect our ability to obtain Performance Bonds and may result in higher funding costs to obtain such Performance Bonds.

Off-Balance Sheet Arrangements: At December 31, 2018, we had no significant off-balance sheet arrangements other than operating leases and guarantees to third parties as described in Note 11 to the consolidated financial statements and our obligation to settle the embedded conversion option under the Senior Convertible Notes described in Note 4 to the consolidated financial statements.

Other Contingencies

Potential Contractual Damage Claims in Excess of Underlying Contract Value: In certain circumstances, we enter into contracts with customers pursuant to which the damages that could be claimed by the customer for failed performance might exceed the revenue we receive from the contract. Contracts with these types of uncapped damages provisions are fairly rare, but individual contracts could still represent meaningful risk. There is a possibility that a claim by a counterparty to one of these contracts could result in expenses that are far in excess of the revenue received from the counterparty in connection with the contract.

Indemnification Provisions: We may provide indemnifications for losses that result from the breach of general warranties contained in certain commercial, intellectual property and divestiture agreements. Historically, we have not made significant payments under these agreements, nor have there been significant claims asserted against us. However, there is an increasing risk in relation to intellectual property indemnities given the current legal climate. In indemnification cases, payment by us is conditioned on the other party making a claim pursuant to the procedures specified in the particular contract, which procedures typically allow us to challenge the other party’s claims. In some instances we may have recourse against third-parties for certain payments made by us. Further, our obligations under divestiture agreements for indemnification based on breach of representations and warranties are generally limited in terms of duration, typically not more than 18 months, and for amounts not in excess of a percentage of the contract

value.
Legal Matters: We are a defendant in various lawsuits, claims, and actions, which arise in the normal course of business. In the opinion of management, the ultimate disposition of these matters will not have a material adverse effect on our consolidated financial position, liquidity, or results of operations. However, an unfavorable resolution could have a material adverse effect on our consolidated financial position, liquidity, or results of operations in the periods in which the matters are ultimately resolved, or in the periods in which more information is obtained that changes management's opinion of the ultimate disposition.
Long-term Customer Financing Commitments
Outstanding Commitments: Certain purchasers of our products and services may request that we provide long-term financing (defined as financing with a term of greater than one year) in connection with the sale of equipment. These requests may include all or a portion of the purchase price of the products and services. Our obligation to provide long-term financing may be conditioned on the issuance of a letter of credit in favor of us by a reputable bank to support the purchaser's credit or a pre-existing commitment from a reputable bank to purchase the long-term receivables from us. We had outstanding commitments to provide long-term financing to third-parties totaling $62 million at December 31, 2018, compared to $93 million at December 31, 2017.

Outstanding Long-Term Receivables: We had non-current long-term receivables of $24 million at December 31, 2018, compared to $19 million at December 31, 2017. There were no allowances for losses in 2018 and 2017. These long-term receivables are generally interest bearing, with interest rates ranging from 0% to 8.46%.

Critical Accounting Policies

Management's Discussion and Analysis of Financial Condition and Results of Operations discusses our consolidated financial statements, which have been prepared in accordance with U.S. generally accepted accounting principles ("GAAP"). The preparation of these financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements, as well as the reported amounts of revenues and expenses during the reporting period. Management bases its estimates and judgments on historical experience, current economic and industry conditions and on various other factors that are believed to be reasonable under the circumstances. This forms the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions. Management believes the following significant accounting policies require significant judgment and estimates.

Revenue Recognition

We enter into arrangements which consist of multiple promises to our customers. We evaluate whether the promised goods and services are distinct or a series of distinct goods or services. Where contracts contain multiple performance obligations, we generally allocate the total estimated consideration to each performance obligation based on applying an estimated selling price ("ESP") as our best estimate of standalone selling price. We determine ESP by: (i) collecting all reasonably available data points including sales, cost and margin analyses of the product or services, and other inputs based on our normal pricing and discounting practices, (ii) making any reasonably required adjustments to the data based on market and Company-specific factors, and (iii) stratifying the data points, when appropriate, based on major product or service, type of customer, geographic market, and sales volume.

We account for certain system contracts on an over-time basis, electing an input method of estimated costs as a measure of performance completed. The selection of the measurement of progress using estimated costs was based on a thorough consideration of alternatives of various output and input measures, including contract milestones and labor hours. However, we have determined that other input and output measures are not an appropriate measure of progress as they do not accurately align with the transfer of control on our customized systems. The selection of costs incurred as a measure of progress aligns the transfer of control to the overall production of the customized system.

For system contracts accounted for over time using estimated costs as a measure of performance completed, we rely on estimates around the total estimated costs to complete the contract ("Estimated Costs at Completion"). Total Estimated Costs at Completion include direct labor, material and subcontracting costs. Due to the nature of the efforts required to be performed to meet the underlying performance obligation, determining Estimated Costs at Completion may be complex and subject to many variables. We have a standard and disciplined quarterly process in which management reviews the progress and performance of open contracts in order to determine the best estimate of Estimated Costs at Completion. As part of this process, management reviews information including, but not limited to, any outstanding key contract matters, progress towards completion, the project schedule, identified risks and opportunities, and the related changes in estimates of costs. The risks and opportunities include management's judgment about the ability and cost to achieve the project schedule, technical requirements, and other contract requirements. Management must make assumptions and estimates regarding labor productivity and availability, the complexity of work to be performed, the availability and cost of materials, and performance by subcontractors, among other variables. Based on this analysis, any quarterly adjustment to net sales, cost of sales, and the related impact to operating income are recorded as necessary in the period they become known. Adjustments to Estimated Costs at Completion were not significant to operating earnings for the years 2018, 2017, and 2016. When estimates of total costs to be incurred on a contract exceed estimates of total revenue to be earned, a provision for the entire loss on the contract is recorded in the period in which the loss is determined.

Retirement Benefits

Our benefit obligations and net periodic pension cost (benefits) associated with our domestic noncontributory pension plans (“U.S. Pension Benefit Plans”), our foreign noncontributory pension plans (“Non-U.S. Plans”), as well as our domestic postretirement health care plan (“Postretirement Health Care Benefits”), are determined using actuarial assumptions. The assumptions are based on management’s best estimates, after consulting with outside investment advisors and actuaries.

Accounting methodologies use an attribution approach that generally spreads the effects of individual events over the service lives of the participants in the plan, or estimated average lifetime when almost all of the plan participants are considered "inactive." Examples of “events” are plan amendments and changes in actuarial assumptions such as discount rate, expected long-term rate of return on plan assets, and rate of compensation increases.

There are various assumptions used in calculating the net periodic cost (benefit) and related benefit obligations. One of these assumptions is the expected long-term rate of return on plan assets. The required use of the expected long-term rate of return on plan assets may result in recognized pension income that is greater or less than the actual returns of those plan assets in any given year. Over time, however, the expected long-term returns are designed to approximate the actual long-term returns. We use a five-year, market-related asset value method of recognizing asset related gains and losses.

We use long-term historical actual return experience with consideration of the expected investment mix of the plans' assets, as well as future estimates of long-term investment returns, to develop our expected rate of return assumption used in calculating the net periodic pension cost and the net retirement health care expense. Our investment return assumption for the U.S. Pension Benefit Plans was 6.95% in both 2018 and 2017. Our investment return assumption for the Postretirement Health Care Benefits Plan was 7.00% in both 2018 and 2017. Our weighted average investment return assumption for the Non-U.S. Plans was 5.18% in 2018 and 5.20% in 2017. At December 31, 2018, the pension plans, including the U.S. Pension Benefit Plans and Non-U.S. Plans investment portfolios were comprised of approximately 28% equity investments, while the Postretirement Health Care Benefits Plan was all comprised of approximately 31% equity investments.

A second key assumption is the discount rate. The discount rate assumptions used for pension benefits and Postretirement Health Care Benefits Plan reflects, at December 31 of each year, the prevailing market rates for high-quality, fixed-income debt instruments that, if the obligation was settled at the measurement date, would provide the necessary future cash flows to pay the benefit obligation when due. Our discount rates for measuring our U.S. Pension Benefit Plan obligations were 4.47% and 3.79% at December 2018 and 2017, respectively. Our weighted average discount rates for measuring our Non-U.S. Plans were 2.67% and 2.34% at December 2018 and 2017, respectively. Our discount rates for measuring the Postretirement Health Care Benefits Plan obligation were 4.29% and 3.62% at December 31, 2018 and 2017, respectively.

Under relevant accounting rules, when almost all of the plan participants are considered inactive, the amortization period for certain unrecognized losses changes from the average remaining service period to the average remaining lifetime of the participant. As such, depending on the specific plan, we amortize gains and losses over periods ranging from ten to thirty-one years. Prior service costs are being amortized over periods ranging from two to five years. Benefits under all pension plans are valued based on the projected unit credit cost method.

Valuation and Recoverability of Goodwill

We assess the recorded amount of goodwill for recovery on an annual basis in the fourth quarter of each fiscal year. Goodwill is assessed more frequently if an event occurs or circumstances change that would indicate it is more-likely-than-not that the fair value of a reporting unit is below its carrying amount. We continually assess whether any such events and circumstances have occurred, which requires a significant amount of judgment. Such events and circumstances may include: adverse changes in macroeconomic conditions, adverse changes in the industry or market in which we transact, changes in cost factors negatively impacting earnings and cash flows, negative or declining overall financial performance, events affecting the carrying value or composition of a reporting unit, or a sustained decrease in share price, among others. Any such adverse event or change in circumstances could have a significant impact on the recoverability of goodwill and could have a material impact on our consolidated financial statements.

The goodwill impairment assessment is performed at the reporting unit level. A reporting unit is an operating segment or one level below an operating segment (referred to as a "component"). A component of an operating segment is a reporting unit if the component constitutes a business for which discrete financial information is available and segment management regularly reviews the operating results of that component. When two or more components of an operating segment have similar economic characteristics, the components are aggregated and deemed a single reporting unit. An operating segment is deemed to be a reporting unit if all of its components are similar, if none of its components is a reporting unit, or if the segment comprises only a single component. Based on this guidance, we have determined that our Products and Systems Integration and Services and Software segments are comprised of three and two reporting units, respectively. In performing this qualitative assessment we assessed relevant events and circumstances including macroeconomic conditions, industry and market conditions, cost factors, overall financial performance, changes in enterprise value, and entity-specific events. For fiscal years 2018, 2017, and 2016, we concluded it was more-likely-than-not that the fair value of each reporting unit exceeded its carrying value.

Valuation of Deferred Tax Assets and Liabilities

We use the asset and liability method of accounting for income taxes. Under this method, income tax expense is recognized for the amount of taxes payable or refundable for the current year. In addition, deferred tax assets and liabilities are recognized for the expected future tax consequences of temporary differences between the financial reporting and tax bases of assets and liabilities, and for operating losses and tax credit carryforwards. Management makes assumptions, judgments and estimates to determine our current and deferred tax provision and also the deferred tax assets and liabilities. We evaluate our deferred tax assets quarterly to determine if adjustments to our valuation allowance are required based on the consideration of all available positive and negative evidence.

Our assumptions, judgments and estimates for computing the income tax provision takes into account current tax laws, our interpretation of current tax law and possible outcomes of current and future audits conducted by foreign and domestic tax authorities. We believe such estimates to be reasonable; however, the final determination of any of the audits could significantly impact the amounts provided for income taxes in our financial statements.

Recent Accounting Pronouncements

In February 2016, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2016-02, "Leases," which amends existing guidance to require lessees to recognize assets and liabilities on the balance sheet for the rights and obligations created by long-term leases and to disclose additional quantitative and qualitative information about leasing arrangements. This was subsequently amended by ASU No. 2018-01, “Land Easement Practical Expedient for Transition to Topic 842”; ASU No. 2018-10, “Codification Improvements to Topic 842, Leases”; and ASU No. 2018-11, “Targeted Improvements.” The new standard establishes a right-of-use ("ROU") model that requires a lessee to recognize a ROU asset and lease liability on the balance sheet for all leases with an initial term longer than twelve months. Leases will be classified as finance or operating, with classification affecting the pattern and classification of expense recognition in the income statement.

The ASU is effective for us on January 1, 2019. A modified retrospective transition approach is required, applying the new standard to all leases existing at the date of initial application. An entity may choose to use either the effective date or the beginning of the earliest comparative period presented in the financial statements as its date of initial application. We will adopt the new standard on January 1, 2019 and use the effective date as the date of initial application. Consequently, financial information will not be updated and disclosures required under the new standard will not be provided for dates and periods before January 1, 2019.

The new standard provides for a number of optional practical expedients in transition. We will elect the practical expedients, which permit us to not reassess prior conclusions about lease identification, lease classification and initial direct costs under the new standard. We do not expect to elect the "use-of hindsight" practical expedient to determine the lease term or in assessing the likelihood that a lease purchase option will be exercised.

The new standard also provides practical expedients for an entity’s ongoing accounting. We currently expect to elect the short-term lease recognition exemption for all leases that qualify. This means, for those leases that qualify, we will not recognize ROU assets or lease liabilities, and this includes not recognizing ROU assets or lease liabilities for existing short-term leases in transition. We also currently expect to elect the practical expedient to not separate lease and non-lease components for all leases.

We are continuing to assess the impact of the ASU on our consolidated financial statements, required disclosures, and changes to internal controls. Based on the work completed, we expect to recognize additional operating lease liabilities ranging from $600 million to $650 million, with corresponding ROU assets of the same amount based on the present value of the remaining minimum rental payments determined under current leasing standards for existing operating leases less accumulated impairment losses.

In August 2018, the FASB issued ASU No. 2018-14, “Compensation - Retirement Benefits - Defined Benefit Plans - General (Subtopic 715-20) - Changes to the Disclosure Requirements for Defined Benefit Plans,” which modifies the disclosure requirements for the defined benefit pension plans and other postretirement plans. The ASU is effective for us on January 1, 2021 with early adoption permitted. The ASU requires a retrospective adoption method. We do not believe the ASU will have a material impact on our financial statement disclosures.

Recently Adopted Accounting Pronouncements

We early adopted ASU No. 2017-12 "Derivatives and Hedging (Topic 815): Targeted Improvements to Accounting for Hedging Activities" on December 1, 2018, using the modified retrospective method of adoption. The ASU requires a cumulative effect adjustment to the opening balance of retained earnings as of the beginning of the fiscal year of adoption for the previously recorded ineffectiveness included in retained earnings related to existing net investment hedges as of the date of adoption. We did not record a cumulative effect adjustment to retained earnings as no net investment hedges existed as of the ASU adoption date. New hedging relationships entered after the adoption date have been presented in the financial statements using the guidance of the ASU. There were no material changes to our financial statements from the adoption of the ASU.

We adopted ASU No. 2016-16, “Accounting for Income Taxes: Intra-Entity Asset Transfers of Assets Other than Inventory” on January 1, 2018 using the modified retrospective method of adoption. We recognized $31 million related to the cumulative effect of applying the ASU as an adjustment to our opening retained earnings balance. The comparative information has not been restated and continues to be reported under accounting standards in effect in those periods. This ASU eliminates the prior application of deferring the income tax effect of intra-entity asset transfers, other than inventory, until the transferred asset is sold to a third party or otherwise recovered through use. Under the ASU, we will recognize tax expense when intra-entity transfers of assets other than inventory occur.

We adopted ASU No. 2017-07, “Compensation - Retirement Benefits (Topic 715) - Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost” on January 1, 2018 using the retrospective method of adoption. The amendments in the ASU require that an employer disaggregate the service cost component from the other components of net periodic cost (benefit) and report that component in the same line item as other compensation costs arising from services rendered by employees during the period. The other components of net periodic cost (benefit) are required to be presented in the statement of operations separately from the service cost component and outside of operating earnings. We have restated our comparative period results to reflect the application of the presentation guidance of the ASU. As a result of the ASU, the presentation of net periodic cost (benefit) has been updated to classify all components of our net periodic benefit, with the exception of the service cost component, within Other in Other income (expense) on the statement of operations. We reclassified $75 million of benefits, $2 million of expense, and $19 million of benefits in the years ended December 31, 2018, 2017 and 2016, respectively.

We adopted ASU No. 2014-09, "Revenue from Contracts with Customers," and all the related amendments (collectively “ASC 606”) on January 1, 2018 using the modified retrospective method. We recognized the cumulative effect of initially applying the new revenue standard as an adjustment to our opening retained earnings. The comparative information has not been restated and continues to be reported under the accounting standards in effect in those periods.

We have retained much of the same accounting treatment used to recognize revenue under ASC 606 as under accounting standards in effect in prior periods. Revenue on a significant portion of our Systems and Systems Integration contracts continues to be recognized under percentage of completion accounting, applying a cost-to-cost method. Services contracts continue to be recognized ratably over relevant contract terms as we stand ready to perform. Finally, revenue on equipment sales continues to be recognized based on delivery terms as aligned with the transfer of control.

Under the new standard, we identified distinct promises to transfer goods and services within our contracts. For system contracts that are recognized under percentage of completion accounting, we have considered the factors used to determine whether promises made in the contract are distinct and determined that devices and accessories represent distinct goods. Accordingly, adoption of the new standard impacts our system contracts, with the result being revenue recognized earlier as control of devices and accessories transfers to the customer at a point in time rather than over time. For the remaining promised goods and services within our system contracts, we continue to recognize revenue on these contracts using a cost-to-cost method based on the continuous transfer of control to the customer over time.

Under the new standard, revenue recognition for software sales is accelerated based on when control of software licenses and related support services are transferred to the customer. Amounts deferred under previous software accounting rules due to lack of vendor-specific objective evidence have been recognized as an adjustment through opening retained earnings.

Historically, we presented transactions that involved a third-party sales representative on a net basis. After considering the control concept and the remaining three indicators of gross presentation under the new standard, we have determined that we are the principal in contracts that involve a third-party sales representative. Thus, under the new standard, we present associated revenues on a gross basis, with the affect being an equal increase to selling, general and administrative expenses for our cost of third-party commissions.

Under prior accounting standards, we expensed sales commissions and other costs to obtain a contract as incurred. However, under the new standard, we capitalize sales commissions and certain other costs as incremental costs to obtain a contract. Such costs are classified as non-current contract cost assets within Other assets and amortized over a period that approximates the timing of revenue recognition on the underlying contracts.

The new standard clarified the definition of a receivable and requires us to present our net position in a contract with a customer on the balance sheet. The position is presented as either a receivable, contract asset, or a contract liability. Under the new definition, accounts receivable are unconditional rights to consideration from a customer. Contract assets represent rights to consideration from a customer in exchange for transferred goods and services that are conditional on events other than the passage of time. Contract liabilities represent obligations to transfer goods and services for which we have received, or are due, consideration from a customer. We reclassified our customer positions to align with the new definitions and presentation guidance. Accordingly, Unbilled accounts receivable and Costs and earnings in excess of billings have been reclassified from Accounts receivable and Other current assets, respectively, and are presented as Contract assets. Accounts receivable which are not due from customers have been reclassified into Other current assets. Deferred revenue, Billings in excess of costs and earnings, and Customer downpayments have been reclassified from Accrued liabilities and are presented as Contract liabilities. Non-current deferred revenue has been reclassified from Deferred revenue to Non-current contract liabilities within Other liabilities.

Forward-Looking Statements

Except for historical matters, the matters discussed in this Form 10-K are forward-looking statements within the meaning of applicable federal securities law. These statements are made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995 and generally include words such as “believes,” “expects,” “intends,” “aims,” “estimates” and similar expressions. We can give no assurance that any future results or events discussed in these statements will be achieved. Any forward-looking statements represent our views only as of today and should not be relied upon as representing our views as of any subsequent date. Readers are cautioned that such forward-looking statements are subject to a variety of risks and uncertainties that could cause our actual results to differ materially from the statements contained in this Form 10-K. Forward-looking statements include, but are not limited to, statements under the following headings: (1) “Business,” about: (a) industry growth and demand, including opportunities resulting from such growth, (b) future product development and the demand for new products, (c) customer spending, (d) the impact of our strategy and focus areas, (e) the impact from the loss of key customers, (f) competitive position and our ability to maintain a leadership position in our core products, (g) increased competition,

(h) the impact of regulatory matters, (i) the impact from the allocation and regulation of spectrum, particularly with respect to broadband spectrum, (j) the firmness of each segment's backlog, (k) the competitiveness of the patent portfolio, (l) the impact of research and development, (m) the availability of materials and components, energy supplies and labor, and (n) the seasonality of the business; (2) “Properties,” about the sufficiency of our manufacturing capacity and the consequences of a disruption in manufacturing; (3) “Legal Proceedings,” about the ultimate disposition of pending legal matters and timing; (4) “Management's Discussion and Analysis,” about: (a) the impact of acquisitions on our business, (b) market growth/contraction, demand, spending and resulting opportunities, (c) the impact of foreign exchange rate fluctuations, (d) our continued ability to reduce our operating expenses, (e) the growth of our Services and Software segment and the resulting impact on consolidated gross margin, (f) the increase in public safety LTE revenues, (g) the return of capital to shareholders through dividends and/or repurchasing shares, (h) our ability to invest in capital expenditures and R&D, (i) the success of our business strategy and portfolio, (j) future payments, charges, use of accruals and expected cost-saving and profitability benefits associated with our reorganization of business programs and employee separation costs, (k) our ability and cost to repatriate funds, (l) future cash contributions to pension plans or retiree health benefit plans, (m) the liquidity of our investments, (n) our ability and cost to access the capital markets, (o) our ability to borrow and the amount available under our credit facilities, (p) our ability to settle the principal amount of the Senior Convertible Notes in cash, (q) our ability and cost to obtain Performance Bonds, (r) adequacy of internal resources to fund expected working capital and capital expenditure measurements, (s) expected payments pursuant to commitments under long-term agreements, (t) the ability to meet minimum purchase obligations, (u) our ability to sell accounts receivable and the terms and amounts of such sales, (v) the outcome and effect of ongoing and future legal proceedings, (w) the impact of the loss of key customers, (x) the expected effective tax rate and deductibility of certain items, and (y) the impact of the adoption of accounting pronouncements on our retained earnings; and (5) "Quantitative and Qualitative Disclosures about Market Risk," about: (a) the impact of foreign currency exchange risks, (b) future hedging activity and expectations of the Company, and (c) the ability of counterparties to financial instruments to perform their obligations.

Some of the risk factors that affect our business and financial results are discussed in "Item 1A: Risk Factors." We caution the reader that the risk factors discussed in "Item 1A: Risk Factors," and those described elsewhere in this report or in our other Securities and Exchange Commission filings, could cause our actual results to differ materially from those stated in the forward-looking statements.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

Interest Rate Risk

As of December 31, 2018, we have $5.3 billion of long-term debt, including the current portion of long-term debt, which is primarily priced at long-term, fixed interest rates. Interest on the $400 million Term Loan is variable and indexed to LIBOR. In addition, we have a subsidiary that has variable interest loans denominated in Chilean Peso.

Foreign Currency Risk

We are exposed to foreign currency risk as a result of buying and selling in various currencies, our net investments in foreign entities, and monetary assets and liabilities denominated in a currency other than the functional currency of the legal entity holding the instrument. We use financial instruments to reduce our overall exposure to the effects of currency fluctuations on cash flows. Our policy prohibits speculation in financial instruments for profit on exchange rate price fluctuations, trading in currencies for which there are no underlying exposures, or entering into transactions for any currency to intentionally increase the underlying exposure.

Our strategy related to foreign exchange exposure management is to offset the gains or losses on the financial instruments against losses or gains on the underlying operational cash flows, net investments or monetary assets and liabilities based on our assessment of risk. We enter into derivative contracts for some of our non-functional currency cash, receivables, and payables, which are primarily denominated in major currencies that can be traded on open markets. We typically use forward contracts and options to hedge these currency exposures. In addition, we enter into derivative contracts for some forecasted transactions or net investments in some of our overseas entities, which are designated as part of a hedging relationship if it is determined that the transaction qualifies for hedge accounting under the provisions of the authoritative accounting guidance for derivative instruments and hedging activities. A portion of our exposure is from currencies that are not traded in liquid markets and these are addressed, to the extent reasonably possible, by managing net asset positions, product pricing and component sourcing.

At December 31, 2018, we had outstanding foreign exchange contracts totaling $819 million, compared to $507 million outstanding at December 31, 2017. Management does not believe these financial instruments should subject it to undue risk due to foreign exchange movements because gains and losses on these contracts should generally offset gains and losses on the underlying assets, liabilities and transactions.

The following table shows the five largest net notional amounts of the positions to buy or sell foreign currency as of December 31, 2018 and the corresponding positions as of December 31, 2017:

	Notional Amount	
Net Buy (Sell) by Currency	2018	2017
British Pound	$139	$72
Euro	89	149
Australian Dollar	(105)	(64)
Chinese Renminbi	(55)	(73)
Brazilian Real	(41)	(45)

Foreign exchange financial instruments that are subject to the effects of currency fluctuations, which may affect reported earnings, include derivative financial instruments and other monetary assets and liabilities denominated in a currency other than the functional currency of the legal entity holding the instrument. Derivative financial instruments consist primarily of currency forward contracts. Other monetary assets and liabilities denominated in a currency other than the functional currency of the legal entity consist primarily of cash, cash equivalents, short-term investments, as well as accounts payable and receivable. Accounts payable and receivable are reflected at fair value in the financial statements. Assuming the amounts of the outstanding foreign exchange contracts represent our underlying foreign exchange risk related to monetary assets and liabilities, a hypothetical unfavorable 10% movement in the foreign exchange rates, from current levels, would reduce the value of those monetary assets and liabilities by approximately $57 million. Our market risk calculation represents an estimate of reasonably possible net losses that would be recognized assuming hypothetical 10% movements in future currency market pricing and is not necessarily indicative of actual results, which may or may not occur. It does not represent the maximum possible loss or any expected loss that may occur, since actual future gains and losses will differ from those estimated, based upon, among other things, actual fluctuation in market rates, operating exposures, and the timing thereof. We believe, however, that any such loss incurred would be offset by the effects of market rate movements on the respective underlying derivative financial instruments transactions. The foreign exchange financial instruments are held for purposes other than trading.

Item 8: Financial Statements and Supplementary Data
REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and Board of Directors
Motorola Solutions, Inc.:
Opinion on the Consolidated Financial Statements
We have audited the accompanying consolidated balance sheets of Motorola Solutions, Inc. and subsidiaries (the Company) as of December 31, 2018 and 2017, the related consolidated statements of operations, comprehensive income (loss), stockholders' equity, and cash flows for each of the years in the three year period ended December 31, 2018, and the related notes (collectively, the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and 2017, and the results of its operations and its cash flows for each of the years in the three year period ended December 31, 2018, in conformity with U.S. generally accepted accounting principles.
We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2018, based on the criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO), and our report dated February 15, 2019 expressed an unqualified opinion on the effectiveness of the Company's internal control over financial reporting.
Change in Accounting Principle
As discussed in Note 1 to the consolidated financial statements, the Company has changed its method of accounting for revenue recognition in 2018 due to the adoption of ASU No. 2014-09, "Revenue from Contracts with Customers".

Basis for Opinion
These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.
We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the 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. We believe that our audits provide a reasonable basis for our opinion.
We have served as the Company's auditor since 1959.
Chicago, Illinois
February 15, 2019

Consolidated Statements of Operations

	Years ended December 31		
(In millions, except per share amounts)	2018	2017	2016
Net sales from products	$4,463	$3,772	$3,649
Net sales from services	2,880	2,608	2,389
Net sales	7,343	6,380	6,038
Costs of products sales	2,035	1,686	1,649
Costs of services sales	1,828	1,670	1,520
Costs of sales	3,863	3,356	3,169
Gross margin	3,480	3,024	2,869
Selling, general and administrative expenses	1,254	1,025	1,044
Research and development expenditures	637	568	553
Other charges	334	147	224
Operating earnings	1,255	1,284	1,048
Other income (expense):			
Interest expense, net	(222)	(201)	(205)
Gains (losses) on sales of investments and businesses, net	16	3	(6)
Other	53	(10)	7
Total other expense	(153)	(208)	(204)
Net earnings before income taxes	1,102	1,076	844
Income tax expense	133	1,227	282
Net earnings (loss)	969	(151)	562
Less: Earnings attributable to noncontrolling interests	3	4	2
Net earnings (loss) attributable to Motorola Solutions, Inc.	$966	$(155)	$560
Earnings (loss) per common share:			
Basic:	$5.95	$(0.95)	$3.30
Diluted:	5.62	(0.95)	3.24
Weighted average common shares outstanding:			
Basic	162.4	162.9	169.6
Diluted	172.0	162.9	173.1
Dividends declared per share	$2.13	$1.93	$1.70

See accompanying notes to consolidated financial statements.

Consolidated Statements of Comprehensive Income (Loss)

(In millions)	Years ended December 31 2018	2017	2016
Net earnings (loss)	$969	$(151)	$562
Other comprehensive income (loss), net of tax (Note 3):			
Foreign currency translation adjustments	(91)	141	(228)
Marketable securities	(6)	6	3
Defined benefit plans	(106)	(392)	(226)
Total other comprehensive loss, net of tax	(203)	(245)	(451)
Comprehensive income (loss)	766	(396)	111
Less: Earnings attributable to noncontrolling interest	3	4	2
Comprehensive income (loss) attributable to Motorola Solutions, Inc. common shareholders	$763	$(400)	$109

See accompanying notes to consolidated financial statements.

Consolidated Balance Sheets

(In millions, except par value)	December 31 2018	2017
ASSETS		
Cash and cash equivalents	$1,246	$1,205
Restricted cash	11	63
Total cash and cash equivalents	1,257	1,268
Accounts receivable, net	1,293	1,523
Contract assets	1,012	—
Inventories, net	356	327
Other current assets	354	832
Total current assets	4,272	3,950
Property, plant and equipment, net	895	856
Investments	169	247
Deferred income taxes	985	1,023
Goodwill	1,514	938
Intangible assets, net	1,230	861
Other assets	344	333
Total assets	$9,409	$8,208
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current portion of long-term debt	$31	$52
Accounts payable	592	593
Contract liabilities	1,263	—
Accrued liabilities	1,210	2,286
Total current liabilities	3,096	2,931
Long-term debt	5,289	4,419
Other liabilities	2,300	2,585
Stockholders' Equity		
Preferred stock, $100 par value	—	—
Common stock, $.01 par value:	2	2
Authorized shares: 600.0		
Issued shares: 12/31/18—164.0; 12/31/17—161.6		
Outstanding shares: 12/31/18—163.5; 12/31/17—161.2		
Additional paid-in capital	419	351
Retained earnings	1,051	467
Accumulated other comprehensive loss	(2,765)	(2,562)
Total Motorola Solutions, Inc. stockholders' equity (deficit)	(1,293)	(1,742)
Noncontrolling interests	17	15
Total stockholders' equity (deficit)	(1,276)	(1,727)
Total liabilities and stockholders' equity	$9,409	$8,208

See accompanying notes to consolidated financial statements.

Consolidated Statements of Stockholders' Equity

(In millions, except per share amounts)	Shares	Common Stock and Additional Paid-in Capital	Accumulated Other Comprehensive Income (Loss)	Retained Earnings	Noncontrolling Interests
Balance as of January 1, 2016	174.5	$ 44	$ (1,866)	$ 1,716	$ 10
Net earnings				560	2
Other comprehensive loss			(451)		
Issuance of common stock and stock options exercised	3.0	93			
Share repurchase program	(12.0)			(842)	
Share-based compensation expense		68			
Dividends declared				(286)	
Balance as of December 31, 2016	165.5	$ 205	$ (2,317)	$ 1,148	$ 12
Net earnings				(155)	4
Other comprehensive income			25		
Issuance of common stock and stock options exercised	1.8	82			
Share repurchase program	(5.7)			(483)	
Reclassification of stranded tax effects			(270)	270	
Share-based compensation expense		66			
Dividends paid to noncontrolling interest in subsidiary common stock					(1)
Dividends declared				(313)	
Balance as of December 31, 2017	161.6	$ 353	$ (2,562)	$ 467	$ 15
Net earnings				966	3
Other comprehensive loss			(203)		
Issuance of common stock and stock options exercised	3.6	168			
Share repurchase program	(1.2)			(132)	
ASU 2016-16 modified retrospective adoption				(31)	
Share-based compensation expense		73			
ASU 2014-09 modified retrospective adoption				127	
Dividends paid to noncontrolling interest in subsidiary common stock					(1)
Dividends declared				(346)	
Repurchase of senior convertible notes		(173)			
Balance as of December 31, 2018	164.0	$ 421	$ (2,765)	$ 1,051	$ 17

See accompanying notes to consolidated financial statements.

Consolidated Statements of Cash Flows

	Years ended December 31		
(In millions)	2018	2017	2016
Operating			
Net earnings (loss) attributable to Motorola Solutions, Inc.	$966	$(155)	$560
Earnings attributable to noncontrolling interests	3	4	2
Net earnings (loss)	969	(151)	562
Adjustments to reconcile Net earnings (loss) to Net cash provided by operating activities:			
Depreciation and amortization	360	343	295
Non-cash other charges	56	32	54
Non-U.S. pension settlement loss	—	48	26
Share-based compensation expense	73	66	68
Loss (gains) on sales of investments and businesses, net	(16)	(3)	6
Loss (gain) from the extinguishment of long term debt	(6)	—	2
Changes in assets and liabilities, net of effects of acquisitions, dispositions, and foreign currency translation adjustments:			
Accounts receivable	62	(60)	(6)
Inventories	71	(46)	6
Other current assets and contract assets	(251)	(99)	(185)
Accounts payable, accrued liabilities, and contract liabilities	271	160	241
Other assets and liabilities	(523)	(44)	(117)
Deferred income taxes	9	1,100	213
Net cash provided by operating activities	1,075	1,346	1,165
Investing			
Acquisitions and investments, net	(1,164)	(404)	(1,474)
Proceeds from sales of investments	95	183	670
Capital expenditures	(197)	(227)	(271)
Proceeds from sales of property, plant and equipment	—	—	73
Net cash used for investing activities	(1,266)	(448)	(1,002)
Financing			
Repayment of debt	(723)	(21)	(686)
Net proceeds from issuance of debt	1,490	10	673
Issuance of common stock	168	82	93
Purchase of common stock	(132)	(483)	(842)
Settlement of conversion premium on convertible debt	(169)	—	—
Payment of dividends	(337)	(307)	(280)
Payment of dividends to non-controlling interest	(1)	(1)	—
Deferred acquisition costs	(76)	(2)	—
Net cash provided by (used for) financing activities	220	(722)	(1,042)
Effect of exchange rate changes on cash, cash equivalents, and restricted cash	(40)	62	(71)
Net increase (decrease) in cash, cash equivalents, and restricted cash	(11)	238	(950)
Cash, cash equivalents, and restricted cash, beginning of period	1,268	1,030	1,980
Cash, cash equivalents, and restricted cash, end of period	$1,257	$1,268	$1,030
Supplemental Cash Flow Information			
Cash paid during the period for:			
Interest, net	$204	$176	$191
Income and withholding taxes, net of refunds	119	122	66

See accompanying notes to consolidated financial statements.

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Notes to Consolidated Financial Statements
(Dollars in millions, except as noted)
1. Summary of Significant Accounting Policies

Principles of Consolidation: The consolidated financial statements include the accounts of Motorola Solutions, Inc. (the “Company” or “Motorola Solutions”) and all controlled subsidiaries. All intercompany transactions and balances have been eliminated.

The consolidated financial statements as of December 31, 2018 and 2017 and for the years ended December 31, 2018, 2017 and 2016, include, in the opinion of management, all adjustments (consisting of normal recurring adjustments and reclassifications) necessary to present fairly the Company's consolidated financial position, results of operations, statements of comprehensive income, and statements of stockholders' equity and cash flows for all periods presented.

Use of Estimates: The preparation of financial statements in conformity with United States ("U.S.") Generally Accepted Accounting Principles ("GAAP") requires management to make certain estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting periods. Actual results could differ from those estimates.

Revenue Recognition: Net sales consist of a wide range of goods and services including the delivery of devices, systems and system integration and a full set of software and service offerings. The Company recognizes revenues when, or as, it transfers control of promised goods or services to its customers in an amount that reflects the consideration to which it expects to be entitled to in exchange for those goods and services. Refer to Note 2 for further discussion of the Company’s accounting policies for revenue from contract with its customers.

Cash Equivalents: The Company considers all highly-liquid investments purchased with an original maturity of three months or less to be cash equivalents. Restricted cash was $11 million at December 31, 2018 and $63 million at December 31, 2017.

Investments: Investments in debt securities classified as available-for-sale are carried at fair value with changes in fair value recorded in other comprehensive income. Certain investments are accounted for using the equity method if the Company has significant influence over the issuing entity.

The Company assesses declines in the fair value of debt securities and equity method investments to determine whether such declines are other-than-temporary. This assessment is made considering all available evidence, including changes in general market conditions, specific industry and individual company data, the length of time and the extent to which the fair value has been less than cost, the financial condition and the near-term prospects of the entity issuing the security, and the Company’s ability and intent to hold the investment until recovery. Other-than-temporary impairments of investments are recorded to Other within Other income (expense) in the Company’s Consolidated Statements of Operations in the period in which they become impaired.

Equity securities with readily determinable fair values are carried at fair value with changes in fair value recorded in Other within Other income (expense). Equity securities without readily determinable fair values are carried at cost, less impairments, if any, and adjusted for observable price changes for the identical or a similar investment of the same issuer. The Company performs a qualitative impairment assessment to determine if such investments are impaired. The qualitative assessment considers all available information, including declines in the financial performance of the issuing entity, the issuing entity’s operating environment, and general market conditions. Impairments of equity securities without readily determinable fair values are recorded in Other within Other income (expense).

Inventories: Inventories are valued at the lower of average cost (which approximates cost on a first-in, first-out basis) or net realizable value.

Property, Plant and Equipment: Property, plant and equipment are stated at cost less accumulated depreciation. Depreciation is recorded on a straight-line basis, based on the estimated useful lives of the assets (leasehold improvements, five to twenty years; machinery and equipment, two to ten years) and commences once the assets are ready for their intended use. When certain events or changes in operating conditions occur, useful lives of the assets may be adjusted or an impairment assessment may be performed on the recoverability of the carrying value.

Goodwill and Intangible Assets: Goodwill is assessed for impairment at least annually at the reporting unit, or more frequently if events or circumstances occur that would more likely than not reduce the fair value of a reporting unit below its carrying value level. The Company performs its annual assessment of goodwill for impairment in the fourth quarter of each fiscal year, typically through a qualitative assessment. Indicators of impairment include: (i) macroeconomic conditions, (ii) industry and market conditions, (iii) cost factors, including product and SG&A costs, (iv) overall financial performance of the Company, (v) changes in share price, and (vi) other relevant company-specific events. If it’s determined that it is more-likely-than-not that the fair value of the reporting unit is less than its carrying amount, the Company will perform the first step of the impairment process, which compares the fair value of the reporting unit to its book value. If the fair value of the reporting unit is less than its book value, the Company performs a hypothetical purchase price allocation based on the reporting unit's fair value to determine the fair value of the reporting unit's goodwill. Fair value is determined using a combination of present value techniques and market prices of comparable businesses.

Intangible assets are amortized on a straight line basis over their respective estimated useful lives ranging from one to twenty years. The Company has no intangible assets with indefinite useful lives.

Impairment of Long-Lived Assets: Long-lived assets, which include intangible assets, held and used by the Company are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of assets may not be recoverable. The Company evaluates recoverability of assets to be held and used by comparing the carrying amount of an asset (group) to future net undiscounted cash flows to be generated by the asset (group). If an asset (group) is considered to be impaired, the impairment to be recognized is equal to the amount by which the carrying amount of the asset (group) exceeds the asset's (group's) fair value calculated using a discounted future cash flows analysis or market comparable analysis. Assets held for sale, if any, are reported at the lower of the carrying amount or fair value less cost to sell.

Income Taxes: The Company records deferred income tax assets and liabilities based on the estimated future tax effects of differences between the financial and tax bases of assets and liabilities based on currently enacted tax laws. The Company's deferred and other tax balances are based on management's interpretation of the tax regulations and rulings in numerous tax jurisdictions. Income tax expense and liabilities recognized by the Company also reflect its best estimates and assumptions regarding, among other things, the level of future taxable income, the effect of the Company's various tax planning strategies, and uncertain tax positions. Future tax authority rulings and changes in tax laws, changes in projected levels of taxable income, and future tax planning strategies could affect the actual effective tax rate and tax balances recorded by the Company.

Long-term Receivables: Long-term receivables include trade receivables where contractual terms of the note agreement are greater than one year. Long-term receivables are considered impaired when management determines collection of all amounts due according to the contractual terms of the note agreement, including principal and interest, is no longer probable. Impaired long-term receivables are valued based on the present value of expected future cash flows discounted at the receivable’s effective interest rate, or the fair value of the collateral if the receivable is collateral dependent. Interest income and late fees on impaired long-term receivables are recognized only when payments are received. Previously impaired long-term receivables are no longer considered impaired and are reclassified to performing when they have performed under restructuring for four consecutive quarters.

Environmental Liabilities: The Company maintains a liability related to ongoing remediation efforts of environmental media such as groundwater, soil, and soil vapor, as well as related legal fees for a designated Superfund site under the Comprehensive Environmental Response, Compensation and Liability Act (commonly known as the “Superfund Act”) incurred by a legacy business. It is the Company’s policy to re-evaluate the reserve when certain events become known that will impact the future cash payments. When the timing and amount of the future cash payments are fixed or reliably determinable, the Company discounts the future cash flows used in estimating the accrual using a risk-free treasury rate. The current portion of the estimated environmental liability is included in the “Accrued liabilities” statement line and the non-current portion is included in the “Other liabilities” statement line within the Company’s Consolidated Balance Sheet.

Foreign Currency: Certain non-U.S. operations within the Company use their respective local currency as their functional currency. Those operations that do not have the U.S. dollar as their functional currency translate assets and liabilities at current rates of exchange in effect at the balance sheet date and revenues and expenses using rates that approximate those in effect during the period. The resulting translation adjustments are included as a component of Accumulated other comprehensive income (loss) in the Company’s Consolidated Balance Sheet. For those operations that have the U.S. dollar as their functional currency, transactions denominated in the local currency are measured in U.S. dollars using the current rates of exchange for monetary assets and liabilities and historical rates of exchange for nonmonetary assets. Gains and losses from remeasurement of monetary assets and liabilities are included in Other within Other income (expense) within the Company’s Consolidated Statements of Operations.

Derivative Instruments: Gains and losses on hedging instruments that do not qualify for hedge accounting are recorded immediately in Other income (expense) within the Consolidated Statements of Operations. Gains and losses pertaining to instruments designated as net investment hedges that qualify for hedge accounting are recognized as a component of Accumulated other comprehensive income (loss). Components excluded from the assessment of hedge

ineffectiveness in net investment hedges are included in Accumulated other comprehensive income (loss) at their initial value and amortized into Interest expense, net on a straight-line basis.
Earnings Per Share: The Company calculates its basic earnings (loss) per share based on the weighted-average number of common shares issued and outstanding. Net earnings (loss) attributable to Motorola Solutions, Inc. is divided by the weighted average common shares outstanding during the period to arrive at the basic earnings (loss) per share. Diluted earnings (loss) per share is calculated by dividing net earnings (loss) attributable to Motorola Solutions, Inc. by the sum of the weighted average number of common shares used in the basic earnings (loss) per share calculation and the weighted average number of common shares that would be issued assuming exercise or conversion of all potentially dilutive securities, excluding those securities that would be anti-dilutive to the earnings (loss) per share calculation. Both basic and diluted earnings (loss) per share amounts are calculated for net earnings attributable to Motorola Solutions, Inc. for all periods presented.
Share-Based Compensation Costs: The Company grants share-based compensation awards and offers an employee stock purchase plan. The amount of compensation cost for these share-based awards is generally measured based on the fair value of the awards as of the date that the share-based awards are issued and adjusted to the estimated number of awards that are expected to vest. The fair values of stock options and stock appreciation rights are generally determined using a Black-Scholes option pricing model which incorporates assumptions about expected volatility, risk free rate, dividend yield, and

expected life. Performance-based stock options, performance-contingent stock options, and market stock units vest based on market conditions and are therefore measured under a Monte Carlo simulation in order to simulate a range of possible future unit prices for Motorola Solutions over the performance period. Compensation cost for share-based awards is recognized on a straight-line basis over the vesting period.

Defined Benefit Plans: The Company records annual expenses relating to its defined benefit plans based on calculations which include various actuarial assumptions, including discount rates, assumed asset rates of return, compensation increases, and turnover rates. The Company reviews its actuarial assumptions on an annual basis and makes modifications to the assumptions based on current rates and trends. The effects of the gains, losses, and prior service costs and credits are amortized either over the average service life or over the average remaining lifetime of the participants, depending on the number of active employees in the plan. The funded status, or projected benefit obligation less plan assets, for each plan, is reflected in the Company’s Consolidated Balance Sheets using a December 31 measurement date.

Recent Acquisitions

On January 7, 2019, the Company announced that it acquired VaaS International Holdings ("VaaS"), a company that is a leading global provider of data and image analytics for vehicle location for a purchase price of $445 million. This acquisition expands the Company's command center software portfolio.

On March 28, 2018, the Company completed the acquisition of Avigilon Corporation ("Avigilon"), a provider of advanced security and video solutions including video analytics, network video management hardware and software, video cameras and access control solutions for a purchase price of $974 million.

On March 7, 2018, the Company completed the acquisition of Plant Holdings, Inc. ("Plant"), the parent company of Airbus DS Communications for a purchase price of $237 million. This acquisition expands the Company's software portfolio in the command center with additional solutions for Next Generation 9-1-1.

On August 28, 2017, the Company completed the acquisition of Kodiak Networks, a provider of broadband push-to-talk for commercial customers, for a purchase price of $225 million.

On March 13, 2017, the Company completed the acquisition of Interexport, a managed service provider of communications systems to public safety and commercial customers in Chile, for a purchase price of $98 billion Chilean pesos, or approximately $147 million.

On November 10, 2016, the Company completed the acquisition of Spillman Technologies ("Spillman"), a provider of comprehensive law enforcement and public safety software solutions, for a purchase price of $221 million. The acquisition expands the Company's command center software and services portfolio and enables it to offer a full suite of solutions to a broader customer base.

On February 19, 2016, the Company completed the acquisition of Guardian Digital Communications Limited ("GDCL"), a holding company of Airwave Solutions Limited ("Airwave"), the largest private operator of a public safety network in the world. All of the outstanding equity of GDCL was acquired for the sum of £1, after which the Company invested into GDCL £698 million, net of cash acquired, or approximately $1.0 billion, to settle all third party debt.

Recent Accounting Pronouncements: In February 2016, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2016-02, "Leases," which amends existing guidance to require lessees to recognize assets and liabilities on the balance sheet for the rights and obligations created by long-term leases and to disclose additional quantitative and qualitative information about leasing arrangements. This was subsequently amended by ASU No. 2018-01, “Land Easement Practical Expedient for Transition to Topic 842”; ASU No. 2018-10, “Codification Improvements to Topic 842, Leases”; and ASU No. 2018-11, “Targeted Improvements.” The new standard establishes a right-of-use model ("ROU") that requires a lessee to recognize a ROU asset and lease liability on the balance sheet for all leases with an initial term longer than twelve months. Leases will be classified as finance or operating, with classification affecting the pattern and classification of expense recognition in the income statement. The ASU is effective for the Company on January 1, 2019. A modified retrospective transition approach is required, applying the new standard to all leases existing at the date of initial application. An entity may choose to use either the effective date or the beginning of the earliest comparative period presented in the financial statements as its date of initial application. The Company will adopt the new standard on January 1, 2019 and use the effective date as the date of initial application. Consequently, financial information will not be updated and disclosures required under the new standard will not be provided for dates and periods before January 1, 2019.

The new standard provides for a number of optional practical expedients in transition. The Company will elect the practical expedients, which permits the Company to not reassess prior conclusions about lease identification, lease classification and initial direct costs under the new standard. The Company does not expect to elect the "use-of hindsight" practical expedient to determine the lease term or in assessing the likelihood that a lease purchase option will be exercised.

The new standard also provides practical expedients for an entity’s ongoing accounting. The Company currently expects to elect the short-term lease recognition exemption for all leases that qualify. This means, for those leases that qualify, The Company will not recognize ROU assets or lease liabilities, and this includes not recognizing ROU assets or lease liabilities for existing short-term leases in transition. The Company also currently expects to elect the practical expedient to not separate lease and non-lease components for all leases.

The Company is continuing to assess the impact of the ASU on its consolidated financial statements, required disclosures, and changes to internal controls. Based on the preliminary work completed, the Company expects to recognize additional operating lease liabilities ranging from $600 million to $650 million, with corresponding ROU assets of the same amount based on the present value of the remaining minimum rental payments determined under current leasing standards for existing operating leases less accumulated impairment losses.

In August 2018, the FASB issued ASU No. 2018-14, “Compensation - Retirement Benefits - Defined Benefit Plans - General (Subtopic 715-20) - Changes to the Disclosure Requirements for Defined Benefit Plans,” which modifies the disclosure requirements for the defined benefit pension plans and other postretirement plans. The ASU is effective for the Company on January 1, 2021 with early adoption permitted. The ASU requires a retrospective adoption method. The Company does not believe the ASU will have a material impact on its financial statement disclosures.

Recently Adopted Accounting Pronouncements: The Company early adopted ASU No. 2017-12 "Derivatives and Hedging (Topic 815): Targeted Improvements to Accounting for Hedging Activities" on December 1, 2018, using the modified retrospective method of adoption. The ASU requires a cumulative effect adjustment to the opening balance of retained earnings as of the beginning of the fiscal year of adoption for the previously recorded ineffectiveness included in retained earnings related to existing net investment hedges as of the date of adoption. The Company did not record a cumulative effect adjustment to retained earnings as no net investment hedges existed as of the ASU adoption date. New hedging relationships entered after the adoption date have been presented in the financial statements using the guidance of the ASU. There were no material changes to the Company’s financial statements from the adoption of the ASU.

The Company adopted ASU No. 2016-16, “Accounting for Income Taxes: Intra-Entity Asset Transfers of Assets Other than Inventory” on January 1, 2018 using the modified retrospective method of adoption. The Company recognized $31 million related to the cumulative effect of applying the ASU as an adjustment to its opening retained earnings balance. The comparative information has not been restated and continues to be reported under accounting standards in effect in those periods. This ASU eliminates the prior application of deferring the income tax effect of intra-entity asset transfers, other than inventory, until the transferred asset is sold to a third party or otherwise recovered through use. Under the ASU, the Company will recognize tax expense when intra-entity transfers of assets other than inventory occur.

The Company adopted ASU No. 2017-07, “Compensation - Retirement Benefits (Topic 715) - Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost” on January 1, 2018 using the retrospective method of adoption. The amendments in the ASU require that an employer disaggregate the service cost component from the other components of net periodic cost (benefit) and report that component in the same line item as other compensation costs arising from services rendered by employees during the period. The other components of net periodic cost (benefit) are required to be presented in the statement of operations separately from the service cost component and outside of operating earnings. The Company has restated its comparative period results to reflect the application of the presentation guidance of the ASU. As a result of the ASU, the presentation of net periodic cost (benefit) has been updated to classify all components of the Company’s net periodic benefit, with the exception of the service cost component, within Other in Other income (expense) on the statement of operations. The Company reclassified $75 million of benefits, $2 million of expense, and $19 million of benefits in the years ended December 31, 2018, 2017 and 2016, respectively.

The Company adopted ASU No. 2014-09, "Revenue from Contracts with Customers," and all the related amendments (collectively “ASC 606”) on January 1, 2018 using the modified retrospective method. The Company recognized the cumulative effect of initially applying the new revenue standard as an adjustment to its opening retained earnings. The comparative information has not been restated and continues to be reported under the accounting standards in effect in those periods.

The Company has retained much of the same accounting treatment used to recognize revenue under ASC 606 as under accounting standards in effect in prior periods. Revenue on a significant portion of its Systems and Systems Integration contracts continues to be recognized under percentage of completion accounting, applying a cost-to-cost method. Services contracts continue to be recognized ratably over relevant contract terms as the Company stands ready to perform. Finally, revenue on equipment sales continues to be recognized based on delivery terms as aligned with the transfer of control.

Under the new standard, the Company identified distinct promises to transfer goods and services within its contracts. For system contracts that are recognized under percentage of completion accounting, the Company has considered the factors used to determine whether promises made in the contract are distinct and determined that devices and accessories represent distinct goods. Accordingly, adoption of the new standard impacts the Company's system contracts, with the result being revenue recognized earlier as control of devices and accessories transfers to the customer at a point in time rather than over time. For the remaining promised goods and services within the Company's system contracts, it continues to recognize revenue on these contracts using a cost-to-cost method based on the continuous transfer of control to the customer over time.

Under the new standard, revenue recognition for software sales is accelerated based on when control of software licenses and related support services are transferred to the customer. Amounts deferred under previous software accounting rules due to lack of vendor-specific objective evidence have been recognized as an adjustment through opening retained earnings.

Historically, the Company presented transactions that involved a third-party sales representative on a net basis. After considering the control concept and the remaining three indicators of gross presentation under the new standard, the Company has determined that it is the principal in contracts that involve a third-party sales representative. Thus, under the new standard, the Company presents associated revenues on a gross basis, with the affect being an equal increase to selling, general and administrative expenses for its cost of third-party commissions.

Under prior accounting standards, the Company expensed sales commissions and other costs to obtain a contract as incurred. However, under the new standard, the Company capitalizes sales commissions and certain other costs as incremental costs to obtain a contract. Such costs are classified as non-current contract cost assets within Other assets and amortized over a period that approximates the timing of revenue recognition on the underlying contracts.

The new standard clarified the definition of a receivable and requires the Company to present its net position in a contract with a customer on the balance sheet. The position is presented as either a receivable, contract asset, or a contract liability. Under the new definition, accounts receivable are unconditional rights to consideration from a customer. Contract assets represent rights to consideration from a customer in exchange for transferred goods and services that are conditional on events other than the passage of time. Contract liabilities represent obligations to transfer goods and services for which the Company has received, or is due, consideration from a customer. The Company reclassified its customer positions to align with the new definitions and presentation guidance. Accordingly, Unbilled accounts receivable and Costs and earnings in excess of billings have been reclassified from Accounts receivable and Other current assets, respectively, and are presented as Contract assets. Accounts receivable which are not due from customers have been reclassified into Other current assets. Deferred revenue, Billings in excess of costs and earnings, and Customer downpayments have been reclassified from Accrued liabilities and are presented as Contract liabilities. Non-current deferred revenue has been reclassified from Deferred revenue to Non-current contract liabilities within Other liabilities.

The cumulative effect of the changes made to our consolidated opening balance sheet as of January 1, 2018 due to the modified retrospective method of adoption of ASC 606 is as follows:

Balance Sheet (Selected captions)

(In millions)	December 31, 2017	Reclassification of Contract Assets	Reclassification of Non-customer receivables	Reclassification of Contract Liabilities	Impact of Adoption on Open Contracts	January 1, 2018
						(Unaudited)
ASSETS						
Accounts receivable, net	$ 1,523	$ (297)	$ (24)	$ —	$ (4)	$ 1,198
Contract assets	—	846	—	—	85	931
Inventories, net	327	—	—	—	1	328
Other current assets	832	(549)	24	—	(23)	284
Deferred income taxes	1,023	—	—	—	(41)	982
Other assets	333	—	—	—	85	418
LIABILITIES AND STOCKHOLDERS’ EQUITY						
Contract liabilities	$ —	$ —	$ —	$ 1,099	$ (17)	$ 1,082
Accrued liabilities	2,286	—	—	(1,099)	—	1,187
Other liabilities	2,585	—	—	—	(7)	2,578
Stockholders’ Equity						
Retained earnings	467	—	—	—	127	594

The impact of the adoption of ASC 606 to the consolidated financial statements for the year ended December 31, 2018 is as follows:

Statements of Operations (Selected captions)

	Year Ended		
(In millions)	December 31, 2018	Adjustments due to ASC 606	December 31, 2018 Balances Under ASC 605

Net sales	$7,343	$ (83)	$ 7,260
Gross margin	3,480	(82)	3,398
Selling, general and administrative expenses	1,254	(64)	1,190
Operating earnings	1,255	(18)	1,237
Net earnings before income taxes	1,102	(18)	1,084
Net earnings attributable to Motorola Solutions Inc.	966	(18)	948

Balance Sheet (Selected captions)

(In millions)	December 31, 2018	Adjustments due to ASC 606	December 31, 2018 Balances Under ASC 605
ASSETS			
Accounts receivable, net	$ 1,293	$ 416	$ 1,709
Contract assets	1,012	(1,012)	—
Other current assets	354	531	885
Deferred income taxes	985	41	1,026
Other assets	344	(99)	245
LIABILITIES AND STOCKHOLDERS' EQUITY			
Contract liabilities	$ 1,263	$ (1,263)	$ —
Accrued liabilities	1,210	1,275	2,485
Other liabilities	2,300	10	2,310
Stockholders' Equity			
Retained earnings	1,051	(145)	906

There is no impact to the Consolidated Statements of Comprehensive Income (Loss) or the Statements of Cash Flows, with the exception of changes to Net earnings and changes within assets and liabilities as presented on the Consolidated Balance Sheet and disclosed above.

2. Revenue from Contracts with Customers

In accordance with ASC 606, the Company recognizes revenue to reflect the transfer of control 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 goods or services. The Company records revenue following the five steps below:

1.Identify the contract with customers: A contract is an agreement between two or more parties that creates enforceable rights and obligations and specifies that enforceability is a matter of law. Contracts shall be accounted for when: (i) the parties to the contract have approved the contract (in writing, orally, or in accordance with other customary business practices) and are committed to perform their respective obligations, (ii) the Company can identify each party’s rights regarding the goods or services to be transferred, (iii) the Company can identify the payment terms for the goods or services to be transferred, (iv) the contract has commercial substance (that is, the risk, timing, or amount of the Company’s future cash flow is expected to change as a result of the contract), and (v) it is probable that the Company will collect substantially all of the consideration to which it will be entitled in exchange for the goods or services that will be transferred to the customer. It is the Company’s customary business practice to obtain a signed legal document as evidence of an arrangement.

2.Identify performance obligations in contracts: The goods or services promised in a contract must be evaluated at inception to identify as a performance obligation each promise to transfer to the customer either: (i) a distinct good or service, or (ii) a series of distinct goods or services that are substantially the same and that have the same pattern of transfer to the customer.

3.Determine the transaction price: The transaction price is the amount of consideration to which the Company expects to be entitled in exchange for transferring goods or services to a customer, excluding amounts collected on behalf of third parties. In determining the transaction price, the Company considers the following components: (i) variable consideration, (ii) significant financing, (iii) non-cash consideration, and (iv) consideration payable to a customer.

4.Allocate the transaction price: For a contract that has more than one distinct performance obligation, the Company must allocate the transaction price to each distinct performance obligation in an amount that depicts the amount of consideration to which the Company expects to be entitled in exchange for satisfying that specific performance obligation.

5.Recognize revenue when or as the entity satisfies a performance obligation: The Company recognizes revenue when, or as, it satisfies a performance obligation by transferring control of a promised good or service to a customer.

Disaggregation of Revenue

The following table summarizes the disaggregation of our revenue by segment, geography, major product and service type and customer type for the year ended December 31, 2018, consistent with the information reviewed by our chief operating decision maker for evaluating the financial performance of operating segments:

(in millions)	Products and Systems Integration	Services and Software
Regions		
Americas	$ 3,743	$ 1,320
EMEA	845	755
Asia Pacific	512	168
Total	$ 5,100	$ 2,243
Major Products and Services		
Devices	$ 3,216	$ —
Systems and Systems Integration	1,884	—
Services	—	1,815
Software	—	428
Total	$ 5,100	$ 2,243
Customer Type		
Direct	$ 3,317	$ 2,134
Indirect	1,783	109
Total	$ 5,100	$ 2,243

Products and Systems Integration: The Products and Systems Integration segment is comprised of Systems, Devices and Systems Integration. Direct customers of the Products and Systems Integration segment are typically government, public safety and first-responder agencies, procuring at state, local, and federal levels as well as large commercial customers with secure mission-critical needs. Indirect customers are defined as customers purchasing professional commercial radios and Avigilon video solutions, which are primarily sold through the Company's reseller partners to an end-customer base, composed of various industries where private communications networks and video solutions are used to secure operations and enable a mobile workforce. Contracts with the Company's customers are typically fixed fee, with consideration measured net of associated sales taxes, and, as it relates to our direct customers, funded through government appropriations. On the Company's Products and Systems Integration sales, it records consideration from shipping and handling on a gross basis within Net sales.

Devices: Devices includes two-way portable and vehicle-mounted radios, accessories, software features, and upgrades. Devices also includes video cameras sold by Avigilon. Devices are considered capable of being distinct and distinct within the context of our contracts. Revenue is recognized upon the transfer of control of the devices to the customer at a point in time, typically consistent with delivery under the applicable shipping terms. Devices are sold by both the direct sales force and through reseller partners. Revenue is generally recognized upon transfer of devices to reseller partners, rather than the end-customer, except for limited consignment arrangements. Provisions for returns and reseller discounts are made on a portfolio basis using historical data.

Systems and Systems Integration: Systems and Systems Integration include customized radio network, video solutions and implementation, optimization, and integration of networks, devices, software, and applications. Radio network includes the aggregation of promises to the customer to provide the radio network core and central processing software, base stations, consoles, and repeaters. These individual promises are not distinct in the context of the contract, as the Company provides a significant service of integrating and customizing the goods and services promised. The radio network represents a distinct performance obligation for which revenue is recognized over time, as the Company creates an asset with no alternative use and has an enforceable right to payment for work performed. The Company's revenue recognition over time is based on an input measure of costs incurred, which depicts the transfer of control to its customers under its contracts. Systems and Systems Integration revenue is recognized over an average duration of approximately one to two years.

Systems also include Avigilon security and video solutions including: video analytics, network video management hardware and software, and access control solutions, which are capable of being distinct and distinct in the context of the contract. Avigilon security and video solutions are traditionally sold through reseller partners, with contracts negotiated under fixed pricing. Provisions for returns are determined on a portfolio basis using historical data. Revenue is recognized upon the transfer of control of the video solution to the reseller partners, typically upon shipment.

Services and Software: The Services and Software segment provides a full set of offerings for government, public safety and commercial communication networks. Direct customers of the Services and Software segment are typically government, public safety and first-responder agencies and municipalities. Indirect customers are commercial customers who distribute broadband push-to-talk services to a final end customer base. Contracts with our customers are typically fixed fee, with consideration measured net of associated sales taxes, and, as it relates to our direct customers, funded through government appropriations.

Services: Services includes a continuum of service offerings beginning with repair, technical support and maintenance. More advanced offerings include: monitoring, software updates and cybersecurity services. Managed service offerings range from partial to full operation of customer or Motorola Solutions-owned networks. Services are provided across all radio network technologies. Services are both distinct and capable of being distinct in the context of the contract, representing a series of recurring services that the Company stands ready to perform over the contract term. Since services contracts typically allow for customers to terminate for convenience or for non-appropriations of fiscal funding, the contract term is generally considered to be limited to a monthly or annual basis, subject to customer renewal. While contracts with customers are typically fixed fee, certain managed services contracts may be subject to variable consideration related to the achievement of service level agreement performance measurements. The Company has not historically paid significant penalties under service level agreements, and accordingly, it does not constrain its contract price. Certain contracts may also contain variable consideration driven by the number of users. Revenue is typically recognized on services over time as a series of services performed over the contract term on a straight-line basis.

Software: Software offerings include public safety and enterprise command solutions, unified communications applications, and video software solutions delivered either “as a service” or on-premise. Solutions delivered as a service consist of a range of promises including hosted software, technical support and the right to unspecified future software enhancements. Software is not distinct from the hosting service since the customer does not have the right to take possession of the software at any time during the term of the arrangement. The hosted software, technical support, and right to unspecified future software enhancements each represent a series of distinct services that are delivered concurrently using the same over time method. As such, the promises are accounted for as a single performance obligation with revenue recognized on a straight-line basis.

On-premise offerings consist of multiple promises primarily including software licenses and post-contract customer support. The promises are each distinct and distinct within the context of the contract as the customer benefits from each promise individually without any significant integration or interrelationship between the promises. On-premise software revenue is recognized at the point in time when the customer can benefit from the software which generally aligns with the beginning of the license period. Revenue for post-contract customer support is recognized over time as the customer simultaneously receives and consumes the services on a straight-line basis.

Significant Judgments

The Company enters into arrangements which consist of multiple promises to our customers. The Company evaluates whether the promised goods and services are distinct or a series of distinct goods or services. Where contracts contain multiple performance obligations, the Company generally allocates the total estimated consideration to each performance obligation based on applying an estimated selling price (“ESP”) as our best estimate of standalone selling price. The Company determines ESP by: (i) collecting all reasonably available data points including sales, cost and margin analyses of the product or services, and other inputs based on its normal pricing and discounting practices, (ii) making any reasonably required adjustments to the data based on market and Company-specific factors, and (iii) stratifying the data points, when appropriate, based on major product or service, type of customer, geographic market, and sales volume.

The Company accounts for certain system contracts on an over-time basis, electing an input method of estimated costs as a measure of performance completed. The selection of the measurement of progress using estimated costs was based on a thorough consideration of alternatives of various output and input measures, including contract milestones and labor hours. However, the Company has determined that other input and output measures are not an appropriate measure of progress as they do not accurately align with the transfer of control on its customized systems. The selection of costs incurred as a measure of progress aligns the transfer of control to the overall production of the customized system.

For system contracts accounted for over time using estimated costs as a measure of performance completed, the Company relies on estimates around the total estimated costs to complete the contract ("Estimated Costs at Completion"). Total Estimated Costs at Completion include direct labor, material and subcontracting costs. Due to the nature of the efforts required to be performed to meet the underlying performance obligation, determining Estimated Costs at Completion may be complex and subject to many variables. We have a standard and disciplined quarterly process in which management reviews the progress and performance of open contracts in order to determine the best estimate of Estimated Costs at Completion. As part of this process, management reviews information including, but not limited to, any outstanding key contract matters, progress towards completion, the project schedule, identified risks and opportunities, and the related changes in estimates of costs. The risks and opportunities include management's judgment about the ability and cost to achieve the project schedule, technical requirements, and other contract requirements. Management must make assumptions and estimates regarding labor productivity and availability, the complexity of work to be performed, the availability and cost of materials, and performance by subcontractors, among other variables. Based on this analysis, any quarterly adjustment to net sales, cost of sales, and the related impact to operating income are recorded as necessary in the period they become known. When estimates of total costs to be incurred on a contract exceed estimates of total revenue to be earned, a provision for the entire loss on the contract is recorded in the period in which the loss is determined.

Remaining Performance Obligations

Remaining performance obligations represent the revenue that is expected to be recognized in future periods related to performance obligations that are unsatisfied, or partially unsatisfied, as of the end of a period. The transaction price associated with remaining performance obligations which are not yet satisfied as of December 31, 2018 is $7.2 billion. A total of $3.2 billion is from Products and Systems Integration performance obligations that are not yet satisfied, of which $1.7 billion is expected to be recognized in the next 12 months. The remaining amounts will generally be satisfied over time as systems are implemented. A total of $4.0 billion is from Services and Software performance obligations that are not yet satisfied as of December 31, 2018. The determination of Services and Software performance obligations that are not satisfied takes into account a contract term that may be limited by the customer's ability to terminate for convenience. Where termination for convenience exists in the Company's Services contracts, its disclosure of the remaining performance obligations that are unsatisfied assumes the contract term is limited until renewal. The Company expects to recognize $1.2 billion from unsatisfied Services and Software performance obligations over the next 12 months, with the remaining performance obligations to be recognized over time as services are performed and software is implemented.

Contract Balances

(in millions)	December 31, 2018	January 1, 2018
Receivables	$ 1,293	$ 1,198
Contract assets	1,012	931
Contract liabilities	1,263	1,082
Non-current contract liabilities	214	162

Contract assets consist of amounts formerly classified as Costs and earnings in excess of billings and Unbilled accounts receivable where the Company does not yet have an unconditional right to bill. Contract liabilities consist of amounts formerly classified Billings in excess of costs and earnings recognized, Customer downpayments and Deferred revenue.

Payment terms on system contracts are typically tied to implementation milestones associated with progress on contracts, while revenue recognition is over time based on a cost-to-cost method of measuring performance. The Company may recognize a contract asset or contract liability, depending on whether revenue has been recognized in excess of billings or billings in excess of revenue. Services contracts are typically billed in advance, generating Contract liabilities until the Company has performed the services. The Company does not record a financing component to contracts when it expects, at contract inception, that the period between the transfer of a promised good or service and related payment terms are less than a year.

Revenue recognized during the year ended December 31, 2018 which was previously included in Contract liabilities as of January 1, 2018 was $836 million. Revenue of $15 million was reversed during the year ended December 31, 2018 related to performance obligations satisfied, or partially satisfied, in previous periods, primarily driven by changes in the estimates of progress on system contracts.

There have been no material impairment losses recognized on contract assets during the year ended December 31, 2018.

Contract Cost Balances

(in millions)	December 31, 2018	January 1, 2018
Current contract cost assets	$ 30	$ 62
Non-current contract cost assets	98	85

Contract cost assets represent incremental costs to obtain a contract, primarily related to the Company's sales incentive plans, and certain costs to fulfill contracts. Contract cost assets are amortized into expense over a period that follows the passage of control to the customer over time. Incremental costs to obtain a contract with the Company's sales incentive plans are accounted for under a portfolio approach, with amortization ranging from one to four years to approximate the recognition of revenues over time. Where incremental costs to obtain a contract will be recognized in one year or less, the Company applies a practical expedient around expensing amounts as incurred. Amortization of contract cost assets was $44 million for the year ended December 31, 2018.

3. Other Financial Data

Statement of Operations Information

Other Charges (Income)

Other charges (income) included in Operating earnings consist of the following:

Years ended December 31	2018	2017	2016
Other charges (income):			
Intangibles amortization (Note 14)	$188	$151	$113
Reorganization of businesses (Note 13)	61	33	77
Loss (gain) on legal settlements	3	(1)	—
Asset impairments	1	10	21
Environmental reserve expense	57	—	—
Gain on the recovery of financial receivables	—	(47)	—
Acquisition-related transaction fees	24	1	13
	$334	$147	$224

During the year ended December 31, 2018, the Company became aware of additional remediation requirements for the Superfund site, resulting in a charge of $57 million primarily due to: (i) changes in the expected timeline of the remediation activities to 30 years and (ii) additional costs for further remediation efforts, increasing the reserve to $107 million. The current portion of the estimated environmental liability is included in the "Accrued liabilities" statement line and the non-current portion is included in the "Other liabilities" statement line within the Company's Consolidated Balance Sheet.

During the year ended December 31, 2018, the Company expensed $24 million of acquisition-related transaction fees related to the acquisitions of Avigilon, Plant, and VaaS compared to $1 million during the year ended December 31, 2017, and $13 million during the year ended December 31, 2016 related to the acquisition of Airwave.

During the years ended December 31, 2018, December 31, 2017 and December 31, 2016, the Company recognized $1 million, $10 million and $21 million, respectively, of asset impairments. During the years ended December 31, 2017 and December 31, 2016, the impairments were primarily related to building impairments from the sale of various corporate and manufacturing facilities.

During the year ended December 31, 2017, the Company recognized a net gain of $47 million related to the recovery, through legal procedures to seize and liquidate assets, of financial receivables owed to the Company by a former customer of its legacy Networks business. The net gain of $47 million was based on $57 million of proceeds received, net $10 million of fees owed to third parties for their involvement in the recovery.

Other Income (Expense)

Interest expense, net, and Other both included in Other income (expense) consist of the following:

Years ended December 31	2018	2017	2016
Interest expense, net:			
Interest expense	$(240)	$(215)	$(225)
Interest income	18	14	20
	$(222)	$(201)	$(205)
Other:			
Net periodic pension and postretirement benefit (Note 7)	$75	$46	$45
Non-U.S. pension settlement loss (Note 7)	—	(48)	(26)
Gain (loss) from the extinguishment of long-term debt (Note 4)	6	—	(2)
Investment impairments	(5)	—	(4)
Foreign currency gain (loss)	(24)	(31)	46
Gain (loss) on derivative instruments	(14)	15	(56)
Gains on equity method investments	1	1	5
Fair value adjustments to equity investments	11	—	—
Realized foreign currency loss on acquisition	—	—	(10)
Other	3	7	9
	$53	$(10)	$7

During the year ended December 31, 2018, the Company recognized a foreign currency loss of $24 million, primarily driven by the Brazilian real, the Australian dollar and the Argentinian peso. In addition, the Company recognized a $14 million loss on derivative instruments related to foreign currency derivatives put in place to minimize the exposure to the Canadian dollar related to the purchase of Avigilon as well as $5 million of impairments on strategic investments. These losses were offset by an $11 million gain related to an increase in the fair value of common stock held in a strategic investment.

During the year ended December 31, 2017, the Company recognized a foreign currency loss of $31 million, primarily driven by the Euro and British pound, partially offset by a gain of $15 million, on derivative instruments put in place to minimize the foreign exchange risk related to currency fluctuations.

During the year ended December 31, 2016, the Company recognized foreign currency gain of $46 million, primarily driven by the British pound, offset by a loss of $56 million on derivative instruments put in place to minimize the foreign exchange risk related to currency fluctuations. The Company also realized a $10 million foreign currency loss on currency purchased and held in anticipation of the acquisition of Airwave during the year ended December 31, 2016.

Earnings Per Common Share

Basic and diluted earnings per common share from net earnings attributable to Motorola Solutions, Inc. are computed as follows:

	Amounts attributable to Motorola Solutions, Inc. common stockholders Net Earnings (loss)		
Years ended December 31	2018	2017	2016
Basic earnings per common share:			
Earnings (loss)	$966	$(155)	$560
Weighted average common shares outstanding	162.4	162.9	169.6
Per share amount	$5.95	$(0.95)	$3.30
Diluted earnings per common share:			

Earnings (loss)	$966	$(155)	$560
Weighted average common shares outstanding	162.4	162.9	169.6
Add effect of dilutive securities:			
Share-based awards	4.2	—	2.7
Senior Convertible Notes	5.4	—	0.8
Diluted weighted average common shares outstanding	172.0	162.9	173.1
Per share amount	$5.62	$(0.95)	$3.24

In the computation of diluted earnings per common share for the year ended December 31, 2018, the assumed exercise of 0.8 million options, including 0.6 million subject to market-based contingent option agreements, were excluded because their inclusion would have been antidilutive. In the computation of diluted earnings per common share for the year ended December 31, 2017, the Company recorded a net loss and, accordingly, the basic and diluted weighted average shares outstanding are equal because any increase to the basic shares would be antidilutive, including the assumed exercise of 8.7 million stock options, the assumed vesting of 1.4 million RSUs, and 3.1 million shares related to the Senior Convertible Notes. In the computation of diluted earnings per common share for the year ended December 31, 2016, the assumed exercise of 2.8 million stock options and the assumed vesting of 0.3 million RSUs, including 2.0 million subject to market-based contingent option agreements, were excluded because their inclusion would have been antidilutive.

On August 25, 2015, the Company issued $1.0 billion of 2.0% Senior Convertible Notes which mature in September 2020 (the "Senior Convertible Notes"). The notes became fully convertible as of August 25, 2017. On September 5, 2018, the Company agreed with Silver Lake Partners to re-purchase $200 million principal of the convertible notes for aggregate consideration of $369 million in cash, inclusive of the conversion premium. The Company paid the $369 million during the year ended December 31, 2018. In the event of an additional conversion, the Company intends to settle the principal amount of the Senior Convertible Notes in cash. Since the Company’s intention is to settle the par value of the Senior Convertible Notes in cash upon conversion, only the number of shares that would be issuable (under the treasury stock method of accounting for share dilution) are included in our computation of diluted earnings per share. The conversion price is adjusted for dividends declared through the date of settlement. Diluted earnings per share has been calculated based upon the amount by which the average stock price exceeds the conversion price.

Balance Sheet Information

Accounts Receivable, Net

Accounts receivable, net, consists of the following:

December 31	2018	2017
Accounts receivable	$1,344	$1,568
Less allowance for doubtful accounts	(51)	(45)
	$1,293	$1,523

During the year ended December 31, 2018, $297 million of Unbilled accounts receivable were reclassified to Contract assets and $24 million of non-customer miscellaneous receivables were reclassified to Other current assets as a result of the adoption of ASC 606.

Inventories, Net

Inventories, net, consist of the following:

December 31	2018	2017
Finished goods	$206	$178
Work-in-process and production materials	293	282
	499	460
Less inventory reserves	(143)	(133)
	$356	$327

Other Current Assets

Other current assets consist of the following:

December 31	2018	2017
Costs and earnings in excess of billings (Note 1)	$—	$549
Current contract cost assets (Note 2)	30	62
Tax-related refunds receivables and prepayments	138	90
Other	186	131
	$354	$832

65

Property, Plant and Equipment, Net

Property, plant and equipment, net, consist of the following:

December 31	2018	2017
Land	$10	$11
Leasehold improvements	362	316
Machinery and equipment	1,886	2,122
	2,258	2,449
Less accumulated depreciation	(1,363)	(1,593)
	$895	$856

Depreciation expense for the years ended December 31, 2018, 2017, and 2016 was $172 million, $192 million and $182 million, respectively.

Property, plant and equipment, net includes capital leases of $56 million, net of accumulated depreciation of $23 million, as of December 31, 2018.

Investments

Investments consist of the following:

December 31	2018	2017
Corporate bonds	$1	$2
Common stock	19	13
Strategic investments, at cost	62	78
Company-owned life insurance policies	75	141
Equity method investments	12	13
	$169	$247

Strategic investments include investments in non-public technology-driven startup companies. Strategic investments do not have a readily determinable fair value and are recorded at cost, less any impairment, and adjusted for changes resulting from observable, orderly transactions for identical or similar securities. The Company did not recognize any significant adjustments to the recorded cost basis during the year ended December 31, 2018.

The Company’s common stock portfolio reflects an investment in a publicly-traded company within the communications services sector and is valued utilizing active market prices for similar instruments. During the year ended December 31, 2018, the Company recognized $11 million in Other income (expense) related to an increase in the fair value of the investments.

Company-owned life insurance policies are recorded at their cash surrender value. During the year ended December 31, 2018, the Company withdrew $60 million of excess cash from its company-sponsored life insurance investments.

During the year ended December 31, 2018, Gains on the sale of investments and businesses were $16 million, compared to $3 million during the year ended December 31, 2017, and losses of $6 million during the year ended December 31, 2016. During the year ended December 31, 2018, the Company recorded investment impairment charges of $5 million, compared to $4 million during the year ended December 31, 2016, representing other-than-temporary declines in the value of the Company’s equity investment portfolio. There were no investment impairments recorded during the year ended December 31, 2017. Investment impairment charges are included in Other within Other income (expense) in the Company’s Consolidated Statements of Operations.

Other Assets

Other assets consist of the following:

December 31	2018	2017
Defined benefit plan assets	$135	$133
Tax receivable	39	101
Non-current contract cost assets (Note 2)	98	—
Other	72	99
	$344	$333

Accrued Liabilities

Accrued liabilities consist of the following:

December 31	2018	2017
Deferred revenue (Note 1)	$—	$613
Compensation	324	273
Billings in excess of costs and earnings (Note 1)	—	428
Tax liabilities (Note 6)	111	107
Deferred consideration on Airwave acquisition (Note 14)	—	83
Dividend payable	93	84
Trade liabilities	185	151
Other	497	547
	$1,210	$2,286

The deferred consideration in conjunction with the acquisition of Airwave was paid during the fourth quarter of 2018.

Other Liabilities

Other liabilities consist of the following:

December 31	2018	2017
Defined benefit plans (Note 7)	$1,557	$2,019
Non-current contract liabilities (Note 2)	214	—
Deferred revenue (Note 1)	—	169
Unrecognized tax benefits (Note 6)	51	54
Deferred income taxes (Note 6)	201	115
Other	277	228
	$2,300	$2,585

Stockholders’ Equity Information

Share Repurchase Program: Through a series of actions, the board of directors has authorized the Company to repurchase in the aggregate up to $14.0 billion of its outstanding shares of common stock (the “share repurchase program”). The share repurchase program does not have an expiration date. As of December 31, 2018, the Company had used approximately $12.4 billion of the share repurchase authority, including transaction costs, to repurchase shares, leaving $1.6 billion of authority available for future repurchases.

The Company's share repurchases, including transaction costs, for 2018, 2017, and 2016 can be summarized as follows:

Year	Shares Repurchased (in millions)	Average Price	Aggregate Amount (in millions)
2018	1.2	$112.42	$ 132
2017	5.7	85.32	483
2016	12.0	70.28	842

Payment of Dividends: On November 15, 2018, the Company announced that its board of directors approved an increase in the quarterly cash dividend from $0.52 per share to $0.57 per share of common stock. During the years ended December 31, 2018, 2017, and 2016 the Company paid $337 million, $307 million, and $280 million, respectively, in cash dividends to holders of its common stock.

Accumulated Other Comprehensive Loss

The following table displays the changes in Accumulated other comprehensive loss, including amounts reclassified into income, and the affected line items in the Consolidated Statements of Operations during the years ended December 31, 2018, 2017, and 2016:

	Years ended December 31		
	2018	2017	2016
Foreign Currency Translation Adjustments:			
Balance at beginning of period	$(353)	$(494)	$(266)
Other comprehensive income (loss) before reclassification adjustment	(94)	133	(227)
Tax benefit (expense)	3	8	(1)
Other comprehensive income (loss), net of tax	(91)	141	(228)
Balance at end of period	$(444)	$(353)	$(494)
Available-for-Sale Securities:			
Balance at beginning of period	$6	$—	$(3)
Other comprehensive income (loss) before reclassification adjustment	(8)	8	—
Tax benefit (expense)	2	(2)	—
Other comprehensive income (loss) before reclassification adjustment, net of tax	(6)	6	—
Reclassification adjustment into Losses (Gains) on sales of investments and businesses	—	—	5
Tax benefit	—	—	(2)
Reclassification adjustment into Net earnings, net of tax	—	—	3
Other comprehensive income (loss), net of tax	(6)	6	3
Balance at end of period	$—	$6	$—
Defined Benefit Plans:			
Balance at beginning of period	$(2,215)	$(1,823)	$(1,597)
Other comprehensive loss before reclassification adjustment	(200)	(260)	(368)
Tax benefit (expense)	46	(213)	98
Other comprehensive loss before reclassification adjustment, net of tax	(154)	(473)	(270)
Reclassification adjustment - Actuarial net losses into Other income (expense)	76	65	53
Reclassification adjustment - Prior service benefits into Other income (expense)	(15)	(18)	(27)
Reclassification adjustment - Non-U.S. pension settlement loss into Other income (expense)	—	48	26
Tax benefit	(13)	(14)	(8)
Reclassification adjustments into Net earnings, net of tax	48	81	44
Other comprehensive loss, net of tax	(106)	(392)	(226)
Balance at end of period	$(2,321)	$(2,215)	$(1,823)
Total Accumulated other comprehensive loss	$(2,765)	$(2,562)	$(2,317)

During the year ended December 31, 2017, the Company reclassified $270 million of stranded tax effects out of Accumulated other comprehensive loss and into Retained earnings. The stranded tax effects remained a component of Accumulated other comprehensive loss as a result of the remeasurement of our deferred tax assets related to our U.S. Pension Plans through the statement of operations, to the U.S. federal tax rate of 21%. As a result, stranded tax effects within Accumulated other comprehensive loss which would not be realized at the established historical tax rates have been adjusted through equity.

4. Debt and Credit Facilities

Long-Term Debt

December 31	2018	2017
2.0% Senior Convertible Notes due 2020	$800	$1,000
Term Loan due 2021	399	—
3.5% senior notes due 2021	397	396
3.75% senior notes due 2022	748	747
3.5% senior notes due 2023	596	594
4.0% senior notes due 2024	591	590
6.5% debentures due 2025	118	118
7.5% debentures due 2025	346	346
4.6% senior notes due 2028	690	—
6.5% debentures due 2028	36	36
6.625% senior notes due 2037	54	54
5.5% senior notes due 2044	396	396
5.22% debentures due 2097	91	91
Other long-term debt	62	108
	5,324	4,476
Adjustments for unamortized gains on interest rate swap terminations	(4)	(5)
Less: current portion	(31)	(52)
Long-term debt	$5,289	$4,419

On August 25, 2015, the Company entered into an agreement with Silver Lake Partners to issue $1.0 billion of 2.0% Senior Convertible Notes which mature in September 2020. The notes became fully convertible as of August 25, 2017. The notes are convertible based on a conversion rate of 14.8252, as may be adjusted for dividends declared, per $1,000 principal amount (which is currently equal to a conversion price of $67.45 per share). The exercise price adjusts automatically for dividends. As of August 25, 2015, the Company recorded a long-term debt liability associated with the Senior Convertible Notes by determining the fair value of an equivalent debt instrument without a conversion option. Using a discount rate of 2.4%, which was determined based on a review of relevant market data, the Company calculated the fair value of the debt liability to be $992 million, indicating an $8 million discount to be amortized over the expected life of the debt instrument. As of December 31, 2018, the remaining unamortized debt discount has been fully amortized as a component of interest expense.

On September 5, 2018, the Company agreed with Silver Lake Partners to repurchase $200 million in principal amount of the Senior Convertible Notes for aggregate consideration of $369 million in cash, inclusive of the conversion premium. During the year ended December 31, 2018, the Company recorded a gain of $6 million from the extinguishment of the convertible debt. Of the $369 million paid to Silver Lake Partners, $169 million was paid during the third quarter of 2018 and the remaining $200 million was paid on October 15, 2018. The $200 million that was paid during the fourth quarter was from the additional $200 million issued on the outstanding 4.60% Senior notes due in 2028. The Company settled the issuance of these notes on October 5, 2018 and received net proceeds of $196 million. The value by which the Senior Convertible Notes exceeded their principal amount if converted as of December 31, 2018 was $673 million. In the event of an additional conversion, the Company intends to settle the principal amount of the Senior Convertible Notes in cash. For the year ended December 31, 2018, total interest expense relating to both the contractual interest coupon and amortization of the debt discount was $20 million, compared to $23 million for the year December 31, 2017 and $24 million for the year ended December 31, 2016.

In February of 2018, the Company issued $500 million of 4.60% Senior notes due 2028. The Company recognized net proceeds of $497 million after debt issuance costs and debt discounts. These proceeds were then used to make a $500 million contribution to the Company's U.S. pension plan in the first quarter of 2018.

Aggregate requirements for long-term debt maturities during the next five years are as follows: 2019—$31 million; 2020—$801 million; 2021—$810 million; 2022—$767 million; and 2023—$604 million.

Credit Facilities

As of December 31, 2018, the Company had a $2.2 billion syndicated, unsecured revolving credit facility scheduled to mature in April 2022, which can be used for borrowing and letters of credit (the "2017 Motorola Solutions Credit Agreement"). As of March 31, 2018, the Company borrowed $400 million under the facility to complete the Avigilon acquisition which was re-paid by December 31, 2018. The 2017 Motorola Solutions Credit Agreement includes a $500 million letter of credit sub-limit with $450 million of fronting commitments. Borrowings under the facility bear interest at the prime rate plus the applicable margin, or at a spread above the London Inter-bank Offered Rate ("LIBOR"), at the Company's option. An annual facility fee is payable on the undrawn amount of the credit line. The interest rate and facility fee are subject to adjustment if the Company's credit rating changes. The Company must comply with certain customary covenants including a maximum leverage ratio, as defined in the

2017 Motorola Solutions Credit Agreement. The Company was in compliance with its financial covenants as of December 31, 2018. No letters of credit were issued under the revolving credit facility as of December 31, 2018.
Also in conjunction with the Avigilon acquisition in the first quarter of 2018, the Company entered into a term loan for $400 million with a maturity date of March 26, 2021 (the “Term Loan”). Interest on the Term Loan is variable, indexed to LIBOR, and paid monthly. The weighted average borrowing rates for amounts outstanding during the year ended December 31, 2018 was 3.47%. No additional borrowings are permitted and amounts borrowed and repaid or prepaid may not be re-borrowed.

5. Risk Management

Foreign Currency Risk

The Company is exposed to foreign currency risk as a result of buying and selling in various currencies, our net investments in foreign entities, and monetary assets and liabilities denominated in a currency other than the functional currency of the legal entity holding the instrument. The Company uses financial instruments to reduce its overall exposure to the effects of currency fluctuations on cash flows. The Company’s policy prohibits speculation in financial instruments for profit on exchange rate fluctuations, trading in currencies for which there are no underlying exposures, or entering into transactions for any currency to intentionally increase the underlying exposure.
The Company’s strategy related to foreign exchange exposure management is to offset the gains or losses on the financial instruments against gains or losses on the underlying operational cash flows, net investments or monetary assets and liabilities based on the Company's assessment of risk. The Company enters into derivative contracts for some of its non-functional currency cash, receivables, and payables, which are primarily denominated in major currencies that can be traded on open markets. The Company typically uses forward contracts and options to hedge these currency exposures. In addition, the Company has entered into derivative contracts for some forecasted transactions or net investments in some of its overseas entities, which are designated as part of a hedging relationship if it is determined that the transaction qualifies for hedge accounting under the provisions of the authoritative accounting guidance for derivative instruments and hedging activities. A portion of the Company’s exposure is from currencies that are not traded in liquid markets and these are addressed, to the extent reasonably possible, by managing net asset positions, product pricing and component sourcing.
At December 31, 2018, the Company had outstanding foreign exchange contracts with notional amounts totaling $819 million, compared to $507 million outstanding at December 31, 2017. The Company does not believe these financial instruments should subject it to undue risk due to foreign exchange movements because gains and losses on these contracts should generally offset gains and losses on the underlying assets, liabilities and transactions.
The following table shows the Company's five largest net notional amounts of the positions to buy or sell foreign currency as of December 31, 2018 and the corresponding positions as of December 31, 2017:

	Notional Amount	
Net Buy (Sell) by Currency	2018	2017
British Pound	$139	$72
Euro	89	149
Australian Dollar	(105)	(64)
Chinese Renminbi	(55)	(73)
Brazilian Real	(41)	(45)

During the year ended December 31, 2018, the Company entered into forward contracts to sell €85 million, that expire in December 2019 as well as to sell €10 million, that will expire in January 2020. The forward contracts have been designated as a net investment hedges which are in place to partially hedge the Company's Euro foreign currency exposure on its net investments in certain foreign subsidiaries that are Euro-denominated. The gains and losses on the Company's net investments in Euro-denominated foreign operations, driven by changes in foreign exchange rates, are economically offset by movements in the fair values of the forward contracts designated as net investment hedges. Any changes in fair value of the net investment hedges are reflected as a component of Accumulated other comprehensive income (loss) with the exception of the excluded component which will be amortized on a straight-line basis to Interest expense, net.

Counterparty Risk

The use of derivative financial instruments exposes the Company to counterparty credit risk in the event of non-performance by counterparties. However, the Company's risk is limited to the fair value of the instruments when the derivative is in an asset position. The Company actively monitors its exposure to credit risk. As of December 31, 2018, all of the counterparties have investment grade credit ratings. As of December 31, 2018, the credit risk with all counterparties was approximately $5 million.

Derivative Financial Instruments

The following tables summarize the fair values and location in the Consolidated Balance Sheet of all derivative financial instruments held by the Company at December 31, 2018 and 2017:

	Fair Values of Derivative Instruments			
	Assets		Liabilities	
December 31, 2018	Fair Value	Balance Sheet Location	Fair Value	Balance Sheet Location
Derivatives not designated as hedging instruments:				
Foreign exchange contracts	$5	Other assets	$4	Accrued liabilities

	Fair Values of Derivative Instruments			
	Assets		Liabilities	
December 31, 2017	Fair Value	Balance Sheet Location	Fair Value	Balance Sheet Location
Derivatives designated as hedging instruments:				
Foreign exchange contracts	$—	Other assets	$3	Accrued liabilities
Derivatives not designated as hedging instruments:				
Foreign exchange contracts	$5	Other assets	$2	Accrued liabilities
Total derivatives	$5		$5	

The following table summarizes the effect of derivatives designated as hedging instruments, for the years ended December 31, 2018, 2017 and 2016:

	December 31			Financial Statement Location
Gain (Loss) on Derivative Instruments	2018	2017	2016	
Foreign exchange contracts	$—	$(3)	$—	Other comprehensive income (loss)

The following table summarizes the effect of derivatives not designated as hedging instruments, for the years ended December 31, 2018, 2017 and 2016:

	December 31			Financial Statement Location
Gain (Loss) on Derivative Instruments	2018	2017	2016	
Interest agreements	$—	$—	$1	Other income (expense)
Foreign exchange contracts	(14)	15	(57)	Other income (expense)
Total derivatives	$(14)	$15	$(56)	

6. Income Taxes

Components of Income Tax Expense

Components of earnings (loss) before income taxes are as follows:

Years ended December 31	2018	2017	2016
United States	$980	$959	$651
Other nations	122	117	193
	$1,102	$1,076	$844

Components of income tax expense (benefit) are as follows:

Years ended December 31	2018	2017	2016
United States	$16	$43	$20
Other nations	88	75	31
States (U.S.)	20	9	18
Current income tax expense	124	127	69
United States	39	1,078	180
Other nations	(18)	(8)	36
States (U.S.)	(12)	30	(3)
Deferred income tax expense	9	1,100	213
Total income tax expense	$133	$1,227	$282

Differences between income tax expense (benefit) computed at the U.S. federal statutory tax rate of 21% and income tax expense (benefit) as reflected in the Consolidated Statements of Operations are as follows:

Years ended December 31	2018		2017		2016	
Income tax expense at statutory rate	$231	21.0 %	$377	35.0 %	$295	35.0 %
Non-U.S. tax expense (benefit) on non-U.S. earnings	7	0.6 %	(28)	(2.6)%	(25)	(3.0)%
State income taxes, net of federal benefit	11	1.0 %	39	3.6 %	26	3.1 %
Reserve for uncertain tax positions	2	0.2 %	3	0.3 %	(13)	(1.6)%
Other provisions	(1)	(0.1)%	3	0.3 %	4	0.4 %
Valuation allowances	(14)	(1.3)%	(8)	(0.7)%	(7)	(0.8)%
Section 199 deduction	—	— %	(18)	(1.7)%	(15)	(1.7)%
U.S. tax on undistributed non-U.S. earnings	6	0.5 %	20	1.9 %	25	3.0 %
Stock compensation	(30)	(2.7)%	(14)	(1.3)%	(8)	(1.0)%
Loss on sale of investment	—	— %	(21)	(2.0)%	—	— %
U.S. tax reform	(79)	(7.2)%	874	81.2 %	—	— %
	$133	12.0 %	$1,227	114.0 %	$282	33.4 %

Income tax expense for the year ended December 31, 2018 was $133 million, a decrease of $1.1 billion, primarily driven by the following items: (i) the U.S. corporate income tax rate decrease from 35% to 21% as a result of the U.S. Tax Cuts and Jobs Act (the ”Tax Act”) enacted December 22, 2017, (ii) $874 million of non-recurring charges during the prior year related to the enactment of the Tax Act, and (iii) $79 million of non-recurring benefits during the current year as a result of changes to 2017 Tax Act enactment-date provisional amounts. The effective tax rate is below the current U.S. federal statutory rate of 21% primarily driven by a tax benefit due to the recognition of excess tax benefits of share-based compensation and tax benefits due to changes to 2017 Tax Act enactment-date provisional amounts.

Under the guidance in the U.S. Securities and Exchange Commission's Staff Accounting Bulletin No. 118 ("SAB 118"), the Company recorded provisional amounts for the impact of the Tax Act as of December 31, 2017, representing $874 million of incremental tax expense. Under the transitional provisions of SAB 118, the Company had a one-year measurement period to complete the accounting for the initial tax effects of the Tax Act. The Company recorded its final adjustments to the provisional amounts in 2018. Final regulations will be issued in the future and may be applied retroactively to the date of enactment of US Tax Reform that may result in changes to the tax amounts recorded as a result of the Tax Act. For the year ended December 31, 2018, the Company has recorded the following adjustments to the previously recorded provisional tax amounts:

	December 31, 2018	December 31, 2017	Adjustment	Financial Statement Location
Valuation allowance on foreign tax credit carryforward	$ 400	$ 471	$ (71)	Deferred tax expense
Re-measurement of U.S. deferred tax balances at 21%	353	366	(13)	Deferred tax expense
Transition tax on repatriation of foreign earnings	18	16	2	Current tax expense
Uncertain tax positions on foreign operations	21	21	—	Current tax expense
Disallowed deduction of covered employees' incentive plans	3	—	3	Deferred tax expense
Total	$ 795	$ 874	$ (79)	

Deferred tax balances that were recorded within Accumulated other comprehensive income (loss) in the Company's Consolidated Balance Sheet, rather than Income tax expense, are a result of retirement benefit adjustments, currency translation adjustments, and fair value adjustments to available-for-sale securities. The adjustments were charges of $38 million for the year ended December 31, 2018 and benefits of $49 million, and $87 million for the years ended December 31, 2017 and 2016, respectively.

The Company evaluates its permanent reinvestment assertions with respect to foreign earnings at each reporting period and generally, except for certain earnings that the Company intends to reinvest indefinitely due to the capital requirements of the foreign subsidiaries or due to local country restrictions, accrues for the U.S. federal and foreign income tax applicable to the earnings. As a result of the Tax Act, dividends from foreign subsidiaries are now exempt or the earnings have been previously subject to U.S. tax. As a result, the tax accrual for undistributed foreign earnings is limited primarily to foreign withholding taxes and tax on inherent capital gains that would result from distribution of foreign earnings which are not permanently reinvested, and such earnings may be distributed without an additional charge.

Undistributed foreign earnings that the Company intends to reinvest indefinitely, aggregate to $1.5 billion at December 31, 2018. It is impracticable to determine the exact amount of unrecognized deferred tax liabilities on such earnings; however, due to the above-mentioned changes made under the Tax Act, the Company believes that the additional U.S. or foreign income tax charge with respect to such earnings, if distributed, would be immaterial.

Gross deferred tax assets were $2.0 billion and $2.1 billion at December 31, 2018 and 2017, respectively. Deferred tax assets, net of valuation allowances, were $1.6 billion at December 31, 2018 and $1.5 billion at December 31, 2017, respectively. Gross deferred tax liabilities were $771 million and $546 million at December 31, 2018 and 2017, respectively.

Significant components of deferred tax assets (liabilities) are as follows:

December 31	2018	2017
Inventory	$28	$46
Accrued liabilities and allowances	84	74
Employee benefits	402	374
Capitalized items	(68)	18
Tax basis differences on investments	(2)	—
Depreciation tax basis differences on fixed assets	47	72
Undistributed non-U.S. earnings	(26)	(26)
Tax carryforwards	613	778
Business reorganization	10	16
Warranty and customer liabilities	19	21
Deferred revenue and costs	147	142
Valuation allowances	(461)	(604)
Other	(9)	(3)
	$784	$908

At December 31, 2018 and 2017, the Company had valuation allowances of $461 million and $604 million, respectively, against its deferred tax assets, including $86 million and $90 million, respectively, relating to deferred tax assets for non-U.S. subsidiaries. The Company's U.S. valuation allowance decreased $139 million during 2018 primarily related to a $71 million release of valuation allowances as a result of changes to 2017 Tax Act enactment-date provision amounts and $63 million of foreign tax credits expiring in 2018. The Company believes that the remaining deferred tax assets are more-likely-than-not to be realizable based on estimates of future taxable income and the implementation of tax planning strategies.

Tax carryforwards are as follows:

December 31, 2018	Gross Tax Loss	Tax Effected	Expiration Period
United States:			
U.S. tax losses	$ 73	$ 15	2022-2036
Foreign tax credits	—	334	2019-2023
General business credits	—	51	2026-2037
State tax losses	—	35	2019-2030
State tax credits	—	32	2019-2031
Non-U.S. Subsidiaries:			
Japan tax losses	102	32	2019-2025
Germany tax losses	26	8	Unlimited
United Kingdom tax losses	81	14	Unlimited
Singapore tax losses	33	6	Unlimited
Canada tax losses	46	12	2024-2025
Other subsidiaries tax losses	128	36	Various
Spain tax credits	—	25	Various
Other subsidiaries tax credits	—	13	Various
		$ 613	

The Company had unrecognized tax benefits of $76 million at both December 31, 2018 and December 31, 2017, of which approximately $30 million, if recognized, would affect the effective tax rate for both 2018 and 2017, net of resulting changes to valuation allowances.

A roll-forward of unrecognized tax benefits is as follows:

	2018	2017
Balance at January 1	$76	$68
Additions based on tax positions related to current year	4	10
Additions for tax positions of prior years	1	22
Reductions for tax positions of prior years	—	(1)
Settlements and agreements	(2)	(20)
Lapse of statute of limitations	(3)	(3)
Balance at December 31	$76	$76

The Internal Revenue Service ("IRS") is currently examining the Company's 2014 and 2015 tax years. The Company also has several state and non-U.S. audits pending. A summary of open tax years by major jurisdiction is presented below:

Jurisdiction	Tax Years
United States	2014-2018
Australia	2012-2018
Canada	2014-2018
Germany	2011-2018
India	1997-2018
Israel	2015-2018
Poland	2014-2018
Malaysia	2012-2018
United Kingdom	2017

Although the final resolution of the Company’s global tax disputes is uncertain, based on current information, in the opinion of the Company’s management, the ultimate disposition of these matters will not have a material adverse effect on the Company’s consolidated financial position, liquidity or results of operations. However, an unfavorable resolution of the

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Company's global tax disputes could have a material adverse effect on the Company's consolidated financial position, liquidity, or results of operations in the periods, and as of the dates, on which the matters are ultimately resolved.
Based on the potential outcome of the Company's global tax examinations, the expiration of the statute of limitations for specific jurisdictions, or the continued ability to satisfy tax incentive obligations, it is reasonably possible that the unrecognized tax benefits will change within the next twelve months. The associated net tax impact on the effective tax rate, exclusive of valuation allowance changes, is estimated to be in the range of a $10 million tax charge to a $30 million tax benefit, with cash payments not to exceed $20 million.
At December 31, 2018, the Company had $30 million accrued for interest and $17 million accrued for penalties on unrecognized tax benefits. At December 31, 2017, the Company had $31 million and $19 million accrued for interest and penalties, respectively, on unrecognized tax benefits. The Company's policy is to classify the interest and penalty as a component of interest expense and other expense, respectively.

7. Retirement Benefits

Pension and Postretirement Health Care Benefits Plans

U.S. Pension Benefit Plans

The Company's non-contributory U.S. pension plan (the "U.S. Pension Plan") provides benefits to U.S. employees hired prior to January 1, 2005, who became eligible after one year of service. The Company also has an additional non-contributory supplemental retirement benefit plan, the Motorola Supplemental Pension Plan ("MSPP"), which provided supplemental benefits to individuals by replacing benefits that are lost by such individuals under the retirement formula due to application of the limitations imposed by the Internal Revenue Code. Effective January 1, 2007, eligible compensation was capped at the IRS limit plus $175,000 (the "Cap") or, for those already in excess of the Cap as of January 1, 2007, the eligible compensation used to compute such employee's MSPP benefit for all future years is the greater of: (i) such employee's eligible compensation as of January 1, 2007 (frozen at that amount) or (ii) the relevant Cap for the given year. In December 2008, the Company amended the U.S. Pension Plan and MSSP (together the "U.S. Pension Plans") such that, effective March 1, 2009: (i) no participant shall accrue any benefit or additional benefit on or after March 1, 2009, and (ii) no compensation increases earned by a participant on or after March 1, 2009 shall be used to compute any accrued benefit.

Postretirement Health Care Benefits Plan

Certain health care benefits are available to eligible domestic employees hired prior to January 1, 2002 and meeting certain age and service requirements upon termination of employment (the "Postretirement Health Care Benefits Plan"). As of January 1, 2005, the Postretirement Health Care Benefits Plan was closed to new participants. After a series of amendments, all eligible retirees under the age of 65 will be provided an annual subsidy per household, versus per individual, toward the purchase of their own health care coverage from private insurance companies and for the reimbursement of eligible health care expenses. During 2014, the Postretirement Health Care Benefits Plan was then further amended ("The New Amendment") to provide the annual subsidy discussed as part of the Original Amendment to all participants remaining under the plan effective March 1, 2015. All eligible retirees over the age of 65 are entitled to one fixed-rate subsidy capped at $560 per participant.
The amendments to the Postretirement Health Care Benefits Plan required remeasurement of the plan, resulting in a reduction in the Postretirement Benefit Obligation. A substantial portion of the decrease related to prior service credits and will be amortized as a credit to the Consolidated Statements of Operations over approximately five years, or the period in which the remaining employees eligible for the plan qualify for benefits under the plan.

Non U.S. Pension Benefit Plans

The Company also provides defined benefit plans which cover non-U.S. employees in certain jurisdictions, principally the U.K. and Germany (the "Non-U.S. Pension Benefit Plans"). Other pension plans outside of the U.S. are not material to the Company either individually or in the aggregate.
In June 2015, the Company amended its Non-U.S. defined benefit plan within the United Kingdom by closing future benefit accruals to all participants effective December 31, 2015.
During the years ended December 31, 2017 and 2016, the Company offered lump-sum settlements to certain participants in the Non-U.S. defined benefit plan within the United Kingdom. The lump-sum settlements were

targeted to certain participants who had accrued a pension benefit, but had not yet started receiving pension benefit payments. As a result of the actions taken, the Company recorded settlement losses of $48 million and $26 million in 2017 and 2016, respectively, which are recorded within Other income (expense) within the Consolidated Statement of Operations.

Net Periodic Cost (Benefit)

The net periodic cost (benefit) for pension and Postretirement Health Care Benefits plans was as follows:

	U.S. Pension Benefit Plans			Non U.S. Pension Benefit Plans			Postretirement Health Care Benefits Plan		
Years ended December 31	2018	2017	2016	2018	2017	2016	2018	2017	2016
Service cost	$—	$ —	$—	$3	$3	$11	$—	$—	$—
Interest cost	186	185	182	38	40	55	2	3	4
Expected return on plan assets	(270)	(229)	(220)	(92)	(92)	(93)	(10)	(10)	(9)
Amortization of:									
Unrecognized net loss	57	44	37	15	16	11	4	5	5
Unrecognized prior service benefit	—	—	—	—	—	—	(15)	(18)	(27)
Settlement loss	—	—	—	—	48	26	—	—	—
Net periodic cost (benefit)	$(27)	$ —	$(1)	$(36)	$15	$10	$(19)	$(20)	$(27)

The status of the Company's plans is as follows:

	U.S. Pension Benefit Plans		Non U.S. Pension Benefit Plans		Postretirement Health Care Benefits Plan	
	2018	2017	2018	2017	2018	2017
Change in benefit obligation:						
Benefit obligation at January 1	$5,235	$4,644	$1,844	$1,791	$85	$83
Service cost	—	—	3	3	—	—
Interest cost	186	185	38	40	2	3
Plan amendments	—	—	10	—	—	—
Settlement	—	—	—	(201)	—	—
Actuarial loss (gain)	(452)	502	(97)	52	(8)	6
Foreign exchange valuation adjustment	—	—	(98)	193	—	—
Benefit payments	(105)	(96)	(46)	(34)	(7)	(7)
Benefit obligation at December 31	$4,864	$5,235	$1,654	$1,844	$72	$85
Change in plan assets:						
Fair value at January 1	$3,614	$3,195	$1,590	$1,565	$151	$136
Return on plan assets	(339)	512	(28)	96	(12)	21
Company contributions	503	3	8	7	—	—
Settlements	—	—	—	(201)	—	—
Foreign exchange valuation adjustment	—	—	(88)	157	—	—
Benefit payments	(105)	(96)	(44)	(34)	(6)	(6)
Fair value at December 31	$3,673	$3,614	$1,438	$1,590	$133	$151
Funded status of the plan	$(1,191)	$(1,621)	$(216)	$(254)	$61	$66
Unrecognized net loss	2,329	2,229	543	518	74	64
Unrecognized prior service benefit	—	—	11	—	(35)	(49)
Prepaid pension cost	$1,138	$608	$338	$264	$100	$81
Components of prepaid (accrued) pension cost:						
Current benefit liability	$(3)	$(3)	$—	$—	$—	$—
Non-current benefit liability	(1,188)	(1,618)	(265)	(294)	—	—
Non-current benefit asset	—	—	49	40	61	66
Deferred income taxes	561	544	55	58	10	6
Accumulated other comprehensive loss	1,768	1,685	499	460	29	9
Prepaid pension cost	$1,138	$608	$338	$264	$100	$81

The benefit obligation and plan assets for the Company's U.S. Pension Benefit Plan and Postretirement Health Care Benefit Plan are measured as of December 31, 2018. The Company utilizes a five-year, market-related asset value method of recognizing asset related gains and losses.

Under relevant accounting rules, when almost all of the plan participants are considered inactive, the amortization period for certain unrecognized gains and losses changes from the average remaining service period to the average remaining lifetime of the participants. As such, depending on the specific plan, the Company amortizes gains and losses over periods ranging from ten to thirty-one years. Prior service costs will be amortized over periods ranging from two to five years. Benefits under all pension plans are valued based on the projected unit credit cost method.

The net periodic cost for 2019 will include amortization of the unrecognized net loss for the U.S. Pension Benefit Plans and Non U.S. Pension Benefit Plans, currently included in Accumulated other comprehensive income (loss), of $47 million and $16 million, respectively. It is estimated that the 2019 net periodic expense for the Postretirement Health Care Benefits Plan will include amortization of net periodic benefits of $11 million, comprised of unrecognized net losses and prior service benefits, currently included in Accumulated other comprehensive income (loss).

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Actuarial Assumptions

Certain actuarial assumptions such as the discount rate and the long-term rate of return on plan assets have a significant effect on the amounts reported for net periodic cost and the benefit obligation. The assumed discount rates reflect the prevailing market rates of a universe of high-quality, non-callable, corporate bonds currently available that, if the obligation were settled at the measurement date, would provide the necessary future cash flows to pay the benefit obligation when due. The long-term rates of return on plan assets represent an estimate of long-term returns on an investment portfolio consisting of a mixture of equities, fixed income, cash and other investments similar to the actual investment mix. In determining the long-term return on plan assets, the Company considers long-term rates of return on the asset classes (both historical and forecasted) in which the Company expects the plan funds to be invested.

The Company uses a full yield curve approach to estimate interest and service cost components of net periodic cost (benefit) for defined pension benefit pension and other post-retirement benefit plans. The full yield curve approach requires the application of the specific spot rate along the yield curve used in the determination of the projected benefit obligation to the relevant projected cash flows.

Weighted average actuarial assumptions used to determine costs for the plans at the beginning of the fiscal year were as follows:

	U.S. Pension Benefit Plans		Non U.S. Pension Benefit Plans		Postretirement Health Care Benefits Plan	
	2018	2017	2018	2017	2018	2017
Discount rate	3.57%	4.02%	2.08%	2.22%	3.16%	3.29%
Investment return assumption	6.95%	6.95%	5.18%	5.20%	7.00%	7.00%

Weighted average actuarial assumptions used to determine benefit obligations for the plans were as follows:

	U.S. Pension Benefit Plans		Non U.S. Pension Benefit Plans		Postretirement Health Care Benefits Plan	
	2018	2017	2018	2017	2018	2017
Discount rate	4.47%	3.79%	2.67%	2.34%	4.29%	3.62%
Future compensation increase rate	n/a	n/a	0.52%	0.52%	n/a	n/a

The accumulated benefit obligations for the plans were as follows:

	U.S. Pension Benefit Plans		Non U.S. Pension Benefit Plans	
December 31	2018	2017	2018	2017
Accumulated benefit obligation	$4,864	$5,235	$1,649	$1,838

The Company used Mortality Improvement Scale MP-2016 to calculate the 2018, 2017, and 2016 projected benefit obligations.

Investment Policy

The individual plans have adopted an investment policy designed to meet or exceed the expected rate of return on plan assets assumption. To achieve this, the plans retain professional advisors and investment managers that invest plan assets into various classes including, but not limited to: equity and fixed income securities, cash, cash equivalents, hedge funds, infrastructure/utilities, insurance contracts, leveraged loan funds and real estate. The Company uses long-term historical actual return experience with consideration of the expected investment mix of the plans' assets, as well as future estimates of long-term investment returns, to develop its expected rate of return assumption used in calculating the net periodic cost. The individual plans have target mixes for these asset classes, which are readjusted periodically when an asset class weighting deviates from the target mix, with the goal of achieving the required return at a reasonable risk level.

The weighted-average asset allocations by asset categories for all pension and the Postretirement Health Care Benefits plans were as follows:

	All Pension Benefit Plans		Postretirement Health Care Benefits Plan	
December 31	2018	2017	2018	2017
Target Mix:				
Equity securities	30%	31%	32 %	35 %
Fixed income securities	51%	49%	49 %	44 %
Cash and other investments	19%	20%	19 %	21 %
Actual Mix:				
Equity securities	28%	29%	31 %	34 %
Fixed income securities	50%	49%	48 %	44 %
Cash and other investments	22%	22%	21 %	22 %

Within the equity securities asset class, the investment policy provides for investments in a broad range of publicly-traded securities including both domestic and foreign equities. Within the fixed income securities asset class, the investment policy provides for investments in a broad range of publicly-traded debt securities including: U.S. treasury issues, corporate debt securities, mortgage and asset-backed securities, as well as foreign debt securities. In the cash and other investments asset class, investments may include, but are not limited to: cash, cash equivalents, commodities, hedge funds, infrastructure/utilities, insurance contracts, leveraged loan funds and real estate.

Cash Funding

The Company made $503 million of contributions, of which $500 million was voluntary, and $3 million of contributions to its U.S. Pension Benefit Plans during 2018 and 2017, respectively. The Company contributed $8 million to its Non U.S. Pension Benefit Plans during 2018, compared to $7 million contributed in 2017. The Company made no contributions to its Postretirement Health Care Benefits Plan in 2018 or 2017.

Expected Future Benefit Payments

The following benefit payments are expected to be paid:

Year	U.S. Pension Benefit Plans	Non U.S. Pension Benefit Plans	Postretirement Health Care Benefits Plan
2019	$ 144	$ 47	$ 7
2020	161	48	7
2021	181	50	6
2022	203	51	6
2023	224	52	5

2024-2028	1,418	277	23

Other Benefit Plans

Split-Dollar Life Insurance Arrangements

The Company maintains a number of endorsement split-dollar life insurance policies on now-retired officers under a frozen plan. The Company had purchased the life insurance policies to insure the lives of employees and then entered into a separate agreement with the employees that split the policy benefits between the Company and the employee. Motorola Solutions owns the policies, controls all rights of ownership, and may terminate the insurance policies. To effect the split-dollar arrangement, Motorola Solutions endorsed a portion of the death benefits to the employee and upon the death of the employee, the employee's beneficiary typically receives the designated portion of the death benefits directly from the insurance company and

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the Company receives the remainder of the death benefits. It is currently expected that minimal cash payments will be required to fund these policies.

The net periodic pension cost for these split-dollar life insurance arrangements was $5 million for the years ended December 31, 2018, 2017 and 2016. The Company has recorded a liability representing the actuarial present value of the future death benefits as of the employees' expected retirement date of $61 million and $62 million as of December 31, 2018 and December 31, 2017, respectively.

Deferred Compensation Plan

The Company maintains a deferred compensation plan ("the Plan") for certain eligible participants. Under the Plan, participants may elect to defer base salary and cash incentive compensation in excess of 401(k) plan limitations. Participants under the Plan may choose to invest their deferred amounts in the same investment alternatives available under the Company's 401(k) plan. The Plan also allows for Company matching contributions for the following: (i) the first 4% of compensation deferred under the Plan, subject to a maximum of $50,000 for board officers, (ii) lost matching amounts that would have been made under the 401(k) plan if participants had not participated in the Plan, and (iii) discretionary amounts as approved by the Compensation and Leadership Committee of the board of directors.

Defined Contribution Plan

The Company has various defined contribution plans, in which all eligible employees may participate. In the U.S., the 401(k) plan is a contributory plan. Matching contributions are based upon the amount of the employees' contributions. The Company's expenses for material defined contribution plans for the years ended December 31, 2018, 2017 and 2016 were $31 million, $28 million and $26 million, respectively.

Under the 401(k) plan, the Company may make an additional discretionary matching contribution to eligible employees. For the years ended December 31, 2018, 2017, and 2016 the Company made no discretionary contributions.

8. Share-Based Compensation Plans and Other Incentive Plans

The Company grants options and stock appreciation rights to acquire shares of common stock to certain employees and to existing option holders of acquired companies in connection with the merging of option plans following an acquisition. Each option granted and stock appreciation right has an exercise price of no less than 100% of the fair market value of the common stock on the date of the grant. The awards have a contractual life of five to ten years and vest over two to three years. In conjunction with a change in control, stock options and stock appreciation rights assumed or replaced with comparable stock options or stock appreciation rights only become exercisable if the holder is also involuntarily terminated (for a reason other than cause) or resigns for good reason within 24 months of a change in control.

Restricted stock unit ("RSU") grants consist of shares or the rights to shares of the Company's common stock which are awarded to certain employees and non-employee directors. The grants are restricted such that they are subject to substantial risk of forfeiture and to restrictions on their sale or other transfer by the employee. In conjunction with a change in control, shares of RSUs assumed or replaced with comparable shares of RSUs will only have the restrictions lapse if the holder is also involuntarily terminated (for a reason other than cause) or resigns for good reason within 24 months of a change in control.

Performance-based stock options ("performance options") and market stock units ("MSUs") have been granted to certain Company executive officers. Performance options have a three-year performance period and are granted as a target number of units subject to adjustment based on company performance. Each performance option granted has an exercise price of no less than 100% of the fair market value of the common stock on the date of the grant. The awards have a contractual life of ten years. Shares ultimately issued for performance option awards granted are based on the actual total shareholder return ("TSR") compared to the S&P 500 over the three year performance period based on a payout factor that corresponds to actual TSR results as established at the date of grant. Vesting occurs on the third anniversary of the grant date. Under the terms of the MSUs, vesting is conditioned upon continuous employment until the vesting date and the payout factor is at least 60% of the share price on the award date. The payout factor is the

share price on vesting date divided by share price on award date, with a maximum of 200%. The share price used in the payout factor is calculated using an average of the closing prices on the grant or vesting date, and the 30 calendar days immediately preceding the grant or vesting date. Vesting occurs ratably over three years.
On August 25, 2015, in conjunction with the issuance of the Senior Convertible Notes, and on March 9, 2017, the Company approved grants of performance-contingent stock options ("PCSOs") to certain executive officers. The PCSOs vest upon satisfaction of the following stock price hurdles which must be maintained for 10-consecutive trading days within the performance period ending August 25, 2018 and continuous employment over the vesting period. For PCSOs granted on August 25, 2015, 20% of the total award will vest at an $85 stock price, an additional 30% of the total award will vest at a $102.50 stock price, and the final 50% of the total award will vest at a $120 stock price. For options granted March 9, 2017, 44% of the total award will vest at an $85 stock price, an additional 24% of the total award will vest at a $102.50 stock price, and the final 32% of the award will vest at a $120 stock price. As of December 31, 2018, all stock price hurdles have been met and therefore, all PCSO grants have vested. The August 25, 2015 awards have a seven-year term and a per share exercise price of $68.50. The March 9, 2017 awards have a five-and-a-half-year term and a per share exercise price of $81.37.
The employee stock purchase plan allows eligible participants to purchase shares of the Company's common stock through payroll deductions of up to 20% of eligible compensation on an after-tax basis. Plan participants cannot purchase more than $25,000 of stock in any calendar year. The price an employee pays per share is 85% of the lower of the fair market value of

the Company's stock on the close of the first trading day or last trading day of the purchase period. The plan has two purchase periods, the first from October 1 through March 31 and the second from April 1 through September 30. For the years ended December 31, 2018, 2017 and 2016, employees purchased 0.8 million, 0.8 million and 0.9 million shares, respectively, at purchase prices of $72.96 and $88.84, $63.96 and $72.11, and $57.60 and $64.69, respectively.

Significant Assumptions Used in the Estimate of Fair Value

The Company calculates the value of each employee stock option, estimated on the date of grant, using the Black-Scholes option pricing model. The weighted-average estimated fair value of employee stock options granted during 2018, 2017 and 2016 was $23.31, $15.16 and $13.09, respectively, using the following weighted-average assumptions:

	2018	2017	2016
Expected volatility	24.7 %	24.0 %	23.7 %
Risk-free interest rate	2.7 %	2.1 %	1.4 %
Dividend yield	2.4 %	3.5 %	2.9 %
Expected life (years)	5.9	5.9	6.0

The Company calculates the value of each performance option, MSU, and PCSO using the Monte Carlo simulation, estimated on the date of grant. The fair value of performance options and MSUs granted during 2018 was $42.19 and $125.33, respectively. The fair value of performance options, MSUs, and PCSOs granted during 2017 was $21.47, $85.74, and $7.76, respectively. The fair value of performance options and MSUs granted during 2016 was $19.80 and $76.48, respectively. The following assumptions were used for the calculations.

	2018 Performance Options	2017 Performance Options	2016 Performance Options
Expected volatility of common stock	25.0 %	24.1 %	25.3 %
Expected volatility of the S&P 500	25.3 %	25.6 %	19.8 %
Risk-free interest rate	2.7 %	2.4 %	1.7 %
Dividend yield	3.1 %	3.7 %	2.8 %
Expected life (years)	6.5	6.5	6.5

	2018 Market Stock Units	2017 Market Stock Units	2016 Market Stock Units
Expected volatility of common stock	25.0 %	24.1 %	24.2 %
Risk-free interest rate	2.4 %	1.7 %	1.1 %
Dividend yield	2.2 %	2.9 %	2.8 %

	2017 PCSOs
Expected volatility of common stock	24.1 %
Risk-free interest rate	1.8 %
Dividend yield	3.0 %
Expected life (years)	3.5

The Company uses the implied volatility for traded options on the Company's stock as the expected volatility assumption in the valuation of stock options, performance options, MSUs, and PCSOs. The selection of the implied volatility approach was based upon the availability of actively traded options on the Company's stock and the Company's assessment that implied volatility is more representative of future stock price trends than historical volatility. The Company uses the historical volatility as the expected volatility assumption in the valuation of performance options in order to calculate the correlation coefficients between the S&P 500 and the Company's stock, which can only be calculated using historical data.

The risk-free interest rate assumption is based upon the average daily closing rates during the year for U.S. Treasury notes that have a life which approximates the expected life of the grant. The dividend yield assumption is based on the Company's future expectation of dividend payouts. The expected life represents the average of the contractual term of the options and the weighted average vesting period for all option tranches.

The Company has applied forfeiture rates, estimated based on historical data, of 10%-35% to the stock option fair values calculated by the Black-Scholes option pricing model. These estimated forfeiture rates are applied to grants based on their remaining vesting term and may be revised in subsequent periods if actual forfeitures differ from these estimates.

The following table summarizes information about the total stock options outstanding and exercisable under all stock option plans, including performance options and PCSOs, at December 31, 2018 (in thousands, except exercise price and years):

Exercise price range	Options Outstanding No. of options	Options Outstanding Wtd. avg. Exercise Price	Options Outstanding Wtd. avg. contractual life (in yrs.)	Options Exercisable No. of options	Options Exercisable Wtd. avg. Exercise Price	Options Exercisable Wtd. avg. contractual life (in yrs.)
Under $30	266	$ 29	1	266	$ 29	1
$30-$40	1,198	39	2	1,198	39	2
$41-$50	—	—	0	—	—	0
$51-$60	671	54	4	671	54	4
$61-$70	1,815	68	4	1,796	68	4
$71-$80	469	72	7	86	72	7
$81 and over	1,151	92	8	247	82	5
	5,570			4,264		

As of December 31, 2018, the weighted average contractual life for options outstanding and exercisable was five and four years, respectively.

Current Year Activity

Total share-based compensation activity was as follows (in thousands, except exercise price):

Shares Outstanding in Thousands	Stock Options No. of Options Outstanding	Stock Options Wtd. Avg. Exercise Price of Shares	Performance Options* No. of Options Outstanding	Performance Options* Wtd. Avg. Exercise Price of Shares	Restricted Stock Units No. of Non-Vested Awards	Restricted Stock Units Wtd. Avg. Grant Date Fair Value	Market Stock Units No. of Non-Vested Awards	Market Stock Units Wtd. Avg. Grant Date Fair Value
Balance as of January 1, 2018	4,604	$ 52	2,678	$ 72	1,257	$ 70	139	$ 78
Granted	272	111	159	108	484	105	53	125
Releases/Exercised	(1,445)	52	(774)	71	(570)	70	(101)	73
Adjustment for payout factor	—	—	115	67	—	—	31	73
Forfeited/Canceled	(20)	88	(19)	81	(74)	82	—	—
Balance as of December 31, 2018	3,411	$ 57	2,159	$ 74	1,097	$ 84	122	$ 102
Vested or expected to vest	3,032	50	1,492	70	462	71	89	80

* Inclusive of PCSO awards

At December 31, 2018 and 2017, 8.6 million and 9.6 million shares, respectively, were available for future share-based award grants under the current share-based compensation plan, covering all equity awards to employees and non-employee directors.

Total Share-Based Compensation Expense

Compensation expense for the Company’s share-based compensation plans was as follows:

Years ended December 31	2018	2017	2016
Share-based compensation expense included in:			
Costs of sales	$11	$9	$9
Selling, general and administrative expenses	45	43	45
Research and development expenditures	17	14	14
Share-based compensation expense included in Operating earnings	73	66	68
Tax benefit	18	22	21
Share-based compensation expense, net of tax	$55	$44	$47
Decrease in basic earnings per share	$(0.34)	$(0.27)	$(0.28)
Decrease in diluted earnings per share	$(0.32)	$(0.27)	$(0.27)

At December 31, 2018, the Company had unrecognized compensation expense related to RS, RSUs, and MSUs of $59 million, net of estimated forfeitures, expected to be recognized over the weighted average period of approximately two years. The total fair value of RS, RSU and MSU shares vested during the years ended December 31, 2018, 2017, and 2016 was $40 million, $39 million, and $54 million, respectively. The aggregate fair value of outstanding RS, RSUs, and MSUs as of December 31, 2018 was $105 million.

At December 31, 2018, the Company had $15 million of total unrecognized compensation expense, net of estimated forfeitures, related to stock option plans including performance options and PCSOs that will be recognized over the weighted average period of approximately two years, and $4 million of unrecognized compensation expense related to the employee stock purchase plan that will be recognized over the remaining purchase period. Cash received from stock option exercises and the employee stock purchase plan was $168 million, $82 million, and $93 million for the years ended December 31, 2018, 2017, and 2016, respectively. The total intrinsic value of options exercised during the years ended December 31, 2018, 2017, and 2016 was $125 million, $31 million, and $16 million, respectively. The aggregate intrinsic value for options outstanding and exercisable as of December 31, 2018 was $288 million and $252 million, respectively, based on a December 31, 2018 stock price of $115.04 per share.

Motorola Solutions Incentive Plans

The Company's incentive plans provide eligible employees with an annual payment, calculated as a percentage of an employee’s eligible earnings, in the year after the close of the current calendar year if specified business goals and individual performance targets are met. The expense for awards under these incentive plans for the years ended December 31, 2018, 2017 and 2016 was $143 million, $122 million and $114 million, respectively.

Long-Range Incentive Plan

The Long-Range Incentive Plan (“LRIP”) rewards elected officers for the Company’s achievement of specified business goals during the period, based on a single performance objective measured over a three-year period. The expense for LRIP for the years ended December 31, 2018, 2017 and 2016 was $31 million, $9 million and $12 million, respectively.

9. Fair Value Measurements

The Company holds certain fixed income securities, equity securities and derivatives, which are recognized and disclosed at fair value in the financial statements. Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants as of the measurement date and is measured using the fair value hierarchy. This hierarchy prescribes valuation techniques based on whether the inputs to each measurement are observable or unobservable. Observable inputs reflect market data obtained from independent sources, while unobservable inputs reflect the Company's assumptions about current market conditions. The prescribed fair value hierarchy and related valuation methodologies are as follows:

Level 1 — Quoted prices for identical instruments in active markets.

Level 2 — Quoted prices for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active, and model-derived valuations, in which all significant inputs are observable, in active markets.

Level 3 — Valuations derived from valuation techniques, in which one or more significant inputs are unobservable.

Investments and Derivatives

The fair values of the Company’s financial assets and liabilities by level in the fair value hierarchy as of December 31, 2018 and December 31, 2017 were as follows:

December 31, 2018	Level 1	Level 2	Total
Assets:			
Foreign exchange derivative contracts	$ —	$ 5	$ 5
Corporate bonds	1	—	1
Common stock and equivalents	19	—	19
Liabilities:			
Foreign exchange derivative contracts	$ —	$ 4	$ 4

December 31, 2017	Level 1	Level 2	Total
Assets:			
Foreign exchange derivative contracts	$ —	$ 5	$ 5
Available-for-sale securities:			
Corporate bonds	—	2	2
Common stock and equivalents	13	—	13
Liabilities:			
Foreign exchange derivative contracts	$ —	$ 5	$ 5

Pension and Postretirement Health Care Benefits Plan Assets

The fair values of the various pension and postretirement health care benefits plans’ assets by level in the fair value hierarchy as of December 31, 2018 and 2017 were as follows:

U.S. Pension Benefit Plans

December 31, 2018	Level 1	Level 2	Total
Equities	$10	$—	$10
Commingled funds	2,074	—	2,074
Government fixed income securities	13	340	353
Corporate fixed income securities	—	964	964
Short-term investment funds	243	—	243
Total investment securities	$2,340	$1,304	$3,644
Accrued income receivable			16
Cash			13
Fair value plan assets			$3,673

December 31, 2017	Level 1	Level 2	Total
Equities	$10	$—	$10
Commingled funds	2,198	—	2,198
Government fixed income securities	10	285	295
Corporate fixed income securities	—	900	900
Short-term investment funds	186	—	186
Total investment securities	$2,404	$1,185	$3,589
Accrued income receivable			12
Cash			13
Fair value plan assets			$3,614

Non-U.S. Pension Benefit Plans

December 31, 2018	Level 1	Level 2	Total
Equities	$ 140	$ —	$140
Commingled funds	476	16	492
Government fixed income securities	4	647	651
Short-term investment funds	60	—	60
Total investment securities	$ 680	$ 663	$1,343
Cash			3
Accrued income receivable			42
Insurance contracts			50
Fair value plan assets			$1,438

December 31, 2017	Level 1	Level 2	Total
Equities	$ 136	$ —	$136
Commingled funds	431	38	469
Government fixed income securities	3	779	782
Short-term investment funds	92	—	92
Total investment securities	$ 662	$ 817	$1,479
Cash			3
Accrued income receivable			55
Insurance contracts			53
Fair value plan assets			$1,590

Postretirement Health Care Benefits Plan

December 31, 2018	Level 1	Level 2	Total
Commingled funds	$ 74	$ —	$74
Government fixed income securities	—	12	12
Corporate fixed income securities	—	34	34
Short-term investment funds	9	—	9
Total investment securities	$ 83	$ 46	$129
Cash			$4
Fair value plan assets			$133

December 31, 2017	Level 1	Level 2	Total
Equities	$ 1	$ —	$1
Commingled funds	92	—	92
Government fixed income securities	—	12	12
Corporate fixed income securities	—	38	38
Short-term investment funds	8	—	8
Fair value plan assets	$ 101	$ 50	$151

The following is a description of the categories of investments:

Equities — A diversified portfolio of corporate common stock and preferred stock.

Commingled funds — A diversified portfolio of assets that includes corporate common stock, preferred stock, emerging market and high-yield fixed income securities among others.

Government fixed income securities — Securities issued by municipal, domestic and foreign government agencies, index-linked government bonds as well as interest rate derivatives.

Corporate fixed income securities — A diversified portfolio of primarily investment grade bonds issued by corporations.

Short-term investment funds — Investments in money market accounts and derivatives with a liquidity of less than 90 days.
Level 1 investments include securities which are valued at the closing price reported on the active market in which the individual securities are traded. Level 2 investments consist principally of securities which are valued using independent third party pricing sources. A variety of inputs are utilized by the independent pricing sources including market based inputs, binding quotes, indicative quotes, and ongoing redemption and subscription activity. Inputs may be weighted differently for any security, and not all inputs are used for each security evaluation.
At December 31, 2018, the Company had $734 million of investments in money market prime and government funds (Level 1) classified as Cash and cash equivalents in its Consolidated Balance Sheet, compared to $633 million at December 31, 2017. The money market funds had quoted market prices that are approximately at par.
Using quoted market prices and market interest rates, the Company determined that the fair value of long-term debt at December 31, 2018 was $5.4 billion (Level 2), compared to a face value of $5.3 billion. Since considerable judgment is required in interpreting market information, the fair value of the long-term debt is not necessarily indicative of the amount which could be realized in a current market exchange.
All other financial instruments are carried at cost, which is not materially different from the instruments' fair values.

10. Long-term Financing and Sales of Receivables
Long-term Financing
Long-term receivables consist of receivables with payment terms greater than twelve months, long-term loans and lease receivables under sales-type leases. Long-term receivables consist of the following:

December 31	2018	2017
Long-term receivables, gross	$33	$37
Less allowance for losses	(2)	—
Long-term receivables	$31	$37
Less current portion	(7)	(18)
Non-current long-term receivables	$24	$19

The current portion of long-term receivables is included in Accounts receivable, net and the non-current portion of long-term receivables is included in Other assets in the Company's Consolidated Balance Sheet. The Company recognized Interest income on long-term receivables of $1 million, $1 million, and $2 million for the years ended December 31, 2018, 2017 and 2016, respectively.
Certain purchasers of the Company's products and services may request that the Company provide long-term financing (defined as financing with a term greater than one year) in connection with the sale of products and services. These requests may include all or a portion of the purchase price of the products and services. The Company's obligation to provide long-term financing may be conditioned on the issuance of a letter of credit in favor of the Company by a reputable bank to support the purchaser's credit or a pre-existing commitment from a reputable bank to purchase the long-term receivables from the Company. The Company had outstanding commitments to provide long-term financing to third-parties totaling $62 million at December 31, 2018, compared to $93 million at December 31, 2017.
Sales of Receivables
From time to time, the Company sells accounts receivable and long-term receivables to third-parties under one-time arrangements. The Company may or may not retain the obligation to service the sold accounts receivable and long-term receivables.
The following table summarizes the proceeds received from sales of accounts receivable and long-term receivables for the years ended December 31, 2018, 2017 and 2016.

Years ended December 31	2018	2017	2016
Accounts receivable sales proceeds	$77	$193	$51
Long-term receivables sales proceeds	270	284	289
Total proceeds from receivable sales	$347	$477	$340

At December 31, 2018, the Company had retained servicing obligations for $970 million of long-term receivables, compared to $873 million of long-term receivables at December 31, 2017. Servicing obligations are limited to collection activities of sold accounts receivables and long-term receivables.

Credit Quality of Long-Term Receivables and Allowance for Credit Losses

An aging analysis of financing receivables at December 31, 2018 and December 31, 2017 is as follows:

December 31, 2018	Total Long-term Receivable	Current Billed Due	Past Due Under 90 Days	Past Due Over 90 Days
Municipal leases secured tax exempt	$ 22	$ 1	$ —	$ —
Commercial loans and leases secured	11	—	—	2
Long-term receivables, including current portion	$ 33	$ 1	$ —	$ 2

December 31, 2017	Total Long-term Receivable	Current Billed Due	Past Due Under 90 Days	Past Due Over 90 Days
Municipal leases secured tax exempt	$ 21	$ —	$ 1	$ 2
Commercial loans and leases secured	16	1	3	1
Long-term receivables, including current portion	$ 37	$ 1	$ 4	$ 3

The Company uses an internally developed credit risk rating system for establishing customer credit limits. This system is aligned with and comparable to the rating systems utilized by independent rating agencies.

The Company's policy for valuing the allowance for credit losses is to review all customer financing receivables for collectability on an individual receivable basis. For those receivables where collection risk is probable, the Company calculates the value of impairment based on the net present value of expected future cash flows from the customer.

11. Commitments and Contingencies

Lease Obligations

The Company leases certain office, factory and warehouse space, land, and other equipment under principally non-cancelable operating leases. Rental expense, net of sublease income, for the years ended December 31, 2018, 2017 and 2016 was $108 million, $94 million, and $84 million, respectively.

At December 31, 2018, future minimum lease obligations, net of minimum sublease rentals, for the next five years and beyond are as follows:

(in millions)	2019	2020	2021	2022	2023	Beyond
	$ 131	$ 120	$ 112	$ 101	$ 54	$ 204

Purchase Obligations

During the normal course of business, in order to manage manufacturing lead times and help ensure adequate component supply, the Company enters into agreements with contract manufacturers and suppliers that either allow them to procure inventory based upon criteria as defined by the Company or establish the parameters defining the Company's requirements. In addition, we have entered into software license agreements which are firm commitments and are not cancelable. As of December 31, 2018, the Company had entered into firm, non-cancelable, and unconditional commitments under such arrangements through 2023. The Company expects to make total payments of $124 million under these arrangements as follows: $92 million in 2019, $16 million in 2020, $12 million in 2021, $3 million in 2022, and $1 million in 2023.

The Company outsources certain corporate functions, such as benefit administration and information technology-related services, under various contracts, the longest of which is expected to expire in 2023. The remaining payments under these contracts are approximately $114 million over the remaining life of the contracts. However, these contracts can be terminated. Termination would result in a penalty substantially less than the remaining annual contract payments. The Company would also be required to find another source for these services, including the possibility of performing them in-house.

Legal Matters

The Company is a defendant in various lawsuits, claims, and actions that arise in the normal course of business. While the outcome of these matters is currently not determinable, the Company does not expect the ultimate disposition of these matters to have a material adverse effect on the Company’s consolidated financial position, liquidity or results of operations. However, an unfavorable resolution could have a material adverse effect on the Company's consolidated financial position, liquidity, or results of operations in the periods in which the matters are ultimately resolved, or in the periods in which more information is obtained that changes management's opinion of the ultimate disposition.

Indemnifications

The Company is a party to a variety of agreements pursuant to which it is obligated to indemnify the other party with respect to certain matters. In indemnification cases, payment by the Company is conditioned on the other party making a claim pursuant to the procedures specified in the particular contract, which procedures typically allow the Company to challenge the other party's claims. In some instances, the Company may have recourse against third parties for certain payments made by the Company.

Some of these obligations arise as a result of divestitures of the Company's assets or businesses and require the Company to indemnify the other party against losses arising from breaches of representations and warranties and covenants and, in some cases, the settlement of pending obligations. The Company's obligations under divestiture agreements for indemnification based on breaches of representations and warranties are generally limited in terms of duration and to amounts not in excess of a percentage of the contract value. The Company had no accruals for any such obligations at December 31, 2018.

In addition, the Company may provide indemnifications for losses that result from the breach of general warranties contained in certain commercial and intellectual property agreements. Historically, the Company has not made significant payments under these agreements.

12. Information by Segment and Geographic Region

The Company conducts its business globally and manages it through the following two segments:

Products and Systems Integration: The Products and Systems Integration segment offers an extensive portfolio of infrastructure, devices, accessories, video solutions, and the implementation, optimization, and integration of such systems, devices, and applications, including the Company's: (i) "ASTRO" products, which meet the Association of Public Safety Communications Officials Project 25 standard, (ii) "Dimetra" products which meet the European Telecommunications Standards Institute Terrestrial Trunked Radio "TETRA" standard, (iii) Professional and Commercial Radio ("PCR") products, (iv) broadband technology products, such as Long-Term Evolution ("LTE"), and (v) video solutions, including video cameras. The primary customers of the Products and Systems Integration segment are government, public safety and first-responder agencies, municipalities, and commercial and industrial customers who operate private communications networks and video solutions and typically managing a mobile workforce. In 2018, the segment's net sales were $5.1 billion, representing 69% of the Company's consolidated net sales.

Services and Software: The Services and Software segment provides a broad range of solution offerings for government, public safety and commercial communication networks. Services includes a continuum of service offerings beginning with repair, technical support and maintenance. More advanced platforms include monitoring, software updates and cybersecurity services. Managed services range from partial to full operation of customer or Motorola Solutions-owned networks. Software includes a public safety and enterprise command center software suite, unified communications applications, and video software solutions, delivered both on premise and "as a service." In 2018, the segment's net sales were $2.2 billion, representing 31% of the Company's consolidated net sales.

For the years ended December 31, 2018, 2017 and 2016, no single customer accounted for more than 10% of the Company's net sales.

Segment Information

The following table summarizes Net sales and Operating earnings by segment:

	Net Sales			Operating Earnings		
Years ended December 31	2018	2017	2016	2018	2017	2016
Products and Systems Integration	$5,100	$4,513	$4,394	$854	$969	$762
Services and Software	2,243	1,867	1,644	401	315	286
	$7,343	$6,380	$6,038	1,255	1,284	1,048
Total other expense				(153)	(208)	(204)
Net earnings before income taxes				$1,102	$1,076	$844

The following table summarizes the Company's capital expenditures and depreciation expense by segment:

	Capital Expenditures			Depreciation Expense		
Years ended December 31	2018	2017	2016	2018	2017	2016
Products and Systems Integration	$72	$113	$104	$71	$69	$72
Services and Software	125	114	167	101	123	110
	$197	$227	$271	$172	$192	$182

The Company's "chief operating decision maker" does not review or allocate resources based on segment assets.

Geographic Area Information

	Net Sales			Assets		
Years ended December 31	2018	2017	2016	2018	2017	2016
United States	$4,361	$3,725	$3,566	$5,441	$5,138	$5,653
United Kingdom	638	558	528	2,284	2,329	2,300
Canada	303	251	222	1,014	97	91
Other, net of eliminations	2,041	1,846	1,722	670	644	419
	$7,343	$6,380	$6,038	$9,409	$8,208	$8,463

Net sales attributed to geographic area are predominately based on the ultimate destination of the Company's products and services.

13. Reorganization of Businesses

The Company maintains a formal Involuntary Severance Plan (the “Severance Plan”), which permits the Company to offer eligible employees severance benefits based on years of service and employment grade level in the event that employment is involuntarily terminated as a result of a reduction-in-force or restructuring. The Severance Plan includes defined formulas to calculate employees’ termination benefits. In addition to the Severance Plan, during the year ended December 31, 2016, the Company accepted voluntary applications to its Severance Plan from a defined subset of employees within the United States. Voluntary applicants received termination benefits based on the formulas defined in the Severance Plan. However, termination benefits, which are normally different based on employment level grade and capped at six months of salary, were equalized for all employment level grades and capped at a full year’s salary.

The Company recognizes termination benefits based on formulas per the Severance Plan at the point in time that future settlement is probable and can be reasonably estimated based on estimates prepared at the time a restructuring plan is approved by management. Exit costs consist of future minimum lease payments on vacated facilities and other contractual terminations. At each reporting date, the Company evaluates its accruals for employee separation and exit costs to ensure the accruals are still appropriate. In certain circumstances, accruals are no longer needed because of efficiencies in carrying out the plans or because employees previously identified for separation resigned from the Company and did not receive severance, or were redeployed due to circumstances not foreseen when the original plans were approved. In these cases, the Company reverses accruals through the Consolidated Statements of Operations where the original charges were recorded when it is determined they are no longer needed.

During 2018, 2017, and 2016 the Company continued to implement various productivity improvement plans aimed at achieving long-term, sustainable profitability by driving efficiencies and reducing operating costs. As a result, the Company communicated its plan to close one of its manufacturing facilities in Europe during the fourth quarter of 2018 resulting in a charge of $44 million and impacting 165 employees, primarily within the Products and Systems Integration segment. The remainder of the initiatives impacted both of the Company’s segments and affected employees located in all geographic regions.

2018 Charges

During 2018, the Company recorded net reorganization of business charges of $120 million, including $59 million of charges in Costs of sales and $61 million of charges in Other charges in the Company’s Consolidated Statements of Operations. Included in the $120 million were charges of $122 million for employee separation costs and $16 million for exit costs, partially offset by $18 million of reversals of accruals no longer needed.

The following table displays the net charges incurred by segment:

Year ended December 31	2018
Products and Systems Integration	$ 101
Services and Software	19
	$ 120

The following table displays a rollforward of the reorganization of businesses accruals established for exit costs and employee separation costs from January 1, 2018 to December 31, 2018:

	Accruals at January 1	Additional Charges	Adjustments	Amount Used	Accruals at December 31
Exit costs	$ 9	$ 16	$ —	$ (4)	$ 21
Employee separation costs	41	122	(18)	(61)	84
	$ 50	$ 138	$ (18)	$ (65)	$ 105

Exit Costs

At January 1, 2018, the Company had $9 million accrual for exit costs. There were $16 million of additional charges in 2018. The $4 million used in 2018 reflects cash payments. The remaining accrual of $21 million, which the current portion is included in Accrued liabilities and the non-current portion is included in Other liabilities in the Company's Consolidated Balance Sheet at December 31, 2018, primarily represents future cash payments for lease obligations that are expected to be paid over a number of years.

Employee Separation Costs

At January 1, 2018, the Company had an accrual of $41 million for employee separation costs. The 2018 additional charges of $122 million represent severance costs for approximately an additional 1,200 employees, of which 500 were direct employees and 700 were indirect employees. The adjustments of $18 million reflect reversals of accruals no longer needed. The $61 million used in 2018 reflects cash payments to severed employees. The remaining accrual of $84 million, which is included in Accrued liabilities in the Company's Consolidated Balance Sheet at December 31, 2018, is expected to be paid, primarily within one year to: (i) severed employees who have already begun to receive payments and (ii) approximately 200 employees to be separated in 2019.

2017 Charges

During 2017, the Company recorded net reorganization of business charges of $42 million, including $9 million of charges in Costs of sales and $33 million of charges under Other charges in the Company's Consolidated Statements of Operations. Included in the aggregate $42 million were charges of $43 million for employee separation costs and $8 million for exit costs, partially offset by $9 million of reversals of accruals no longer needed.

The following table displays the net charges incurred by segment:

Year ended December 31	2017
Products and Systems Integration	$ 32
Services and Software	10
	$ 42

The following table displays a rollforward of the reorganization of businesses accruals established for exit costs and employee separation costs from January 1, 2017 to December 31, 2017:

	Accruals at January 1	Additional Charges	Adjustments	Amount Used	Accruals at December 31
Exit costs	$ 7	$ 8	$ —	$ (6)	$ 9
Employee separation costs	94	43	(9)	(87)	41
	$ 101	$ 51	$ (9)	$ (93)	$ 50

Exit Costs

At January 1, 2017, the Company had $7 million accrual for exit costs. There were $8 million of additional charges in 2017. The $6 million used in 2017 reflects cash payments. The remaining accrual of $9 million, which the current portion was included in Accrued liabilities and the non-current portion was included in Other liabilities in the Company's Consolidated Balance Sheet at December 31, 2017, primarily represented future cash payments for lease obligations.

Employee Separation Costs

At January 1, 2017, the Company had an accrual of $94 million for employee separation costs. The additional 2017 charges of $43 million represent severance costs for approximately an additional 400 employees, of which 100 were direct employees and 300 were indirect employees. The adjustments of $9 million reflect reversals of accruals no longer needed. The $87 million used in 2017 reflects cash payments to severed employees. The remaining accrual of $41 million was included in Accrued liabilities in the Company's Consolidated Balance Sheet at December 31, 2017.

2016 Charges

During 2016, the Company recorded net reorganization of business charges of $140 million, including $43 million of charges in Costs of sales and $97 million of charges in Other charges in the Company's Consolidated Statements of Operations. Included in the aggregate $140 million are charges of: (i) $120 million for employee separation costs, (ii) a $17 million building impairment charge, (iii) $5 million of charges for exit costs, and (iv) $3 million for the impairment of corporate aircraft, partially offset by $5 million of reversals for accruals no longer needed.

The following table displays the net charges incurred by segment:

Year ended December 31	2016
Products and Systems integration	$ 107
Services and Software	33
	$ 140

The following table displays a rollforward of the reorganization of businesses accruals established for exit costs and employee separation costs, including those related to discontinued operations which were maintained by the Company after the sale of the Enterprise business, from January 1, 2016 to December 31, 2016:

	Accruals at January 1	Additional Charges	Adjustments	Amount Used	Accruals at December 31
Exit costs	$ 9	$ 5	$ (1)	$ (6)	$ 7
Employee separation costs	51	120	(4)	(73)	94
	$ 60	$ 125	$ (5)	$ (79)	$ 101

Exit Costs

At January 1, 2016, the Company had $9 million accrual for exit costs. There were $5 million of additional charges in 2016. The $6 million used in 2016 reflects cash payments. The remaining accrual of $7 million, which the current portion was included in Accrued liabilities and the non-current portion was included in Other liabilities in the Company's Consolidated Balance Sheet at December 31, 2016, primarily represented future cash payments for lease obligations.

Employee Separation Costs

At January 1, 2016, the Company had an accrual of $51 million for employee separation costs. The additional 2016 charges of $120 million represent severance costs for approximately an additional 1,300 employees, of which 400 were direct employees and 900 were indirect employees. The adjustments of $4 million reflect of reversals of accruals no longer needed. The $73 million used in 2016 reflects cash payments to these severed employees. The remaining accrual of $94 million was included in Accrued liabilities in the Company's Consolidated Balance Sheet at December 31, 2016.

14. Intangible Assets and Goodwill

The Company accounts for acquisitions using purchase accounting with the results of operations for each acquiree included in the Company's consolidated financial statements for the period subsequent to the date of acquisition.

Avigilon Corporation

On March 28, 2018, the Company completed the acquisition of Avigilon Corporation, a provider of advanced security and video solutions including video analytics, network video management hardware and software, video cameras and access control solutions. The purchase price of $974 million, consisted of cash payments of $980 million for outstanding common stock, restricted stock units and employee held stock options, net of cash acquired of $107 million, debt assumed of $75 million and transaction costs of $26 million. Prior to the end of the first quarter, $35 million of the assumed debt was repaid with the remaining $40 million repaid during the second quarter of 2018.

The acquisition of Avigilon has been accounted for at fair value as of the acquisition date, based on the fair value of the total consideration transferred which has been attributed to all identifiable assets acquired and liabilities assumed and measured at fair value. The purchase accounting is not yet complete and as such the final allocation between deferred income tax accounts and goodwill may be subject to change. The following table summarizes fair values of assets acquired and liabilities assumed as of the March 28, 2018 acquisition date:

Accounts receivable, net	$67
Inventory	93
Other current assets	18
Property, plant and equipment, net	33
Deferred income taxes	4
Accounts payable	(21)
Accrued liabilities	(28)
Deferred income tax liabilities	(124)
Goodwill	434
Intangible assets	498
Total consideration	$974

Acquired intangible assets consist of $110 million of customer relationships, $380 million of developed technology and $8 million of trade names and will have useful lives of two to 20 years. The fair values of all intangible assets were estimated using the income approach. Customer relationships and developed technology were valued under the excess earnings method which assumes that the value of an intangible asset is equal to the present value of the incremental after-tax cash flows attributable specifically to the intangible asset. Trade names were valued under the relief from royalty method, which assumes value to the extent that the acquired company is relieved of the obligation to pay royalties for the benefits received from them.

Goodwill is calculated as the excess of the consideration transferred over the net assets recognized and represents the future economic benefits arising from the other assets acquired that could not be individually identified and separately recognized. Goodwill is not deductible for tax purposes.

The pro forma effect of this acquisition is not significant.

Other Acquisitions

On April 9, 2018, the Company completed the acquisition of a provider of two-way radio communications for a purchase price of $11 million, recognizing $7 million of identifiable intangible assets, which will be amortized over a period of seven years. The results of operations for this acquisition have been included in the Company’s Consolidated Statements of Operations subsequent to the acquisition date.

On March 7, 2018, the Company completed the acquisition of Plant Holdings, Inc., the parent company of Airbus DS Communications for a purchase price of $237 million; net of cash acquired. This acquisition will expand the Company's software portfolio in the command center with additional solutions for Next Generation 9-1-1. The Company recognized $151 million of goodwill, $80 million of identifiable intangible assets and $6 million of net assets. Goodwill is not deductible for tax purposes. The identifiable intangible assets were classified as $41 million of customer-related intangibles, $27 million of completed technology and $12 million of trade names. The identifiable intangible assets will be amortized over a period of 10 to 20 years. The purchase accounting is not yet complete and as such the final allocation between deferred income tax accounts and goodwill may be subject to change.

On August 28, 2017, the Company completed the acquisition of Kodiak Networks, a provider of broadband push-to-talk for commercial customers, for a purchase price of $225 million. As a result of the acquisition, the Company recognized $191 million of goodwill, $44 million of identifiable intangible assets and $10 million of acquired liabilities. The identifiable intangible assets were classified as $25 million of customer-related intangibles and $19 million of completed technology and will be amortized over a period of 13 to 16 years.

On March 13, 2017, the Company completed the acquisition of Interexport, a managed service provider for communications systems to public safety and commercial customers in Chile, for a purchase price of $98 billion Chilean pesos, or approximately $147 million U.S. dollars based on cash payments of $55 million, net of cash acquired, and assumed liabilities of $92 million, primarily related to capital leases. As a result of the acquisition, the Company recognized $61 million of identifiable intangible assets, $70 million of acquired property, plant and equipment and $16 million of net other tangible assets. The estimated identifiable intangible assets were classified as $56 million of customer-related intangibles and $5 million of other intangibles and will be amortized over a period of seven years.

On November 10, 2016, the Company completed the acquisition of Spillman Technologies, Inc., a provider of comprehensive law enforcement and public safety software solutions, for a purchase price of $221 million. As a result of the acquisition, the Company recognized $144 million of goodwill, $115 million of identifiable intangible assets, and $38 million of acquired liabilities. The identifiable intangible assets were classified as $49 million of completed technology, $59 million of customer-related intangibles, and $7 million of other intangibles and will be amortized over a period of seven to ten years.

On February 19, 2016, the Company completed the acquisition of Guardian Digital Communications Limited, a holding company of Airwave Solutions Limited, the largest private operator of a public safety network in the world. All of the outstanding equity of Airwave was acquired for the sum of £1, after which the Company invested into Airwave £698 million, net of cash acquired, or approximately $1.0 billion, to settle all third party debt. As a result of the acquisition, the Company recognized $875 million of identifiable intangible assets, $191 million of goodwill, and $16 million of net other tangible assets. As part of the acquisition, the Company recorded $82 million of deferred consideration, which was paid during the fourth quarter of 2018. The identifiable intangible assets were classified as $846 million of customer relationships and $29 million of trade names. All intangibles have a useful life of seven years, over which amortization expense will be recognized on a straight line basis.

During the year ended December 31, 2016, the Company completed the acquisition of several software and service-based providers for a total of $30 million, recognizing $6 million of goodwill, $15 million of intangible assets, and $9 million of tangible net assets related to these acquisitions. Under the preliminary purchase accounting, the $15 million of identifiable intangible assets were classified as: (i) $7 million of completed technology and (ii) $8 million of customer-related intangibles and will be amortized over a period of five years. During the first quarter of 2017, the Company completed the purchase accounting and recorded an additional $11 million completed technology intangible asset that will be amortized over a period of eight years.

The results of operations for these acquisitions have been included in the Company's Consolidated Statements of Operations subsequent to the acquisition date. The pro forma effects of these acquisitions are not significant individually or in the aggregate.

On January 7, 2019, the Company completed the acquisition of VaaS, a data and image analytics company based in Livermore, California and Fort Worth, Texas for a total consideration, including contingent consideration, of $445 million in a combination of cash and equity. The acquisition of VaaS enables the Company to expand on its command center software portfolio to help shorten response times and improve the speed and accuracy of investigations. As of the date of issuance of the Company's financial statements, the purchase accounting has not been completed.

Intangible Assets

Amortized intangible assets are comprised of the following:

December 31	2018 Gross Carrying Amount	2018 Accumulated Amortization	2017 Gross Carrying Amount	2017 Accumulated Amortization
Intangible assets:				
Completed technology	$558	$ 92	$148	$ 55
Patents	2	2	2	2
Customer-related	1,085	364	977	242
Other intangibles	74	31	56	23
	$1,719	$ 489	$1,183	$ 322

Amortization expense on intangible assets, which is included within Other charges in the Consolidated Statements of Operations, was $188 million, $151 million, and $113 million for the years ended December 31, 2018, 2017, and 2016, respectively. As of December 31, 2018, future amortization expense is estimated to be $187 million in 2019, $183 million in 2020, $181 million in 2021, $178 million in 2022, and $81 million in 2023.

Amortized intangible assets, excluding goodwill, were comprised of the following by segment:

	2018 Gross Carrying Amount	2018 Accumulated Amortization	2017 Gross Carrying Amount	2017 Accumulated Amortization
Products and Systems Integration	$510	$ 38	$12	$ 8
Services and Software	1,209	451	1,171	314
	$1,719	$ 489	$1,183	$ 322

Goodwill

The following table displays a rollforward of the carrying amount of goodwill, net of impairment losses, by segment from January 1, 2017 to December 31, 2018:

	Products and Systems Integration	Services and Software	Total
Balance as of January 1, 2017	$ 347	$ 381	$728
Goodwill acquired	14	177	191
Purchase accounting adjustments	—	2	2
Foreign currency translation	1	16	17
Balance as of December 31, 2017	$ 362	$ 576	$938
Goodwill acquired	360	225	585
Purchase accounting adjustments	—	1	1
Foreign currency translation	—	(10)	(10)
Balance as of December 31, 2018	$ 722	$ 792	$1,514

During the second quarter of 2018, the Company modified its internal reporting structure to better align the way financial information is reported to and analyzed by executive leadership, in part, as a result of recent acquisitions contributing to the growth within the newly-aligned Services and Software segment. Previously, the Company had two reporting segments: Products and Services. The changes in reporting structure consist of Systems Integration-related revenue and costs moving from the old Services segment into the newly-presented Products and Systems Integration segment and software-related revenue and costs moving from the old Products segment into the newly-presented Services and Software segment.

The Company conducts its annual assessment of goodwill for impairment in the fourth quarter of each year. The goodwill impairment assessment is performed at the reporting unit level. A reporting unit is an operating segment or one level below an operating segment.

The Company performed a qualitative assessment to determine whether it was more-likely-than-not that the fair value of each reporting unit was less than its carrying amount for the fiscal years 2018, 2017, and 2016. In performing this qualitative assessment the Company assessed relevant events and circumstances including macroeconomic conditions, industry and market conditions, cost factors, overall financial performance, changes in share price, and entity-specific events. For fiscal years 2018, 2017, and 2016, the Company concluded it was more-likely-than-not that the fair value of each reporting unit exceeded its carrying value. Therefore, the two-step goodwill impairment test was not required and there was no impairment of goodwill.

15. Valuation and Qualifying Accounts

The following table presents the valuation and qualifying account activity for the years ended December 31, 2018, 2017, and 2016:

	Balance at January 1	Charged to Earnings	Used	Adjustments*	Balance at December 31
2018					
Allowance for doubtful accounts	$ 45	$ 37	$(30)	$ (1)	$ 51
Inventory reserves	133	22	(12)	—	143
2017					
Allowance for doubtful accounts	44	16	(16)	1	45
Inventory reserves	131	21	(19)	—	133
2016					
Allowance for doubtful accounts	28	44	(26)	(2)	44
Inventory reserves	142	20	(33)	2	131

* Adjustments include translation adjustments

16. Quarterly and Other Financial Data (unaudited)

	2018				2017			
	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Operating Results								
Net sales	$1,468	$1,760	$1,862	$2,254	$1,281	$1,497	$1,645	$1,957
Costs of sales	799	938	961	1,166	711	807	851	987
Gross margin	669	822	901	1,088	570	690	794	970
Selling, general and administrative expenses	279	316	323	337	244	254	259	267
Research and development expenditures	152	162	158	165	135	138	141	155
Other charges	67	71	126	70	18	37	47	45
Operating earnings	171	273	294	516	173	261	347	503
Net earnings (loss)*	117	180	247	423	77	131	212	(575)
Per Share Data (in dollars)								
Net earnings (loss)*:								
Basic earnings per common share	$0.73	$1.11	$1.52	$2.58	$0.47	$0.80	$1.30	$(3.56)
Diluted earnings per common share	0.69	1.05	1.43	2.44	0.45	0.78	1.25	(3.56)
Dividends declared	$0.52	$0.52	$0.52	$0.57	$0.47	$0.47	$0.47	$0.52
Dividends paid	0.52	0.52	0.52	0.52	0.47	0.47	0.47	0.47
Stock prices								
High	$110.29	$118.37	$130.34	$133.97	$87.00	$89.15	$93.75	$95.30
Low	$89.18	$103.18	$114.95	$108.25	$76.92	$79.63	$82.86	$84.56

* Amounts attributable to Motorola Solutions, Inc. common shareholders.

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

None.

Item 9A. Controls and Procedures

Evaluation of Disclosure Controls and Procedures.

Under the supervision and with the participation of our senior management, including our chief executive officer and chief financial officer, we conducted an evaluation of the effectiveness of the design and operation of our disclosure controls and procedures, as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the “Exchange Act”), as of the end of the period covered by this annual report (the “Evaluation Date”). Based on this evaluation, our chief executive officer and chief financial officer concluded as of the Evaluation Date that our disclosure controls and procedures were effective such that the information relating to Motorola Solutions, including our consolidated subsidiaries, required to be disclosed in our Securities and Exchange Commission (“SEC”) reports (i) is recorded, processed, summarized and reported within the time periods specified in SEC rules and forms, and (ii) is accumulated and communicated to Motorola Solutions’ management, including our chief executive officer and chief financial officer, as appropriate to allow timely decisions regarding required disclosure.

Management’s Report on Internal Control Over Financial Reporting.

Motorola Solutions’ management is responsible for establishing and maintaining adequate internal control over financial reporting as such term is defined in Rule 13a-15(f) of the Exchange Act. Under the supervision and with the participation of our senior management, including our chief executive officer and chief financial officer, we assessed the effectiveness of our internal control over financial reporting as of December 31, 2018, using the criteria set forth in the Internal Control—Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO"). Based on this assessment, management has concluded that our internal control over financial reporting is effective as of December 31, 2018.

On March 28, 2018 the Company completed the acquisition of Avigilon Corporation. As permitted for recently acquired businesses, management has excluded the acquired business from its assessment of internal control over financial reporting. The excluded Avigilon Corporation business represents 12.6% of total assets and 5.2% of net sales related to the consolidated financial statements amounts, as of and for the year ended December 31, 2018.

The Company’s independent registered public accounting firm, KPMG LLP, has issued a report on the Company’s internal control over financial reporting. The report on the audit of internal control over financial reporting appears in this Form 10-K.

Changes in Internal Control Over Financial Reporting.

Effective January 1, 2018, we adopted the new revenue standard ASC 606. We have implemented new accounting processes related to revenue recognition and related disclosures, including related control activities. There have been no changes in our internal control over financial reporting that occurred during the quarter ended December 31, 2018, that have materially affected or are reasonably likely to materially affect our internal control over financial reporting.

Item 9B. Other Information

None.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM
To the Stockholders and Board of Directors
Motorola Solutions, Inc.:
Opinion on Internal Control Over Financial Reporting
We have audited Motorola Solutions, Inc.'s (the Company) internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission. In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission.
We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of December 31, 2018 and 2017, the related consolidated statements of operations, comprehensive income (loss), stockholders' equity, and cash flows for each of the years in the three year period ended December 31, 2018, and the related notes (collectively, the consolidated financial statements), and our report dated February 15, 2019 expressed an unqualified opinion on those consolidated financial statements.
Motorola Solutions, Inc. acquired Avigilon Corporation during 2018 and management excluded from its assessment of the effectiveness of the Company's internal control over financial reporting as of December 31, 2018, Avigilon Corporation's internal control over financial reporting associated with total assets representing 12.6% of consolidated total assets, and total net sales representing 5.2% of consolidated net sales included in the consolidated financial statements of the Company as of and for the year ended December 31, 2018. Our audit of internal control over financial reporting of Motorola Solutions, Inc. also excluded an evaluation of the internal control over financial reporting of Avigilon Corporation.
Basis for Opinion
The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Control Over Financial Reporting in Item 9A: Controls and Procedures. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.
We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit 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 audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.
Definition and Limitations of Internal Control Over Financial Reporting
A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have

a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Chicago, Illinois
February 15, 2019

PART III

Item 10. Directors, Executive Officers and Corporate Governance

The response to this Item required by Item 401 of Regulation S-K, with respect to directors, incorporates by reference the information under the caption “Our Board - Who We Are” of Motorola Solutions’ Proxy Statement for the 2019 Annual Meeting of Shareholders (the “Proxy Statement”) and, with respect to executive officers, is contained in Part I hereof under the caption “Executive Officers of the Registrant” and, with respect to the audit committee, incorporates by reference the information under the caption “Committees of the Board” and “Audit Committee Matters - Report of Audit Committee” of the Proxy Statement.

The response to this Item required by Item 405 of Regulation S-K incorporates by reference the information under the caption “Security Ownership Information-Section 16 (a) Beneficial Ownership Reporting Compliance” of the Proxy Statement.

The response to this Item also incorporates by reference the information under the caption “Important Dates for the 2020 Annual Meeting - Recommending a Director Candidate to the Governance and Nominating Committee” of the Proxy Statement.

Motorola Solutions has adopted a code of ethics, the Motorola Solutions Code of Business Conduct (the “Code”), that applies to all employees, including the Company’s principal executive officer, principal financial officer and controller (principal accounting officer). The Code is posted on Motorola Solutions’ Internet website, www.motorolasolutions.com/investors, and is available free of charge, upon request to Investor Relations, Motorola Solutions, Inc., Corporate Offices, 500 W. Monroe Street, Chicago, Illinois 60661, E-mail: investors@motorolasolutions.com. Any amendment to, or waiver from, the Code applicable to executive officers will be posted on our Internet website within four business days following the date of the amendment or waiver. Motorola Solutions’ Code of Business Conduct applies to all of the Company’s employees worldwide, without exception, and describes employee responsibilities to the various stakeholders involved in our business. The Code goes beyond the legal minimums by implementing the values we share as employees of Motorola Solutions—our key beliefs—uncompromising integrity and constant respect for people. The Code places special responsibility on managers and prohibits retaliation for reporting issues.

Item 11. Executive Compensation

The response to this Item incorporates by reference the information under the captions "How We Determine Director Compensation - How Our Directors Are Compensated,” "Compensation Discussion and Analysis," "Compensation and Leadership Committee Report,” "Compensation and Leadership Committee Interlocks and Insider Participation," and under “Named Executive Officer Compensation," the following subsections: "2018 Summary Compensation Table,” "Grants of Plan-Based Awards in 2018," “Outstanding Equity Awards at 2018 Fiscal Year-End,” “Option Exercises and Stock Vested in 2018,” "Nonqualified Deferred Compensation in 2018,” "Retirement Plans," "Pension Benefits in 2018," "Employment Contracts," and "Termination of Employment and Change in Control Arrangements," of the Proxy Statement.

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

The response to this Item incorporates by reference the information under the captions “Equity Compensation Plan Information” and “Security Ownership Information” of the Proxy Statement.

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

The response to this Item incorporates by reference the relevant information under the caption “Related Person Transaction Policy and Procedures” and “Independence” of the Proxy Statement.

Item 14. Principal Accounting Fees and Services

The response to this Item incorporates by reference the information under the caption “Audit Committee Matters - Independent Registered Public Accounting Firm Fees” and “Audit Committee Matters - Audit Committee Pre-Approval Policies” of the Proxy Statement.

PART IV

Item 15. Exhibits, Financial Statement Schedules

(a) 1. Financial Statements

See Part II, Item 8 hereof.

2. Financial Statement Schedules and Independent Auditors' Report

All schedules omitted are inapplicable or the information required is shown in the consolidated financial statements or notes thereto.

3. Exhibits

Exhibit numbers 10.6 through 10.61, listed in the attached Exhibit Index, are management contracts or compensatory plans or arrangements required to be filed as exhibits to this form by Item 15(b) hereof.

2.1	Master Acquisition Agreement, dated April 14, 2014, by and between Motorola Solutions, Inc. and Zebra Technologies, Inc. (incorporated by reference to Exhibit 2.1 to Motorola Solutions' Current Report on Form 8-K filed on April 16, 2014 (File No. 1-7221)).
2.2	Share Purchase Agreement, dated December 3, 2015, by and between Motorola Solutions, Inc., Motorola Solutions Overseas Limited, and Guardian Digital Communications Holdings Limited (incorporated by reference to Exhibit 1.1 to Motorola Solutions' Current Report on 8-K filed on December 3, 2015 (File 1-17221)).
2.3	Arrangement Agreement, dated February 1, 2018, between Motorola Solutions, Inc., Motorola Solutions Canada Holdings Inc. and Avigilon Corporation (incorporated by reference to Exhibit 2.1 to Motorola Solutions' Current Report on Form 8-K filed on March 28, 2018 (File 1-17221)).
3.1 (a)	Restated Certificate of Incorporation of Motorola, Inc., as amended through May 5, 2009 (incorporated by reference to Exhibit 3(i)(b) to Motorola, Inc.'s Quarterly Report on Form 10-Q for the fiscal quarter ended July 4, 2009 (File No. 1-7221)).
3.1 (b)	Certificate of Amendment to the Restated Certificate of Incorporation of Motorola, Inc., effective January 4, 2011, as filed with the Secretary of State of the State of Delaware (incorporated by reference to Exhibit 3.1 to Motorola Solutions' Current Report on Form 8-K filed on January 10, 2011 (File No. 1-7221)).
3.1 (c)	Certificate of Ownership and Merger merging Motorola Name Change Corporation into Motorola, Inc., effective January 4, 2011, as filed with the Secretary of State of the State of Delaware (incorporated by reference to Exhibit 3.2 to Motorola Solutions' Current Report on Form 8-K filed on January 10, 2011 (File No. 1-7221)).
3.2	Amended and Restated Bylaws of Motorola Solutions, Inc. as of November 13, 2014 (incorporated by reference to Exhibit 3.1 to Motorola Solutions' Current Report on Form 8-K filed on November 14, 2014 (File No. 1-7221)).
4.1 (a)	Senior Indenture, dated as of May 1, 1995, between The Bank of New York Mellon Trust Company, N.A. (as successor Trustee to JPMorgan Chase Bank (as successor in interest to Bank One Trust Company) and BNY Midwest Trust Company (as successor in interest to Harris Trust and Savings Bank) and Motorola, Inc. (incorporated by reference to Exhibit 4(d) of the Registrant's Registration Statement on Form S-3 dated September 25, 1995 (Registration No. 33-62911)).
4.1 (b)	Instrument of Resignation, Appointment and Acceptance, dated as of January 22, 2001, among Motorola, Inc., Bank One Trust Company, N.A. and BNY Midwest Trust Company (as successor in interest to Harris Trust and Savings Bank) (incorporated by reference to Exhibit 4.2(b) to Motorola, Inc.'s Annual Report on Form 10-K for the fiscal year ended December 31, 2000 (File No. 1-7221)).
4.1 (c)	Indenture dated as of August 19, 2014 between Motorola Solutions, Inc. and The Bank of New York Mellon Trust Company, N.A., as trustee. (incorporated by reference to Exhibit 4.1 to Motorola Solutions' Current Report on Form 8-K filed on August 19, 2014 (File No. 1-7221)).
4.1 (d)	Indenture dated as of August 25, 2015 between Motorola Solutions, Inc. and The Bank of New York Mellon Trust Company, N.A., as Trustee, related to 2% Convertible Senior Notes Due 2020 (incorporated by

	reference to Exhibit 10.1 to Motorola Solutions' Current Report on Form 8-K filed on August 26, 2015 (File No. 1-7221)).
	Certain instruments defining the rights of holders of long-term debt of Motorola, Inc. and of all its subsidiaries for which consolidated or unconsolidated financial statements are required to be filed are being omitted pursuant to paragraph (b)(4)(iii)(A) of Item 601 of Regulation S-K. Motorola Solutions agrees to furnish a copy of any such instrument to the Commission upon request.
10.1	Amended and Restated Master Separation and Distribution Agreement among Motorola Mobility Holdings, Inc. (f/k/a Motorola SpinCo Holdings Corporation), Motorola Mobility, Inc. and Motorola, Inc. effective as of July 31, 2010 (incorporated by reference to Exhibit 2.1 to Amendment No. 1 to the Form 10 Registration Statement filed on August 31, 2010 by Motorola Mobility Holdings, Inc. (formerly Motorola SpinCo Holdings Corporation) (File No. 1-34805)).
10.2	Amended and Restated Intellectual Property License Agreement between Motorola Mobility, Inc. and Motorola, Inc. effective as of July 31, 2010 (incorporated by reference to Exhibit 10.2 to Amendment No. 1 to the Form 10 Registration Statement filed on August 31, 2010 by Motorola Mobility Holdings, Inc. (formerly Motorola SpinCo Holdings Corporation (File No. 1-34805)).
10.3	Amended and Restated Exclusive License Agreement between Motorola Trademark Holdings, LLC and Motorola, Inc. effective as of July 30, 2010 (incorporated by reference to Exhibit 10.3 to Amendment No. 3 to the Form 10 Registration Statement filed on November 12, 2010 by Motorola Mobility Holdings, Inc. (File No. 1-34805)).

10.4	Tax Sharing Agreement among Motorola Mobility Holdings, Inc. (f/k/a Motorola SpinCo Holdings Corporation), Motorola Mobility, Inc. and Motorola, Inc. effective as of July 31, 2010 (incorporated by reference to Exhibit 10.4 to Amendment No. 1 to the Form 10 Registration Statement filed on August 31, 2010 by Motorola Mobility Holdings, Inc. (formerly Motorola SpinCo Holdings Corporation) (File No. 1-34805)).
10.5	Amended and Restated Employee Matters Agreement among Motorola Mobility Holdings, Inc. (f/k/a Motorola SpinCo Holdings Corporation), Motorola Mobility, Inc. and Motorola, Inc. effective as of July 31, 2010 (incorporated by reference to Exhibit 10.7 to Amendment No. 2 to the Form 10 Registration Statement filed on October 8, 2010 by Motorola Mobility Holdings, Inc. (formerly Motorola SpinCo Holdings Corporation (File No. 1-34805)).
10.6	Motorola Solutions Omnibus Incentive Plan of 2015, effective May 18, 2015 (an amendment and restatement of the Motorola Solutions Omnibus Incentive Plan of 2006) (incorporated by reference to Exhibit 10.1 to Motorola Solutions' Current Report on Form 8-K filed on May 21, 2015 (file No. 1-7221)).
10.7	March 9, 2017 Form of Motorola Solutions, Inc. Terms and Conditions Related to Employee Performance-Contingent Stock Options (non-CEO) (incorporated by reference to Exhibit 10.8 to Motorola Solutions' Quarterly Report on Form 10-Q for the fiscal quarter ended April 1, 2017 (File No. 1-7221)).
10.8	Form of Motorola Solutions, Inc. Performance Option Award Agreement for grants to Section 16 Officers on or after March 9, 2015 (incorporated by reference to Exhibit 10.1 to Motorola Solutions' Current Report on Form 8-K filed on March 11, 2015 (File No. 1-7221)).
10.9	Form of Motorola Solutions, Inc. Terms and Conditions Related to Employee Performance-Contingent Stock Options (non-CEO) (incorporated by reference to Exhibit 10.3 to Motorola Solutions' Current Report on Form 8-K filed on August 26, 2015 (File No. 1-7221)).
10.10	Form of Motorola Solutions, Inc. Award Document-Terms and Conditions Related to Employee Nonqualified Stock Options for grants to Section 16 Officers on or after May 6, 2013 (incorporated by reference to Exhibit 10.2 to Motorola Solutions' Quarterly Report on Form 10-Q for the fiscal quarter ended June 30, 2013 (File No. 1-7221)).
10.11	Form of Motorola Solutions, Inc. Award Document-Terms and Conditions Related to Employee Nonqualified Stock Options relating to the Motorola Solutions Omnibus Incentive Plan of 2015 for grants on or after February 15, 2018 incorporated by reference to Exhibit 10.4 to Motorola Solutions' Quarterly Report on Form 10-Q for the fiscal quarter ended March 31, 2018 (File No. 1-7221)).
10.12	Form of Motorola Solutions, Inc. Award Document-Terms and Conditions Related to Employee Nonqualified Stock Options relating to the Motorola Solutions Omnibus Incentive Plan of 2015 for grants from March 9, 2017 to February 14, 2018 (incorporated by reference to Exhibit 10.6 to Motorola Solutions' Quarterly Report on Form 10-Q for the fiscal quarter ended April 1, 2017 (File No. 1-7221)).
10.13	Form of Motorola Solutions Inc. Award Document-Terms and Conditions Related to Employee Nonqualified Stock Options relating to the Motorola Solutions Omnibus Incentive Plan of 2006 for grants from February 3, 2014 to March 8, 2017 (incorporated by reference to Exhibit 10.9 to Motorola Solutions' Annual Report on Form 10-K for the fiscal year ended December 31, 2013 (File No. 1-7221)).
10.14	Form of Motorola Solutions Inc. Award Document-Terms and Conditions Related to Employee Nonqualified Stock Options relating to the Motorola Solutions Omnibus Incentive Plan of 2006 for grants from January 4, 2011 to February 2, 2014 (incorporated by reference to Exhibit 10.11 to Motorola Solutions' Annual Report on Form 10-K for the fiscal year ended December 31, 2010 (File No. 1-7221)).
10.15	Form of Motorola, Inc. Award Document-Terms and Conditions Related to Employee Nonqualified Stock Options relating to the Motorola Solutions Omnibus Incentive Plan of 2006 for grants from August 1, 2009 to January 3, 2011 (incorporated by reference to Exhibit 10.1 to Motorola Inc.'s Quarterly Report on Form 10-Q for the fiscal quarter ended July 4, 2009 (File No. 1-7221)).
10.16	Form of Motorola, Inc. Award Document-Terms and Conditions Related to Employee Nonqualified Stock Options relating to the Motorola Solutions Omnibus Incentive Plan of 2006 for grants from May 6, 2008 to July 31, 2009 (incorporated by reference to Exhibit 10.54 to Motorola Inc.'s Quarterly Report on Form 10-Q for

	the fiscal quarter ended March 29, 2008 (File No. 1-7221)).
10.17	Form of Motorola, Inc. Award Document-Terms and Conditions Related to Employee Nonqualified Stock Options relating to the Motorola Solutions Omnibus Incentive Plan of 2006 for grants from February 11, 2007 to May 5, 2008 (incorporated by reference to Exhibit 10.37 to Motorola Inc.'s Current Report on Form 8-K filed on February 15, 2007 (File No. 1-7221)).
10.18	Form of Motorola Solutions, Inc. Stock Option Consideration Agreement for grants on or after March 9, 2017 (incorporated by reference to Exhibit 10.7 to Motorola Solutions' Quarterly Report on Form 10-Q for the fiscal quarter ended April 1, 2017 (File No. 1-7221)).
10.19	Form of Motorola Solutions Stock Option Consideration Agreement for grants from February 3, 2014 to March 8, 2017 (incorporated by reference to Exhibit 10.14 to Motorola Solutions' Annual Report on Form 10-K for the fiscal year ended December 31, 2013 (File No. 1-7221)).
10.20	Form of Motorola Solutions Stock Option Consideration Agreement for grants from January 4, 2011 to February 2, 2014 (incorporated by reference to Exhibit 10.15 to Motorola Solutions' Annual Report on Form 10-K for the fiscal year ended December 31, 2010 (File No. 1-7221)).
10.21	Form of Motorola, Inc. Stock Option Consideration Agreement for grants from May 6, 2008 to January 3, 2011 (incorporated by reference to Exhibit 10.56 to Motorola Inc.'s Quarterly Report on Form 10-Q for the fiscal quarter ended March 29, 2008 (File No. 1-7221)).
10.22	Form of Motorola, Inc. Stock Option Consideration Agreement for grants from February 27, 2007 to May 5, 2008 (incorporated by reference to Exhibit 10.4 to Motorola Inc.'s Annual Report on Form 10-K for the fiscal year ended December 31, 2006 (File No. 1-7221)).

10.23	Form of Motorola Solutions, Inc. Market Stock Unit Agreement for grants to Section 16 Officers on or after March 9, 2017 (incorporated by reference to Exhibit 10.2 to Motorola Solutions' Quarterly Report on Form 10-Q for the fiscal quarter ended April 1, 2017 (File No. 1-7221)).
10.24	Form of Motorola Solutions, Inc. Market Stock Unit Agreement for grants to Section 16 Officers from March 9, 2015 to March 8, 2017 (incorporated by reference to Exhibit 10.2 to Motorola Solutions’ Current Report on Form 8-K filed on March 11, 2015 (File No. 1-7221)).
10.25	Form of Motorola Solutions, Inc. Restricted Stock Unit Agreement relating to the Motorola Solutions Omnibus Incentive Plan of 2015 for grants to Section 16 Officers on or after March 9, 2017 (incorporated by reference to Exhibit 10.5 to Motorola Solutions’ Quarterly Report on Form 10-Q filed for the fiscal quarter ended April 1, 2017 (File No. 1-7221)).
10.26	Form of Motorola Solutions, Inc. Restricted Stock Unit Agreement relating to the Motorola Solutions Omnibus Incentive Plan of 2006 for grants to Section 16 Officers from May 6, 2013 to March 8, 2017 (incorporated by reference to Exhibit 10.1 to Motorola Inc’s Quarterly Report on Form 10-Q for the fiscal quarter ended June 30, 2013 (File No. 1-7221)).
10.27	Form of Motorola Solutions, Inc. Restricted Stock Unit Agreement relating to the Motorola Solutions Omnibus Incentive Plan of 2015 for grants to Appointed Vice Presidents and Elected Officers on or after February 15, 2018 (incorporated by reference to Exhibit 10.2 to Motorola Solutions’ Quarterly Report on Form 10-Q for the fiscal quarter ended March 31, 2018 (File No. 1-7221)).
10.28	Form of Motorola Solutions, Inc. Restricted Stock Unit Agreement relating to the Motorola Solutions Omnibus Incentive Plan of 2015 for grants to Appointed Vice Presidents and Elected Officers from March 9, 2017 to February 14, 2018 (incorporated by reference to Exhibit 10.3 to Motorola Solutions’ Quarterly Report on Form 10-Q for the fiscal quarter ended April 1, 2017 (File No. 1-7221)).
10.29	Form of Motorola Solutions, Inc. Restricted Stock Unit Agreement relating to the Motorola Solutions Omnibus Incentive Plan of 2006 for grants to Appointed Vice Presidents and Elected Officers from February 3, 2014 to March 8, 2017 (incorporated by reference to Exhibit 10.19 to Motorola Solutions’ Annual Report on Form 10-K for the fiscal year ended December 31, 2013 (File No. 1-7221)).
10.30	Form of Motorola Solutions, Inc. Restricted Stock Unit Agreement relating to the Motorola Solutions Omnibus Incentive Plan of 2015 for grants to Employees on or after February 15, 2018 (incorporated by reference to Exhibit 10.3 to Motorola Solutions’ Quarterly Report on Form 10-Q for the fiscal quarter ended March 31, 2018 (File No. 1-7221)).
10.31	Form of Motorola Solutions, Inc. Restricted Stock Unit Agreement relating to the Motorola Solutions Omnibus Incentive Plan of 2015 for grants to Employees from March 9, 2017 to February 14, 2018 (incorporated by reference to Exhibit 10.4 to Motorola Solutions’ Quarterly Report on Form 10-Q for the fiscal quarter ended April 1, 2017 (File No. 1-7221)).
10.32	Motorola Solutions, Inc. Amended Award Document-Terms and Conditions Related to Employee Nonqualified Stock Options and Addendum A to Motorola Solutions, Inc. Award Document-Terms and Conditions Related to Employee Stock Appreciation Rights, relating to the Motorola Solutions Omnibus Incentive Plan of 2006 for a grant on February 22, 2011 to Gregory Q. Brown. (incorporated by reference to Motorola Solutions’ Quarterly Report on Form 10-Q for the fiscal quarter ended April 2, 2011 (File No. 1-7221)).
10.33	Form of Motorola Solutions Award Document-Terms and Conditions Related to Employee Nonqualified Stock Options for Gregory Q. Brown, relating to the Motorola Solutions Omnibus Incentive Plan of 2006 for grant on February 1, 2011 pursuant to the terms of the Employment Agreement dated August 27, 2008, as amended, by and between Motorola, Inc. and Gregory Q. Brown (incorporated by reference to Exhibit 10.24 to Motorola Solutions’ Annual Report on Form 10-K for the fiscal year ended December 31, 2010 (File No. 1-7221)).
10.34	Form of Motorola Solutions Award Document-Terms and Conditions Related to Employee Nonqualified Stock Options for Gregory Q. Brown, relating to the Motorola Solutions Omnibus Incentive Plan of 2006 for grants on or after January 4, 2011 (incorporated by reference to Exhibit 10.25 to Motorola Solutions’ Annual Report on Form 10-K for the fiscal year ended December 31, 2010 (File No. 1-7221)).

10.35	Form of Motorola, Inc. Award Document-Terms and Conditions Related to Employee Nonqualified Stock Options for Gregory Q. Brown, relating to the Motorola Solutions Omnibus Incentive Plan of 2006 for grants from May 7, 2009 to January 3, 2011 (incorporated by reference to Exhibit 10.13 to Motorola, Inc.'s Quarterly Report on Form 10-Q for the fiscal quarter ended April 4, 2009 (File No. 1-7221)).
10.36	Form of Motorola Solutions, Inc. Performance Option Award Agreement for grants to Gregory Q. Brown on or after March 9, 2015 (incorporated by reference to Exhibit 10.3 to Motorola Solutions' Current Report on Form 8-K filed on March 11, 2015 (File No. 1-7221)).
10.37	Form of Motorola Solutions, Inc. Terms and Conditions Related to Employee Performance-Contingent Stock Options (CEO) (incorporated by reference to Exhibit 10.4 to Motorola Solutions' Current Report on Form 8-K filed on August 26, 2015 (File No. 1-7221)).
10.38	Form of Motorola Solutions Stock Option Consideration Agreement for Gregory Q. Brown for grants on or after January 4, 2011 under the Motorola Solutions Omnibus Incentive Plan of 2006 (incorporated by reference to Exhibit 10.27 to Motorola Solutions' Annual Report on Form 10-K for the fiscal year ended December 31, 2010)(File No. 1-7221)).
10.39	Form of Motorola, Inc. Stock Option Consideration Agreement for Gregory Q. Brown for grants from May 7, 2009 to January 3, 2011 under the Motorola Solutions Omnibus Incentive Plan of 2006 (incorporated by reference to Exhibit 10.14 to Motorola, Inc.'s Quarterly Report on Form 10-Q for the fiscal quarter ended April 4, 2009 (File No. 1-7221)).

10.40	Form of Motorola, Inc. Stock Option Consideration Agreement for Gregory Q. Brown for grants from January 31, 2008 to May 6, 2009 under the Motorola Solutions Omnibus Incentive Plan of 2006 (incorporated by reference to Exhibit 10.10 to Motorola, Inc.'s Annual Report on Form 10-K for the fiscal year ended December 31, 2007 (File No. 1-7221)).
10.41	Form of Motorola Solutions, Inc. Restricted Stock Unit Award Agreement for Gregory Q. Brown under the Motorola Solutions Omnibus Incentive Plan of 2006 for grants on or after January 4, 2011 (incorporated by reference to Exhibit 10.32 to Motorola Solutions' Annual Report on Form 10-K for the fiscal year ended December 31, 2010 (File No. 1-7221)).
10.42	Form of Motorola Solutions, Inc. Market Stock Unit Agreement for grants to Gregory Q. Brown on or after March 9, 2015 (incorporated by reference to Exhibit 10.4 to Motorola Solutions' Current Report on Form 8-K filed on March 11, 2015 (File No. 1-7221)).
10.43	Form of Motorola Solutions Deferred Stock Units Agreement between Motorola Solutions, Inc. and its non-employee directors, relating to the deferred stock units issued in lieu of cash compensation to directors under the Motorola Solutions Omnibus Incentive Plan of 2006, for acquisitions on or after January 1, 2012 (incorporated by reference to Exhibit 10.37 to Motorola Solutions' Annual Report on Form 10-K for the fiscal year ended December 31, 2011 (File No. 1-7221)).
10.44	Form of Motorola Solutions Deferred Stock Units Agreement between Motorola Solutions, Inc. and its non-employee directors, relating to the deferred stock units issued in lieu of cash compensation to directors under the Motorola Solutions Omnibus Incentive Plan of 2006, for acquisitions on or after January 4, 2011 (incorporated by reference to Exhibit 10.37 to Motorola Solutions' Annual Report on Form 10-K for the fiscal year ended December 31, 2010 (File No. 1-7221)).
10.45	Form of Motorola Solutions Deferred Stock Units Award between Motorola Solutions, Inc. and its non-employee directors under the Motorola Solutions Omnibus Incentive Plan of 2006 or any successor plan for grants on or after January 1, 2012 (incorporated by reference to Exhibit 10.40 to Motorola Solutions' Annual Report on Form 10-K for the fiscal year ended December 31, 2011 (File No. 1-7221)).
10.46	Form of Motorola Solutions Deferred Stock Units Award between Motorola Solutions, Inc. and its non-employee directors under the Motorola Solutions Omnibus Incentive Plan of 2006 or any successor plan for grants from January 4, 2011 to December 31, 2011 (incorporated by reference to Exhibit 10.39 to Motorola Solutions' Annual Report on Form 10-K for the fiscal year ended December 31, 2010 (File No. 1-7221)).
10.47	Form of Deferred Stock Units Award between Motorola, Inc. and its non-employee directors under the Motorola Solutions Omnibus Incentive Plan of 2006 or any successor plan for grants from February 11, 2007 to January 3, 2011(incorporated by reference to Exhibit 10.9 to Motorola, Inc.'s Annual Report on Form 10-K for the fiscal year ended December 31, 2006 (File No. 1-7221)).
10.48	Motorola Omnibus Incentive Plan of 2003, as amended through May 4, 2009 (incorporated by reference to Exhibit 10.6 to Motorola, Inc.'s Quarterly Report on Form 10-Q for the fiscal quarter ended April 4, 2009 (File No. 1-7221)).
10.49	Motorola Omnibus Incentive Plan of 2000, as amended through May 4, 2009 (incorporated by reference to Exhibit 10.8 to Motorola, Inc.'s Quarterly Report on Form 10-Q for the fiscal quarter ended April 4, 2009 (File No. 1-7221)).
10.50	Form of Deferred Stock Units Agreement between Motorola, Inc. and its non-employee directors, relating to the deferred stock units issued in lieu of cash compensation to directors under the Motorola Omnibus Incentive Plan of 2003 or any successor plan, for acquisitions from January 1, 2006 to February 11, 2007 (incorporated by reference to Exhibit No. 10.25 to Motorola, Inc.'s Annual Report on Form 10-K for the fiscal year ended December 31, 2005 (File No. 1-7221)).
10.51	Motorola Non-Employee Directors Stock Plan, as amended and restated on May 6, 2003 (incorporated by reference to Exhibit 10.20 to Motorola, Inc.'s Quarterly Report on Form 10-Q for the fiscal quarter ended March 29, 2003 (File No. 1-7221)).
10.52	

	Motorola Solutions Executive Officer Short Term Incentive Plan dated January 17, 2013 (effective January 1, 2013) (incorporated by reference to Exhibit 10.50 to Motorola Solutions' Annual Report on Form 10-K for the fiscal year ended December 31, 2012 (File No. 1-7221)).
10.53	Motorola Solutions Executive Officer Short Term Incentive Plan Term Sheet (incorporated by reference to Exhibit 10.51 to Motorola Solutions' Annual Report on Form 10-K for the fiscal year ended December 31, 2012 (File No. 1-7221)).
10.54	Motorola Solutions Long Range Incentive Plan (LRIP), as Amended and Restated February 11, 2015 (incorporated by reference to Exhibit 10.5 to Motorola Solutions' Quarterly Report on Form 10-Q for the fiscal quarter ended April 4, 2015 (File No. 1-7221)).
10.55	2018-2020 Performance Measures under the Motorola Solutions Long Range Incentive Plan (LRIP), as approved on February 15, 2018 (incorporated by reference to Exhibit 10.1 to Motorola Solutions' Quarterly Report on Form 10-Q for the fiscal quarter ended March 31, 2018 (File No. 1-7221)).
10.56	2017-2019 Performance Measures under the Motorola Solutions Long Range Incentive Plan (LRIP), as approved on February 16, 2017 (incorporated by reference to Exhibit No. 10.1 to Motorola Solutions' Quarterly Report on Form 10-Q for the fiscal quarter ended on April 1, 2017 (File No. 1-7221)).
10.57	2016-2018 Performance Measures under the Motorola Solutions Long Range Incentive Plan (LRIP), as Amended and Restated February 18, 2016 (incorporated by reference to Exhibit No. 10.1 to Motorola Solutions' Quarterly Report on Form 10-Q for the fiscal quarter ended on April 2, 2016 (File No. 1-7221)).

10.58	Motorola Solutions Management Deferred Compensation Plan (As Amended and Restated Effective as of June 1, 2013) (incorporated by reference to Exhibit 10.1 to Motorola Solutions' Current Report on Form 8-K filed on June 5, 2013 (File No. 1-7221)).
10.59	Motorola Solutions Management Deferred Compensation Plan, as amended and restated effective as of December 1, 2010, as amended January 4, 2011 (incorporated by reference to Exhibit 10.57 to Motorola Solutions' Annual Report on Form 10-K for the fiscal year ended December 31, 2010 (File No. 1-7221)).
10.60	Motorola Solutions, Inc. 2011 Senior Officer Change in Control Severance Plan, as amended and restated November 13, 2014 (incorporated by reference to Exhibit No. 10.54 to Motorola Solutions' Annual Report on Form 10-K for the fiscal year ended December 31, 2014 (File No. 1-7221)).
10.61	Motorola Solutions, Inc. 2011 Executive Severance Plan, as amended and restated November 13, 2014 (incorporated by reference to Exhibit No. 10.55 to Motorola Solutions' Annual Report on Form 10-K for the fiscal year ended December 31, 2014 (File No. 1-7221)).
10.62	Arrangement for directors' fees for non-employee directors (description incorporated by reference from the information under the caption "How the Directors are Compensated" of Motorola Solutions' Proxy Statement for the Annual Meeting of Stockholders held on May 14, 2018 ("Motorola Solutions' Proxy Statement")).
10.63	Description of Insurance covering non-employee directors and their spouses (including a description incorporated by reference from the information under the caption "Director Retirement Plan and Insurance Coverage" of the Motorola Solutions' Proxy Statement filed March 27, 2017, and incorporated by reference to Exhibit 10.2 to Motorola Solutions' Quarterly Report on Form 10-Q for the fiscal quarter ended on July 1, 2017 (File No. 1-7221)).
10.64	Employment Agreement dated August 27, 2008 by and between Motorola, Inc. and Gregory Q. Brown (incorporated by reference to Exhibit 10.1 to Motorola, Inc.'s Current Report on Form 8-K filed on August 29, 2008 (File No. 1-7221)).
10.65	Amendment made on December 15, 2008 to the Employment Agreement dated August 27, 2008 by and between Motorola, Inc. and Gregory Q. Brown (incorporated by reference to Exhibit No. 10.50 to Motorola, Inc.'s Annual Report on Form 10-K for the fiscal year ended December 31, 2008 (File No. 1-7221)).
10.66	Second Amendment, dated May 28, 2010, to the Employment Agreement dated August 27, 2008, as amended, by and between Motorola, Inc. and Gregory Q. Brown (incorporated by reference to Exhibit 10.1 to Motorola, Inc.'s Current Report on Form 8-K filed on May 28, 2010 (File No. 1-7221)).
10.67	Third Amendment, dated March 10, 2014, to the Employment Agreement dated August 27, 2008, as amended, by and between Motorola Solutions, Inc. and Gregory Q. Brown (incorporated by reference to Exhibit 10.1 to Motorola Solutions Current Report on Form 8-K filed on March 13, 2014 (File No. 1-7221)).
10.68	Revolving Credit Agreement dated as of April 25, 2017 among the Company, JPMorgan Chase Bank, N.A., as administrative agent, and the several lenders and agents party thereto (incorporated by reference to Exhibit 10.1 to Motorola Solutions' Current Report on Form 8-K filed on April 27, 2017 (File No. 1-7221)).
10.69	Definitive Purchase Agreement by and among Motorola Solutions, Inc., The Prudential Insurance Company of America, Prudential Financial, Inc., and State Street Bank and Trust Company, as Independent Fiduciary of the Motorola Solutions Pension Plan, dated as of September 22, 2014 (incorporated by reference to Exhibit 10.1 to Motorola Solutions' Quarterly Report on Form 10-Q for the fiscal quarter ended September 27, 2014 (File No. 1-7221))**
10.70	Revised and Amended Aircraft Time Sharing Agreement as of October 1, 2015, by and between Motorola Solutions, Inc. and Gregory Q. Brown (incorporated by reference to Exhibit 10.4 to Motorola Solutions', Quarterly Report on Form 10-Q for the fiscal quarter ended October 3, 2015 (File No. 1-7221)).
10.71	Investment Agreement by and among Motorola Solutions, Inc., Silver Lake Partners IV, L.P. and Silver Lake Partners IV Cayman (AIV II), L.P., dated as of August 4, 2015 (incorporated by reference to Exhibit 10.1 to Motorola Solutions' Current Report on Form 8-K filed on August 5, 2015 (file No. 1-7221)).
*12	Statement regarding Computation of Ratio of Earnings to Fixed Charges.
*21	Subsidiaries of Motorola Solutions, Inc.

23	Consent of Independent Registered Public Accounting Firm, see page 105 of the Annual Report on Form 10-K of which this Exhibit Index is a part.
*31.1	Certification of Gregory Q. Brown pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
*31.2	Certification of Gino A. Bonanotte pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
*32.1	Certification of Gregory Q. Brown pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
*32.2	Certification of Gino A. Bonanotte pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Scheme Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	XBRL Taxonomy Extension Label Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document

* Filed herewith

** Confidential treatment has been requested for portions of this agreement

(b) Exhibits:
See Item 15(a) 3 above.

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

The Board of Directors
Motorola Solutions, Inc.:

We consent to the incorporation by reference in the registration statements on Form S 8 (Nos. 033 59285, 333 51847, 333 36308, 333 53120, 333 60612, 333 87728, 333 105107, 333 123879, 333 133736, 333 142845, 333 160137, and 333 204324) and Form S 3 (Nos. 333 76637, 333 206451, 333 208332, and 333-223828) of Motorola Solutions, Inc. of our reports dated February 15, 2019, with respect to the consolidated balance sheets of Motorola Solutions, Inc. as of December 31, 2018 and 2017, and the related consolidated statements of operations, comprehensive income (loss), stockholders' equity, and cash flows for each of the years in the three year period ended December 31, 2018, and the related notes (collectively, the consolidated financial statements), and the effectiveness of internal control over financial reporting as of December 31, 2018, which reports appear in the December 31, 2018 annual report on Form 10 K of Motorola Solutions, Inc.

Our report on the financial statements refers to a change to the revenue recognition accounting principle as a result of the adoption of ASU 2014-09, "Revenue from Customers with Contracts."

Our report dated February 15, 2019, on the effectiveness of internal control over financial reporting as of December 31, 2018, contains an explanatory paragraph that states Motorola Solutions, Inc. acquired Avigilon Corporation during 2018, and management excluded from its assessment of the effectiveness of the Company's internal control over financial reporting as of December 31, 2018, Avigilon Corporation's internal control over financial reporting associated with total assets representing 12.6% of consolidated total assets, and total net sales representing 5.2% of consolidated net sales included in the consolidated financial statements of the Company as of and for the year ended December 31, 2018. Our audit of internal control over financial reporting of Motorola Solutions, Inc. also excluded an evaluation of the internal control over financial reporting of Avigilon Corporation.

Chicago, Illinois
February 15, 2019

SIGNATURES

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

MOTOROLA SOLUTIONS, INC.

By: /S/ GREGORY Q. BROWN
Gregory Q. Brown
Chairman and Chief Executive Officer

February 15, 2019

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of Motorola Solutions, Inc. and in the capacities and on the dates indicated.

Signature	Title	Date
/S/ GREGORY Q. BROWN Gregory Q. Brown	Chairman and Chief Executive Officer and Director (Principal Executive Officer)	February 15, 2019
/S/ GINO A. BONANOTTE Gino A. Bonanotte	Executive Vice President and Chief Financial Officer (Principal Financial Officer)	February 15, 2019
/S/ DAN PEKOFSKE Dan Pekofske	Corporate Vice President and Chief Accounting Officer (Principal Accounting Officer)	February 15, 2019
/S/ KENNETH D. DENMAN Kenneth D. Denman	Director	February 15, 2019
/S/ EGON P. DURBAN Egon P. Durban	Director	February 15, 2019
/S/ CLAYTON M. JONES Clayton M. Jones	Director	February 15, 2019
/S/ JUDY C. LEWENT Judy C. Lewent	Director	February 15, 2019
/S/ GREGORY K. MONDRE Gregory K. Mondre	Director	February 15, 2019
/S/ ANNE R. PRAMAGGIORE Anne R. Pramaggiore	Director	February 15, 2019
/S/ SAMUEL C. SCOTT III Samuel C. Scott III	Director	February 15, 2019
/S/ JOSEPH M. TUCCI Joseph M. Tucci	Director	February 15, 2019