NOKIA CORP
Form 20-F
March 22, 2018

As filed with the Securities and Exchange Commission on March 22, 2018

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 20-F

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE

SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2017

Commission file number 1 13202

Nokia Corporation

(Exact name of Registrant as specified in its charter)

Republic of Finland
(Jurisdiction of incorporation)

Karaportti 3 FI 02610 Espoo, Finland
(Address of principal executive offices)

Jussi Koskinen, Vice President, Corporate Legal, Telephone: +358 (0) 10 44 88 000, Facsimile: +358 (0) 10 44 81 002,
Karaportti 3, FI 02610 Espoo, Finland
(Name, Telephone, E-mail and/or Facsimile number and Address of Company Contact Person)

Securities registered pursuant to Section 12(b) of the Securities Exchange Act of 1934 (the “Exchange Act”):

Title of each class	Name of each exchange on which registered
American Depositary Shares	New York Stock Exchange
Shares	New York Stock Exchange(1)

(1)Not for trading, but only in connection with the registration of American Depositary Shares representing these shares, pursuant to the requirements of the Securities and Exchange Commission.

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

Securities for which there is a reporting obligation pursuant to Section 15(d) of the Exchange Act:
5.375% Notes due 2019, 3.375% Notes due 2022, 4.375% Notes due 2027 and 6.625% Notes due 2039.

Indicate the number of outstanding shares of each of the registrant's classes of capital or common stock as of the close of the period covered by the annual report. Shares: 5 839 404 303.

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.

Yes No

If this report is an annual or transition report, indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Exchange Act.

Yes No

Indicate by check mark whether the registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Exchange Act during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Yes No

Indicate by check mark whether the registrant has submitted electronically 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 (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files).

Yes No

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

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

Indicate by check mark which basis of accounting the registrant has used to prepare the financial statements included in this filing:

U.S. GAAP

International Financial Reporting Standards as issued by the International Accounting Standards Board

Other

If "Other" has been checked in response to the previous question, indicate by check mark which financial statement item the registrant has elected to follow.

Item 17 Item 18

If this is an annual report, indicate by check mark whether the registrant is a shell company (as defined in Rule 12b 2 of the Exchange Act).

Yes No

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Forward-looking statements

It should be noted that Nokia and its businesses are exposed to various risks and uncertainties and certain statements herein that are not historical facts are forward-looking statements, including, without limitation, those regarding:

A) our ability to integrate acquired businesses into our operations and achieve the targeted business plans and benefits, including targeted benefits, synergies, cost savings and efficiencies;
B) expectations, plans or benefits related to our strategies and growth management;
C) expectations, plans or benefits related to future performance of our businesses;
D) expectations, plans or benefits related to changes in organizational and operational structure;
E) expectations regarding market developments, general economic conditions and structural changes;
F) expectations and targets regarding financial performance, results, operating expenses, taxes, currency exchange rates, hedging, cost savings and competitiveness, as well as results of operations including targeted synergies and those related to market share, prices, net sales, income and margins;
G) expectations, plans or benefits related to any future collaboration or to business collaboration agreements or patent license agreements or arbitration awards, including income to be received under any collaboration or partnership, agreement or award;
H) timing of the deliveries of our products and services;
I) expectations and targets regarding collaboration and partnering arrangements, joint ventures or the creation of joint ventures, and the related administrative, legal, regulatory and other conditions, as well as our expected customer reach;
J) outcome of pending and threatened litigation, arbitration, disputes, regulatory proceedings or investigations by authorities;
K) expectations regarding restructurings, investments, capital structure optimization efforts, uses of proceeds from transactions, acquisitions and divestments and our ability to achieve the financial and operational targets set in connection with any such restructurings, investments, capital structure optimization efforts, divestments and acquisitions; and
L) statements preceded by or including “believe”, “expect”, “anticipate”, “foresee”, “sees”, “target”, “estimate”, “designed”, “ “plans”, “intends”, “focus”, “continue”, “project”, “should", "is to", "will” or similar expressions.

These statements are based on management’s best assumptions and beliefs in light of the information currently available to it. Because they involve risks and uncertainties, actual results may differ materially from the results that we currently expect. Factors, including risks and uncertainties that could cause these differences include, but are not limited to:

1) our strategy is subject to various risks and uncertainties and we may be unable to successfully implement our strategic plans, sustain or improve the operational and financial performance of our business groups, correctly identify or successfully pursue business opportunities or otherwise grow our business;
2) general economic and market conditions and other developments in the economies where we operate;
3) competition and our ability to effectively and profitably invest in new competitive high-quality products, services, upgrades and technologies and bring them to market in a timely manner;
4) our dependence on the development of the industries in which we operate, including the cyclicality and variability of the information technology and telecommunications industries;
5) our dependence on a limited number of customers and large multi-year agreements;
6) our ability to maintain our existing sources of intellectual property-related revenue, establish new sources of revenue and protect our intellectual property from infringement;
7) our global business and exposure to regulatory, political or other developments in various countries or regions, including emerging markets and the associated risks in relation to tax matters and exchange controls, among others;
8)

our ability to achieve the anticipated benefits, synergies, cost savings and efficiencies of acquisitions, including the acquisition of Alcatel Lucent, and our ability to implement changes to our organizational and operational structure efficiently;

9) our ability to manage and improve our financial and operating performance, cost savings, competitiveness and synergies generally and after the acquisition of Alcatel Lucent;
10) exchange rate fluctuations, as well as hedging activities;
11) our ability to successfully realize the expectations, plans or benefits related to any future collaboration or business collaboration agreements and patent license agreements or arbitration awards, including income to be received under any collaboration, partnership, agreement or arbitration award;
12) our dependence on IPR technologies, including those that we have developed and those that are licensed to us, and the risk of associated IPR-related legal claims, licensing costs and restrictions on use;
13) our exposure to direct and indirect regulation, including economic or trade policies, and the reliability of our governance, internal controls and compliance processes to prevent regulatory penalties in our business or in our joint ventures;
14) our reliance on third-party solutions for data storage and service distribution, which expose us to risks relating to security, regulation and cybersecurity breaches;

15) inefficiencies, breaches, malfunctions or disruptions of information technology systems;
16) Nokia Technologies' ability to generate net sales and profitability through licensing of the Nokia brand, technology licensing and the development and sales of products and services for instance in digital health, as well as other business ventures, which may not materialize as planned;
17) our exposure to various legal frameworks regulating corruption, fraud, trade policies, and other risk areas, and the possibility of proceedings or investigations that result in fines, penalties or sanctions;
18) adverse developments with respect to customer financing or extended payment terms we provide to customers;
19) the potential complex tax issues, tax disputes and tax obligations we may face in various jurisdictions, including the risk of obligations to pay additional taxes;
20) our actual or anticipated performance, among other factors, which could reduce our ability to utilize deferred tax assets;
21) our ability to retain, motivate, develop and recruit appropriately skilled employees;
22) disruptions to our manufacturing, service creation, delivery, logistics and supply chain processes, and the risks related to our geographically-concentrated production sites;
23) the impact of litigation, arbitration, agreement-related disputes or product liability allegations associated with our business;
24) our ability to re-establish investment grade rating or maintain our credit ratings;
25) our ability to achieve targeted benefits from, or successfully implement planned transactions, as well as the liabilities related thereto;
26) our involvement in joint ventures and jointly-managed companies;
27) the carrying amount of our goodwill may not be recoverable;
28) uncertainty related to the amount of dividends and equity return we are able to distribute to shareholders for each financial period;
29) pension costs, employee fund-related costs, and healthcare costs; and
30) risks related to undersea infrastructure, as well as the risk factors specified under "Operating and financial review and prospects Risk factors" of this annual report on Form 20 F and in our other filings or documents furnished with the U.S. Securities and Exchange Commission. Other unknown or unpredictable factors or underlying assumptions subsequently proven to be incorrect could cause actual results to differ materially from those in the forward-looking statements. We do not undertake any obligation to publicly update or revise forward-looking statements, whether as a result of new information, future events or otherwise, except to the extent legally required.

Introduction and use of certain terms

Nokia Corporation is a public limited liability company incorporated under the laws of the Republic of Finland. In this annual report on Form 20 F, any reference to "we," "us," "the Group," "the company" or "Nokia" means Nokia Corporation a its consolidated subsidiaries and generally to Nokia's Continuing operations, except where we separately specify that the term means Nokia Corporation or a particular subsidiary or business segment only or our Discontinued operations. References to "our shares" matters relating to our shares or matters of corporate governance refer to the shares and corporate governance of Nokia Corporation.

Nokia Corporation has published its consolidated financial statements in euro for periods beginning on or after January 1, 1999. In this annual report on Form 20 F, references to "EUR," "euro" or "€" are to the common currency of the European Economic and Monetary Union, and references to "dollars", "U.S. dollars", "USD" or "$" are to the currency of the United States. Solely for the convenience of the reader, this annual report on Form 20-F contains conversions of selected euro amounts into U.S. dollars at specified rates or, if not so specified, at the year-end rate of 1.1993 U.S. dollars per euro, which was the European Central Bank reference rate on December 29, 2017. No representation is made that the amounts have been, could have been or could be converted into U.S. dollars at the rates indicated or at any other rates.

The information contained in, or accessible through, the websites linked throughout this annual report on Form 20 F is not incorporated by reference into this document and should not be considered a part of this document.

Nokia Corporation furnishes Citibank, N.A., as Depositary, with its consolidated financial statements and a related audit opinion of our independent auditors annually. These financial statements are prepared on the basis of International Financial Reporting Standards as issued by the International Accounting Standards Board and in conformity with IFRS as adopted by the European Union ("IFRS"). In accordance with the rules and regulations of the SEC, we do not provide a reconciliation of net income and shareholders' equity in our consolidated financial statements to accounting principles generally accepted in the United States, or U.S. GAAP. We also furnish the Depositary with quarterly reports containing unaudited financial information prepared on the basis of IFRS, as well as all notices of shareholders' meetings and other reports and communications that are made available generally to our shareholders. The Depositary makes these notices, reports and communications available for inspection by record holders of American Depositary Receipts ("ADRs"), evidencing American Depositary Shares ("ADSs"), and distributes to all record holders of ADRs notices of shareholders' meetings received by the Depositary.

In addition to the materials delivered to holders of ADRs by the Depositary, holders can access our consolidated financial statements, and other information included in our annual reports and proxy materials, at nokia.com/financials. This annual report on Form 20 F is also available at nokia.com/financials as well as on Citibank's website at https://app.irdirect.net/company/49733/hotline/. Holders may also request a hard copy of this annual report by calling the toll-free number 1 877 NOKIA-ADR (1 877 665 4223), or by directing a written request to Citibank, N.A., Shareholder Services, PO Box 43077, Providence, RI 02940 3081, United States. With each annual distribution of our proxy materials, we offer our record holders of ADRs the option of receiving all of these documents electronically in the future.

Overview

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This is Nokia

We create the technology to connect the world. Powered by the research and innovation of Nokia Bell Labs, we serve communications service providers, governments, large enterprises and consumers, with the industry's most complete, end-to-end portfolio of products, services and licensing.

Nokia is enabling the infrastructure for 5G and the Internet of Things, and shaping the future of technology to transform the human experience.

We have combined global leadership in mobile and fixed network infrastructure with the software, services and advanced technologies to serve customers in approximately 130 countries around the world. We are driving the transition to smart, virtual networks and connectivity by creating one single network for all services, converging mobile and fixed broadband, IP routing and optical networks, with the software and services to manage them. Our research scientists and engineers continue to invent new technologies that will increasingly transform the way people and things communicate and connect including 5G, ultra broadband access, IP and Software Defined Networking ("SDN"), cloud applications, Internet of Things ("IoT"), as well as security platforms, data analytics, and sensors.

Through our six business groups, we have a global presence with operations in Europe, the Middle East & Africa, Greater China, North America, Asia-Pacific, India, and Latin America. We also have research and development ("R&D") facilities in Europe, North America and Asia, and at the end of 2017, we employed approximately 103 000 people.

We closed 2017 delivering net sales of EUR 23.1 billion. We continued to make significant targeted R&D investments, a bedrock of our success in innovation, with R&D expenditures equaling EUR 4.9 billion in 2017.

Countries of operation	Number of employees as of December 31, 2017	R&D investment in 2017
~130	~103 000	EUR 4.9bn

Organizational structure and reportable segments

We have organized our networks-oriented businesses into five business groups: Mobile Networks, Fixed Networks, Global Services, IP/Optical Networks, and Nokia Software (together the "Networks business"); and have kept our driver of future innovation and licensing, Nokia Technologies, as a separate, sixth business group. For descriptions of our business groups, refer to "Business overview—Networks business" and "Business overview—Nokia Technologies".

We have four reportable segments: (i) Ultra Broadband Networks, comprised of the Mobile Networks and the Fixed Networks business groups, (ii) Global Services, comprised of the Global Services business group, (iii) IP Networks and Applications, comprised of the IP/Optical Networks and Nokia Software business groups (all within our Networks business), and (iv) Nokia Technologies.

On February 1, 2018, we announced that we would rename our Applications & Analytics business group as Nokia Software, effective immediately, to better reflect our strategy and focus on building a strong, standalone software business. In this annual report we refer to Nokia Software throughout the document.

Additionally, we report the results of other business activities that are not reportable segments within Group Common and Other, such as our undersea cables business, Alcatel-Lucent Submarine Networks (“ASN”), and our antenna systems business, Radio Frequency Systems (“RFS”), in aggregate. Both ASN and RFS are being managed as separate businesses. We are continuing the strategic reviews of both businesses. Refer to Note 4, Segment information, of our consolidated financial statements included in this annual report on Form 20-F.

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Key data

Net sales 2017	Dividend per share 2017
EUR 23.1bn	EUR 0.19
Gross margin 2017	Net cash as of December 31, 2017
39.5%	EUR 4.5bn

The following table sets forth summary financial and non-financial information for the years ended December 31, 2017 and December 31, 2016 for our Continuing operations. This data has been derived from our consolidated financial statements, which are included in this annual report on Form 20-F.

For the year ended December 31	2017 EURm		2016 EURm		change	
Net sales	23 147		23 641		(2)	%
Nokia's Networks business	20 523		21 830		(6)	%
Ultra Broadband Networks	8 970		9 758		(8)	%
Global Services	5 810		6 036		(4)	%
IP Networks and Applications	5 743		6 036		(5)	%
Nokia Technologies	1 654		1 053		57	%
Group Common and Other	1 114		1 142		(2)	%
Gross margin	39.5	%	36.1	%	343	bps
Operating profit/(loss)	16		(1 100)		–	
Nokia's Networks business	1 711		1 943		(12)	%
Ultra Broadband Networks	781		922		(15)	%
Global Services	411		406		1	%
IP Networks and Applications	519		615		(16)	%
Nokia Technologies	1 124		579		94	%
Group Common and Other	(248)		(350)		(29)	%
Unallocated items(1)	(2 571)		(3 272)		(21)	%
Operating margin	0.1	%	(4.7)	%	472	bps
Financial income and expenses, net	(537)		(287)		87	%
Income tax (expense)/benefit	(927)		457		–	
Loss for the year	(1 437)		(912)		58	%
Earnings per share ("EPS"), EUR diluted	(0.26)		(0.13)		100	%
Average number of employees	101 731		102 687		(1)	%
Net sales by region						
Asia-Pacific	4 228		4 223		–	
Europe	6 833		6 410		7	%
Greater China	2 516		2 654		(5)	%
Latin America	1 279		1 458		(12)	%

Middle East & Africa	1 907	1 872	2 %
North America	6 384	7 024	(9) %
Total	23 147	23 641	(2) %

(1) Includes costs related to the acquisition of Alcatel Lucent and related integration, goodwill impairment charges, intangible asset amortization and other purchase price fair value adjustments, restructuring and associated charges and certain other items.

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Business overview

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Letter from our President and CEO

Net sales in 2017	Proposed dividend per share	Proposed dividends
EUR 23.1bn	EUR 0.19	EUR 1.1bn

“We have a very talented and dedicated team across our organization; employee connectedness to our mission is strong; and that puts Nokia in the driver’s seat in the transition to 5G and in delivering further shareholder value.”

2017 was a solid year of execution for Nokia, as we delivered on our financial commitments and gained momentum in driving forward all four pillars of our strategy.

With that progress, Nokia is in an excellent position for sharply improving its performance towards 2020 and for leading the transition to 5G that is underway.

Financial Highlights

Our Networks business net sales declined in line with our guidance and it posted an operating margin of 8.3%, which also met our guidance. Nokia Technologies had a strong year, with net sales and operating margin up 57% and 13 percentage points, respectively, compared to 2016, driven by higher licensing revenue that highlights the strength of our patent portfolio. We also closed the year on track to deliver EUR 1.2 billion in structural cost savings in full-year 2018.

Looking forward on the Networks side, we expect our market to decline again in 2018, although at a slightly lower rate than the market decline in 2017, given early signs of improved conditions in North America. For 2019 and 2020, we expect market conditions to improve markedly, driven by full-scale rollouts of 5G networks; and, as those rollouts occur, Nokia is remarkably well-positioned.

With our overall performance, Nokia's Board of Directors will propose a dividend of EUR 0.19 per share for 2017, up 12% from our 2016 dividend. And, the Board is committed to proposing a growing dividend, including for 2018.

Customers

Customer recognition of Nokia's work in leading the way to 5G was reflected in our healthy deal-win rate in 2017. This included our agreement with ALTÁN Redes in Mexico, a truly end-to-end project, which underlined the strength of our complete product offering.

We saw customer support for the progress in our cross-selling capabilities, with the multi-business-group opportunity share of Nokia's deal pipeline standing at 36%. That is up substantially from 2016 and underlines how customers continue to respond favorably to the broad scope of our portfolio in preparation for 5G.

We also saw it in the market share we gained in 2017 in 4G/LTE and small cells; that is relevant, as the 4G/LTE installed base needs to be truly 5G ready. Now to the excellent execution in the four pillars of our strategy.

Strategy

In the first pillar, leading in high-performance end-to-end networks with CSPs, or communication service providers, our 5G readiness progressed on several fronts.

Let me start by saying that CSPs increasingly realize that, unlike 4G and previous generations of technology, 5G is very different. It is not just about radio but spans the full network: from mobile access, cloud core, and software-defined networking to backhaul, front haul, IP routing, fixed networks, and software.

In the face of fast-rising bandwidth and other performance demands, customers know they need to take an architecture-driven, end-to-end approach that Nokia offers, with a coordinated, holistic view across all elements of the network. And, the work is well underway. In early 2018, we announced an agreement to deliver 5G equipment to Japan's NTT DOCOMO, kickstarting what we think will be a year of 5G investment and trials with operators around the globe; followed potentially by some deployments towards the end of 2018, with meaningful deployments in 2019.

Mobile Networks broadened our focus into multiple areas of early 5G mobility use cases, including enhanced mobile broadband and ultra-reliable, ultra-low latency communications. As part of this, we introduced the 5G NR (New Radio) air interface standard to support 5G devices and services.

Fixed Networks launched its Intelligent Access Vision, aimed at making access networks faster, better and smarter. Faster is about bringing the most complete network access toolkit to the market, including copper, fiber, cable and fixed-wireless solutions; better, about delivering a gigabit to the home and throughout the home, as users also expect optimal connectivity in every corner of the home; and smarter, about removing complexity and making the network simpler and easier to manage. As part of that, we introduced our Software-Defined Access Network, or SDAN, solution to bring customers a set of cloud-native software, open hardware, automated operations and integration services. And, we capped all of that by winning the world's first major SDAN project in December, and we see more progress like that ahead.

Global Services accelerated development of its service offering and delivery capabilities by integrating artificial intelligence, machine learning and automation. It unveiled an enhanced Analytics Services solution, powered by our cloud-based cognitive services platform, AVA (Automation,

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Virtualized, Analytics). GS also announced our Multi-purpose Intuitive Knowledge Assistant, or MIKA, the world's first digital assistant for CSPs that gives engineers faster access to accurate answers through voice-dictated automated assistance. Further, it launched the industry's first global managed service for IoT, Nokia WING (worldwide IoT network grid), to help CSPs enter this market quickly.

In our second pillar, expanding network sales beyond CSPs to select vertical markets, Nokia saw double-digit underlying sales growth compared to 2016. This reflects our confidence that the need for mission-critical, high-performance networks continues to grow as companies and public sector organizations everywhere digitize their operations.

In the segments we are targeting–spanning webscale companies, extra-large enterprises that use technology as a competitive advantage, and large players in transportation, energy and the public sector–we added almost 100 new customers in 2017, including Amazon, Fujitsu, and Philips.

Our IP/Optical Networks, or ION, business group was a key driver in our momentum in new vertical markets, which represented roughly 5% of Nokia's total sales in 2017. And, with our FP4, silicon-based routing products starting to ship, ION is well-placed to fundamentally improve our IP routing position with webscale companies in 2018 and beyond.

In our third pillar, building a strong, standalone software business at scale, our Applications & Analytics (A&A) business group built Nokia's first dedicated software sales force and re-architected our software on a common foundation. We introduced several new products and services, including Nokia Smart Plan Suite, Nokia Session Border Controller and Nokia NetGuard Security Management Center, and we acquired Comptel to enhance our software intelligence and automation capabilities. In February 2018, we renamed A&A as Nokia Software, highlighting our longer-term ambitions for this business and the opportunities we see in helping CSPs and our select vertical markets improve the digital customer experience, implement innovative business models, and unlock new revenue opportunities.

In our fourth pillar, creating new business and licensing opportunities in the consumer ecosystem, Nokia did not miss a beat. Nokia Technologies signed several new patent licensing agreements and won patent arbitration awards with companies that included Apple, Blackberry, and Huawei. We advanced plans to develop our licensing business in new areas like automotive, and in geographies like China and India. We saw early progress in our brand licensing agreement with HMD Global, which launched several Nokia-branded smartphones and feature phones that have achieved outstanding net promoter scores.

We also took the decision to stop development of the OZO virtual reality camera, as we focus Nokia Technologies' efforts on our licensing business and lowering costs. As part of that approach, in early 2018, we initiated a strategic review of our Digital Health business. We have a disciplined and pragmatic approach towards investing in new growth opportunities in Nokia Technologies. If we think a bet won't meet our criteria for becoming a meaningful business, we will move on quickly, and you see that in the actions we have taken.

Innovation

An important dimension to our strategy progress was the fact that 2017 was another year in which Nokia Bell Labs and all our business groups lived up to Nokia's innovation prowess.

Among our important product launches were 5G FIRST, which enabled early 5G testing and incorporates Nokia's AirScale radio platform and AirFrame technology, including massive MIMO Adaptive Antenna, Cloud Packet Core and mobile transport, to bring new capabilities to operators.

Just after 2017 closed, we introduced our end-to-end 5G Future X network architecture and ReefShark chipset for our radio portfolio. Together, these innovations provide significant differentiation for Nokia against the competition and enable full-scale commercial deployments of standards-based 5G networks, which we see happening towards the end of 2018 or early 2019.

And, we launched the most powerful internet routing platforms, powered by Nokia's new FP4 silicon, the world's first multi-terabit chipset that is many times faster and smarter than anything on the market.

People

In 2017, we strengthened awareness and understanding of our core cultural principles, which are summarized in the "Drive, Dare and Care" behaviors we put into place during the year.

It is especially pleasing to see Nokia employees' strong belief in our company's direction, as indicated by our internal Culture Cohesion Tracker survey, along with particularly good progress in reducing bureaucracy and hierarchies.

All of this progress is encouraging even as we continue to deepen our common culture and ways of working in all six of our business groups and in geographies across the world.

Sustainability and Corporate Responsibility

We also continued to do the right things the right way in delivering on our sustainability commitments, which are an important dimension to everything we do at Nokia.

Working with the Science Based Targets initiative, we set a long term carbon emissions reduction target of 75%; this target includes customer use of our products and forms the largest portion of our carbon footprint. We also set a science-based emissions reduction target of 41% for our own operations. Both targets are set for 2030 against a 2014 baseline. We track these annually and are progressing against both targets.

Nokia was also again ranked in the top 1% of suppliers assessed in 2017 as part of the EcoVadis scorecards, which measure corporate sustainability performance. We achieved excellent scores in environmental performance, sustainable procurement, and labor practices. And, we were again rated an industry leader in the Communications Equipment ("CMT") sector of the Dow Jones Sustainability Indices ("DJSI") and were awarded a "Gold" level by RobecoSAM in early 2018 for our sustainability performance.

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Looking ahead

With our 2017 performance, there is much to look forward to at Nokia.

Our strategy is working well; our customer relationships continue to grow and deepen; and we are taking meaningful steps to further strengthen our disciplined execution, including in our customer operations.

Our competitive advantages–from the strength of our innovation capacity to the scale and scope of our portfolio–give Nokia the capabilities to continue to live up to the rich legacy of our 153-year old company. And, that is why we are confident about our market prospects as we move forward.

We have a very talented and dedicated team across our organization; employee connectedness to our mission is strong; and that puts Nokia in the driver's seat in the transition to 5G and in delivering further shareholder value.

Rajeev Suri

President and CEO

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Our role as a global technology leader

We create the technology to connect the world

We are shaping a new revolution in technology, where intelligent networks augment and aid our daily lives through sensing the world around us and providing the data and analytics needed to make choices that help society thrive. We are creating effortless, simple and dependable technology for IoT, ultra-broadband, cloud, IP interconnectivity and digital health.

We optimize performance to maximize value and customer satisfaction

We enable our customers to move away from an economy-of-scale network operating model to demand-driven operations by providing the easy programmability and flexible automation needed to support dynamic operations, reduce complexity and improve efficiency. As a result, our customers can fulfill end-user demands by provisioning services in real time while automatically making optimal use of networks assets.

We create disruptive solutions enabling market differentiation and competitive advantage

We believe that innovation is the foundation of everything we do at Nokia. We force the pace of change by pushing technology boundaries, challenging the status quo and working in open collaboration with customers and partners. Our research and development within Nokia Bell Labs creates a future path so that our customers can successfully navigate megatrends and challenges to expand and draw closer to their customers. It is through these efforts that Nokia grows and enhances its portfolio, introduces disruptive technologies and identifies new market opportunities for its customers.

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Our values

We foster a culture of high-performance and high integrity, guided by our vision, brand and values. It is through our people and culture that we shape technology to serve human needs. Our pursuit of performance with integrity and sustainability – a culture that stems from our Finnish roots – is key to why our customers and partners choose to work with us.

Common shared principles and focus on Drive, Dare and Care is the cultural platform we use to shape our core common culture. It means relentlessly driving for excellent results, and being passionate about good customer experiences and the quality of our products. We have the attitude and Drive of entrepreneurs and do not celebrate hierarchies. We Dare to innovate, learn and challenge outdated practices. We Care about our colleagues, quality and putting the Nokia team first.

Our core culture empowers people and teams to deliver on our strategy. It guides our quest for innovation, as we use our insatiable curiosity and deep technical knowledge to paint a picture of the future for our customers. It also drives our pursuit of continuous improvement, our ability to outperform competitors and be a trusted partner for our customers, partners, and suppliers.

Our integrity is fundamental to how we internally work and provide for our customers. Particularly in the standards-driven world of network technologies, the choices that customers make are often less between different products, and more between different relationships. Nokia stands out as a trusted customer partner, sustaining long-term relationships through our commitment to deliver, and fostering a level of trust we work relentlessly to earn and keep.

We pursue high performance, always under the guiding principles of our values:

Respect

Acting with uncompromising integrity, we work openly and collaboratively, seeking to earn respect from others.

Challenge

We are never complacent. We ask tough questions and push for higher performance to deliver the right results.

Achievement

We take responsibility, and are accountable for driving quality, setting high standards, and striving for continuous improvement.

Renewal

We constantly refine our skills: learning and embracing new ways of doing things, and adapting to the world around us.

Our commitments

What we do to design and deploy technology in the service of our customers and people:

We create the most sophisticated technology that is effortless and intuitive to use

We lead the relentless quest for gains in performance and agility, with technology that thinks for itself.

We solve your future needs

We help customers shape their futures based on a clear view of technology opportunities and constraints. We work closely with customers and partners to anticipate their priorities and guide their choices.

We obsess about integrity, quality, and security

We never compromise our values in the drive for business or technical performance. We pursue quality in all our products and processes, and design for security and privacy from the start.

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Our strategy

We are rebalancing for growth, putting Nokia at the heart of unprecedented opportunities to create the technology to connect the world.

We have identified six global megatrends. These megatrends create massive technological requirements, impact our current and potential customers, change the lives of people, impact business operations on a global scale and provide opportunities for Nokia to diversify into new growth areas.

The megatrends we have identified are:

1. Network, compute and storage: Ever present broadband capacity coupled with a distributed cloud for ubiquitous compute and near infinite storage, allowing limitless connectivity and imperceptible latency as well as subscription-based and asset-less business models.
2. Internet of Things: In addition to people, trillions of things are connected to the internet, collecting unprecedented amounts of data in a private and business context.
3. Augmented Intelligence: Artificial intelligence combined with human intelligence transforms the collected data into actionable insights, fundamentally changing the way decisions are made by businesses, governments and individuals, resulting in time savings, less waste, higher efficiency and new business models.
4. Human and machine interaction: A range of new form factors that fundamentally transform the way humans interact with each other and with machines, e.g. voice-based digital assistance, gesture control, smart clothes, implantable chips, robotics and Augmented and Virtual Reality.
5. Social and trust economics: Ubiquitous connectivity, compute and storage, as well as technologies such as blockchain, enabling new business models based on sharing assets and distributed trust, allowing rapid scalability on a global level.
6. Digitization and ecosystems: Next level of digitization beyond content and information, digitizing atoms with additive printing in an industrial, consumer and medical context, fundamentally transforming entire supply chains and production processes by massive-scale automation.

These megatrends are driving new technology requirements. End-to-end networks are a central enabler, which create a multitude of opportunities for us. Nokia Bell Labs has developed a vision of a future network architecture that fulfills these requirements in a holistic way—the Future X network vision. This is our guide not just to how things will change, but also to what we need to do to meet the future needs of our customers and to address these megatrends and the inherent opportunities. The Future X vision encompasses the key domains of future networks: massive scale access, converged edge cloud, smart network fabric, universal adaptive core, programmable network operating systems, augmented cognition systems, digital value platforms and dynamic data security.

Simultaneously, driven by the megatrends and the resulting increasing relevance of networks, we are seeing a shift in who is investing in technology. Our primary market, comprised of communications service providers (“CSPs”), in which we have a leadership position, is very large in size, but expected to remain challenging with a limited estimated growth opportunity. However, the megatrends are increasing the demand for large high-performance networks in other key industries, which we define as our select vertical markets. Webscale companies—such as Google, Microsoft, and Alibaba—are investing in cloud technology and network infrastructure on an increasing scale. As other vertical markets such as transportation, energy, and public sector digitize their operations, they will also need high-performing mission-critical networks. The same is true for TXLEs—technically sophisticated companies, such as banks, that invest heavily in their own network infrastructures to gain a key competitive advantage. Consequently, we have identified attractive growth opportunities in new verticals outside our primary market with CSPs.

We are addressing both our primary CSP market and the newly identified growth opportunities in our adjacent market with our “Rebalancing for Growth” strategy. This strategy builds on our core strength of delivering large high-performance networks by expanding our business into targeted, higher-growth and higher-margin vertical markets. Our ambition is to grow the share of our revenue that is derived from outside the CSPs.

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Our four pillars

Our strategy builds on our business portfolio and continued drive to create technology that serves people and includes the following four key priorities:

1.Lead

Lead in high-performance, end-to-end networks with CSPs

Nokia is a leader in this area today and we will use our main competitive advantage—a near 100% end-to-end portfolio that we can deliver on a global scale—to maintain our leadership while managing for profitability. We are focused on:

§ establishing leadership in 5G by being first to market in the key advanced markets with key customers and achieving global technology and quality leadership;
§ growing in managed services and systems integration and innovating in augmented intelligence, automation, and robotics to improve our delivery services;
§ maintaining our leading market share in copper access, accelerating momentum in fiber access, successfully expanding in the cable market, and further developing new smart home solutions;
§ leveraging our superior products and the next generation IP routing portfolio based on our FP4 chipset to grow in both edge and core routing, where we have a fully virtualized portfolio that is differentiated by performance, flexibility, security, and quality;
§ using our unique capability of offering optical and routing that work together, a capability that is increasingly becoming a customer requirement; and
§ delivering cost savings and productivity improvements by realizing synergies and applying best practices across our entire portfolio to maintain the industry's most profitable networks business.

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2.Expand

Expand network sales to select vertical markets

We expand into five select vertical markets with carrier-grade needs: webscales, TXLEs, transportation, energy, and public sector. As the world becomes more digital, the kind of massive, high-performance networks once used almost exclusively in telecommunications are now needed by other organizations. We have implemented a dedicated sales organization, a customer segmentation and a targeted portfolio and entry strategy to diversify our business and address this opportunity.

§ Webscale customers will increasingly require high-performance networks to improve customer experiences and to expand their primary business models. For webscale companies, we are focusing on an all-IP-led approach, providing IP routing and optical network infrastructure.
§ For TXLE customers, we aspire to enter with technological disruptions, like the SD-WAN, and then expand further with the remaining portfolio.
§ For transportation, energy, and public sector (“TEPS”) customers, we offer mission-critical networks, solutions for digitization and IoT, and industrial automation.

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3.Build

Build a strong standalone software business

With our existing software products, we are already today a strong player in the large and growing telecoms software market. Our ambition is to build on this foundation, strengthen our position in telecoms software, and address new customer segments, thereby creating a global software player that has a growth and margin profile like leading software companies. We continue to pursue this ambition along three priorities:

§ Transform our go-to-market: We have established a dedicated software sales organization in the Nokia Software business group to work the specific sales cycles and dynamics in enterprise software and address more customers. On this basis, we will execute a new, differentiated go-to-market strategy and leverage alliance partners for software selling. We are streamlining and optimizing our services and delivery unit for a harmonized and efficient front to the customer and setting them up for growth. To strengthen our reach, we are establishing a new messaging for our software offering around Connected Intelligence and digitizing our go-to-market.

§ Strengthen our portfolio and R&D set-up: We have complemented our portfolio with new products and the Comptel acquisition and structured it into four segments reflecting our customers' needs: Digital Operations, Digital Experience, Digital Networks, and Cognitive Intelligence. We will expand in these areas based on the Common Software Foundation, a cloud-native middleware component library. With continuing investment, we keep evolving this platform to enable effective and innovative cutting-edge development and accelerate our move towards DevOps and agile development. In our Emerging Products unit, we invest in new businesses and nurture them to scale.

§ Diversify markets and business models: We are first expanding our scope within our CSP customers to address also the IT, marketing, sales, customer relationships domains besides the network domain. Gradually, we will also address other sectors with our existing and upcoming products and solutions. New business models, particularly Software-as-a-Service ("SaaS") offerings with subscription revenues to address general enterprises, will be crucial to the achieve this. A strong business play around open source components will help to improve our offering and expand our reach as well.

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4.Create

Create new business and licensing opportunities in the consumer ecosystem

In addition to renewing existing patent licenses on favorable terms, our aim is to add new licensees from the mobile industry, and we continue to expand patent licensing into new segments, such as automotive and consumer electronics. Besides this, we are exploring opportunities to license our unique technological capabilities in the domain of Virtual Reality.

Our brand licensing efforts are well underway–we see value creation opportunities in the mobile devices industry leveraging our strong Nokia brand. Our exclusive brand licensee for mobile phones and tablets, HMD Global, has already launched a comprehensive portfolio of new Nokia branded feature phones and smartphones.

Over the next years, we intend to maintain our leading position with CSPs, while establishing ourselves as a credible and recognized player in our target vertical markets among enterprises. We strive to sustain and rebuild Nokia as a value-adding consumer brand, earning returns through licensing.

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Our leadership

Our diverse Group Leadership Team, spanning several nationalities, reflects the scope of our technological role – and our business ambition.

The Nokia Group Leadership Team is responsible for the operative management of Nokia, including decisions concerning our strategy and the overall business portfolio. The Chair and members of the Group Leadership Team are appointed by the Board of Directors. The Group Leadership Team is chaired by the President and Chief Executive Officer (the "President and CEO").

Our Group Leadership Team comprises the following 15 members:

Rajeev Suri

President and CEO

Marc Rouanne

President of Mobile Networks

Federico Guillén

President of Fixed Networks

Igor Leprince

President of Global Services

Igor Leprince will step down from the Group Leadership Team as of March 31, 2018. Sanjay Goel was appointed President of Global Services and member of the Group Leadership Team as of April 1, 2018.

Basil Alwan

President of IP/Optical Networks

Bhaskar Gorti

President of Nokia Software

As of February 1, 2018 the Applications & Analytics business group was renamed Nokia Software

Gregory Lee

President of Nokia Technologies

Kristian Pullola

Chief Financial Officer

Joerg Erlemeier

Chief Operating Officer

Hans-Jürgen Bill

Chief Human Resources Officer

Kathrin Buvac

Chief Strategy Officer

Ashish Chowdhary

Chief Customer Operations Officer

Barry French

Chief Marketing Officer

Maria Varsellona

Chief Legal Officer

Marcus Weldon

Chief Technology Officer and President of Nokia Bell Labs

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Our businesses

We have two businesses: Nokia's Networks business and Nokia Technologies.

Within these two businesses, we had six business groups in 2017: Mobile Networks, Fixed Networks, Global Services, IP/Optical Networks, and Nokia Software* (all within our Networks business); and Nokia Technologies. This section presents an overview of Nokia's Networks business and Nokia Technologies.

Networks business

Mobile Networks

Fixed Networks

Global Services

IP/Optical Networks

Nokia Software*

Nokia Technologies

Nokia Technologies

* As of February 1, 2018 the Applications & Analytics business group was renamed Nokia Software.

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Networks business

Market overview

Through our comprehensive end-to-end portfolio of products and services, we are addressing a market that encompasses mobile and fixed network access infrastructure, IP routing and optical networks as well as software platforms and applications.

We define our primary market as a network and IP infrastructure, software and CSP services market. We estimate that our primary market was EUR 103 billion in 2017. In addition, we have an adjacent market, including a vertical market that includes our Networks businesses expansion areas in both a customer and a product dimension. The adjacent market includes customer segments such as webscale companies, energy, transport, public sector, and TXLEs. In the product dimension, this includes our traditional networking in addition to new solutions like Nuage Networks, SDN, Analytics, IoT, and Security. The adjacent market was estimated at EUR 23 billion in 2017.

Demand for our portfolio is driven by exponentially increasing growth in data traffic as people’s lives and enterprises become ever more digitalized. This drives the demand for highly reliable networks for massive connectivity.

Competition

The competitors in our primary market are Huawei, Ericsson, and ZTE. We also compete with technology experts in some of our other market segments, such as Juniper Networks and Cisco in the IP networking and security segments, and Ciena, Adtran, and Calix in the optical networks and fixed access segments. Both the optical networks and the applications and analytics market segments are still highly fragmented.

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Mobile Networks

Market overview

The primary market for our Mobile Networks business group includes technologies for mobile access, core networks and microwave transport. This encompasses access and core network technologies ranging from 2G to 5G licensed and unlicensed spectrum for both macro and small cell deployments. The primary addressable market for Mobile Networks was estimated at EUR 27 billion in 2017.

The adjacent market for Mobile Networks includes solutions for the public sector, TXLEs, and webscales, and drives expansion into domains such as LTE for public safety, private LTE and unlicensed radio access. The adjacent market, including verticals, was estimated at EUR 4 billion in 2017.

Business overview and organization

Providing connectivity is the core business of our Mobile Networks business group. Our Mobile Networks strategy focuses on maintaining the strong business that we have today, and prudently expanding it to new customer segments and technologies. To implement our strategy, and to become fast and agile in our execution, Mobile Networks introduced a new organizational structure and new ways of working in October 2017. We target to lead in high-performance mobile networks with communications service providers. In practice, we define leading with two indicators: customer feedback and return on investment.

Practically, we aim at being perceived as a leader in 5G, as well as providing the best value to our customers as they evolve their networks towards cloudification. As we move from 4G to 5G and transform our networks into a cloud-native environment, we aim to become a champion of DevOps and continuous delivery. 5G is more than a mobile access technology: the full potential of 5G is only achieved if every part of the network can perform to the same level, and for this we have developed our Future X network architecture blueprint. The capacity, latency, agility, reliability and speed offered by this technology make it applicable to CSPs and other industry verticals.

We believe that 5G will change the way in which communications technology is used in virtually every sphere of life. As we move along the path towards making 5G a commercial reality, we aim to extend our leadership in LTE with a smooth evolution path comprising successive generations of 4.5G, 4.5G Pro and 4.9G offerings. Mobile Networks' rationalized portfolio, featuring the 5G-ready AirScale radio access, is setting the standard for scalability, openness, energy efficiency and multitechnology support ("Single RAN").

An important part of our focus is the transformation of service providers as they adopt cloud computing technologies to enable digitalization. Particularly on the Core networks side, there has been a continuous evolution from traditional monolithic products, passing through virtualization and now into a cloud-native network architecture. To support this transition, in 2017 Nokia launched the AirGile cloud-native core which is a full portfolio of network functions built to execute on the demands brought by the future 5G and IoT networks. A proof point of the maturity of the Telco Cloud market and of the leadership position that Nokia has achieved is the strong deal momentum that we have achieved, with more than 120 commercial cloud references with operators and enterprises across the world.

Competition

The mobile networks market is a highly consolidated market and our main competitors are Huawei and Ericsson. Additionally, there are two regional vendors, ZTE and Samsung, that operate with an estimated below 10% market share. As network infrastructure gets virtualized and cloudified, we expect IT companies, such as HP Enterprise and Cisco, to emerge in this field.

2017 highlights

In 2017, Mobile Networks established a portfolio of enabling technologies that are central to the infrastructure, operations, software and services required in a hyperconnected, digital world.

In February, Nokia launched its 5G FIRST, a commercial end-to-end solution for early 5G deployments. Later in the year, Nokia announced the 5G upgradeability of its existing radio units as well as inclusion of the 3GPP standards based 5GNR support of 5G FIRST.

For smoothening the evolution of 4G networks to 5G, Nokia demonstrated commercial 1.2 Gbps speed with a commercial chipset device, cloud radio access network ("RAN") with all technologies virtualized, and eightfold radio cell capacity increase with massive MIMO technology jointly with Sprint.

In September, Nokia launched the AirGile cloud-native core - a full portfolio of network functions built to execute on the demands brought by the future 5G and IoT networks.

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Fixed Networks

Market overview

The primary market for our Fixed Network business group includes technologies for fixed access and related services in addition to fixed network transformation services with a focus on transformation of legacy fixed switching networks. The primary market for Fixed Networks was estimated at EUR 8.4 billion in 2017. In this market, we see a shift from copper to fiber technologies, and networks increasingly use a combination of multiple technologies, such as copper, fiber and wireless.

The adjacent market, including verticals, for Fixed Networks includes virtualization solutions for cable access platforms, Digital Home (IoT) and passive optical LAN. The adjacent market, including verticals, was estimated at EUR 0.2 billion in 2017.

Business overview and organization

Our Fixed Networks business group creates Intelligent Access networks that are more advanced, bringing connectivity to more people sooner to deliver the best broadband experience.

The Fixed Networks business group provides the broadest access networks toolkit including copper, fiber, coax and fixed-wireless access technologies to deliver more bandwidth to more people, faster and in a cost-efficient way. The portfolio allows for a customized combination of technologies that brings fiber to the most economical point for our customers. Nokia is a market leader in copper-based solutions to boost capacity on existing copper infrastructure, such as VDSL2 Vectoring, Vplus, and G.fast. Together with Nokia Bell Labs, we continue the innovation and development of even higher-capacity technologies like XG-Fast, which allows 10 Gb/s over copper. The Fixed Networks business group is also a market leader in fiber-to-the-home solutions, with technologies such as GPON, EPON, Ethernet point-to-point, as well as the award-winning 10 gigabit next generation fiber technologies (XGS-PON and TWDM-PON).

Following the acquisition of Gainspeed, Nokia has been extending its cable operator portfolio, with a comprehensive Unified Cable Access solution, including both fiber and coax solutions, as well as its ground-breaking and award-winning virtualized distributed access architecture solution ("vCMTS"). With this enhanced portfolio, Nokia provides cable operators with the end-to-end technology capabilities needed to support growing capacity requirements today and into the future.

Delivering a gigabit to the home is no longer enough, when in-home network, especially Wi-Fi capabilities, is often the pain point. To ensure carrier-grade in-home connectivity, Nokia has expanded its smart home portfolio with its carrier-grade Nokia Wi-Fi solution, providing coverage in every corner of the home, supporting communications service providers to offer enriched customer experience and diversify their services.

Virtualization will have a key role in keeping operational costs low as the network gets more complex. Moving functions to the cloud makes networks easier to manage and scale. With its Software Defined Access solution, Nokia takes a very pragmatic approach towards fixed access virtualization, working closely with service providers around the world to define the use cases that make the most sense for them. Nokia's Software-Defined Access Network ("SDAN") solution includes Altiplano cloud-native software and Lightspan open programmable hardware, enabling scalable deployment practices, automated operations and integration services. Nokia was awarded the Broadband Award 2017 for Achievement in Virtualization.

The Fixed Networks services portfolio is based on our unparalleled expertise and experience and includes amongst others, Public Switched Telephone Network transformation, ultra-broadband network design, deployment and operation, site implementation and outside plant, and multivendor maintenance. With predictive care, Nokia brings the powerful and proven intelligent analytics and automation capabilities of Nokia AVA cognitive services platform to fixed networks, providing near-real time monitoring capabilities to identify network anomalies before they impact service.

Competition

The competitive landscape in fixed access has similar characteristics to mobile access, where the market is dominated by three main vendors, Nokia, Huawei, and ZTE, and a handful of other vendors with estimated less than 10% market share.

2017 highlights

Nokia continued to be the market leader in copper access and one of the market leaders in fiber access, and is the only vendor with a leading market share in all regions worldwide, according to Dell'Oro.

In October, Nokia launched its Intelligent Access Vision on how to build access networks that are faster, better and smarter. This included a series of new product launches for the access network, the cloud and the home. With this extended portfolio, Nokia continues to strengthen its innovation leadership.

To complement our portfolio for the cable operator market, Nokia announced the virtualized Distributed Access Architecture, based on its Gainspeed portfolio, ending the industry debate between remote PHY and remote MACPHY, immediately followed by a first customer announcement with Wide Open West. Following the acquisition of Gainspeed in 2016, we have now built up a strong portfolio to address cable operators' needs.

Other key launches included Nokia Wi-Fi, a carrier-grade whole home Wi-Fi solution; a cloud-native set of Software Defined Access Network products; the industry's first wireless PON solution; expansions to our existing copper and fiber portfolio, and Nokia Predictive Care.

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Global Services

Market overview

The Global Services business group's market includes network implementation, care and professional services for mobile networks in addition to managed services for the fixed, mobile, applications, IP and optical domains. The primary market for mobile networks services was estimated at EUR 28 billion in 2017. The adjacent market for Global Services, including services for Mobile Networks vertical segments, was estimated at EUR 5 billion.

Business overview and organization

Our services, solutions and multivendor capabilities help communications service providers navigate through the evolving technology landscape, network complexity and data growth as well as improve end user experience while supporting them also in day-to-day network planning, implementation, operations and maintenance. At the same time, we expand our offering in select attractive verticals as well as for IoT and cloud by leveraging our innovative portfolio and telco grade expertise.

We differentiate strategically through our service delivery by driving speed, quality and efficiency with the right combination of local expertise and globalized delivery centers, as well as automation and advanced analytics powered by Nokia AVA, our cognitive service delivery platform.

The Global Services business group consists of five business units.

Network Planning and Optimization helps customers maximize their network performance and quality of end users' experience, while also keeping capital expenditure under tight control. Analytics-based services powered by Nokia AVA are designed to satisfy the surging need for a use-case driven approach to addressing customer pain points.

Network Implementation deploys, expands and modernizes mobile networks of the communications service providers, enterprise and public sector customers in growth and mature markets, thus optimizing customers' total cost of ownership (both capital expenditure and operating expenditure) and deployment schedules while minimizing risks.

Systems Integration offers network architecture, integration, customization, and migration services. The portfolio focuses on core and SDM, data center services, telco cloud, transformation and prime integration for communications service providers and other specific services for vertical customers.

Care assures optimal network availability by providing network operation support, maintenance, orchestration and expert services. With the power of Nokia AVA and its latest analytics and automation, our offering includes proactive and predictive solutions that are fully customizable to local and customer-specific requirements.

Managed Services provides tailored packages for its communications service providers, public sector, transport and utility customers to help them transform their business and excel in the fixed, mobile, applications, IP and optical domains. The full portfolio comprises of network and service management, a build-operate-transfer model, hosting, advanced analytics, IoT, cloud and security operations.

Competition

In a market segment that combines products and services, Nokia competes against Huawei, Ericsson, ZTE, and Cisco, while for the service-led businesses like managed services and systems integration we see other competitors, such as TechMaindra, HPE and IBM, emerging in addition to Ericsson and Huawei.

2017 highlights

Global Services expanded its portfolio with close to 20 new services, including in 5G, IoT, public safety, and analytics.

The new Nokia WING—a managed service for IoT—provides communications service providers with a quick market entry.

Our new Analytics Services that draw from machine learning, augmented intelligence and the power of Nokia AVA were recognized by several industry awards.

Our analytics, artificial intelligence and machine learning capabilities were also recognized by several industry awards.

We launched MIKA (Multi-purpose Intuitive Knowledge Assistant), the first digital assistant to support telecom services.

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IP/Optical Networks

Market overview

The primary market for our IP/Optical Networks business group includes routing and optical technologies and related services sold to CSPs. This market includes technologies such as IP aggregation, edge and core routing, mobile packet core, Wave Division Multiplex, and packet optical transport networking solutions. We also have analytics and end-to-end Software-Defined Network ("SDN") solutions. The primary market for IP/Optical Networks was estimated at EUR 25 billion in 2017.

A growing portion of IP/Optical Networks revenue is derived from its adjacent market, which includes customer segments like webscales and enterprise. In the enterprise segment, we address verticals like energy, transport, public sector, and TXLEs. We address this mission-critical market with our IP, Optical and Nuage Networks portfolios. The adjacent market was estimated at EUR 6 billion in 2017.

Business overview and organization

The IP/Optical Networks business group provides the high-performance and massively scalable networks that underpin the digital world's dynamic interconnectivity. IP/Optical Networks' portfolio of carrier-grade software, systems and services play across multiple domains, from programmable IP and optical transport networks for the smart fabric to analytics and software-defined capabilities for the programmable network operating system and more.

The networks of CSPs are under tremendous pressure from cloud-based applications, ultra-broadband evolution and the IoT. IP/Optical Networks solutions reduce time-to-market and risk in CSPs launching new services, enabling rapid scaling to meet surging demands in the most optimized configurations. Our insight-driven network automation solutions further assure that network services are delivered with consistent quality, reliability and security and that restorative actions are automatically initiated when any parameter varies beyond set limits. These carrier-grade attributes also benefit—and are valued by—the needs of webscales, energy, transport, public sector and TXLEs.

The IP/Optical Networks product portfolio includes:

§ comprehensive IP and optical Wide Area Networking ("WAN") solutions that dynamically, reliably and securely connect people and things from any universal broadband access modality to any clouds and edge clouds at the lowest cost-per-bit;
§ advanced, cloud-optimized IP service gateways for residential, business, mobile and IoT services and unique hybrid solutions enabling a converged services future;
§ analytics and carrier SDN solutions for insight-driven network automation that dynamically provision, optimize and assure network services and resources end-to-end, from access to the cloud, and spanning IP and optical technology layers;
§ advanced datacenter automation and software-defined WAN solutions that configure network connectivity among clouds and to any enterprise branch office with the ease and efficiency of cloud compute using products from our Nuage portfolio;
§ advanced IP video services offering the utmost user experience streamed efficiently and flawlessly from the cloud; and
§ an extensive portfolio of professional services to accelerate the benefits of integrating new technologies to transform networks and leverage the latest innovations in SDN, virtualization, video and programmable all-IP networks.

Competition

The competitive landscape includes Cisco, Juniper Networks, Huawei, and Nokia in addition to various specialized players in optical, such as Ciena.

2017 highlights

The IP/Optical Networks business group launched the world's most powerful internet routing platforms powered by Nokia's new FP4 silicon. Leading smartphone manufacturer Xiaomi signed a business collaboration and multi-year patent agreement that includes the new FP4 silicon as well as optical transport solutions for datacenter interconnect and a datacenter fabric solution.

The Nokia 100G optical portfolio was chosen to support the massive growth of Jio's pan-India 4G network and was integral to Nokia and Facebook breaking subsea spectral efficiency records in transatlantic field tests.

The Nuage Networks solution powered the launch of BT Agile Connect and TELUS Network as a Service ("NaaS"). These launches reinforced Nuage Networks' SD-WAN leadership following additional wins with major service providers including Telefonica and China Telecom.

AT&T teamed with Nokia to offer U.S. utilities a private LTE solution based on the new Nokia wireless router, which will help utility customers modernize their grid distribution and build converged field area networks to reap the benefits of the smart grid.

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Nokia Software*

Market overview

Nokia Software's primary solution segments include software for 1) digital experience and monetization (i.e., Business Support Systems), 2) digital operations (i.e., Operational Support Systems), 3) digital networks (i.e., Session Border Controllers, Authentication, Authorization, and Accounting ("AAA"), and Diameter Routing), and 4) digital intelligence (i.e., big data analytics, augmented and artificial intelligence, etc.). The primary addressable market for Nokia Software and associated professional services was estimated at EUR 14 billion in 2017.

The adjacent market for Nokia Software includes emerging software and services for Network Function Virtualization ("NFV") and NFV Management Orchestration ("MANO"), Self-Organizing Networks, IoT platforms, and security. This market also includes digital enterprises and IoT verticals. The adjacent market, including verticals, was estimated at EUR 8 billion in 2017.

Business overview and organization

The Nokia Software business group serves communications service providers by helping them harness the power of connected intelligence to enrich and monetize experiences. Nokia is helping customers move from the slow, siloed, and monolithic systems they have today to agile, scalable and lightweight solutions that are built to work in digital time. Each solution is designed to provide intelligence, automation, security, cloud readiness and multi-vendor capabilities over a common software foundation.

The Nokia Software portfolio contains:

§ Digital experience and monetization: helps service providers identify and act upon the small windows of digital time where the opportunities to enrich and monetize are the best. Our portfolio includes solutions for omni-channel customer engagement, autonomous customer care, fixed and mobile device management, and policy and charging software that can be utilized across all network types from any vendor. Today, we have more than 300 digital experience and monetization customers, we are the market leader in both fixed and mobile device management, and we have one of the industry's first 5G charging solutions.
§ Digital operations: helps service providers simplify, automate and optimize their service and network operations. Our portfolio includes solutions for service fulfilment, assurance, orchestration, and network management. We have more than 500 digital operations customers globally, hold leading market positions in NFV MANO and service assurance and have been recognized as the "one stop shop for Operations Support Systems" by Analysys Mason.
§ Digital networks: software that creates an elastic, programmable, and secure cloud-based foundation to address performance and reliability requirements. Our products include one of the industry's first cloud-native session border controllers, a portfolio of active security solutions, and market-leading mobile network management solutions.
§ Our digital intelligence portfolio provides a complete 360-degree view on the market. We use artificial intelligence to provide advanced summarization, correlation, and prediction to determine sentiment, marketing targets, and the next best actions. We are the market leader in network analytics and have over 350 customers.

Competition

Nokia is one of the leading providers of telecom software products according to Analysys Mason. As the market is highly fragmented, the top six vendors all hold less than 10% market share while the remaining market is shared across several niche players.

Our competitors fall into two categories: Independent Software Vendors ("ISVs") and Network Equipment Providers ("NEPs"). The main ISV competitors are Amdocs, Netcracker, and Oracle. The main NEP competitors are Huawei and

Ericsson, selling software as part of large infrastructure deals.

*As of February 1, 2018 the Applications & Analytics business group was renamed Nokia Software.

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2017 highlights

As part of Nokia's strategy to build a standalone software business at scale, the Nokia Software business group has been driving a major change agenda to strengthen the business.

Product highlights include:

Acquired Comptel Corporation and gained the ability to provide closed loop fulfillment and assurance along with catalogue driven orchestration which are essential for fully automated operations. The acquisition also bolstered our monetization and analytics capabilities.

Continued to add machine learning, analytics and automation capabilities with the launches of Autonomous Customer Care, Nokia Cognitive Analytics for Crowd Insight, Nokia Analytics Office Services, Nokia NetGuard Security Management Center solution, New Nokia evolved Service Operations Center, and Nokia IMPACT, our IoT platform.

Introduced 5G-ready Nokia Smart Plan Suite in a cloud-native lightweight solution.

Launched NetAct Archive Cloud, the first automated real-time monitoring cloud backup system and the industry's first cloud-native Session Border Controller.

Operational and organizational highlights include:

Established a dedicated software salesforce with new leadership. The team invested in recruitment and enablement to ensure our team provides high value customer engagements.

Modernized software R&D with improved portfolio management; creating a Common Software Foundation to make our software easier for customers to use, rely on and integrate; strengthening our DevOps capabilities to get features to market faster; and standardizing performance and reliability testing to ensure our products meet telco-grade standards.

Increased the value of our service practice with a Common Delivery Framework, investment in key skills like data science, NFV on-boarding, security, and monetization.

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Within our Networks business

Sales and marketing

The Customer Operations ("CO") organization is responsible for sales and account management across the five network-oriented business groups. The CO teams are represented worldwide (in approximately 130 countries) to ensure that we are close to our customers and have a deep understanding of local markets. In this way, we strive to create and maintain deep customer intimacy across our customer base.

Geographically, the CO organization is divided into seven markets:

§ Asia-Pacific and Japan spans a varied geographical scope, ranging from advanced telecommunications markets, such as Japan and the Republic of South Korea, to developing markets including Philippines, Bangladesh, Myanmar, Vietnam and others. In 2017, we worked with all the leading operators in the market, and collaborated on 5G, IoT and other leading network evolution topics with operators from Japan and the Republic of South Korea. We also run a major Service Delivery Hub in Japan. Furthermore, we work across a wide range of vertical markets in Asia-Pacific and Japan including public sector, transportation and energy enabling solutions through its end-to-end portfolio.

§ In Europe, we engaged with all the major operators serving millions of customers. We have extensive R&D expertise in Europe, and some of our largest Technology Centers, which are developing future technologies, are based in this market. We also have a Global Delivery Center (across two locations: Portugal and Romania) and three regional Service Delivery Hubs in Europe (one in Russia and two in Poland). With our strong end-to-end portfolio, Nokia is well positioned in Europe to help maximize the benefits of 5G, IoT and the digital transformation in the local digital ecosystems.

§ In Greater China, we are the leading player among companies headquartered outside China, and work with all the major operators. We have also extended our market presence to the public and enterprise sectors, including energy, railways and public security. In 2017, we worked with numerous China-based webscale companies, and all the major operators in Taiwan. In China, we have six Technology Centers, one regional Service Delivery Hub and more than 80 offices spread over megacities and provinces. A major achievement in 2017 was the closing of our agreement with our Chinese partner, which resulted in the formation of the joint venture – Nokia Shanghai Bell. This was the last major organizational step in Nokia and Alcatel Lucent integration, bringing together approximately 8 000 colleagues from both companies into a single organization.

§ In India, we are a strong supplier and service provider to the leading public and private operators. Collectively, our networks for these operators serve 418 million subscribers across some 459 000 sites with Nokia managing networks supporting 154 million subscribers. In addition, we are a key telecom infrastructure supplier to non-operator segments, including large enterprises, utilities companies, and the Indian defense sector. We are also a strategic telecommunications partner in GSM-Railways technology in India. Nokia's operations in the country include a Global Delivery Center, a Service Delivery Hub and a Global Technology Center.

§ In Latin America, an estimated 24% of mobile subscribers use LTE services, almost double from a year ago, due to accelerated adoption in Brazil, Mexico and Argentina. High-speed fixed broadband, meanwhile, is still in its early phase. With the aim of providing broadband services to a population of over 600 million people in the area, we supplied ultra-competitive solutions to all major operators. In 2017, we also closed our biggest ever deal in the market – the nationwide wholesale LTE network in Mexico known as 'Red Compartida', for Altán Redes, and the largest LTE 700 MHz deployment in Brazil with TIM.

§ In Middle-East and Africa, we see strong opportunities for Nokia, and we are closely working with all key global and regional operators. We have been laying the foundation for early 5G adoption and Smart Cities deployments in the Middle-East region, and continue to see strong growth in the number of mobile broadband users in Africa, driven by increasing affordability of smartphones and commercial LTE deployments across the continent.

§

In North America, we count all the major operators as our key customers. We also deliver advanced IP networking, ultra-broadband access, and cloud technology solutions to a wide array of customers, including local service providers, cable operators, large enterprises, state and local governments, utilities, and many others. North America is also home to the our most important and thriving innovation practices from the renowned Nokia Bell Labs headquarters in Murray Hill, New Jersey, to the development labs in Silicon Valley.

As Nokia executes its strategy to expand beyond our traditional telecom operator customer base, Customer Operations is leading the way with a strong go-to-market strategy for our non-telco target segments. Our ambition is to drive the sale of business and mission-critical communications networks and services to organizations in several carefully chosen markets.

These efforts are led by two teams within Customer Operations. These are Global Enterprise TEPS (transportation, energy and public sector) and Global Enterprise Webscale / TXLE.

Within TEPS, we focus on the needs of public sector customers for technology in public safety, government driven broadband initiatives and smart city projects. For example, we work with Nedaa (the Dubai government security networks operator) in both public safety and smart city; as a key supplier to AT&T, Nokia will play a significant part in building the FirstNet nationwide U.S. Public Safety broadband network; we supply the Shanghai Oriental Pearl Group with technology for smart city services and work with the Digital Poland Operational Program, in which, together with Infracapital, we formed a joint venture to design, deploy and operate GPON fiber-optic networks to serve more than 400 000 residences and 2 500 schools in 13 regions in central and northern Poland.

In transportation, Nokia is the market leader in GSM for railway customers (“GSMR”) world-wide. And in aviation, we are working with Skyguide on modernizing Switzerland’s nationwide mission-critical communications network for air traffic control, managing both civil and military air traffic. We also supply Air2Ground private LTE solutions for major airline corporations, in cooperation with Deutsche Telekom and Inmarsat, among others. In energy, we are the global leader in Private LTE solutions for the mining industry. In 2017, we also added our first water utility with Placer County Water Authority in the United States, where our technology is helping to control water quality, prevent water loss and more effectively manage hydro-electric power generation. We also work with the world’s largest utility companies, including the world’s largest utility by production – EDF –

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the world's largest utility by customers – SGCC in China – Tata Power in India and the major utilities for both generation and distribution across the United States, including Ameren.

Our Webscale / TXLE business saw significant progress during 2017. In Webscale, our business has grown steadily and we now count Facebook, Amazon Web Services ("AWS"), Apple, Xiaomi Baidu, Alibaba and Tencent among our customers and we also work with some of these as partners. We announced a partnership with Amazon Web Services, providing a full suite of services to support service providers in their migration to AWS, a patent agreement with Xiaomi and a business and patent license and business collaboration agreement with Apple. Among our TXLE customers, we include international banks–such as BBVA, Santander, and Crèdit Andorrà–to which we supply software-defined networking and / or software-defined WAN solutions.

Research and development

Our Networks business is one of the industry's largest R&D investors in information communication technology and we expect it to drive innovation across telecommunications and vertical industries to meet the needs of a digitally connected world. Product development is continually underway to meet the highly programmable, agile and efficiency requirements of the next generation software-defined networks that will accommodate the IoT, intelligent analytics, and automation used to forge new human possibilities.

Our five networks-focused business groups are responsible for product R&D within the Networks business. The Networks business has a global network of R&D centers, each with individual technology and competence specialties. The main R&D centers are located in Belgium, Canada, China, Finland, France, Germany, Greece, Hungary, India, Italy, Japan, Poland, the Philippines, Portugal, Romania, the United Kingdom, and the United States. We believe that the geographical diversity of our R&D network is an important competitive advantage for us. In addition, the ecosystem around each R&D center helps us to connect with experts on a global scale and our R&D network is further complemented by cooperation with universities and other research facilities.

All of our Networks business groups, and also Nokia Technologies, are committed to the Future X network architecture defined by Nokia Bell Labs. The Future X network is based on a vision of a massively distributed, cognitive, continuously adaptive, learning and optimizing network connecting humans, senses, things, systems, infrastructure, and processes. The Future X network aims to provide a 10-fold improvement across key technology domains in response to the six megatrends identified by Nokia as driving new technological requirements. For a more detailed description refer to "Our strategy" section.

Patents and licenses

Intellectual property assets are fundamental to Nokia, and we own a large patent portfolio of approximately 20 000 patent families. The Patent Business in Nokia Technologies is the primary monetization entity for patent assets. Refer to "Nokia Technologies—Patents and licenses" for a description of our patent licensing activities.

Industry leading R&D in our Networks business including Nokia Bell Labs in fields such as wireless, IP networking, ultra-broadband access and cloud technologies and applications continues to generate valuable new, patentable innovations.

Our Networks business has patent license agreements in place with a number of third parties as part of its ordinary course of business.

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Nokia Bell Labs

Nokia Bell Labs is the world-renowned industrial research and innovation arm of Nokia. Over its 90-year history, Nokia Bell Labs has invented many of the foundational technologies that underpin information and communications networks and all digital devices and systems.

This research has resulted in eight Nobel Prizes, two Turing Awards, three Japan Prizes, a plethora of National Medals of Science and Engineering, as well as an Oscar, two Grammys, and an Emmy award for technical innovation. Nokia Bell Labs continues to conduct disruptive research focused on solving the challenges of the new digital era, defined by the contextual connection and interaction of everything and everyone.

Nokia Bell Labs searches for the fundamental limits of what is possible, rather than being constrained by the current state of art. It looks to the future to understand essential human needs and the potential barriers to enabling this new human existence. It then uses its unique diversity of research intellects and disciplines and perspectives to solve the key complex problems by discovering or inventing disruptive innovations that have the power to enable new economic capabilities, new societal behaviors, new business models and new types of services in other words, to drive human and technological revolutions.

Research at Nokia Bell Labs is focused on key scientific, technological, engineering or mathematical areas which require 10x or more improvement in one or more dimensions. It then combines these areas of research into the Future X network architecture, which brings these disruptive research elements together into industry-redefining solutions. These innovations are brought to market through our business groups or through technology and patent licensing. Nokia Bell Labs also engages directly with the market and customers through its consulting service to help define the path to the future network with business model innovation and the optimum techno-economics.

This model of defining future needs and inventing game-changing solutions to critical problems while advising the market on the path forward has been the constant mission of Nokia Bell Labs.

Three functions create the Nokia Bell Labs' foundation to disrupt and transform the future:

(1) Chief Technology Office which defines the technological and architectural vision for the future of human needs.
(2) Nokia Bell Labs Research which understands the key challenges in the future vision and invents solutions that are 10x better than what is currently possible.
(3) Bell Labs Consulting which advises the industry on the economics of the vision and how to efficiently achieve this future goal, from the current starting point.

Nokia Bell Labs and Facebook achieved a record spectral efficiency of 7.46 b/s/Hz and 2.5 times capacity breakthrough for massive undersea cable transmission during a submarine field trial using Bell Labs' Probabilistic Constellation Shaping ("PCS") technology, a ground-breaking novel modulation technique that maximizes the distance and capacity of high-speed transmission in optical networks.

Nokia Bell Labs introduced "skim storage," a unique innovation that decreases storage needs by five times using innovative advanced video transcoding technology allowing TV and video providers to serve programming to time-shifted viewers at a fraction of the storage and compute now required.

In a world's first, Nokia Bell Labs demonstrated it is now possible to use a commercial next generation 10G PON to transport ultra-low latency Common Public Radio Interfaces ("CPRI") streams showing how operators can re-use existing fiber-to-the-home ("FTTH") massive-scale deployments to satisfy the strict latency constraints and capacity needs for mobile transport in 4G and future 5G networks.

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Nokia Technologies

Market overview

Building on decades of innovation and R&D leadership in technologies used in virtually all mobile devices used today, Nokia Technologies is expanding our patent licensing business, reintroducing the Nokia brand to smartphones through brand licensing, and establishing a technology licensing business.

Smartphones, feature phones, and tablets had a global estimated wholesale market of over EUR 360 billion in 2017. Global smartphone wholesale revenues alone are forecasted to increase by 12% in 2018 and total over EUR 350 billion. In the automotive industry, expectations are that around half of the approximately 100 million new cars sold annually around the world will have connectivity in the next five years.

Business overview and organization

Nokia Technologies is determined to explore, discover and develop the ways in which technology can transform our lives. Nokia Technologies makes our vision for a connected future today’s reality. Nokia Technologies’ mission is to create effortless and impactful technological products and solutions that expand human possibilities.

Nokia Technologies currently consists of a portfolio of four businesses.

With the acquisition of Withings in 2016, our Digital Health business entered the market with a portfolio of premium, intuitive consumer products designed to inspire the individual to take control of their own health. Since then, we expanded this business into corporate wellness and elder care and developed an innovative patient care platform focused on remote patient care monitoring.

In the future, we plan to reduce our focus on consumer incubation in Nokia Technologies to allow us to prioritize our core strengths in business-to- business and licensing patents, technologies and the Nokia brand. In February 2018, Nokia announced a strategic review of options for the Digital Health consumer products business.

Our Brand Partnerships business works with our exclusive licensee for the Nokia brand for phones and tablets, HMD Global, which has launched six new Android smartphones and five new feature phones during 2017.

Our Patent Business continues to grow its successful patent licensing and monetization activities, which drive most of Nokia Technologies’ net sales today, giving us the ability to invest in our new businesses in a disciplined, venture capital-like manner.

We have launched a Technology Licensing business, focused on innovative spatial audio and visual technologies stemming from our OZO VR camera, which is no longer in production.

Sales and marketing

Our Patent Business manages intellectual property as a technology asset and seeks a return on our investments by making our innovations available to the markets through licensing activities and transactions. Nokia Technologies currently has more than 100 licensees, mainly for our standards essential patents (“SEPs”).

Nokia Technologies also continues to engage in global sales and marketing activities supporting the technology licensing solutions stemming from the OZO VR camera, as well as our portfolio of connected health products in both regulated and non-regulated markets.

Nokia Technologies sees further opportunities in licensing its proprietary technologies, intellectual property and brand assets into telecommunications and vertical industries.

Research and development

The applied nature of our R&D in Nokia Technologies has resulted in various relevant and valuable inventions in areas that we believe are important for emerging consumer experiences, such as audio and video standardization, sensing technologies and advanced machine learning-based health analytics.

Nokia Technologies has R&D centers in Finland and France.

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Patents and licenses

For more than 20 years, we have defined many of the fundamental technologies used in virtually all mobile devices and taken a leadership role in standards setting. As a result, we own a leading share of essential patents for GSM, 3G radio and 4G LTE technologies. These, together with others for Wi-Fi and video standards, form the core of our patent portfolio for monetization purposes. As mentioned above, Nokia Technologies currently has more than 100 licensees, mainly for our SEPs.

With the acquisitions of Nokia Siemens Networks in 2013 and Alcatel Lucent in 2016, we added the results of their sustained innovation, including that of Bell Labs, creating a larger and more valuable IP portfolio than ever before. As part of our active portfolio management approach, we are continuously evaluating our collective assets and taking actions to optimize the size of our overall portfolio while preserving the high quality of our patents. Through a series of structured divestments in 2017, we have enabled product companies to access Nokia innovations. At the end of 2017, our portfolio stands at around 20 000 patent families, built on combined R&D investments of more than EUR 123 billion over the last two decades.

We continue to refresh our portfolio from R&D activities across all Nokia businesses, filing patent applications on more than 1 300 new inventions in 2017. Continuing our focus on communications standards, we also expect to have a leading position in 5G. Through 2017, we continued to be a leading contributor to the development of emerging 5G standards.

Competition

In the digital health market, our competitors range from large multinationals to innovative smaller specialist vendors. Until recently, our focus was on higher growth segments of the total market, including consumer health and wellness products such as hybrid smart watches, blood pressure monitors, scales and thermometers, as well as remote patient monitoring. Fitbit, Garmin, Xiaomi, and Apple compete in personal wellness products, along with players like Omron, Qardio, and iHealth. Philips, Honeywell Life Care Solutions, Medtronic, and Vivify Health are active around remote patient monitoring.

2017 highlights

At Mobile World Congress in February, Nokia Technologies launched its Patient Care Platform to enable doctors to remotely monitor patients with their smart devices. The platform, which is being used in a trial by the UK's National Health Service, aims to better prevent and manage chronic health conditions and drive timely and targeted patient care.

During the year, Nokia signed a number of patent licensing agreements, including with Apple, Huawei, LG Electronics and Xiaomi. Our agreements with Apple and Xiaomi also include broader business collaborations.

Our exclusive brand licensee for phones and tablets, HMD Global, launched six new Nokia branded Android smartphones and five new Nokia branded feature phones during its first year of operations. The new products have achieved outstanding net promoter (NPS) scores.

New patent filings in 2017

1 300+

R&D investment over the last two decades

~EUR 123bn

Patent licensees

100+

35

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Operating and financial review and prospects

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Principal industry trends affecting operations

Business-specific trends

Networks business

We are a leading vendor in the network and IP infrastructure, software, and the related services market. We provide a broad range of different products, from the hardware components of networks used by communications service providers and increasingly by customers in other select verticals, to software solutions supporting the efficient interaction of networks, as well as services to plan, optimize, implement, run and upgrade networks. Our Networks business is conducted through five business groups: Mobile Networks, Fixed Networks, Global Services, IP/Optical Networks and Nokia Software. These business groups provide an end-to-end portfolio of hardware, software and services to enable us to deliver the next generation of leading networks solutions and services to our customers. We aim for all five business groups to be innovation leaders, drawing on our frontline R&D capabilities to deliver leading products and services for our customers, and ultimately ensure our long-term value creation. For more information on the Networks business refer to "Business overview—Networks business" above.

Industry trends

The network and IP infrastructure, software and related services industry has witnessed certain prominent trends in recent years, which have also affected our Networks business. First, the increase in the use of data services and the resulting exponential increase in data traffic has resulted in an increased need for high-performance, high-quality and highly reliable networks. The continuing increase in data traffic has, however, not been directly reflected in operators' revenue. Consequently, there is an increased need to be efficient and cost competitive for both communications service providers and network infrastructure and services vendors.

Second, we are witnessing continued consolidation among communications service providers, driven by their desire to provide a wider scope of services, especially through the convergence of disparate network technologies across mobile, fixed, and IP and optical networks. In order to improve networks in terms of coverage, capacity and quality, communications service providers are continuing their transition to all-IP architectures, with an emphasis on fast access to their networks through copper, fiber, LTE and new digital services delivery. We are also seeing similar trends with cable operators, who are investing in the deployment of high-speed networks. Our end-to-end portfolio of products and services can be utilized to address both the fixed mobile convergence and the transition to all-IP architectures.

Third, we see an increasing demand for large high-performance networks in some key areas outside the traditional communications service provider space, which we define as our adjacent markets. Webscale companies and extra-large enterprises—such as Apple, Facebook, Google, Alibaba and Amazon—are investing in cloud technology and network infrastructure to build these high-performing, secure networks. In addition, other target vertical markets such as energy, transportation and the public sector are investing in their own network infrastructure, to connect data centers and provide seamless IP interconnection and digital services delivery.

Pricing and price erosion

In 2017, while we did not witness a widespread change in the overall pricing environment, we saw robust competition in China in the second half of the year, where early positioning for 5G is underway.

Product mix

The profitability of our Networks business is affected by our product mix, including the share of software in the sales mix. Products and services also have varying profitability profiles. For instance, our Ultra Broadband Networks and IP Networks and Applications reportable segments offer a combination of hardware and software, which generally have higher gross margins, but also require significant R&D investment, whereas the Global Services reportable segment has offerings that are typically labor-intensive, while carrying low R&D investment, and have relatively low gross margins compared to the hardware and software products.

Seasonality and cyclical nature of projects

Our Networks business' sales are affected by seasonality in the network operators' spending cycles, with generally higher sales in the fourth quarter, followed by generally lower sales in the first quarter. In addition to normal industry seasonality, there are normal peaks and troughs in the deployment of large infrastructure projects. The timing of these projects depends on new radio spectrum allocation, network upgrade cycles and the availability of new consumer devices and services, which in turn affects our Networks' business sales. As an example, during the last couple of years some of the major LTE deployments have been largely completed. The next major technology cycle is expected to be the transition from 4G to 5G, with trials beginning in 2018, commercial deployments in lead markets in 2019 and large-scale deployments in 2020.

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Continued operational efficiency improvements

In 2017, our Networks business continued to focus on operational improvements across its business groups. In order to continue to make our Networks business more efficient, higher-performing and positioned for long-term success, we aim to further strengthen our productivity, efficiency and competitive cost structure through strong operational discipline.

Cost of components and raw materials

There are several important factors driving the profitability and competitiveness of our Networks business: scale, operational efficiency and pricing, and cost discipline. The costs of our networks products comprise, among others, components, manufacturing, labor and overheads, royalties and licensing fees, depreciation of product machinery, logistics and warranty and other quality costs.

Nokia Technologies

Nokia Technologies pursues new business opportunities building on our innovations and the Nokia brand. Nokia Technologies develops and licenses cutting-edge innovations that are powering the next revolution in computing and mobility. The Nokia Technologies strategy consists of: 1) patent licensing, focused on licensing standard-essential and other patents in the Nokia portfolio to companies in the mobile devices market and beyond; 2) technology licensing, focused on licensing proprietary spatial audio and video technologies to enable our customers to build better products; 3) brand licensing, to help our customers leverage the value of the Nokia brand in consumer devices; and 4) developing new products and technologies in digital health. For more information on the Nokia Technologies business, refer to "Business overview—Nokia Technologies".

Monetization strategies of IPR

Success in the technology industry requires significant R&D investment, with the resulting patents and other IPR utilized to protect and generate a return on those investments and related inventions. In recent years, we have seen new entrants in the mobile device industry, many of which do not have licenses to our patents. Our aim is to approach these companies by potentially using one or more means of monetization. We believe we are well-positioned to protect, and build on, our existing industry-leading patent portfolio, and consequently to increase our shareholders' value.

We see a number of means of monetizing these opportunities: on the one hand, we seek to license our patent portfolio, and new technological innovations that can be integrated into other companies' products and services. We also engage in brand licensing to leverage the Nokia brand in consumer devices. In digital health, Nokia announced on February 15, 2018 that it had initiated a review of strategic options for this business. This strategic review of the Digital Health business may or may not result in any transaction or other changes. In digital media, the slower-than-expected development of the virtual reality market has led Nokia Technologies to reduce investments in this area and focus more on technology licensing opportunities.

In patent licensing, the main opportunities we are pursuing are: 1) renewing existing license agreements, and negotiating new license agreements with mobile device manufacturers; and 2) expanding the scope of licensing activities to other industries, in particular those that implement mobile communication technologies such as automotive and consumer electronics. We no longer need patent licenses for our own mobile phone business, enabling the possibility of improving the balance of inbound and outbound patent licensing.

In brand licensing, we will continue to seek further opportunities to bring the Nokia brand into consumer devices, by licensing our brand and other intellectual property. For example, under a strategic agreement covering branding rights and intellectual property licensing, in 2016, Nokia Technologies granted HMD Global, a company based in Finland, an exclusive global license to create Nokia-branded phones and tablets for ten years. During 2017, HMD Global launched 11 new phones, including six Android smartphones.

In technology licensing, the opportunities are more long-term in our view, but we will look at opportunities to license technologies developed by Nokia Technologies and delivered to partners in consumer electronics as solutions or technology packages that can be integrated into their products and services to help enable the Programmable World.

To grow each of the aforementioned business programs, it is necessary to invest in commercial capabilities to support them.

General trends in IPR licensing

In general, there has been increased focus on IPR protection and licensing, and this trend is expected to continue. As such, new agreements are generally a product of lengthy negotiations and potential litigation or arbitration, and therefore the timing and outcome may be difficult to forecast. Due to the structure of patent license agreements, the payments may be very infrequent, at times may be partly retrospective, and the lengths of license agreements can vary.

Additionally, there are clear regional differences in the ease of protecting and licensing patented innovations. We have seen some licensees actively avoiding making license payments, and some licensors using aggressive methods to collect them; both behaviors have attracted regulatory attention. We expect discussion of the regulation of licensing to continue at both global and regional level. Some of those regulatory developments may be adverse to the interests of technology developers and patent owners, including us.

Research, development and patent portfolio development

As the creation of new technology assets and patented innovations is heavily focused on R&D activities with long lead-times to incremental revenues, we may from time to time see investment opportunities that have strategic importance. This generally affects operating expenses before sales reflect a return on those investments.

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Trends affecting our businesses

Exchange rates

We are a company with global operations and net sales derived from various countries, invoiced in various currencies. Therefore, our business and results from operations are exposed to changes in exchange rates between the euro, our reporting currency, and other currencies, such as the U.S. dollar and the Chinese yuan. The magnitude of foreign exchange exposures changes over time as a function of our net sales and costs in different markets, as well as the prevalent currencies used for transactions in those markets. Refer also to "General facts on Nokia—Selected financial data—Exchange rate data" below.

To mitigate the impact of changes in exchange rates on our results, we hedge material net foreign exchange exposures (net sales less costs in a currency) typically with a hedging horizon of approximately 12 months. For the majority of these hedges, hedge accounting is applied to reduce income statement volatility.

In 2017, approximately 25% of Continuing operations net sales and approximately 30% of Continuing operations costs were denominated in euro. In 2017, approximately 45% of Continuing operations net sales were denominated in U.S. dollars and approximately 10% in Chinese yuan.

During 2017, the U.S. dollar depreciated against the euro and this had a slightly negative impact on our net sales expressed in euros. However, the weaker U.S. dollar also contributed to slightly lower cost of sales and operating expenses, as approximately 45% of our total cost base was in U.S. dollars. In total, before hedging, the depreciation of the U.S. dollar had a slightly negative effect on our operating profit in 2017.

During 2017, the Chinese yuan depreciated against the euro and this had a slightly negative impact on our net sales expressed in euros. However, the weaker Chinese yuan also contributed to slightly lower cost of sales and operating expenses, as approximately 10% of Continuing operations total costs were denominated in Chinese yuan. In total, before hedging, the depreciation of the Chinese yuan had a slightly negative effect on our operating profit in 2017.

Significant changes in exchange rates may also impact our competitive position and related price pressures through their impact on our competitors.

For a discussion of the instruments used by us in connection with our hedging activities, refer to Note 36, Risk management of our consolidated financial statements included in this annual report on Form 20-F. Refer also to "Operating and financial review and prospects—Risk factors".

The average currency mix for net sales and total costs:

	2017				2016			
Currency	Net sales		Total costs		Net sales		Total costs	
EUR	~25	%	~30	%	~25	%	~25	%
USD	~45	%	~45	%	~50	%	~45	%
CNY	~10	%	~10	%	~10	%	~10	%
Other	~20	%	~15	%	~15	%	~20	%
Total	100	%	100	%	100	%	100	%

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Results of operations

The financial information included in this "Operating and financial review and prospects" section as of December 31, 2017 and 2016 and for each of the three years ended December 31, 2017, 2016 and 2015 has been derived from our audited consolidated financial statements included in this annual report on Form 20 F. The financial information as of December 31, 2017 and 2016 and for each of the three years ended December 31, 2017, 2016 and 2015 should be read in conjunction with, and is qualified in its entirety by reference to, our audited consolidated financial statements.

On April 1, 2017 we revised our financial reporting structure. We have two businesses: Nokia's Networks business and Nokia Technologies, and four reportable segments for financial reporting purposes: Ultra Broadband Networks, Global Services and IP Networks and Applications (within Nokia's Networks business); and Nokia Technologies. We also present certain segment data for Group Common and Other as well as for Discontinued operations. The comparative financial information presented below has been prepared to reflect the financial results of our Continuing operations as if the new financial reporting structure had been in operation for the full years 2017, 2016 and 2015. Certain adjustments and reclassifications have been necessary. Refer to Note 4, Segment information, of our consolidated financial statements included in this annual report on Form 20 F.

Continuing operations

For the year ended December 31, 2017 compared to the year ended December 31, 2016

The following table sets forth selective line items and the percentage of net sales for the years indicated.

For the year ended December 31	2017 EURm	% of net sales	2016 EURm	% of net sales	Year-on-year change %
Net sales	23 147	100.0	23 641	100.0	(2)
Cost of sales	(14 008)	(60.5)	(15 117)	(63.9)	(7)
Gross profit	9 139	39.5	8 524	36.1	7
Research and development expenses	(4 916)	(21.2)	(4 997)	(21.1)	(2)
Selling, general and administrative expenses	(3 615)	(15.6)	(3 767)	(15.9)	(4)
Other income and expenses	(592)	(2.6)	(860)	(3.6)	(31)
Operating profit/(loss)	16	0.1	(1 100)	(4.7)	–
Share of results of associated companies and joint ventures	11	–	18	0.1	(39)
Financial income and expenses	(537)	(2.3)	(287)	(1.2)	87
Loss before tax	(510)	(2.2)	(1 369)	(5.8)	(63)
Income tax (expense)/benefit	(927)	(4.0)	457	1.9	–
Loss for the year	(1 437)	(6.2)	(912)	(3.9)	58

Net sales

Continuing operations net sales in 2017 were EUR 23 147 million, a decrease of EUR 494 million, or 2%, compared to EUR 23 641 million in 2016. The decrease in Continuing operations net sales was primarily due to a decrease in Nokia's Networks business net sales, partially offset by an increase in Nokia Technologies net sales.

The following table sets forth distribution of net sales by geographical area for the years indicated.

For the year ended December 31	2017 EURm	2016 EURm	Year-on-year change %
Asia-Pacific	4 228	4 223	–
Europe(1)	6 833	6 410	7
Greater China	2 516	2 654	(5)
Latin America	1 279	1 458	(12)
Middle East & Africa	1 907	1 872	2
North America	6 384	7 024	(9)
Total	23 147	23 641	(2)

(1) All Nokia Technologies IPR and licensing net sales are allocated to Finland.

Gross profit

Gross profit for Continuing operations in 2017 was EUR 9 139 million, an increase of EUR 615 million, or 7%, compared to EUR 8 524 million in 2016. The increase in gross profit was primarily due to lower working capital-related purchase price allocation adjustments and higher gross profit in Nokia Technologies, partially offset by lower gross profit in Nokia's Networks business and higher product portfolio integration-related costs. Gross margin for Continuing operations in 2017 was 39.5%, compared to 36.1% in 2016. In 2017, gross profit included product portfolio integration-related costs of EUR 453 million and working capital-related purchase price allocation adjustments of EUR 55 million. In 2016, gross profit included working capital-related purchase price allocation adjustments of EUR 840 million, which resulted in higher cost of sales and lower gross profit when the inventory was sold; and product portfolio integration-related costs of EUR 274 million.

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Operating expenses

Our R&D expenses for Continuing operations in 2017 were EUR 4 916 million, a decrease of EUR 81 million, or 2%, compared to EUR 4 997 million in 2016. R&D expenses represented 21.2% of our net sales in 2017 compared to 21.1% in 2016. The decrease in R&D expenses were due to decreases in Nokia's Networks business, Group Common and Other and Nokia Technologies R&D expenses. In 2017, R&D expenses included amortization and depreciation of acquired intangible assets and property, plant and equipment of EUR 633 million, compared to EUR 619 million in 2016, as well as product portfolio integration-related costs of EUR 57 million, compared to EUR 62 million in 2016.

Our selling, general and administrative expenses for Continuing operations in 2017 were EUR 3 615 million, a decrease of EUR 152 million, or 4%, compared to EUR 3 767 million in 2016. Selling, general and administrative expenses represented 15.6% of our net sales in 2017 compared to 15.9% in 2016. The decrease in selling, general and administrative expenses was primarily due to lower transaction and integration-related costs, a decrease in Nokia's Networks business selling, general and administrative expenses and, to a lesser extent, Group Common and Other selling, general and administrative expenses, partially offset by an increase in Nokia Technologies selling, general and administrative expenses. Selling, general and administrative expenses included amortization and depreciation of acquired intangible assets, and property, plant and equipment of EUR 394 million in 2017 compared to EUR 386 million in 2016, as well as transaction and integration-related costs of EUR 194 million, compared to EUR 294 million in 2016.

Other income and expenses for Continuing operations in 2017 was a net expense of EUR 592 million, a change of EUR 268 million, compared to a net expense of EUR 860 million in 2016. The net positive fluctuation in our other income and expenses was primarily due to lower restructuring and associated charges and a net positive fluctuation in Nokia's Networks business and Group Common and Other other income and expenses, partially offset by impairment charges. Other income and expenses included restructuring and associated charges of EUR 576 million in 2017 compared to EUR 759 million in 2016.

In 2017, as a result of challenging business conditions, we recorded a non-cash charge to other income and expenses of EUR 141 million, due to the impairment of goodwill related to our Digital Health business, which is part of Nokia Technologies. The impairment charge was allocated to the carrying amount of goodwill held within the digital health cash generating unit, which was reduced to zero. In 2017, we also recorded a non-cash impairment charge to other income and expenses of EUR 32 million related to acquired intangible assets in Nokia's Networks business.

Operating profit/loss

Our operating profit for Continuing operations in 2017 was EUR 16 million, a change of EUR 1 116 million, compared to an operating loss of EUR 1 100 million in 2016. The change in operating result was primarily due to a higher gross profit and, to a lesser extent, a net positive fluctuation in other income and expenses and lower selling, general and administrative and R&D expenses. Our operating margin in 2017 was approximately break even compared to negative 4.7% in 2016.

The following table sets forth the impact of unallocated items on operating profit/loss:

EURm	2017	2016
Total segment operating profit(1)	2 587	2 172
Amortization and depreciation of acquired intangible assets and property, plant and equipment	(1 033)	(1 026)
Restructuring and associated charges	(579)	(774)

Product portfolio strategy costs	(536)	(348)
Transaction and related costs, including integration costs relating to the acquisition of Alcatel Lucent	(206)	(295)
Impairment of intangible assets	(173)	–
Release of acquisition-related fair value adjustments to deferred revenue and inventory	(55)	(840)
Other	11	11
Total operating profit/(loss)	16	(1 100)

(1) Excludes costs related to the acquisition of Alcatel Lucent and related integration, goodwill impairment charges, intangible asset amortization and other purchase price fair value adjustments, restructuring and associated charges and certain other items.

Financial income and expenses

Financial income and expenses for Continuing operations was a net expense of EUR 537 million in 2017 compared to a net expense of EUR 287 million in 2016, an increase of EUR 250 million, or 87%. The net negative fluctuation in financial income and expenses was primarily due to costs of EUR 220 million related to the offer to purchase the 6.50% notes due January 15, 2028, the 6.45% notes due March 15, 2029, the 6.75% notes due February 4, 2019 and the 5.375% notes due May 15, 2019; losses from foreign exchange fluctuations; a non-recurring interest expense related to a change to uncertain tax positions; and a loss on the sale of financial assets. This was partially offset by a change in the fair value of the financial liability to acquire Nokia Shanghai Bell non-controlling interest and the absence of costs related to the early redemption of Alcatel Lucent high yield bonds, which adversely affected full year 2016.

Refer to "—Liquidity and capital resources" below.

Loss before tax

Our loss before tax for Continuing operations in 2017 was EUR 510 million, a change of EUR 859 million compared to a loss of EUR 1 369 million in 2016.

Income tax

Income taxes for Continuing operations was a net expense of EUR 927 million in 2017, a change of EUR 1 384 million compared to a net benefit of EUR 457 million in 2016. The change in net income taxes was primarily due to increased profitability, deferred tax expenses of EUR 777 million from re-measurement of deferred tax assets resulting from the tax rate change in the United States, a non-recurring tax expense of EUR 245 million (EUR 439 million tax benefit in 2016) related to the integration of the former Alcatel Lucent and Nokia operating models; as well as income taxes for prior years primarily from to the disposal of the former Alcatel Lucent railway signaling business in 2006 to Thalès. This was partially offset by three factors: lower income taxes due to our regional profit mix in 2017 compared to 2016, lower losses than in 2016 in countries for which we do not recognize deferred tax assets, and a deferred tax benefit from re-measurement of deferred tax assets resulting from the tax rate changes (in

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countries other than the United States). Refer to Note 12, Income taxes, of our consolidated financial statements included in this annual report on Form 20-F.

On December 22, 2017, the United States passed a comprehensive set of tax reforms into law. The new law, known as the Tax Cuts and Jobs Act, includes numerous changes to prior tax law, including a permanent reduction in the federal corporate income tax rate from 35% to 21%. Our deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in the consolidated income statement in the period in which the law is substantively enacted. We concluded that the United States federal income tax rate reduction causes our United States deferred tax assets and liabilities to be revalued in 2017 and, therefore, recognized an additional tax provision of EUR 777 million related to such revaluation. The new tax law also contains several other changes, in addition to the reduction in the federal corporate tax rate, many of which become effective for tax years beginning in 2018. We continue to consider the impact all the tax reform provisions will have on us and have made reasonable estimates for certain effects in our December 31, 2017 consolidated financial statements, as appropriate.

Loss attributable to equity holders of the parent and earnings per share

The loss attributable to equity holders of the parent in 2017 was EUR 1 494 million, an increase of EUR 728 million, compared to a loss of EUR 766 million in 2016. The change in profit attributable to equity holders of the parent was primarily due to an income tax expense, compared to an income tax benefit in 2016 and a net negative fluctuation in financial income and expenses. This was partially offset by an operating profit in 2017, compared to an operating loss in 2016.

Our total basic EPS in 2017 decreased to negative EUR 0.26 (basic) and negative EUR 0.26 (diluted) compared to negative EUR 0.13 (basic) and negative EUR 0.13 (diluted) in 2016.

Cost savings program

On April 6, 2016, we launched a new cost savings program, targeting approximately EUR 1 200 million of recurring annual cost savings to be achieved in full year 2018. In 2017, we recognized restructuring and associated charges of approximately EUR 550 million related to the cost savings program. Cumulative recognized restructuring and associated charges are approximately EUR 1 300 million and we expect total restructuring and associated charges to be approximately EUR 1 900 million.

In 2017, we had restructuring and associated cash outflows of approximately EUR 550 million related to the cost savings program. Cumulative restructuring and associated cash outflows are approximately EUR 950 million and we expect total restructuring and associated cash outflows to be approximately EUR 2 250 million, including approximately EUR 550 million related to previous Nokia and Alcatel Lucent restructuring and cost savings programs.

For the year ended December 31, 2016 compared to the year ended December 31, 2015

The following table sets forth selective line items and the percentage of net sales that they represent for the years indicated.

For the year ended December 31	2016 EURm	% of net sales	2015 EURm	% of net sales	Year-on-year change %
Net sales	23 641	100.0	12 560	100.0	88
Cost of sales	(15 117)	(63.9)	(6 963)	(55.4)	117
Gross profit	8 524	36.1	5 597	44.6	52
Research and development expenses	(4 997)	(21.1)	(2 080)	(16.6)	140
Selling, general and administrative expenses	(3 767)	(15.9)	(1 772)	(14.1)	113
Other income and expenses	(860)	(3.6)	(48)	(0.4)	–
Operating (loss)/profit	(1 100)	(4.7)	1 697	13.5	–
Share of results of associated companies and joint ventures	18	0.1	29	0.2	(38)
Financial income and expenses	(287)	(1.2)	(186)	(1.5)	54
(Loss)/profit before tax	(1 369)	(5.8)	1 540	12.3	–
Income tax benefit/(expense)	457	1.9	(346)	(2.8)	–
(Loss)/profit for the year	(912)	(3.9)	1 194	9.5	–

Net sales

Continuing operations net sales in 2016 were EUR 23 641 million, an increase of EUR 11 081 million, or 88%, compared to
EUR 12 560 million in 2015. The increase in Continuing operations net sales was primarily attributable to growth in Nokia's Networks business and Group Common and Other, primarily related to the acquisition of Alcatel Lucent and, to a lesser extent, growth in Nokia Technologies.

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The following table sets forth distribution of net sales by geographical area for the years indicated.

For the year ended December 31	2016 EURm	2015 EURm	Year-on-year change %
Asia-Pacific	4 223	3 248	30
Europe(1)	6 410	3 817	68
Greater China	2 654	1 718	54
Latin America	1 458	979	49
Middle East & Africa	1 872	1 195	57
North America	7 024	1 603	338
Total	23 641	12 560	88

(1) All Nokia Technologies net sales are allocated to Finland.

Gross profit

Gross profit for Continuing operations in 2016 was EUR 8 524 million, an increase of EUR 2 927 million, or 52%, compared to EUR 5 597 million in 2015. The increase in gross profit was primarily due to Nokia's Networks business, partially offset by working capital-related purchase price allocation adjustments, which resulted in higher cost of sales and lower gross profit when the inventory was sold; and product portfolio integration-related costs, all of which primarily related to the acquisition of Alcatel Lucent. Gross margin for Continuing operations in 2016 was 36.1% compared to 44.6% in 2015. In 2016, cost of sales included working capital-related purchase price allocation adjustments of EUR 509 million, which resulted in higher cost of sales and lower gross profit when the inventory was sold; and product portfolio integration-related costs of EUR 274 million.

Operating expenses

Our R&D expenses for Continuing operations in 2016 were EUR 4 997 million, an increase of EUR 2 917 million, or 140%, compared to EUR 2 080 million in 2015. R&D expenses represented 21.1% of our net sales in 2016 compared to 16.6% in 2015. The increase in R&D expenses was primarily attributable to Nokia's Networks business, amortization of acquired intangible assets and depreciation of acquired property, plant and equipment; and, to a lesser extent, product portfolio integration costs, as well as Group Common and Other, all of which primarily related to the acquisition of Alcatel Lucent, in addition to Nokia Technologies. R&D expenses included amortization and depreciation of acquired intangible assets, and property, plant and equipment of EUR 619 million in 2016 compared to EUR 35 million in 2015, as well as product portfolio integration-related costs of EUR 61 million in 2016.

Our selling, general and administrative expenses for Continuing operations in 2016 were EUR 3 767 million, an increase of EUR 1 995 million, or 113%, compared to EUR 1 772 million in 2015. Selling, general and administrative expenses represented 15.9% of our net sales in 2016 compared to 14.1% in 2015. The increase in selling, general and administrative expenses was primarily attributable to Nokia's Networks business, amortization of acquired intangible assets and depreciation of acquired property, plant and equipment, and transaction and integration-related costs and Group Common and Other, all of which primarily related to the acquisition of Alcatel Lucent, as well as Nokia Technologies. Selling, general and administrative expenses included amortization and depreciation of acquired intangible assets, and property, plant and equipment of EUR 385 million in 2016 compared to EUR 44 million in 2015, as well as transaction and integration-related costs of EUR 294 million in 2016.

Other income and expenses for Continuing operations in 2016 was a net expense of EUR 860 million, a change of EUR 812 million, compared to a net expense of EUR 48 million in 2015. The change was primarily attributable to higher restructuring and associated charges and, to a lesser extent, the absence of realized gains related to certain investments made through venture funds. Other income and expenses included restructuring and associated charges of

EUR 759 million in 2016 compared to EUR 121 million in 2015.

Operating loss/profit

Our operating loss for Continuing operations in 2016 was EUR 1 100 million, a change of EUR 2 797 million, compared to an operating profit of EUR 1 697 million in 2015. The change in operating result was primarily attributable to higher R&D expenses and selling, general and administrative expenses, and a net negative fluctuation in other income and expenses, partially offset by higher gross profit. Our operating margin in 2016 was negative 4.7% compared to positive 13.5% in 2015.

The following table sets forth the impact of unallocated items on operating profit:

EURm	2016	2015
Total segment operating profit(1)	2 172	1 958
Amortization and depreciation of acquired intangible assets and property, plant and equipment	(1 026)	(79)
Release of acquisition-related fair value adjustments to deferred revenue and inventory	(840)	–
Restructuring and associated charges	(774)	(123)
Product portfolio strategy costs	(348)	–
Transaction and related costs, including integration costs relating to the acquisition of Alcatel Lucent	(295)	(99)
Other	11	40
Total operating (loss)/profit	(1 100)	1 697

(1) Excludes costs related to the acquisition of Alcatel Lucent and related integration, goodwill impairment charges, intangible asset amortization and other purchase price fair value adjustments, restructuring and associated charges and certain other items.

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Financial income and expenses

Financial income and expenses for Continuing operations was a net expense of EUR 287 million in 2016 compared to a net expense of EUR 186 million in 2015, an increase of EUR 101 million, or 54%. The change in financial income and expenses was primarily attributable to higher interest expenses, including charges of EUR 41 million related to the redemption of Alcatel Lucent bonds, net interest expenses of EUR 65 million for defined benefit pensions, and impairments of EUR 108 million for certain investments in private funds; partially offset by higher interest income, significantly lower foreign exchange losses and realized gains from venture fund distributions.

Refer to "—Liquidity and capital resources" below.

Loss/profit before tax

Our loss before tax for Continuing operations in 2016 was EUR 1 369 million, a change of EUR 2 909 million compared to a profit of EUR 1 540 million in 2015.

Income tax

Income taxes for Continuing operations was a net benefit of EUR 457 million in 2016, a change of EUR 803 million compared to a net expense of EUR 346 million in 2015. In 2016, net income tax benefit was primarily related to two factors. Firstly, we recorded a loss before tax compared to profit before tax in 2015. Secondly, following the completion of the squeeze-out of the remaining Alcatel Lucent securities, we launched actions to integrate the former Alcatel Lucent and Nokia operating models. In 2016, in connection with these integration activities, we transferred certain intellectual property to our operations in the United States, recording a tax benefit and additional deferred tax assets of EUR 348 million. In addition, we elected to treat the acquisition of Alcatel Lucent's operations in the United States as an asset purchase for United States tax purposes. The impact of this election was to utilize or forfeit existing deferred tax assets and record new deferred tax assets with a longer amortization period than the life of those forfeited assets. As a result of this we recorded EUR 91 million additional deferred tax assets in 2016.

Following the acquisition of Alcatel Lucent, we now have a strong presence in three jurisdictions: Finland, France and the United States, which had an impact on our effective tax rate in 2016. The local corporate tax rate in the United States and France is significantly higher compared to Finland. In addition, we do not recognize deferred tax assets for tax losses and temporary differences in France as our ability to utilize unrecognized deferred tax assets is currently uncertain. As of December 31, 2016 we have unrecognized deferred tax assets in France of EUR 4.8 billion.

Loss/profit attributable to equity holders of the parent and earnings per share

The loss attributable to equity holders of the parent in 2016 was EUR 766 million, a change of EUR 3 232 million, compared to a profit of EUR 2 466 million in 2015. Continuing operations generated a loss attributable to equity holders of the parent in 2016 of EUR 751 million compared to a profit of EUR 1 192 million in 2015. The change in profit attributable to equity holders of the parent was primarily attributable to the operating loss in 2016, compared to an operating profit in 2015 and, to a lesser extent, a net negative fluctuation in financial income and expenses, both of which primarily related to the acquisition of Alcatel Lucent. This was partially offset by an income tax benefit, resulting from the acquisition of Alcatel Lucent, compared to an income tax expense in 2015. In addition, the loss attributable to the non-controlling interests was higher, as a result of the acquisition of Alcatel Lucent. Our total basic EPS in 2016 decreased to negative EUR 0.13 (basic) and negative EUR 0.13 (diluted) compared to EUR 0.67 (basic) and EUR 0.63 (diluted) in 2015. In 2015, profit for the year included EUR 1 178 million gain on the Sale of the HERE Business recorded in Discontinued operations. From Continuing operations, EPS in 2016 decreased to negative EUR 0.13 (basic) and negative EUR 0.13 (diluted) compared to EUR 0.32 (basic) and EUR 0.31 (diluted) in 2015.

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Discontinued operations

Background

The two businesses below are presented as Discontinued operations in this annual report on Form 20 F. Refer to Note 6, Disposals treated as Discontinued operations, of our consolidated financial statements included in this annual report on Form 20-F.

HERE business

We sold our HERE digital mapping and location services business to a German automotive industry consortium comprised of AUDI AG, BMW Group and Daimler AG, that was completed on December 4, 2015 ("the Sale of HERE Business"). The transaction, originally announced on August 3, 2015, valued HERE at an enterprise value of EUR 2.8 billion, subject to certain purchase price adjustments. We received net proceeds from the transaction of approximately EUR 2.55 billion at the closing of the transaction. We recorded a gain on the Sale of the HERE Business, including a related release of cumulative foreign exchange translation differences of approximately EUR 1.2 billion, in the year ended December 31, 2015.

Devices & Services business

We sold substantially all of our Devices & Services business to Microsoft in a transaction that was completed on April 25, 2014 (the "Sale of the D&S Business"). We granted Microsoft a ten-year non-exclusive license to our patents and patent applications. The announced purchase price of the transaction was EUR 5.44 billion, of which EUR 3.79 billion related to the purchase of substantially all of the Devices & Services business, and EUR 1.65 billion to the ten-year mutual patent license agreement and the option to extend this agreement into perpetuity. Of the Devices & Services-related assets, our former CTO organization and our patent portfolio remained within the Nokia Group, and are now part of the Nokia Technologies business group.

For the year ended December 31, 2017 compared to the year ended December 31, 2016

Discontinued operations loss for the year on ordinary activities was EUR 27 million compared to a loss of EUR 29 million in 2016. Discontinued operations loss for the year was EUR 21 million compared to a loss of EUR 15 million in 2016. Loss for the year in 2017 included EUR 5 million gain on the Sale of the HERE Business. Loss for the year in 2016 included EUR 7 million gain on the Sale of the HERE Business and EUR 7 million gain on the Sale of the D&S Business.

For the year ended December 31, 2016 compared to the year ended December 31, 2015

As the Sale of the HERE Business closed on December 4, 2015, the financial results of Discontinued operations in 2016 are not comparable to the financial results of Discontinued operations in 2015.

The following table sets forth selective line items for the years indicated.

For the year ended December 31	2016 EURm	2015 EURm
Net sales	–	1 075
Cost of sales	–	(244)
Gross profit	–	831

Research and development expenses	–	(498)
Selling, general and administrative expenses	(11)	(213)
Other income and expenses	(4)	(23)
Operating (loss)/profit	(15)	97
Financial income and expenses	14	(9)
(Loss)/profit before tax	(1)	88
Income tax (expense)/benefit	(28)	8
(Loss)/profit for the year, ordinary activities	(29)	96
Gain on the Sale of the HERE and D&S Businesses, net of tax	14	1 178
(Loss)/profit for the year	(15)	1 274

Net sales

Discontinued operations did not generate net sales in 2016. In 2015, Discontinued operations net sales were EUR 1 075 million. The decrease was attributable to the absence of net sales from HERE.

Gross profit

Discontinued operations did not generate gross profit in 2016. In 2015, Discontinued operations gross profit was EUR 831 million and gross margin 77.3%. The decrease in gross profit was attributable to the absence of net sales and cost of sales from HERE.

Operating expenses

Discontinued operations operating expenses in 2016 were EUR 15 million, a decrease of EUR 719 million, compared to EUR 734 million in 2015. The decrease was attributable to the absence of operating expenses from HERE.

Operating loss/profit

Discontinued operations operating loss in 2016 was EUR 15 million, a change of EUR 112 million, compared to an operating profit of EUR 97 million in 2015. The change in Discontinued operations operating result was attributable to the absence of net sales and operating expenses from HERE.

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Loss/profit for the year

Discontinued operations loss in 2016 was EUR 15 million, a change of EUR 1 289 million compared to a profit of EUR 1 274 million in 2015. The gain on the Sale of the HERE Business recorded in 2015 was EUR 1 178 million, which included a reclassification of EUR 1 174 million of foreign exchange differences from other comprehensive income.

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Results of segments

Networks business

For the year ended December 31, 2017 compared to the year ended December 31, 2016

The following table sets forth selective line items and the percentage of net sales for the years indicated.

For the year ended December 31	2017 EURm	% of net sales	2016 EURm	% of net sales	Year-on-year change %
Net sales	20 523	100.0	21 830	100.0	(6)
Cost of sales	(12 590)	(61.3)	(13 370)	(61.2)	(6)
Gross profit	7 933	38.7	8 460	38.8	(6)
Research and development expenses	(3 730)	(18.2)	(3 777)	(17.3)	(1)
Selling, general and administrative expenses	(2 587)	(12.6)	(2 664)	(12.2)	(3)
Other income and expenses	95	0.5	(76)	(0.3)	–
Operating profit	1 711	8.3	1 943	8.9	(12)

Segment information(1)

For the year ended December 31	Ultra Broadband Networks (2) 2017 EURm	Global Services 2017 EURm	IP Networks and Applications (3) 2017 EURm	Networks total (4) 2017 EURm	Ultra Broadband Networks (2) 2016 EURm	Global Services 2016 EURm	IP Networks and Applications (3 2016 EURm
Net sales	8 970	5 810	5 743	20 523	9 758	6 036	6 036
Cost of sales	(4 723)	(4 697)	(3 170)	(12 590)	(5 210)	(4 825)	(3 335)
Gross profit	4 247	1 113	2 573	7 933	4 548	1 211	2 701
Research and development expenses	(2 361)	(85)	(1 284)	(3 730)	(2 393)	(96)	(1 288)
Selling, general and administrative expenses	(1 162)	(631)	(794)	(2 587)	(1 212)	(679)	(773)
Other income and expenses	57	14	24	95	(21)	(30)	(25)
Operating profit	781	411	519	1 711	922	406	615

(1) Refer to Note 4, Segment information, of our consolidated financial statements included in this annual report.
(2)

Net sales include EUR 6 895 million (EUR 7 357 million in 2016) attributable to Mobile Networks and EUR 2 075 million (EUR 2 401 million in 2016) attributable to Fixed Networks.

(3) Net sales include EUR 2 694 million (EUR 2 941 million in 2016) attributable to IP Routing; EUR 1 499 million (EUR 1 564 million in 2016) attributable to Optical Networks; and EUR 1 550 million (EUR 1 531 million in 2016) attributable to Nokia Software.

(4) Includes Total Services net sales of EUR 8 221 million (EUR 8 531 million in 2016) which consists of all the services sales of Nokia's Networks business, including Global Services of EUR 5 810 million (EUR 6 036 million in 2016) and the services of Fixed Networks, IP/Optical Networks and Nokia Software.

The following table sets forth distribution of net sales by geographical area for the years indicated.

For the year ended December 31	2017 EURm	2016 EURm	Year-on-year change %
Asia-Pacific	4 197	4 237	(1)
Europe	4 442	4 884	(9)
Greater China	2 466	2 640	(7)
Latin America	1 245	1 446	(14)
Middle East & Africa	1 897	1 891	–
North America	6 276	6 732	(7)
Total	20 523	21 830	(6)

Net sales

Nokia's Networks business net sales in 2017 were EUR 20 523 million, a decrease of EUR 1 307 million, or 6%, compared to EUR 21 830 million in 2016. The decrease in Nokia's Networks business net sales was primarily due to Ultra Broadband Networks and, to a lesser extent, IP Networks and Applications and Global Services. Ultra Broadband Networks net sales were EUR 8 970 million in 2017, a decrease of EUR 788 million, or 8%, compared to EUR 9 758 million in 2016. Global Services net sales were EUR 5 810 million in 2017, a decrease of EUR 226 million, or 4%, compared to EUR 6 036 million in 2016. IP Networks and Applications net sales were EUR 5 743 million in 2017, a decrease of EUR 293 million, or 5%, compared to EUR 6 036 million in 2016.

The decrease in Ultra Broadband Networks net sales is comprised of a decrease in Mobile Networks net sales of EUR 462 million and a decrease in Fixed Networks net sales of EUR 326 million.

In 2017, Mobile Networks net sales were adversely affected by challenging market conditions. The decrease in Mobile Networks net sales was primarily due to radio networks and, to a lesser extent, converged core networks, partially offset by growth in advanced mobile networks solutions. From a growth perspective, small cells continued to deliver strong performance. Also, within radio networks, LTE net sales grew, despite weakness in the global LTE market. For radio networks, the decrease was primarily related to Greater China, Europe and, to a lesser extent, North America and Latin America. This was partially offset by growth in Asia-Pacific. For converged core networks, the decrease was primarily related to North America, partially offset by growth in Asia-Pacific. For advanced mobile networks solutions, the increase was primarily related to North America and Greater China, partially offset by a decrease in Middle East & Africa.

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The net sales performance in Fixed Networks was in comparison to a particularly strong year 2016. The decrease in Fixed Networks net sales was primarily due to broadband access and services. The decrease was primarily related to three specific customers, which led to declines in Asia-Pacific, North America and Latin America. For broadband access, the decrease was primarily related to Asia-Pacific and, to a lesser extent, North America, partially offset by Europe. For services, the decrease was primarily related to North America, Europe and Latin America, partially offset by growth in Middle East & Africa and Greater China.

The decrease in Global Services net sales in 2017 was primarily due to systems integration, care and managed services, partially offset by growth in network implementation. For systems integration, the decrease was primarily related to Europe and, to a lesser extent, North America. The decrease in systems integration was attributable to the winding down of a specific set of legacy Alcatel Lucent contracts. For care, the decrease was primarily related to North America, Europe and Asia-Pacific, partially offset by growth in Greater China. For managed services, the decrease was primarily related to Asia-Pacific, partially offset by growth in Europe. For network implementation, the increase was primarily related to North America, Latin America and Asia-Pacific, partially offset by Middle East & Africa and Europe.

The decrease in IP Networks and Applications net sales is comprised of decrease in IP/Optical Networks net sales of EUR 312 million, partly offset by an increase in Nokia Software net sales of EUR 19 million.

The decrease in IP/Optical Networks net sales was due to both IP routing and optical networks, primarily due to weakness in the communications service provider market in preparation for a new product portfolio launch in IP routing. For IP routing, the decrease was primarily related to North America and, to a lesser extent, Europe and Latin America, partially offset by growth in Greater China. In addition, IP routing net sales were adversely affected by lower resale of third party IP routers. For optical networks, the decrease was primarily related to Latin America, North America and Europe, partially offset by Middle East & Africa and Asia-Pacific.

The increase in Nokia Software net sales was primarily due to growth in network management, services and emerging businesses, partially offset by service delivery platforms and operational support systems. The year-on-year performance of Nokia Software benefitted from the acquisition of Comptel. 2017 was a year of transformation for our software business. It announced and executed plans to: 1) build our first standalone software sales force, 2) strengthen its services and care practices, 3) increase R&D velocity through modern software development, including the introduction of a Common Software Foundation that will improve the user experience for Nokia Software software, 4) acquire and integrate Comptel and 5) introduce new products and services that provide customers with increased intelligence and ability to push automation to new levels.

Gross profit

Nokia’s Networks business gross profit in 2017 was EUR 7 933 million, a decrease of EUR 527 million, or 6%, compared to EUR 8 460 million in 2016. Nokia’s Networks business gross margin in 2017 was 38.7%, compared to 38.8% in 2016. The decrease in Nokia’s Networks business gross profit was primarily due to Ultra Broadband Networks and, to a lesser extent, IP Networks and Applications and Global Services.

Ultra Broadband Networks gross profit in 2017 was EUR 4 247 million, a decrease of EUR 301 million, or 7%, compared to EUR 4 548 million in 2016. The decrease in Ultra Broadband Networks gross profit was due to both Mobile Networks and Fixed Networks. The lower gross profit in both Mobile Networks and Fixed Networks was primarily due to lower net sales. Ultra Broadband Networks gross margin in 2017 was 47.3%, compared to 46.6% in 2016.

Global Services gross profit in 2017 was EUR 1 113 million, a decrease of EUR 98 million, or 8%, compared to EUR 1 211 million in 2016. The decrease in Global Services gross profit was primarily due to network implementation, care and network planning and optimization, partially offset by systems integration. Global Services gross profit was negatively affected by the absence of a benefit related to lower incentive accruals in 2016. Global Services gross margin in 2017 was 19.2%, compared to 20.1% in 2016.

IP Networks and Applications gross profit in 2017 was EUR 2 573 million, a decrease of EUR 128 million, or 5%, compared to EUR 2 701 million in 2016. The decrease in IP Networks and Applications gross profit was primarily due to IP/Optical Networks, partially offset by Nokia Software. The lower gross profit in IP/Optical Networks was primarily due to lower net sales. The higher gross profit in Nokia Software was due to higher net sales. IP Networks and Applications gross margin in 2017 was 44.8%, compared to 44.7% in 2016.

Operating expenses

Nokia's Networks business R&D expenses were EUR 3 730 million in 2017, a slight decrease of EUR 47 million, or 1%, compared to EUR 3 777 million in 2016. The decrease in Nokia's Networks business R&D expenses was primarily attributable to Ultra Broadband Networks R&D expenses, and to a lesser extent, Global Services R&D expenses. Ultra Broadband Networks R&D expenses were EUR 2 361 million in 2017, a decrease of EUR 32 million, compared to EUR 2 393 million in 2016. The decrease in Ultra Broadband Networks R&D expenses was primarily due to Mobile Networks, partially offset by Fixed Networks. The lower R&D expenses in Mobile Networks was primarily due to lower personnel expenses, reflecting progress related to our cost savings program, with reduced R&D related to legacy technologies, partially offset by an increase in R&D related to 5G. The higher R&D expenses in Fixed Networks was primarily related to investments to drive growth and higher returns in our current addressable market, as well as to expand into adjacent markets, both of which are priorities for Fixed Networks. Related to our current addressable market, Fixed Networks has increased its investments to enhance its portfolio of offerings towards the digital home and software defined access markets. Related to adjacent markets, Fixed Networks has increased its investments towards the cable access market, and is now offering a disruptive cable solution which gives operators the flexibility to choose from a full range of options across both fiber and cable to meet their unique network needs. Ultra Broadband Networks R&D expenses were negatively affected by the absence of a benefit related to lower incentive accruals for full year 2016. Global Services R&D expenses were EUR 85 million in 2017, a decrease of EUR 11 million, compared to EUR 96 million in 2016. The decrease in Global Services R&D expenses was primarily due to lower personnel expenses, reflecting progress related to our cost savings program. IP Networks and Applications R&D expenses were EUR 1 284 million in 2017, a decrease of EUR 4 million, compared to EUR 1 288 million in 2016.

Nokia's Networks business selling, general and administrative expenses were EUR 2 587 million in 2017, a decrease of EUR 77 million, or 3%, compared to EUR 2 664 million in 2016. The decrease in Nokia's Networks business selling, general and administrative expenses was attributable to decreases in both Ultra Broadband Networks and Global Services selling, general and administrative expenses, partially offset by an increase in IP Networks and Applications selling, general and administrative expenses. Ultra Broadband Networks selling, general and administrative expenses were EUR 1 162 million in 2017, a decrease of EUR 50 million, compared to EUR 1 212 million in 2016. The decrease in Ultra Broadband Networks selling, general and administrative expenses was primarily due to Mobile Networks. The lower selling, general and administrative expenses in Mobile Networks was primarily due to lower personnel expenses reflecting progress related to our cost savings program and lower consultancy

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costs. Ultra Broadband Networks selling, general and administrative expenses were negatively affected by the absence of a benefit related to lower incentive accruals for full year 2016. Global Services selling, general and administrative expenses were EUR 631 million in 2017, a decrease of EUR 48 million, compared to EUR 679 million in 2016. The decrease in Global Services selling, general and administrative expenses was primarily due to lower personnel expenses, reflecting progress related to our cost savings program. IP Networks and Applications selling, general and administrative expenses were EUR 794 million in 2017, an increase of EUR 21 million, compared to EUR 773 million in 2016. The increase in IP Networks and Applications selling, general and administrative expenses was primarily due to Nokia Software. The higher selling, general and administrative expenses in Nokia Software was primarily due to investments to build an independent, dedicated software sales organization.

Nokia's Networks business other income and expenses was an income of EUR 95 million in 2017, a change of EUR 171 million compared to an expense of EUR 76 million in 2016. The change in other income and expenses was attributable to Ultra Broadband Networks, IP Networks and Applications and Global services other income and expenses. The net positive fluctuation in Ultra Broadband Networks other income and expenses was primarily related to foreign exchange hedging. The net positive fluctuation in Global Services other income and expenses was primarily related to foreign exchange hedging and lower doubtful accounts allowances. The net positive fluctuation in IP Networks and Applications other income and expenses was primarily due to lower doubtful accounts allowances and a settlement with a component supplier.

Operating profit

Nokia's Networks business operating profit was EUR 1 711 million in 2017, a decrease of EUR 232 million compared to EUR 1 943 million in 2016. Nokia's Networks business operating margin in 2017 was 8.3% compared to 8.9% in 2016. The decrease in operating margin was attributable to decreases in both Ultra Broadband Networks and IP Networks and Applications operating margin, partly offset by a slight increase in Global Services operating margin. Ultra Broadband Networks operating margin decreased from 9.4% in 2016 to 8.7% in 2017. IP Networks and Applications operating margin decreased from 10.2% in 2016 to 9.0% in 2017. The decreases in both Ultra Broadband Networks and IP Networks and Applications operating margins in 2017 were primarily attributable to lower gross profit.

For the year ended December 31, 2016 compared to the year ended December 31, 2015

The following table sets forth selective line items and the percentage of net sales for the years indicated.

For the year ended December 31	2016 EURm	% of net sales	2015 EURm	% of net sales	Year -on- year change %
Net sales	21 830	100.0	11 548	100.0	89
Cost of sales	(13 370)	(61.2)	(7 006)	(60.7)	91
Gross profit	8 460	38.8	4 542	39.3	86
Research and development expenses	(3 777)	(17.3)	(1 738)	(15.0)	117
Selling, general and administrative expenses	(2 664)	(12.2)	(1 420)	(12.3)	88
Other income and expenses	(76)	(0.3)	(35)	(0.3)	119
Operating profit	1 943	8.9	1 349	11.7	44

Segment information(1)

For the year ended December 31	Ultra Broadband Networks(2) 2016	Global Services 2016	IP Networks and Applications(3) 2016	Networks total(4) 2016	Ultra Broadband Networks(2) 2015	Global Services 2015	IP Networks and Applications 2015
	EURm	EURm	EURm	EURm	EURm	EURm	EURm
Net sales	9 758	6 036	6 036	21 830	5 333	4 887	1 328
Cost of sales	(5 210)	(4 825)	(3 335)	(13 370)	(2 716)	(3 638)	(652)
Gross profit	4 548	1 211	2 701	8 460	2 617	1 249	676
Research and development expenses	(2 393)	(96)	(1 288)	(3 777)	(1 405)	(65)	(268)
Selling, general and administrative expenses	(1 212)	(679)	(773)	(2 664)	(674)	(472)	(274)
Other income and expenses	(21)	(30)	(25)	(76)	(46)	7	4
Operating profit	922	406	615	1 943	492	719	138

(1) Refer to Note 4, Segment information, of our consolidated financial statements included in this annual report on Form 20 F.
(2) Net sales include EUR 7 357 million (EUR 5 197 million in 2015) attributable to Mobile Networks and EUR 2 401 million (EUR 136 million in 2015) attributable to Fixed Networks.
(3) Net sales include EUR 2 941 million (EUR 515 million in 2015) attributable to IP Routing; EUR 1 564 million attributable to Optical Networks; and EUR 1 531 million (EUR 813 million in 2015) attributable to Nokia Software.
(4) Includes Total Services net sales of EUR 8 531 million (EUR 5 424 million in 2015) which consists of all the services sales of Nokia's Networks business, including Global Services of EUR 6 036 million (EUR 4 887 million in 2015) and the services of Fixed Networks, IP/Optical Networks and Nokia Software.

Net sales

Nokia's Networks business net sales in 2016 were EUR 21 830 million, an increase of EUR 10 282 million, or 89%, compared to EUR 11 548 million in 2015. The increase in Nokia's Networks business net sales was primarily attributable to the acquisition of Alcatel Lucent. Ultra Broadband Networks net sales were EUR 9 758 million in 2016, an increase of EUR 4 425 million, or 83%, compared to EUR 5 333 million in 2015. Global Services net sales were EUR 6 036 million in 2016, an increase of EUR 1 149 million, or 24%, compared to EUR 4 887 million in 2015. IP Networks and Applications net sales were EUR 6 036 million in 2016, an increase of EUR 4 708 million compared to EUR 1 328 million in 2015.

The increase in Ultra Broadband Networks net sales is comprised of an increase in Mobile Networks net sales of EUR 2 160 million and an increase in Fixed Networks net sales of EUR 2 265 million. The increase in Mobile Networks net sales was primarily attributable to the acquisition of Alcatel Lucent, which drove higher net sales in Radio Networks. This was partially offset by revenue declines from several key customers in Asia-Pacific and North America due to previous build-outs and investments, as well as adverse market conditions in Latin America. The increase in Fixed

Networks net sales was primarily attributable to the acquisition of Alcatel Lucent, and increases in Broadband Access, supported by the completion of a large project in Asia-Pacific.

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The increase in Global Services net sales of EUR 1 149 million was primarily attributable to the acquisition of Alcatel Lucent, affecting all services business units.

The increase in IP Networks and Applications net sales is comprised of an increase in IP/Optical Networks net sales of EUR 3 990 million and an increase in Nokia Software net sales of EUR 718 million, primarily attributable to the acquisition of Alcatel Lucent. The increase in IP/Optical Networks net sales was attributable to an increase in IP Routing net sales of EUR 2 426 million and an increase in Optical Networks net sales of EUR 1 564 million. The increase in Nokia Software net sales was primarily attributable to the acquisition of Alcatel Lucent, and increases in Services.

The following table sets forth distribution of net sales by geographical area for the years indicated.

For the year ended December 31	2016 EURm	2015 EURm	Year on year change %
Asia-Pacific	4 237	3 249	30
Europe	4 884	2 809	74
Greater China	2 640	1 716	54
Latin America	1 446	976	48
Middle East & Africa	1 891	1 195	58
North America	6 732	1 603	320
Total	21 830	11 548	89

On a regional basis, Nokia's Networks business net sales increased across all regions, with particularly strong growth in North America and Europe, primarily attributable to the acquisition of Alcatel Lucent.

The increase in Mobile Networks net sales was driven by the acquisition of Alcatel Lucent, resulting in significant improvements in the North America, Greater China, and the Middle East & Africa regions, partially offset by revenue decreases in Asia-Pacific, Europe and Latin America. The increase in Fixed Networks net sales was primarily attributable to the acquisition of Alcatel Lucent, supported by the completion of a large project in Asia-Pacific, offset by contraction in Europe.

The increase in Global Services net sales was primarily attributable to the acquisition of Alcatel Lucent, resulting in increases in North America, Europe, the Middle East & Africa, Greater China and Asia-Pacific regions, partially offset by revenue decreases in Latin America.

The increases in both IP/Optical Networks net sales and Nokia Software net sales were primarily attributable to significant increases in North America following the acquisition of Alcatel Lucent.

Gross profit

Nokia's Networks business gross profit in 2016 was EUR 8 460 million, an increase of EUR 3 918 million, or 86%, compared to EUR 4 542 million in 2015. The higher gross profit was due to both IP Networks and Applications and Ultra Broadband Networks, primarily related to the acquisition of Alcatel Lucent, partly offset by slightly lower gross profit in Global Services. Nokia's Networks business gross margin in 2016 was 38.8%, compared to 39.3% in 2015.

Ultra Broadband Networks gross profit in 2016 was EUR 4 548 million, an increase of EUR 1 931 million, or 74%, compared to EUR 2 617 million in 2015. The increase in Ultra Broadband Networks gross profit was primarily due to the acquisition of Alcatel Lucent. Ultra Broadband Networks gross margin in 2016 was 46.6%, compared to 49.1% in 2015.

Global Services gross profit in 2016 was EUR 1 211 million, a slight decrease of EUR 38 million, or 3%, compared to EUR 1 249 million in 2015. Global Services gross margin in 2016 was 20.1%, compared to 25.6% in 2015.

IP Networks and Applications gross profit in 2016 was EUR 2 701 million, an increase of EUR 2 025 million compared to EUR 676 million in 2015. The increase in IP Networks and Applications gross profit was primarily due to the acquisition of Alcatel Lucent. IP Networks and Applications gross margin in 2016 was 44.7%, compared to 50.9% in 2015.

Operating expenses

Nokia's Networks business R&D expenses were EUR 3 777 million in 2016, an increase of EUR 2 039 million, or 117%, compared to EUR 1 738 million in 2015. The increase in Nokia's Networks business R&D expenses was primarily attributable to an increase in headcount attributable to the acquisition of Alcatel Lucent, partially offset by operational and synergy savings. The increase in Nokia's Networks business R&D expenses was primarily attributable to Ultra Broadband Networks and IP Networks and Applications. Ultra Broadband Networks R&D expenses were EUR 2 393 million in 2016, an increase of EUR 988 million, compared to EUR 1 405 million in 2015. IP Networks and Applications R&D expenses were EUR 1 288 million in 2016, an increase of EUR 1 020 million, compared to EUR 268 million in 2015.

Nokia's Networks business selling, general and administrative expenses were EUR 2 664 million in 2016, an increase of EUR 1 244 million, or 88%, compared to EUR 1 420 million in 2015. The increase in Nokia's Networks business selling, general and administrative expenses was primarily attributable to an increase in headcount attributable to the acquisition of Alcatel Lucent, partially offset by operational and synergy savings. The increase in Nokia's Networks business selling, general and administrative expenses was attributable to Ultra Broadband Networks, Global Services and IP Networks and Applications. Ultra Broadband Networks selling, general and administrative expenses were EUR 1 212 million in 2016, an increase of EUR 538 million, compared to EUR 674 million in 2015. Global Services selling, general and administrative expenses were EUR 679 million in 2016, an increase of EUR 207 million, compared to EUR 472 million in 2015. IP Networks and Applications selling, general and administrative expenses were EUR 773 million in 2016, an increase of EUR 499 million, compared to EUR 274 million in 2015.

Nokia's Networks business other income and expenses was an expense of EUR 76 million in 2016, a change of EUR 41 million compared to an expense of EUR 35 million in 2015. The change was attributable to Global Services and IP Networks and Applications, primarily related to doubtful accounts allowances, partially offset by Ultra Broadband Networks.

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Operating profit

Nokia's Networks business operating profit was EUR 1 943 million in 2016, an increase of EUR 594 million compared to EUR 1 349 million in 2015. Nokia's Networks business operating margin in 2016 was 8.9% compared to 11.7% in 2015. The decrease in operating margin was primarily attributable to Global Services. Global Services operating margin decreased from 14.7% in 2015 to 6.7% in 2016. IP Networks and Applications operating margin decreased from 10.4% in 2015 to 10.2% in 2016. The decreases in both Global Services and IP Networks and Applications operating margins in 2016 were attributable to lower gross margin and higher operating expenses.

Nokia Technologies

For the year ended December 31, 2017 compared to the year ended December 31, 2016

The following table sets forth selective line items and the percentage of net sales for the years indicated.

For the year ended December 31	2017 EURm	% of net sales	2016 EURm	% of net sales	Year on year change %
Net sales	1 654	100.0	1 053	100.0	57
Cost of sales	(71)	(4.3)	(42)	(4.0)	69
Gross profit	1 583	95.7	1 011	96.0	57
Research and development expenses	(235)	(14.2)	(249)	(23.6)	(6)
Selling, general and administrative expenses	(218)	(13.2)	(184)	(17.5)	18
Other income and expenses	(6)	(0.4)	1	0.1	–
Operating profit	1 124	68.0	579	55.0	94

Net sales

Nokia Technologies net sales in 2017 were EUR 1 654 million, an increase of EUR 601 million, or 57%, compared to EUR 1 053 million in 2016. In 2017, EUR 1 602 million of net sales related to patent and brand licensing and EUR 52 million of net sales related to digital health and digital media. The increase in Nokia Technologies net sales was primarily due to recurring net sales related to new license agreements and settled arbitrations, non-recurring net sales related to settled arbitrations and new license agreements and, to a lesser extent, our brand partnership with HMD. This was partially offset by lower licensing income from certain existing licensees. In 2017, Nokia Technologies net sales included approximately EUR 300 million of non-recurring catch-up net sales related to prior years, compared to approximately zero in 2016.

Gross profit

Nokia Technologies gross profit in 2017 was EUR 1 583 million, an increase of EUR 572 million, or 57%, compared to EUR 1 011 million in 2016. The higher gross profit in Nokia Technologies was primarily due to higher net sales.

Operating expenses

Nokia Technologies R&D expenses in 2017 were EUR 235 million, a decrease of EUR 14 million, or 6%, compared to EUR 249 million in 2016. The decrease in Nokia Technologies R&D expenses was primarily due to lower patent portfolio costs.

Nokia Technologies selling, general and administrative expenses in 2017 were EUR 218 million, an increase of EUR 34 million, or 18%, compared to EUR 184 million in 2016. The increase in Nokia Technologies selling, general and administrative expenses was primarily due to a non-recurring licensing cost and the ramp-up of digital health. This was partially offset by lower licensing-related litigation costs, which benefitted from a reimbursement related to a settled arbitration, as well as lower business support costs. The higher selling, general and administrative expenses in digital health were primarily due to the acquisition of Withings in 2016.

Nokia Technologies other income and expense in 2017 was a net expense of EUR 6 million, a change of EUR 7 million compared to a net income of EUR 1 million in 2016.

Operating profit

Nokia Technologies operating profit in 2017 was EUR 1 124 million, an increase of EUR 545 million, or 94%, compared to an operating profit of EUR 579 million in 2016. The increase in Nokia Technologies operating profit was primarily attributable to higher gross profit. Nokia Technologies operating margin in 2017 was 68.0% compared to 55.0% in 2016.

For the year ended December 31, 2016 compared to the year ended December 31, 2015

The following table sets forth selective line items and the percentage of net sales for the years indicated.

For the year ended December 31	2016 EURm	% of net sales	2015 EURm	% of net sales	Year on year change %
Net sales	1 053	100.0	1 027	100.0	3
Cost of sales	(42)	(4.0)	(7)	(0.7)	–
Gross profit	1 011	96.0	1 020	99.3	(1)
Research and development expenses	(249)	(23.6)	(220)	(21.4)	13
Selling, general and administrative expenses	(184)	(17.5)	(109)	(10.6)	69
Other income and expenses	1	0.1	7	0.7	(86)
Operating profit	579	55.0	698	68.0	(17)

Net sales

Nokia Technologies net sales in 2016 were EUR 1 053 million, an increase of EUR 26 million, or 3%, compared to EUR 1 027 million in 2015. The increase in Nokia Technologies net sales was primarily attributable to higher IPR licensing income and the inclusion of Withings' net sales from June 2016 onwards, resulting from the acquisition of Withings, partially offset by the absence of non-recurring adjustments to accrued net sales from existing and new agreements, and lower licensing income from certain existing licensees.

Gross profit

Nokia Technologies gross profit in 2016 was EUR 1 011 million, a slight decrease of EUR 9 million, or 1%, compared to EUR 1 020 million in 2015.

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Operating expenses

Nokia Technologies R&D expenses in 2016 were EUR 249 million, an increase of EUR 29 million, or 13%, compared to EUR 220 million in 2015. The increase in R&D expenses in Nokia Technologies was primarily attributable to the inclusion of Bell Labs' patent portfolio costs, resulting from the acquisition of Alcatel Lucent, and higher investments in the areas of digital media and digital health.

The higher R&D expenses in digital health were primarily attributable to the inclusion of Withings' R&D expenses from June 2016. This was partially offset by the focusing of general research investments towards more specific opportunities.

Nokia Technologies selling, general and administrative expenses in 2016 were EUR 184 million, an increase of EUR 75 million, or 69%, compared to EUR 109 million in 2015. The increase in Nokia Technologies selling, general and administrative expenses was primarily attributable to the ramp-up of digital health and digital media, higher business support costs and increased licensing activity. The higher selling, general and administrative expenses in digital health were primarily attributable to the inclusion of Withings' selling, general and administrative expenses from June 2016.

Nokia Technologies other income and expense in 2016 was a net income of EUR 1 million, a decrease of EUR 6 million compared to a net income of EUR 7 million in 2015.

Operating profit

Nokia Technologies operating profit in 2016 was EUR 579 million, a decrease of EUR 119 million, or 17%, compared to an operating profit of EUR 698 million in 2015. The decrease in Nokia Technologies operating profit was primarily attributable to higher selling, general and administrative and R&D expenses. Nokia Technologies operating margin in 2016 was 55.0% compared to 68.0% in 2015.

Group Common and Other

For the year ended December 31, 2017 compared to the year ended December 31, 2016

The following table sets forth selective line items for the years indicated.

For the year ended December 31	2017 EURm	2016 EURm
Net sales	1 114	1 142
Cost of sales	(956)	(957)
Gross profit	158	185
Research and development expenses	(260)	(287)
Selling, general and administrative expenses	(219)	(235)
Other income and expenses	73	(13)
Operating loss	(248)	(350)

Net sales

Group Common and Other net sales in 2017 were EUR 1 114 million, a decrease of EUR 28 million, or 2%, compared to EUR 1 142 million in 2016. The decrease in Group Common and Other net sales was primarily due to Alcatel

Submarine Networks, partially offset by Radio Frequency Systems.

Gross profit

Group Common and Other gross profit in 2017 was EUR 158 million, a decrease of EUR 27 million, or 15%, compared to EUR 185 million in 2016. The lower gross profit was primarily due to Alcatel Submarine Networks. Group Common and Other gross margin in 2017 was 14.2% compared to 16.2% in 2016.

Operating expenses

Group Common and Other R&D expenses in 2017 were EUR 260 million, an decrease of EUR 27 million, or 9%, compared to EUR 287 million in 2016. The decrease in Group Common and Other R&D expenses was primarily due to lower personnel expenses, reflecting progress related to our cost savings program.

Group Common and Other selling, general and administrative expenses in 2017 were EUR 219 million, a decrease of EUR 16 million, or 7%, compared to EUR 235 million in 2016. The decrease in Group Common and Other selling, general and administrative expenses was primarily due to lower personnel expenses, reflecting progress related to our cost savings program.

Group Common and Other other income and expense in 2017 was a net income of EUR 73 million, a change of EUR 86 million compared to a net expense of EUR 13 million in 2016. The net positive fluctuation in other income and expenses was primarily due to the unwinding of a reinsurance contract, gains in venture fund investments and an expiration of a former Alcatel Lucent stock option liability.

Operating loss

Group Common and Other operating loss in 2017 was EUR 248 million, a change of EUR 102 million, compared to an operating loss of EUR 350 million in 2016. The change in Group Common and Other operating loss was primarily attributable to a positive fluctuation in other income and expense, and to a lesser extent, lower R&D and selling, general and administrative expenses, partly offset by lower gross profit.

For the year ended December 31, 2016 compared to the year ended December 31, 2015

The following table sets forth selective line items for the years indicated.

For the year ended December 31	2016 EURm	2015 EURm
Net sales	1 142	–
Cost of sales	(957)	–
Gross profit	185	–
Research and development expenses	(287)	(84)
Selling, general and administrative expenses	(235)	(97)
Other income and expenses	(13)	92
Operating loss	(350)	(89)

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Net sales

Group Common and Other net sales in 2016 were EUR 1 142 million, an increase of EUR 1 142 million, compared to approximately zero in 2015. The increase in Group Common and Other net sales was primarily due to Alcatel Submarine Networks and Radio Frequency Systems net sales, both of which related to the acquisition of Alcatel Lucent.

Gross profit

Group Common and Other gross profit in 2016 was EUR 185 million, compared to approximately zero in 2015. The Group Common and Other gross profit was attributable to gross profit from Alcatel Submarine Networks and Radio Frequency Systems, both of which related to the acquisition of Alcatel Lucent. Group Common and Other gross margin in 2016 was 16.2%.

Operating expenses

Group Common and Other R&D expenses in 2016 were EUR 287 million, an increase of EUR 203 million, compared to EUR 84 million in 2015. Group Common and Other R&D expenses increased, primarily attributable to Nokia Bell Labs, related to the acquisition of Alcatel Lucent.

Group Common and Other selling, general and administrative expenses in 2016 were EUR 235 million, an increase of EUR 138 million compared to EUR 97 million in 2015. The increase in Group Common and Other selling, general and administrative expenses was primarily attributable to higher central function costs, related to the acquisition of Alcatel Lucent.

Group Common and Other other income and expense in 2016 was a net expense of EUR 13 million, a change of EUR 105 million compared to a net income of EUR 92 million in 2015. The change was primarily attributable to the absence of realized gains related to certain investments made through venture funds and the non-cash impairment of certain financial assets.

Operating loss

Group Common and Other operating loss in 2016 was EUR 350 million, an increase of EUR 261 million, compared to an operating loss of EUR 89 million in 2015. The increase in Group Common and Other operating loss was primarily attributable to higher R&D and selling, general and administrative expenses and a net negative fluctuation in other income and expenses, partially offset by higher gross profit.

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Liquidity and capital resources

Financial position

As of December 31, 2017, our total cash and other liquid assets (defined as cash and cash equivalents; current available-for-sale investments, liquid assets; and investments at fair value through profit and loss, liquid assets) equaled EUR 8 280 million, a decrease of EUR 1 047 million, compared to EUR 9 327 million as of December 31, 2016. The decrease was primarily attributable to shareholder distributions, including payment of dividends of EUR 970 million and repurchases of shares of EUR 785 million; EUR 394 million cash outflow related to the acquisitions of businesses, and capital expenditures of EUR 601 million. The decrease was partially offset by EUR 1 811 million positive cash flow from operating activities, including EUR 597 million total cash inflows from net working capital. As of December 31, 2015, our total cash and other liquid assets equaled EUR 9 849 million.

As of December 31, 2017, our net cash and other liquid assets (defined as total cash and other liquid assets less long-term interest-bearing liabilities and short-term borrowings) equaled EUR 4 514 million, a decrease of EUR 785 million, compared to EUR 5 299 million as of December 31, 2016. The decrease was mainly attributable to drivers affecting our total cash and other liquid assets as described above. Our interest-bearing liabilities decreased by EUR 262 million primarily attributable to changes in foreign exchange rates and the issuance of senior notes and repurchases of selected outstanding senior notes during 2017. As of December 31, 2015, our net cash and other liquid assets equaled EUR 7 775 million.

As of December 31, 2017, our cash and cash equivalents equaled EUR 7 369 million, a decrease of EUR 128 million compared to EUR 7 497 million as of December 31, 2016. As of December 31, 2015, our cash and cash equivalents equaled EUR 6 995 million.

Cash flow

2017

Our cash inflow from operating activities in 2017 of EUR 1 811 million increased by EUR 3 265 million compared to a cash outflow of EUR 1 454 million in 2016. The increase was primarily attributable to a EUR 597 million cash release from net working capital in 2017 compared to a EUR 2 207 million cash being tied-up in 2016; and net profit, adjusted for non-cash items, of EUR 2 125 million, an increase of EUR 645 million compared to EUR 1 480 million in 2016. The primary driver for the decrease in net working capital was related to an increase in liabilities of EUR 1 314 million compared to a decrease of EUR 2 758 million in 2016. The increase in liabilities was primarily attributable to an up-front cash payment of approximately EUR 1 700 million, part of which has been recognized as net sales in 2017, and an increase in accounts payable partially offset by restructuring and associated cash outflows of approximately EUR 550 million. The increase in liabilities was partially offset by an increase in receivables of EUR 421 million and an increase in inventories of EUR 296 million.

Cash flow from operating activities also included interest paid of EUR 409 million, an increase of EUR 100 million compared to EUR 309 million in 2016; paid taxes of EUR 555 million, an increase of EUR 52 million compared to EUR 503 million in 2016; and interest received of EUR 53 million, a decrease of EUR 32 million compared to EUR 85 million in 2016. In 2017, out of EUR 555 million paid taxes, approximately EUR 260 million were non-recurring in nature and related to the disposal of the former Alcatel Lucent railway signaling business in 2006 to Thalés and the integration of the former Alcatel Lucent and Nokia operating models. In 2017, out of EUR 409 million interest paid, EUR 250 million were non-recurring in nature and related primarily to our offer to purchase selected outstanding notes.

In 2017, our cash inflow from investing activities equaled EUR 10 million, a decrease of EUR 6 826 million compared to EUR 6 836 million cash inflow in 2016. The decrease in cash inflow from investing activities was primarily driven by cash outflow due to the acquisition of businesses of EUR 394 million, mainly related to the acquisition of Comptel, compared to EUR 5 819 million cash inflow in 2016, which included cash and cash equivalents acquired as part of the acquisition of Alcatel Lucent. In 2017, cash outflow from acquisition of businesses was offset by proceeds from maturities and sale of current available-for-sale investments, liquid assets of EUR 3 265 million partially offset by purchase of current available-for-sale investments, liquid assets of EUR 2 729 million.

In 2017, our capital expenditure equaled EUR 601 million, an increase of EUR 124 million compared to EUR 477 million in 2016. Major items of capital expenditure in 2017 included investments in R&D equipment, test equipment, hardware for telco and cloud environment, plants, buildings and construction for transformation projects, and repair or improvements of sites.

In 2017, our cash outflow from financing activities of EUR 1 749 million decreased by EUR 3 174 million in comparison to EUR 4 923 million cash outflow in 2016. The decrease in cash outflows was primarily driven by proceeds from long-term borrowings of EUR 2 129 million, an increase of EUR 1 904 million compared to 2016, mainly related to issued new bonds; repayment of long-term borrowings of EUR 2 044 million, a decrease of EUR 555 million compared to 2016; and paid dividends of EUR 970 million, a decrease of EUR 545 million compared to 2016. The decrease in cash outflow was partially offset by purchase of treasury shares of EUR 785 million representing an increase of EUR 569 million compared to 2016.

2016

Our cash outflow from operating activities in 2016 of EUR 1 454 million decreased by EUR 1 957 million compared to a cash inflow of EUR 503 million in 2015. The decrease was primarily attributable to a EUR 2 207 million increase in net working capital in 2016 compared to a EUR 1 377 million increase in 2015 and a decrease in net profit, adjusted for non-cash items of EUR 727 million. The primary driver for the increase in net working capital related to a decrease in liabilities of EUR 2 758 million in 2016 compared to a decrease of EUR 990 million in 2015, partially offset by a decrease in inventories of EUR 533 million in 2016 compared to a decrease of EUR 341 million in 2015. The decrease in liabilities mainly related to restructuring cash outflows, reductions in liabilities related to our actions to harmonize working capital processes and practices, termination of Alcatel Lucent’s license agreement with Qualcomm, the payment of incentives related to Alcatel Lucent’s and Nokia’s strong business performance in 2015 and the impact of foreign exchange fluctuations.

The decrease in cash flow from operating activities was also attributable to a EUR 400 million increase in cash outflows related to net interest and income taxes paid in 2016 and 2015 of EUR 727 million and EUR 327 million, respectively. Interest paid included cash outflows from the premium

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paid for the redemption of Alcatel Lucent bonds and notes related to our capital structure optimization program. Income taxes paid included a non-recurring tax payment due to the integration of the former Alcatel Lucent and former Nokia operating models into one combined operating model.

In 2016, our cash inflow from investing activities equaled EUR 6 836 million, representing an increase of EUR 4 940 million compared to EUR 1 896 million cash inflow from investing activities in 2015. The increase in cash inflow from investing activities was primarily driven by cash and cash equivalents acquired as part of the acquisition of Alcatel Lucent and an increase in proceeds from maturities and sale of current available-for-sale investments, liquid assets partially offset by purchase of current available-for-sale investments and liquid assets.

In 2016, our capital expenditure equaled EUR 477 million, an increase of EUR 163 million, as compared to EUR 314 million in 2015. Major items of capital expenditure in 2016 included investments in R&D equipment, test equipment, hardware for telco and cloud environment, plants, buildings and construction for transformation projects, repair or improvements of sites as well as intangible rights.

In 2016, our cash outflow from financing activities of EUR 4 923 million increased by EUR 4 343 million in comparison to our cash outflow of EUR 580 million in 2015. The increase in cash outflows was primarily driven by the repayment of long-term borrowings of EUR 2 599 million mainly including the redemption of Alcatel Lucent bonds and notes related to our capital structure optimization program, paid dividends of EUR 1 515 million primarily related to the payment of the ordinary and special dividends, purchase of equity instruments of subsidiaries of EUR 724 million related to the purchase of Alcatel Lucent shares and the equity component of the purchased Alcatel Lucent convertible bonds and EUR 216 million cash outflow related to the commencement of Nokia's share repurchasing program.

Financial assets and debt

As of December 31, 2017, our net cash and other liquid assets equaled EUR 4 514 million and consisted of EUR 8 280 million in total cash and other liquid assets and EUR 3 766 million of long-term interest-bearing liabilities and short-term borrowings.

We hold our cash and other liquid assets predominantly in euro. Our liquid assets are mainly invested in high-quality money-market and fixed income instruments with strict maturity limits. We also have a EUR 1 579 million undrawn revolving credit facility available for liquidity purposes.

As of December 31, 2017, our interest-bearing liabilities consisted of EUR 231 million notes due in 2019, USD 581 million notes due in 2019, EUR 500 million notes due 2021, USD 500 million notes due 2022, EUR 750 million notes due 2024, USD 500 million notes due 2027, USD 74 million notes due in 2028, USD 206 million notes due in 2029, USD 500 million notes due in 2039 and EUR 326 million of other liabilities. The notes maturing in 2019, 2021, 2022, 2024, 2027 and 2039 are issued by Nokia Corporation, while the notes maturing in 2028 and 2029 are issued by Lucent Technologies Inc., a predecessor to Nokia of America Corporation (Nokia's wholly-owned subsidiary, formerly known as Alcatel-Lucent USA Inc.). Refer to Note 23, Interest-bearing liabilities, of our consolidated financial statements included in this annual report on Form 20-F for further information regarding our interest-bearing liabilities.

In March 2017, we executed capital markets transactions, including issuances of EUR 500 million notes due in 2021 and EUR 750 million notes due 2024 and, pursuant to cash tender offers, purchases of EUR 269 million of notes due 2019, USD 86 million of notes due 2028 and USD 401 million of notes due 2029. In June 2017, we executed additional capital market transactions, including issuances of USD 500 million notes due 2022 and USD 500 million notes due 2027 and, pursuant to cash tender offers, purchases of USD 419 million of notes due 2019, USD 140 million of notes due 2028 and USD 753 million of notes due 2029.

In June 2017, we exercised our option to extend our EUR 1 579 million revolving credit facility from June 2019 to June 2020. The facility has no financial covenants and remains undrawn.

We consider that with EUR 8 280 million of cash and other liquid assets as well as our EUR 1 579 million revolving credit facility, we have sufficient funds to satisfy our future working capital needs, capital expenditures, R&D investments, structured finance, venture fund commitments, acquisitions and debt service requirements, at least through 2018. We further consider that with our current credit ratings of BB+ by Standard & Poor's and Ba1 by Moody's, we have access to the capital markets should any funding needs arise in 2018.

We aim to re-establish our investment grade credit rating.

Off-balance sheet arrangements

There are no material off-balance sheet arrangements that have, or are reasonably likely to have, a current or future effect on our financial condition, changes in financial condition, revenues or expenses, results of operations, liquidity, capital expenditures or capital resources that are material to investors, except for the purchase obligations and leasing commitments, as well as guarantees and financing commitments disclosed in Note 30, Commitments and contingencies, of our consolidated financial statements included in this annual report on Form 20-F.

Capital structure optimization program

In 2015, we announced a two-year, EUR 7 billion program to optimize the efficiency of our capital structure (our "capital structure optimization program"). The capital structure optimization program was initially subject to the closing of the acquisition of Alcatel Lucent and the Sale of the HERE Business, as well as the conversion of all Nokia and Alcatel Lucent OCEANE convertible bonds. The Sale of the HERE business closed in December 2015. The result of the successful offer for Alcatel Lucent securities was announced on January 5, 2016 and 100% ownership was reached on November 2, 2016. However, not all convertible bonds were converted.

In 2017, we completed the following shareholder distributions as part of the capital structure optimization program:

§ ordinary dividend for 2016 of EUR 0.17 per share, totaling EUR 963 million, paid in June 2017; and
§ share repurchases totaling EUR 785 million to complete our EUR 1 billion share repurchase program commenced in November 2016.

Thereafter, we consider that the Capital Structure Optimization Program announced in 2015 has been completed.

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Structured finance

Structured finance includes customer financing and other third-party financing. Network operators occasionally require their suppliers, including us, to arrange, facilitate or provide long-term financing as a condition for obtaining infrastructure projects.

As of December 31, 2017, our total customer financing, outstanding and committed, equaled EUR 655 million, an increase of EUR 303 million as compared to EUR 352 million in 2016. As of December 31, 2015, our total customer financing, outstanding and committed, equaled EUR 213 million. Customer financing primarily consisted of financing commitments to network operators.

Refer to Note 36, Risk management, of our consolidated financial statements included in this annual report on Form 20-F for further information relating to our committed and outstanding customer financing.

We expect our customer financing commitments to be financed mainly from cash and other liquid assets and through cash flow from operations.

As of December 31, 2017, guarantees of our performance consisted of bank guarantees given on behalf of Nokia to its customers for EUR 1 678 million (EUR 1 805 million as of December 31, 2016). In addition, Nokia Corporation issued corporate guarantees directly to our customers with primary obligation for EUR 1 114 million (EUR 1 608 million as of December 31, 2016). These instruments entitle our customers to claim payments as compensation for non-performance by Nokia of its obligations under supply agreements. Depending on the nature of the instrument, compensation is either payable on demand, or is subject to verification of non-performance.

Financial guarantees and any collateral pledged that we may give on behalf of customers, represent guarantees relating to payment by certain customers and other third parties under specified loan facilities between such customers or other third parties and their creditors. Our obligations under such guarantees are released upon the earlier of expiration of the guarantee or early payment by the customer or other third party.

Refer to Note 30, Commitments and contingencies, of our consolidated financial statements included in this annual report on Form 20-F for further information regarding commitments and contingencies.

Venture fund investments and commitments

We make financing commitments to a number of unlisted venture funds that make technology-related investments. The majority of the investments are managed by Nokia Growth Partners which specializes in growth-stage investing, seeking companies that are changing the face of mobility and connectivity.

As of December 31, 2017, our unlisted venture fund investments equaled EUR 661 million, as compared to EUR 819 million as of December 31, 2016. Refer to Note 24, Fair value of financial instruments, of our consolidated financial statements included in this annual report on Form 20-F for further information regarding fair value of our unlisted venture fund investments.

As of December 31, 2017, our venture fund commitments equaled EUR 396 million, as compared to EUR 525 million as of December 31, 2016. As a limited partner in venture funds, we are committed to capital contributions and entitled to cash distributions according to the respective partnership agreements and underlying fund activities. Refer to Note 30, Commitments and contingencies, of our consolidated financial statements included in this annual report on Form 20-F for further information regarding commitments and contingencies.

Treasury policy

Treasury activities are governed by the Nokia Treasury Policy approved by the President and CEO and supplemented by operating procedures approved by the CFO, covering specific areas such as foreign exchange risk, interest rate risk, credit and liquidity risk. The objective of treasury's liquidity and capital structure management activities is to ensure that we have sufficient liquidity to go through unfavorable periods without being severely constrained by the availability of funds to execute Nokia's business plans and implement Nokia's long-term business strategy. We are risk-averse in our treasury activities.

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Material subsequent events

After December 31, 2017 no material subsequent events have taken place.

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Sustainability and corporate responsibility

We create the technology to connect the world and we aim to do this in a responsible way.

We work together with key stakeholders to drive change and enable better lives, greater access to opportunity and a healthier planet. We design, create and deliver technology that can have a positive impact on people and the world around us. We align with globally recognized ethical and responsible business practices and frameworks, putting in place the processes, policies and programs to achieve our aim.

We believe we can achieve our greatest impact on the world's sustainability challenges by developing and enhancing solutions and technology that improve lives and provide greater opportunities for people. The continued development and rollout of 5G and IoT has the potential to socially and economically empower any individual. These, and other technologies can bring about smart efficiencies and improvements in cities, homes, and industry as well as improved access to digital health, greater public safety and a better climate. Our main business of delivering networks, technology solutions and services to operators, enterprises and institutions provides the greatest potential positive impact on sustainable development.

Materiality assessment and sustainability performance

Our sustainability approach is aligned with both our business strategy and focus, as well as the key material issues identified in our materiality analysis. Our sustainability priorities remain: to improve people's lives with technology, to protect the environment, to conduct our business with integrity, and to respect our people. Sustainability and corporate responsibility issues are reviewed regularly at all levels within Nokia, including review and feedback from the Board of Directors and the Group Leadership Team.

In 2017, we revisited and updated our materiality analysis. We analyzed current stakeholder requirements, our influence on sustainable development throughout the value chain, and further embedded the UN Sustainable Development Goals ("SDGs"). We believe the technology we create can have a positive impact on all 17 SDGs, but place special focus on the areas where we can achieve the greatest positive outcomes.

Based on the materiality analysis, we concentrate our efforts on the benefits of connectivity and sustainable products, environmental impact and climate change challenges. We work hard to ensure ethical business practices and support the increasing need for data privacy and freedom of expression, supply chain responsibility and transparency, health & safety, and employee engagement as well as increased diversity. More details on our materiality assessment, including how we support the UN SDGs can be found in our People & Planet Report at www.nokia.com/people&planet.

Setting concrete targets

In May 2017, we published our achievements against 25 targets in our People & Planet sustainability report online and set 46 short and long-term targets for the period 2017 to 2030. We also specifically set and received approval for our science based targets on carbon emissions both for our products in use and for our operations. We were the first major telecoms vendor to set these targets, showing our true commitment to take action in the fight against climate change.

EcoVadis is one of the evaluation platforms through which we provide annual sustainability information for evaluation which is then shared with customers as requested. In 2017, we were in the top 1% of suppliers assessed, achieving excellent scores in environment, sustainable procurement, and labor practices. We also retained for a second consecutive year our listing as Industry leader in the Communications Equipment ("CMT") sector of the Dow Jones Sustainability Indices ("DJSI"). We are listed in both the World and European DJSI indices.

Other recognitions included being ranked at leadership level in the CDP for our work on and disclosure of climate change data and being listed in the Europe 120 and Eurozone 120 indices of Euronext Vigeo. We were also reconfirmed as a constituent of Ethibel Sustainability Indices and were among Corporate Knights Global 100 Most Sustainable Corporations in the world in 2017.

We implement a variety of mitigation processes and procedures to deal with any day-to-day potential environmental, social and ethical risks in our daily business. Potential external global environmental, social, and ethical risks are discussed in more detail under the relevant topic areas below. We have provided detailed reports on our progress and performance in sustainability and corporate responsibility matters annually, and online for over a decade. For further information, refer to our People and Planet report, which is prepared in accordance with the GRI and UN Global Compact sustainability reporting guidelines, at http://www.nokia.com/en_int/about-us/sustainability.

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Improving people's lives through technology

Our radio networks' customers provide service for around 5.7 billion subscriptions worldwide. We have set a public target of helping our customers connect the next billion measured by number of subscriptions in our radio customers' networks and by number of fixed lines shipped to our customers.

1 bn

We have set the target of helping our customers to connect the next billion by 2022

44%

The networks we modernized brought on average energy savings of 44% for our customers

We have continued to develop our public safety portfolio and Nokia Saving Lives project demonstrates the power of technology to save lives by combining mobile communications technology with drones and applications like real-time high-definition video and infrared camera. We have also now included a humanitarian aid category into the Nokia Open Innovation Challenge 2017. Nokia ViTrust, using LTE, enables public safety networks to deliver real time video and data services that greatly enhance situational awareness and response time in emergencies when every second counts.

We also work closely with Non-Governmental Organizations ("NGOs"), customers, and communities in our corporate community investment. Our strategic social themes are: connecting the unconnected, empowering women, and saving lives. In 2017, as part of our community programs we collaborated with others to realize programs in gender diversity that encourage girls into Science Technology Engineering and Mathematics and technology careers, such as greenlight4girls (see www.greenlightforgirls.org) and CodeBus Africa (www.finland100africa.fi).

We look for initiatives where technology can make a positive contribution to people's lives. For example, in India we support the Save the Children led Forecast Application for Risk Management ("FARM") initiative which is a pioneering initiative that would enable farmers to reduce input costs and risks of crop failure by taking informed farming decisions and investing the savings in their children and families. This technology aims to galvanize the farmers against the ill-effects of changing climatic patterns. It is currently being implemented in Nagapattinam district, Tamil Nadu.

Protecting the environment

We believe that we have more opportunities than risks related to the environment. Our key potential environmental risks are the adverse effects resulting from climate change as well as natural and man-made disasters in countries where we have manufacturing or suppliers. These effects could include a material adverse impact on our ability to supply products and services, and therefore on our potential sales.

We are committed to protecting the environment and to the fight against climate change by making our operations eco-friendly and reducing the energy usage of the products we deliver to our customers. We have in place a mature, robust environmental management system, and company-wide environmental policy and procedures. We also provide for estimated costs of environmental remediation relating to soil, groundwater, surface water and sediment contamination when we become obliged, legally or associatively, to perform restorative work on current and/or legacy sites.

Our greatest environmental contribution comes from improving the energy efficiency of our products and solutions in use, as well as driving the positive impact digital technology can have in the world. Our environmental management system helps us monitor our progress and identify ways to improve further. We manage our own footprint through continued certification to ISO 14001 environmental management standard and our performance is audited regularly by external auditors. We apply a circular economy approach, for example, offering an Asset Recovery Service, including remanufacturing, reuse and recycling of older equipment as part of product lifecycle management. In 2017, through our voluntary programs, we sent around 2 600 metric tons of old telecommunications equipment for materials recovery and we remanufactured or reused approximately 68 000 units.

Energy efficiency and responsible waste management remain key objectives in our operations. Working with the Science Based Targets ("SBT") initiative we have set the long-term target of reducing emissions from our operations by 41% by 2030, against 2014 baseline year. Read more at www.sciencebasedtargets.org. In 2017, we were well on track towards the target. As a main element of the Scope 1 and 2 emissions, our total energy consumption across our facilities decreased by 3% as compared to 2016.

Targeting zero emissions

In terms of our products in use, we have also set an SBT target for scope 3 emissions – and particularly for emissions from customer use of our products. We target to reduce these emissions by 75% by 2030 compared to 2014 baseline, and are currently on track. We also further developed our zero-emissions radio network offering, which now includes some 20 products and services. We explored the use of liquid cooling for base station sites as well as investigating the capacity to capture waste heat from the base stations and use it as useful heat e.g. for heating buildings. We have delivered zero emission products to 120 customers around the world, helping them reduce their emissions. Modernization is a key component to enable greater energy efficiency. In 2017, the customer base-station sites we modernized used on average 44% less energy than those where our customers did not modernize. This reduces the environmental impact of electricity consumption and is directly reflected as increased financial benefits for our customers.

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Conducting our business with integrity

We apply our Code of Conduct across our operations which allows us to build and maintain personal integrity and protect our reputation. The Code of Conduct includes key business policy statements for 14 topics, including Improper Payments/Anti-Corruption, Fair Employment Practices, Human Rights, Environment and Working with Suppliers. We emphasize the implementation and understanding of the Code of Conduct across our workforce, sales and supplier interactions. Our employees are expected to comply with our Code of Conduct. In addition, employees are expected to successfully complete a training module on ethical business practices. In 2017, 86% of our employees completed this training against our target of 95%. We will continue and strengthen our efforts to increase the completion percentage of this training in order to meet or exceed this target in 2018.

Anti-corruption and bribery

Our Code of Conduct covers, for example, anti-corruption and bribery issues and is further supported by our internal Anti-Corruption Policy. As a global company working in many countries around the world, we naturally can face risks related to corruption and bribery. To mitigate those risks we have instigated a Compliance Controls Framework ("CCF"). This is a bottom-up exercise which includes internal gap-analysis workshops and localized risk mitigation plans. As per target for 2017, the Ethics & Compliance team together with relevant senior leaders carried out 20 CCF reviews during 2017. We also use face-to-face training, open communication and leadership roundtables. For example, we held specific anti-corruption training targeting supplier and customer facing employee groups which have been identified as groups who may face the greatest potential risk. We perform risk-based due diligence procedures for different categories of third parties (suppliers and business partners) to assess and to manage potential risks related to engaging and working with them. We also screen new suppliers as part of our anti-corruption supplier program, using two levels of screening according to perceived risk. If issues are identified during screening, additional information or actions are required of the supplier, or the supplier is rejected and cannot be used.

Oversight and grievance mechanisms

Leadership involvement and oversight of ethics and compliance are provided by the Board via the Audit Committee, which convened nine times in 2017, and covered ethics and compliance topics in five of those meetings. Compliance management is further supported by both global and regional compliance committees. Employees and external stakeholders are urged to report any ethical misconduct using our dedicated Nokia EthicsPoint channels via email, phone or online, anonymously if desired.

In 2017, our Ethics & Compliance office received 678 concerns, of which 257 were investigated by Ethics & Compliance Investigations as alleged violations of our Code of Conduct. We also implemented corrective actions including 47 dismissals and 45 written warnings following these and other investigations.

Human rights

Our human rights work is guided by the Code of Conduct and the Human Rights Policy. We feel that more connectivity is better than less and that the technologies we provide are a social good that can support human rights by enabling free expression, access to information, exchange of ideas and economic development. However, we have identified the potential misuse of the products and technology we provide, as the most salient human rights risk in our operations. We aim to ensure the technologies we provide are used to respect, and not to infringe human rights. We have also identified potential human rights related risks in our supply chain. Please read more about how we manage our supply chain, including the KPI on conflict-free smelters, in the “Responsible sourcing” section.

Freedom of expression and privacy

In 2017, to increase transparency, we became the first telecoms vendor to publish real human rights due diligence cases to increase the dialogue and understanding of the issues vendors can face. We run human rights due diligence processes as part of our global sales process, to further mitigate the potential risks of product misuse. In March 2017, we took a seat on the board of the Global Network Initiative ("GNI") as a full member and as the first and only telecommunications equipment provider. The former Telecommunications Industry Dialogue was disbanded as the majority of its members have taken up membership in the GNI.

In June 2017, we published our Modern Slavery Statement. While it is often perceived that ICT may enable many activities related to modern slavery, it is our mission to help find ways in which the technology we provide can be used to eradicate modern slavery. We work with others in the industry to identify ways through which we can, as an industry, contribute with concrete solutions to tackling some of the issues related to modern slavery. To this end we co-hosted a multi-stakeholder event to increase the cooperation and dialogue around the role of digital technology in tackling modern slavery. Moving forward, we will also continue to call on other ICT companies to join us in this dialogue.

Responsible sourcing

Whereas our Code of Conduct primarily directs how we work in Nokia, our Supplier Requirements, common to all Nokia suppliers, is part of the contract appendices with suppliers and details related requirements from suppliers. Nokia Supplier Requirements contain requirements on such responsibility related domains as environment, security, privacy, risk management, human resources management, and health. We run robust assessments as well as training with our supplier network to support them in meeting our ethical standards and improving performance where necessary.

In 2017, we implemented 393 supply chain audits (390 in 2016), which included 72 on-site audits on Corporate Responsibility topics; 47 were on-site audits against our supplier requirements and 274 suppliers were assessed using the EcoVadis scorecards. Additionally, we run training workshops for suppliers operating in high-risk countries. In 2017, we organized online training on management of climate change and conflict minerals, and we arranged face-to-face training workshops establishing improvement plans and actions for 253 suppliers. An extract from the Nokia Supplier Requirements document showing a summary of the corporate responsibility requirements is available online at www.nokia.com/people&planet.

We also carry out Health & Safety Maturity Assessments with those high-risk suppliers who for example work at height or with electricity. In 2017, we assessed 975 suppliers delivering high-risk activity using our H&S Maturity Assessment Process and 81% of assessed suppliers met "H&S compliant supplier"-status. By the end of 2018 we target to increase the percentage of suppliers meeting H&S compliant supplier status to 90%.

The traceability of our materials and ensuring our products are conflict-free is a priority for us, which is also reflected in our Conflict Minerals Policy. In 2017, 83% (84% in 2016) of smelters identified as part of our supply chain have been validated as conflict-free or are active in the validation process. In our Mobile Networks business we target to achieve full traceability of the smelters in our supply chain and their conflict-free status by

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the end of 2018, and achieve full traceability at the Nokia Group level by the end of 2020. Refer to our conflict minerals report available at http://www.nokia.com/en_int/about-us/sustainability/downloads.

We work closely with our supply chain through the CDP Supply Chain Program to jointly create environmental improvement programs and better our upstream indirect emissions that occur in our value chain. In 2017, 292 of our key suppliers responded to the CDPs request to disclose their climate performance information and 153 (127 in 2016) also provided emission reduction targets. With this result, we have achieved our target to have 150 suppliers setting emission reduction targets by end of 2018.

Respecting our people

The market for skilled employees in our business is extremely competitive. Our workforce has fluctuated over recent years as we have introduced changes in our strategy to respond to our business targets and our endeavors. Such changes and uncertainty have caused, and may in the future cause disruption among employees as well as fatigue due to the cumulative effect of several reorganizations over the past years. As a result, we believe it is essential that we work on creating a corporate culture that is motivational, based on equal opportunities, and encourages creativity and continuous learning to meet the challenges.

In 2017, we continued to measure the favorability of employee perceptions across a wide variety of topics about company and culture, with an anonymous employee survey. The result rose from 76% to 80% favorability towards the company. In 2018, we aim to continue strengthening our employee engagement understanding by exploring new means to capture employee opinion, for overall perceptions of Nokia as a company and our cultural direction, as well as team dynamics. We offer training, development programs, comprehensive reward packages and flexible working as part of our effort to motivate and show that we value our employees and the work they do. In 2017, we also introduced global volunteering guidelines allowing all employees the opportunity to carry out two working days per year as a volunteer.

In 2017, each employee spent an average of approximately 16 hours on training (19 in 2016). Additionally, we arrange a one-hour dialog session every quarter between the line manager and each team member, which covers objective setting and review of results, individual development, employee well-being and engagement, coaching by the line manager, and mutual feedback.

Diversity, inclusion and anti-discrimination are key to our employee makeup. On March 8, 2017, International Women’s Day, our CEO Rajeev Suri signed the United Nations Women Empowerment Principles, stating that Nokia is committed to doing its part to eliminate the disparity in technology companies between men and women. We have a Diversity Steering Committee that makes decision proposals to the Group Leadership Team and steers our various diversity programs. In September 2017, our CEO also signed a letter of cooperation with UNESCO to promote gender equality, women’s empowerment and women’s leadership. In 2017, approximately 13% (14% in 2016) of our senior management positions were held by women and around 2 300 leaders and employees were trained on gender balance topics, against the target of 2 000. In total, women accounted for 22% of our workforce in 2017.

Labor conditions

Our Code of Conduct provides the basis for our labor conditions, and is underpinned by a comprehensive set of global human resources policies and procedures that enable fair employment. We adhere to the International Labor Organization (“ILO”) Declaration on Fundamental Principles and Rights at Work and wherever we operate we meet the requirements of labor laws and regulations, and oftentimes strive to exceed those laws and regulations.

We strive to ensure decent working conditions and fair employment, considering international and local laws and guidelines. Health and safety is a key priority for us.

We address job-related health and safety risks through training, analysis, assessments and consequence management. We have put in place a wide range of programs to improve our health and safety performance and encourage reporting of near misses and dangerous incidents by employees and contractors. As the highest risks exist with our contractors who, for example, work at height or with electricity, we have therefore set KPIs related to the supplier Health and Safety Maturity Assessment Process, which are described in the Responsible sourcing section above. In April 2017, we launched a new corporate wellness program Healthier Together, encouraging and enabling active lifestyle for all employees, and contributing to making Nokia a healthy place to work.

Making change happen together

To achieve our sustainability goals, we collaborate closely with suppliers, customers, non-governmental organizations ("NGOs"), authorities and industry peers, not only supporting them in achieving their sustainability goals but also driving the sustainability of our products and solutions.

Cooperating with others in our industry and beyond

In 2017, we remained a member of the United Nations Global Compact, Global e-Sustainability Initiative, CDP supply chain program, Global Network Initiative, Climate Leadership Council, Digital Europe, Responsible Mineral Initiative (formerly Conflict-Free Sourcing Initiative), GSMA Humanitarian Connectivity Charter and several standardization and university cooperation groups. We have further structured engagement with the World Economic Forum, the Broadband Commission and ITU Telecom World, amongst others.

Working with NGOs

Based on our Corporate Community Investment approach, we set a target of improving the lives of 2 000 000 people between 2016-2025 through our corporate and key regional community investment programs, focusing our action on gender balance, education, and health, and on how our products and services improve people's lives. By the end of 2017, already around 1 122 400 people have benefitted from our programs.

In addition to multi-year signature programs for example with Save the Children and Greenlight for Girls, in 2017 we supported new signature programs such as the Unicef mHealth program in Indonesia (http://unicefstories.org/tech/mhealth/) and HundrED (www.hundred.org/en). In addition to these, we have worked with several other organizations to activate children and youth to innovate and be empowered through technology.

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Employees

In 2017, the average number of employees was 101 731 (102 687 in 2016 and 56 690 in 2015). The total amount of salaries and wages paid in 2017 was EUR 6 456 million (EUR 6 275 million in 2016 and EUR 3 075 million in 2015). Refer to Note 9, Personnel expenses, of our consolidated financial statements in this annual report on Form 20 F.

The table below shows the average number of employees in 2017, by geographical location:

Region	Average number of employees
Finland	6 359
Other European countries	32 698
Middle East & Africa	3 954
China	17 829
Asia-Pacific	22 179
North America	14 910
Latin America	3 802
Total	101 731

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Dividend

The Board of Directors proposes a dividend of EUR 0.19 per share for 2017.

The proposed dividend is in line with our distribution target. Nokia's Board of Directors is committed to proposing a growing dividend, including for 2018. On a long-term basis, Nokia targets to grow the dividend by distributing approximately 40% to 70% of earnings per share ("EPS"), excluding unallocated items*, taking into account Nokia's cash position and expected cash flow generation.

We distribute retained earnings, if any, within the limits set by the Finnish Companies Act (as defined below). We make and calculate the distribution, if any, in the form of cash dividends, share buy-backs, or in some other form, or a combination of these. There is no specific formula by which the amount of a distribution is determined, although some limits set by law are discussed below. The timing and amount of future distributions of retained earnings, if any, will depend on our future results and financial conditions.

Under the Finnish Companies Act, we may distribute retained earnings on our shares only upon a shareholders' resolution and subject to limited exceptions in the amount proposed by the Board. The amount of any distribution is limited to the amount of distributable earnings of the parent company pursuant to the last accounts approved by our shareholders, taking into account the material changes in the financial situation of the parent company after the end of the last financial period and a statutory requirement that the distribution of earnings must not result in insolvency of the parent company. Subject to exceptions relating to the right of minority shareholders to request a certain minimum distribution, the distribution may not exceed the amount proposed by the Board of Directors.

*Includes costs related to the acquisition of Alcatel Lucent and related integration, goodwill impairment charges, intangible asset amortization and other purchase price fair value adjustments, restructuring and associated charges and certain other items.

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Risk factors

Set forth below is a description of risk factors that could affect our business. Shareholders and potential investors should carefully review the following risk factors, in addition to other information contained in this annual report on Form 20-F. The risk factors described below should not be construed as exhaustive. There may be additional risks that are unknown to us and other risks currently believed to be immaterial that could turn out to be material.

These risks, either individually or collectively, could adversely affect our business, sales, profitability, results of operations, financial condition, competitiveness, costs, expenses, liquidity, market share, brand, reputation and share price. Unless otherwise indicated or the context otherwise requires, references in these risk factors to "Nokia", the "Nokia Group", "Group", "we", "us" and "our" mean Nokia's consolidated operating segments. Certain risks or events may be more prevalent with respect to Nokia or a certain business group, business or part of the Group.

Additional risks and uncertainties not presently known to us, or that are currently believed to be immaterial, could impair our business or the value of an investment made in it. This annual report on Form 20-F also contains forward-looking statements that involve risks and uncertainties presented in "Forward-looking statements" above.

Our strategy is subject to various risks and uncertainties and we may be unable to successfully implement our strategic plans, sustain or improve the operational and financial performance of our business groups, correctly identify or successfully pursue business opportunities or otherwise grow our business.

In November 2016, we announced key financial and strategic targets as well as our "Rebalancing for growth" corporate strategy at our Capital Markets Day event. For further information refer to "Business Overview—Our strategy" and "Operating and financial review and prospects—Principal industry trends affecting operations".

We operate in rapidly changing and innovative industries and the opportunities we pursue may require significant investments in innovation in order to generate growth, profitability or other targeted benefits across our business groups. Our strategy, which includes targeted investments in our business and pursuing new business opportunities based on identified trends and opportunities, may not yield a return on our investment as planned or at all. Our ability to achieve strategic goals and targets is subject to a number of uncertainties and contingencies, certain of which are beyond our control, and there can be no assurance that we will correctly identify trends or opportunities to pursue or be able to achieve the goals or targets we have set. We continuously target various improvements in our operations and efficiencies through investing in R&D, entering into licensing arrangements, acquiring businesses and technologies, recruiting expert employees and partnering with third parties. There can be no assurance that our efforts will generate the expected results or improvements in our operations or that we will achieve our intended targets or financial objectives related to such efforts. Any failure to achieve our strategy may materially and adversely affect our business, financial condition and results of operations. Furthermore, there can be no assurance that our investments will result in technologies, products or services that achieve or retain broad or timely market acceptance, answers to the expanding needs or preferences of our customers or consumers, or break-through innovations that we could otherwise utilize for value creation.

As part of our strategy, we have and may continue to acquire or divest assets. For instance, in June 2017 we completed acquisition of Comptel for the purpose of advancing our software strategy. We may fail to complete planned acquisitions or divestments or to integrate acquired businesses or assets. Any such result could interfere with our ability to achieve our strategy, obtain intended benefits, retain and motivate acquired key employees, or timely discover all liabilities of acquired businesses or assets, which may have a material adverse effect on our business.

We may be materially and adversely affected by general economic and market conditions and other developments in the economies where we operate.

As we are a company with global operations and sales in many countries around the world, our sales and profitability are dependent on general economic conditions both globally and regionally, the global financial markets, as well as industry and market developments in numerous diverse markets. Adverse developments in, or the general weakness of, economic conditions, such as unemployment or consumer spending, may have an adverse impact on the spending patterns of end-users. This, in turn, may affect demand of consumables, such as mobile phones or digital health products which would have an adverse effect on our Technologies business. In our Networks business, this may also affect both the services that end-users subscribe to and the usage levels of such services, which may lead mobile operators and service providers to invest less in related infrastructure and services or to invest in low-margin products and services, which could have a material adverse effect on our business, financial condition, and results of operations. Likewise, adverse developments in economic conditions may lead vertical customers, i.e. webscale companies, TXLE, transportation, energy, public safety, to invest less in infrastructure and services to digitize their operations or to invest in low-margin products and services, which again could have a material adverse effect on our business, financial condition, and results of operations.

General uncertainty and adverse developments in the financial markets and the general economy could have a material adverse effect on our ability to obtain sufficient or affordable financing on satisfying terms. Uncertain market conditions may increase the price of financing or decrease its availability. We could encounter difficulties in raising funds or accessing liquidity, which may have a material adverse effect on our business, financial condition and results of operations. Unfavorable economic conditions may also affect our suppliers. We have manufacturing facilities and suppliers located in various countries around the world and any failure by these suppliers or partners, whether due to challenging economic conditions or intense competition or alike, may lead to material adverse effect on our business, financial condition and results of operations.

We face intense competition and may fail to effectively and profitably invest in new competitive high-quality products, services, upgrades and technologies or bring them to market in a timely manner or fail to adapt to changing business models.

Our business and the markets where we operate are characterized by rapidly evolving technologies, frequent new technological requirements, product feature introductions and evolving industry standards. Our business performance depends on the timely and successful introduction of new products, services and upgrades of current products to meet the evolving requirements of customers, comply with emerging industry standards and address competing technological and product developments carried out by competitors. The R&D of new and innovative, technologically advanced products, as well as upgrades to current products and new generations of technologies, is a complex and uncertain process requiring high levels of innovation and investment, in addition to accurate anticipation of technological, regulatory and market trends. We may focus our resources on products and technologies that do not become widely accepted or ultimately prove unviable. Additionally, many of our current and planned products are highly complex and may contain defects or errors that are, for instance, detected only after deployment in telecommunications networks. Our results of operations will depend to a significant extent on our ability to succeed in the following areas:

§ maintaining and developing a product portfolio and service capability that are attractive to our customers, for instance by keeping pace with technological advances in our industry and pursuing the technologies that become commercially accepted;
§ continuing to introduce new products and product upgrades successfully and on a timely basis;
§ developing new or enhancing existing tools for our services offerings;
§ optimizing the amount of customer or market specific technology, product and feature variants in our product portfolio;
§ continuing to meet expectations and enhance the quality of our products and services as well as introducing products and services that have desired features and attributes, such as energy efficiency;
§ pricing products and services appropriately, which is crucial in the networks infrastructure business due to the typical long-term nature and complexity of the agreements; and
§ leveraging our technological strengths.

Certain of our competitors have significant resources to invest in market exploration and may seek new monetization models or drive industry development and capture value in areas where we may not currently be competitive or do not have similar resources available to us. These areas may include monetization models linked to large amounts of consumer data, large connected communities, home or other entertainment services, healthcare products and services, alternative payment mechanisms or marketing products. We also face competition from various companies that may be able to develop technologies or products that become preferred over those developed by us or result in adverse effects on us through, for instance, developing technological innovations that make our innovations less relevant.

The participants in the information technology, communications and related services market compete on the basis of product offerings, technical capabilities, quality, price and affordability through consumer financing arrangements. Any failure by us to effectively and profitably invest in new competitive products, services, upgrades or technologies and bring them to market in a timely manner could result in a loss of net sales and market share and have a material adverse effect on our results of operations, competitiveness, profitability and financial condition.

The competitive environment in the markets where we operate continues to be intense and is characterized by maturing industry technologies, equipment price erosion and aggressive price competition. Moreover, mobile operators' cost reductions and network sharing, and industry consolidation among operators have reduced the amount of available business, resulting in further competition and pressure on pricing and profitability. Consolidation of operators may result in vendors and service providers concentrating their business in certain service providers and increasing the possibility that agreements with us are terminated or not renewed. Furthermore, there are various incumbent and new players competing with Nokia in customer groups we strategically target, such as webscale companies and customers in energy, transport, public sector and TXLEs. With these types of customers, the nature of competition can be significantly different from the communications service provider markets, including competition based on access network, core network, Cloud infrastructure, platforms, applications and devices.

We compete with companies that have large overall scale, which affords such companies more flexibility (e.g., on pricing). We also continue to face intense competition globally, including from companies based in China which endeavor to gain further market share and broaden their presence in new areas of the network infrastructure and related services business (e.g., by providing lower-cost products and services). Competition for new customers, as well as for new infrastructure deployment, is particularly intense and focused on the favorability of price and agreement terms.

Additionally, new competitors may enter the industry as a result of acquisitions or shifts in technology. For example, the virtualization of core and radio networks and the convergence of IT and telecommunications may lower the barriers to entry for IT companies entering the traditional telecommunications industry or build up tight strategic partnerships with our traditional competitors. These developments may enable more generic IT, software and hardware to be used in telecommunications networks leading to further pricing pressure. Additionally, some companies, including webscale companies, may drive a faster pace of innovation in telecommunication infrastructure through more collaborative approaches and open technologies across access, backhaul, core and management. If we are unable to respond successfully to competitive challenges in the markets in which we operate, our business, financial condition and results of operations may be materially and adversely affected.

We must introduce high-quality products and services in a cost-efficient, timely manner and manage proactively the costs related to our portfolio of products and services, including component sourcing, manufacturing, logistics and other operations. If we fail to maintain or improve our market position, competitiveness or scale, or if we fail to leverage our scale to the fullest extent and keep prices and costs at competitive levels or provide high-quality products and services, this could materially and adversely affect our competitive position, business and results of operations, particularly our profitability.

We are dependent on the development of the industries in which we operate, including the information technology and communications industries and related services market, as well as the digital media and digital health markets. The information technology and communications industries and related services market are cyclical and are affected by many factors, including the general economic environment, purchase behavior, deployment, roll-out timing and spending by service providers, consumers and businesses. The digital media and digital health markets are rapidly evolving markets affected by numerous factors, including regulation and IPR.

Our sales and profitability are dependent on the development of the industries in which we operate, including the information technology and communications and related services market in numerous markets around the world. For instance, we are particularly dependent on the investments made by mobile operators and network service providers in network infrastructure and related services. The pace and size of such investments are in turn dependent on the ability of network service providers and mobile operators to increase their subscriber numbers, reduce churn and compete with business models eroding revenue from traditional voice, messaging and data transport services, as well as the financial condition of such network service providers and mobile operators. Additionally, market developments favoring new technological solutions, such as

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SDN, may result in reduced spending for the benefit of our competitors who have, or may have, a stronger position in such technologies. The technological viability of standardized, low-margin hardware products in combination with the virtualization of functions can induce a change in purchase behavior, resulting in favoring other vendors or in higher bargaining power versus Nokia due to more alternative vendors. Both effects could have a material adverse effect on our business.

We expect to generate a significant share of our growth from new customers, including webscale companies and vertical customers in energy, transport, public sector and TXLEs. Each of these sectors may face adverse industry developments which may significantly impact the size of investments addressable by us and our ability to address these investments, in terms of both having the right products available and being able to attain new customers.

The level of demand by service providers and other customers that purchase our products and services can change quickly and can vary over short periods of time. As a result of the uncertainty and variations in the telecommunications and vertical industries, accurately forecasting revenues, results and cash flow remains difficult.

Our success in the industries where we operate is subject to a number of risks and uncertainties, including:

§ the intensity of competition;
§ further consolidation of our customers or competitors;
§ our ability to develop products and services in a timely manner, or at all, that meet future technological or quality requirements and challenges at a competitive cost level;
§ our ability to maintain and build up strategic partnerships in our value creation chain (e.g., in product creation and in project delivery);
§ our ability to correctly estimate technological developments, including the impending turn to 5G, or adapt successfully to such developments;
§ the development of the relevant markets and/or industry standards in directions that leave us deficient in certain technologies and industry areas that impact our overall competitiveness;
§ the choice of our customers to turn to alternative vendors to maintain end-to-end services from such vendors;
§ our ability to successfully develop market recognition as a leading provider of software and services in the information technology and communications and related services market, in the digital media and digital health markets as well as with our vertical customers in energy, transport, public sector, webscale, and TXLEs;
§ our ability to sustain or grow net sales in our business and areas of strategic focus, which could result in the loss of benefits related to economies of scale and reduced competitiveness;
§ our ability to identify opportunities and enter into agreements that are commercially successful;
§ our ability to continue utilizing current customer relations to advance our sales of related services, or pursue new service-led growth opportunities;
§ our global presence that involves large projects that expose us to various business and operational risks including those related to market developments, political unrest or change in political atmosphere, economic and trade sanctions and compliance and anti-corruption-related risks, especially with respect to emerging markets; and
§ our ability to maintain efficient and low-cost operations.

Our inability to overcome any of the above risks or uncertainties could have a material adverse effect on our results of operations or financial performance.

We are dependent on a limited number of customers and large multi-year agreements. The loss of a single customer or contract, operator consolidation, unfavorable contract terms or other issues related to a single agreement may have a material adverse effect on our business and financial condition.

A significant proportion of the net sales that we generate have historically been derived from a limited number of customers. As consolidation among existing customers continues, it is possible that an even greater portion of our net sales will be attributable to a smaller number of large service providers operating in multiple markets. These developments are also likely to increase the impact on our net sales based on the outcome of certain individual agreement tenders.

Mobile operators are increasingly entering into network sharing arrangements, as well as joint procurement agreements, which may reduce their investments and the number of networks available for us to service. Furthermore, procurement organizations of certain large mobile operators sell consulting services to enhance the negotiating position of small operators with their vendors. As a result of these trends and the intense competition in the industry, we may be required to agree to increasingly less favorable terms in order to remain competitive. Any unfavorable developments in relation to, or any change in the agreement terms applicable to, a major customer may have a material adverse effect on our business, results of operations and financial condition. Also, due to the long-term nature of the agreements, it is possible that the contract terms of the agreement may prove less favorable to us than originally expected, for instance due to changes in costs and product portfolio decisions.

We may lose existing agreements, or we are unable to renew or gain new agreements due to customer diversity policies that limit the ability of customers to have one network provider exceeding a certain threshold of business in a given market. Policies or practices in certain countries may also limit the possibility for foreign vendors to participate in certain business areas over a certain threshold.

Furthermore, there is a risk that the timing of sales and results of operations associated with large multi-year agreements, which are typical in the mobile infrastructure and related services business, will differ from expectations. Moreover, such agreements often require dedication of substantial amounts of working capital and other resources, which may adversely affect our cash flow, particularly in the early stages of an agreement’s term, or may require us to continue to sell certain products and services, or to sell in certain markets, that would otherwise be discontinued or exited,

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thereby diverting resources from developing more profitable or strategically important products and services, or focusing on more profitable or strategically important markets. Any suspension, termination or non-performance by us under an agreement's terms may have a material adverse effect on us (e.g., due to penalties for breaches or early termination).

Our patent licensing income and other intellectual property-related revenues are subject to risks and uncertainties such as our ability to maintain our existing sources of intellectual property-related revenue, establish new sources of revenue and protect our intellectual property from infringement. A proportionally significant share of the current patent licensing income is generated from the smartphone market which is rapidly changing and features a limited number of large vendors.

We have historically invested significantly in R&D to develop new relevant technologies, products and services for our business. This has led to the Nokia Technologies business group possessing one of the industry's strongest intellectual property portfolios, including numerous standardized or proprietary patented technologies. We now have two further, distinct and industry-leading portfolios: the Nokia Networks and Alcatel Lucent portfolios. Many of our products and services use or are protected by patents in these portfolios. We also generate revenue by licensing, and we seek to renew existing license agreements and negotiate new license agreements. We also seek to expand the scope of our licensing activities to other industries, in particular those that implement mobile communication technologies. The continued strength of our portfolios depends on our ability to create new relevant technologies, products and services through our R&D activities and to protect our IPR. If those technologies, products and services do not become relevant, and therefore attractive to licensees, the strength of our intellectual property portfolios could be reduced, which could adversely affect our ability to use our intellectual property portfolios for revenue generation. Our intellectual property-related revenue can vary considerably from time to time based on factors such as the terms of agreements we enter into with licensees, and there is no assurance that past levels are indicative of future levels of intellectual property-related revenue.

Despite the steps that we have taken to protect our technology investments with IPR, we cannot be certain that any rights or pending applications will be granted or that the rights granted in connection with any future patents or other IPR will be sufficiently broad to protect our innovations. Third parties may infringe our intellectual property relating to our proprietary technologies or disregard their obligation to seek a license under our SEPs or seek to pay less than reasonable license fees. If we are unable to continue to develop or protect our intellectual property-related revenue or establish new sources of revenue, this may materially and adversely affect our business, financial position and results of operations.

The Nokia Technologies business group's sales and profitability are currently largely derived from patent licensing. Patent licensing income may be adversely affected by general economic conditions or adverse market developments, as well as regulatory and other developments with respect to protection awarded to technology innovations or compensation trends with respect to licensing. For example, our patent licensing business may be adversely affected if a licensee's ability to pay is reduced or they become insolvent or bankrupt. Additionally, poor performance of potential or current licensees may limit a licensee's motivation to seek new or renew existing licensing arrangements with us. In certain cases, patent licensing income is dependent on the sales of the licensee, where the reduced sales of the licensee have a direct effect on the patent licensing income received by the Nokia Technologies business group.

We enforce our patents against unlawful infringement and generate revenue through realizing the value of our intellectual property by entering into license agreements and occasionally through business transactions. Patent license agreements can cover both licensees' past and future sales. The portion of the income that relates to licensees' past sales is not expected to have a recurring benefit and ongoing patent income from licensing is generally subject to various factors that we have little or no control over, for instance sales by the licensees.

In certain cases, we have initiated litigation to enforce our patents. In other cases, we have used arbitration proceedings to establish the terms of compensation between the parties. Due to the nature of any litigation or arbitration proceedings, there can be no assurances as to the final outcome or timing of any outcome of litigation, arbitration or other resolution.

Regulatory developments, actions by authorities, or applications of regulations may adversely affect our ability to protect our intellectual property or create intellectual property-related revenue. Any patents or other IPR may be challenged, invalidated or circumvented, and any right granted under our patents may not provide competitive advantages for us. Our ability to protect and monetize our intellectual property may depend on regulatory developments in various jurisdictions and the implementation of the regulations by administrative bodies. Our ability to protect, license or divest our patented innovations may vary by region. In the technology sector generally, certain licensees are actively avoiding license payments, while some licensors are using aggressive methods to collect license payments, with both behaviors attracting regulatory attention. Authorities in various countries have increasingly monitored patent monetization and may aim to influence the terms on which patent licensing arrangements or patent divestments may be executed. Such terms may be limited to a certain country or region; however, authorities could potentially seek to widen the scope and even impose global terms, potentially resulting in an adverse effect on us or limiting our ability to monetize our patent portfolios.

Intellectual property-related disputes and litigation are common in the technology industry and are often used to enforce patents and seek licensing fees. Other companies have commenced and may continue to commence actions seeking to establish the invalidity of our intellectual property, including our patents. In the event that one or more of our patents is challenged, a court may invalidate the patent or determine that the patent is not enforceable, which could have an impact on our competitive position. The outcome of court proceedings is difficult to predict and, consequently, our ability to use intellectual property for revenue generation may from time to time depend on favorable court rulings. Additionally, if any of our patents is invalidated, or if the scope of the claims in any patents is limited by a court decision, we could be prevented from using such patents as a basis for product differentiation or from licensing the invalidated or limited portion of our IPR. Even if such a patent challenge is not successful, the related proceedings could be expensive and time-consuming, divert the attention of our management and technical experts from our business and have an adverse effect on our reputation. Any diminution in the protection of our IPR could cause us to lose certain benefits of our R&D investments.

We retained our entire patent portfolio after the sale of the D&S Business in 2014. Following the sale of the D&S Business, Nokia Technologies is no longer required to agree cross-licenses to cover its handset business, which has contributed to growing our licensing revenue. While this has been our practice, there can be no guarantee that this can be continued in future. In the past, parts of our intellectual property development were driven by innovation from the D&S Business. As we no longer own this business, our future intellectual property relating to the mobile phone sector may lessen and our ability to influence industry trends and technology selections may reduce.

We also enter into business agreements separately within our business groups which may grant certain licenses to our patents. Some of these agreements may inadvertently grant licenses to our patents with a broader scope than intended, or they may otherwise make the enforcement of our patents more difficult.

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We conduct our business globally, exposing us to political and regional risks, including unfavorable or unpredictable treatment in relation to tax matters, exchange controls, and other restrictions.

We generate sales from, and have manufacturing facilities and suppliers located in, various countries around the world. Regulatory and economic developments, political turmoil, military actions, labor unrest, civil unrest, public health and safety (including disease outbreaks), environmental issues (including adverse effects resulting from climate change) and natural and man-made disasters in such countries could have a material adverse effect on our ability to supply products and services, including network infrastructure equipment manufactured in such countries, and on our sales and results of operations. In recent years, we have witnessed political unrest in various markets in which we conduct business or in which we have operations, which in turn has adversely affected our sales, profitability or operations in these markets, and in certain cases affected us outside these countries or regions. Any reoccurrence or escalation of such unrest could have a further material adverse effect on our sales or results of operations. For instance, instability and conflict in regions such as the Middle East, parts of Africa and Ukraine have in the past adversely affected, and may in the future adversely affect, our business or operations in these or related markets (e.g., through increased economic uncertainty or a slowdown or downturn attributable to current or increased economic and trade sanctions).

We have a significant presence in emerging markets in which the political, economic, legal and regulatory systems are less predictable than in countries with more developed institutions. These markets represent a significant portion of our total sales, and a significant portion of expected future industry growth. Most of our suppliers are located in, and our products are manufactured and assembled in, emerging markets, particularly in Asia. Our business and investments in emerging markets may also be subject to risks and uncertainties, including unfavorable or unpredictable treatment in relation to tax matters, exchange controls, restrictions affecting our ability to make cross-border transfers of funds, regulatory proceedings, unsound or unethical business practices, challenges in protecting our IPR, nationalization, inflation, currency fluctuations or the absence of or unexpected changes in regulation, as well as other unforeseeable operational risks. The purchasing power of our customers in developing markets depends to a greater extent on the price development of basic commodities and currency fluctuations, which may render our products or services unaffordable.

We continuously monitor international developments and assess the appropriateness of our presence and business in various markets. For instance, as a result of international developments, we have expanded our business in Iran in compliance with applicable economic sanctions and other regulations. While the international agreement on Iran’s nuclear activities has led to a relaxation of international sanctions, many jurisdictions continue to impose various restrictions on conducting business in Iran and the international regulatory framework remains complex. Adverse political or other developments could potentially lead to a reintroduction of sanctions which might necessitate a reassessment of our position there. Should we decide to exit or otherwise alter our presence in a particular market, this may have an adverse effect on us through, for example, triggering investigations, tax audits by authorities, claims by contracting parties or reputational damage. The results and costs of investigations or claims against our international operations may be difficult to predict and could lead to lengthy disputes, fines or fees, indemnities or costly settlements.

Our efforts aimed at managing and improving our financial or operational performance, cost savings, competitiveness and obtaining the targeted synergy benefits and cost savings, may not lead to targeted results, benefits, cost savings or improvements.

We need to manage our operating expenses and other internal costs to maintain cost efficiency and competitive pricing of our products and services. Failure by us to determine the appropriate prioritization of operating expenses and other costs, to identify and implement the appropriate measures to adjust our operating expenses and other costs on a timely basis, or to maintain achieved cost reduction levels, could have a material adverse effect on our business, results of operations and financial condition. For instance, we have announced targeted operating cost savings in relation to the acquisition of Alcatel Lucent and achieving these operating cost savings is dependent partly on the continued efficient integration of the companies which may include certain uncertainties.

We operate in highly competitive industries and we are continuously targeting increased efficiency of our operations through various initiatives. We may, in the ordinary course of business, institute new plans for restructuring measures. Such restructuring measures may be costly, potentially disruptive to operations, and may not lead to sustainable improvements in our overall competitiveness and profitability and, thus, may have a material adverse effect on our business or results of operations, for instance, as a result of the loss of benefits related to economies of scale.

In addition to our efforts in operating cost savings, various efficiency programs aimed at improving cost savings and financial performance have been implemented, including by Alcatel Lucent prior to its acquisition by Nokia, and there can be no assurance that such plans will be met as planned or result in sustainable improvements. Factors that may prevent a successful implementation or cause adverse effects on us include the following:

§ expectations with respect to market growth, customer demand and other trends in the industry in which we operate;
§ our ability to benefit from industry trends may prove to be inaccurate and changes in the general economic conditions, whether globally, nationally or in the markets in which we operate, may impact our ability to implement such plans;
§ a down-turn in global or regional economic conditions may have an adverse effect on our ability to achieve the cost savings contemplated;
§ unfavorable changes in legislation in the markets in which we operate may influence timing, costs and expected savings of certain initiatives contemplated;
§ our ability to successfully develop new or improve existing products, market products to new or existing customers, enter new markets and otherwise grow our business in a highly competitive market;
§ our ability to swap equipment of certain customers in line with our future product lines development. We might not be successful in securing continued business from such customers, leading to sunk cost impacting our business and results of operations;
§ organizational changes related to the implementation plans require the alignment and adjustment of resources, systems and tools, including digitalization and automation, which if not completed in a structured manner could impact our ability to achieve our goals, projected cost savings and ability to achieve the efficiencies contemplated;
§ the costs to effect the initiatives contemplated by our plans may exceed our estimates and we may not be able to realize the targeted cash inflows or yield other expected proceeds;

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- our cost saving initiatives, including R&D, may negatively affect our ability to develop new or improve existing products and compete effectively in certain markets, and there is no guarantee that we will continue to be able to successfully innovate or remain technologically competitive;
- disruptions to regular business operations caused by the plans, including to unaffected parts of Nokia; the benefits of our plans may not be realized in contemplated timeframes or at all;
- intended business plans may require us to inform or consult with employees and labor representatives, and such processes may influence the timing, costs and extent of expected savings and the feasibility of certain of the initiatives contemplated;
- skilled employees may leave or we may not be able to recruit employees as a result of planned initiatives, and loss of their expertise may cause adverse effects on our business or limit our ability to achieve our goals and lead to an overall deterioration of brand value among potential and current employees or as a preferred employer; and
- bargaining power of our suppliers may prevent us from achieving targeted procurement savings.

While we are implementing and have implemented various cost savings and other initiatives in the past, and may implement such initiatives in the future, there can be no assurance that we will be able to complete those successfully or that we will realize the projected benefits. Our plans may be altered in the future, including adjusting any projected financial or other targets. The anticipated costs or the level of disruption expected from implementing such plans or restructurings may be higher than expected.

If we are unable to realize the projected benefits or contemplated cost savings by efforts aimed at managing and improving financial performance, operational performance, cost savings, competitiveness, targeted results or improvements, we may experience negative impacts on our reputation or a material adverse effect on our business, financial condition, results of operations and cash flows. Efforts to plan and implement cost saving initiatives may divert management attention from the rest of the business and adversely affect our business.

We may be unable to realize the anticipated benefits, synergies, cost savings or efficiencies from acquisitions, including the acquisition of Alcatel Lucent, and we may encounter issues or inefficiencies related to our organizational and operational structure, including being unable to successfully implement our business plans.

We acquire businesses or companies from time to time and, for instance, continue to allocate significant resources to the integration of the former Alcatel Lucent business and implementation of our business plans and strategy. Despite our progress in the integration, there can be no assurance that the overall integration of Alcatel Lucent will be successful or yield expected benefits and results. The integration process involves certain risks and uncertainties, some of which are outside our control, and there can be no assurance that we will be able to realize the intended organizational and operational benefits related to our business plans in the manner or within the timeframe currently anticipated. Such risks and uncertainties include, among others, the distraction of our management's attention from our business resulting in performance shortfalls, the disruption of our ongoing business, interference with our ability to maintain our relationships with customers, vendors, regulators and employees and inconsistencies in our services, standards, quality, product road maps, controls, procedures and policies, any of which could have a material adverse effect on our business, financial condition and results of operations. Potential challenges that we may encounter regarding the integration process and operation as a combined company include the following:

- adverse contractual issues with respect to various agreements with third parties (including joint venture agreements, customers, vendors, licensees or other contractual parties), certain financing facilities, pension fund agreements, agreements for the performance of engineering and related work/services, IT agreements, technology, intellectual property rights and licenses, employment agreements, or pension and other post-retirement benefits-related liability issues;
- inability to retain or motivate key employees and recruit employees;
- disruptions caused, for instance, by reorganizations, which may result in inefficiency within the new organization through loss of key employees or delays in implementing our intended structural changes, among other issues;

§ inability to achieve the targeted organizational changes, efficiencies or synergies in the targeted time or to the extent targeted or with targeted implementation costs, for instance due to inability to streamline overlapping products and services efficiently, rationalize our organization and overheads, reduce overheads and costs or achieve targeted efficiencies, and the risk of new and additional costs associated with implementing such changes;
§ inability to rationalize or streamline our organization or product lines or to retire legacy products and related services as a result of pre-existing customer commitments;
§ loss of, or lower volume of, business from key customers, or the inability to renew agreements with existing customers or establish new customer relationships, including limitations linked to customer policies with respect to aggregate vendor share or supplier diversity policies or increased efforts from competitors aiming to capitalize on disruptions;
§ conditions and burdens imposed by laws, regulators or industry standards on our business or adverse regulatory or industry developments or litigation affecting us, as a result of the acquisition of Alcatel Lucent or otherwise;
§ potential unknown or larger than estimated liabilities of Alcatel Lucent (prior to the acquisition) or other adverse circumstances related to Alcatel Lucent that lead to larger than expected liabilities or have other adverse impacts on us;
§ claims, fines, investigations or assessments for conduct that we failed to or were unable to discover or identify in the course of performing our due diligence investigations of Alcatel Lucent prior to the acquisition, including unknown or unasserted liabilities;
§ issues relating to fraud, non-compliance with applicable laws and regulations, improper accounting policies, improper internal control or other improper activities;
§ challenges relating to the consolidation or ongoing integration of corporate, financial data and reporting, control and administrative functions, including cash management, foreign exchange/hedging operations, internal and other financing, insurance, financial control and reporting, IT, communications, legal and compliance and other administrative functions;

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§ the coordination of R&D, marketing and other support functions may fail or cause inefficiencies or other administrative burdens caused by operating the combined business;
§ we may not be able to successfully maintain the Nokia Bell Labs research, development and innovation capabilities;
§ potential divestitures of certain businesses or operations, as desired, for which there can be no assurance that we would be successful in executing such a transaction on favorable terms or at all; and
§ our ability to eliminate the complexity of our corporate structure following the acquisition of Alcatel Lucent.

Additionally, the anticipated cost reductions and other benefits expected to arise from the acquisition of Alcatel Lucent and the integration of Alcatel Lucent into our existing business, as well as related costs to implement such measures, are derived from our estimates, which are inherently uncertain. While we believe these estimated synergy benefits and related costs are reasonable, the underlying assumptions are inherently uncertain and subject to a variety of significant business, economic, and competitive factors, risks and uncertainties that could cause our actual results to differ materially from those contained in the expected synergy benefits and related cost estimates.

Due to our global operations, our net sales, costs and results of operations, as well as the U.S. dollar value of our dividends and market price of our ADSs, are affected by exchange rate fluctuations.

We operate globally and are therefore exposed to foreign exchange risks in the form of both transaction risks and translation risks. Our policy is to monitor and hedge exchange rate exposure, and we manage our operations to mitigate, but not to eliminate, the impacts of exchange rate fluctuations. There can be no assurance, however, that our hedging activities will prove successful in mitigating the potentially negative impact of exchange rate fluctuations. Additionally, significant volatility in the relevant exchange rates may increase our hedging costs, as well as limit our ability to hedge our exchange rate exposure. In particular, we may not adequately hedge against unfavorable exchange rate movements, including those of certain emerging market currencies, which could have an adverse effect on our financial condition and results of operations. Furthermore, exchange rate fluctuations may have an adverse effect on our net sales, costs and results of operations, as well as our competitive position, through their impact on our customers and competitors.

We also experience other financial market-related risks, including changes in interest rates and in prices of marketable securities that we own. We may use derivative financial instruments to reduce certain of these risks. If our strategies to reduce such risks are not successful, our financial condition and results of operation may be harmed.

Additionally, exchange rate fluctuations may materially affect the U.S. dollar value of any dividends or other distributions that are paid in euro, as well as the market price of our ADSs.

Our products, services and business models depend on technologies that we have developed as well as technologies that are licensed to us by certain third parties. As a result, evaluating the rights related to the technologies we use or intend to use is increasingly challenging, and we expect to continue to face claims that we have allegedly infringed third parties' IPR. The use of these technologies may also result in increased licensing costs for us, restrictions on our ability to use certain technologies in our products and/or costly and time-consuming litigation.

Our products and services include, and our business models depend on, utilization of numerous patented standardized or proprietary technologies. We invest significantly in R&D through our business to develop new relevant technologies, products and services. Our R&D activities have resulted in us having one of the industry's strongest intellectual property portfolios, on which our products and services and future cash generation and income depend. We believe our innovations that are protected by IPR are a strong competitive advantage for our business. The continued strength of our IPR portfolios depends on our ability to create new relevant technologies, products and services through our R&D activities.

Our products and services include increasingly complex technologies that we have developed or that have been licensed to us by certain third parties. The amount of such proprietary technologies and the number of parties claiming IPR continue to increase. The holders of patents and other IPR potentially relevant to these complex technologies may be unknown to us, may have different business models, may refuse to grant licenses to their proprietary rights or may otherwise make it difficult for us to acquire a license on commercially acceptable terms. Additionally, although we endeavor to ensure that we and the companies collaborating with us possess appropriate IPR or licenses, we cannot fully avoid the risks of IPR infringement by suppliers of components, processes and other various layers in our products, or by companies with which we collaborate. Similarly, we and our customers may face claims of infringement in connection with the use of our products.

In line with standard practice in our industry, we generally indemnify our customers for certain intellectual property-related infringement claims initiated by third parties, particularly non-practicing entities having no product or service business, and related to products or services purchased from us. If such claims are made directly against our customers, we may have limited possibilities to participate in the processes including negotiations and defenses, or evaluate the outcomes and resolutions in advance. All IPR indemnifications can result in significant payment obligations for us that are difficult to estimate in advance.

The business models for many areas in our industry may not be clearly established. The lack of availability of licenses for copyrighted content, delayed negotiations or restrictive IPR license terms may have a material adverse effect on the cost or timing of content-related services and products offered by us, mobile network operators or third-party service providers.

Since all technology standards that we use and rely on, including mobile communication technologies such as UMTS, LTE and upcoming 5G, or fixed line communication technologies, include certain IPR, we cannot avoid risks of facing claims for infringement of such rights due to our reliance on such standards. We believe the number of third parties declaring their patents to be potentially relevant to these standards is increasing, which may increase the likelihood that we will be subject to such claims in the future. As the number of market entrants and the complexity of technologies increases, it remains likely that we will need to obtain licenses with respect to existing and new standards from other licensors. While we believe most of such IPR declared or actually found to be essential to a particular standard carries an obligation to be licensed on fair, reasonable and non-discriminatory terms, not all intellectual property owners agree to apply such terms. As a result, we have experienced costly and time-consuming litigation proceedings against us and our customers or suppliers over such issues and we may continue to experience such litigations in the future.

From time to time, certain existing patent licenses may expire or otherwise become subject to renegotiation. The inability to renew or finalize such arrangements or renew licenses with acceptable commercial terms may result in costly and time-consuming litigation, and any adverse result in any such litigation may lead to restrictions on our ability to sell certain products and could result in payments that could potentially have a material

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adverse effect on our operating results and financial condition. These legal proceedings may continue to be expensive and time-consuming and divert the efforts of our management and technical experts from our business and, if decided against us, could result in restrictions on our ability to sell our products, require us to pay increased licensing fees, unfavorable judgments, costly settlements, fines or other penalties and expenses.

Our patent license agreements may not cover all the future businesses that we may enter, our existing business may not necessarily be covered by our patent license agreements if there are changes in our corporate structure or our subsidiaries, or our newly-acquired businesses may already have patent license agreements with terms that differ from similar terms in our patent license agreements. This may result in increased costs, restrictions in the use of certain technologies or time-consuming and costly disputes whenever there are changes in our corporate structure or our subsidiaries, or whenever we enter into new business areas or acquire new businesses.

We make accruals and provisions to cover our estimated total direct IPR costs for our products. The total direct IPR costs consist of actual payments to licensors, accrued expenses under existing agreements and provisions for potential liabilities. We believe our accruals and provisions are appropriate for all technologies owned by third parties. The ultimate outcome, however, may differ from the provided level, which could have a positive or adverse impact on our results of operations and financial condition.

Any restrictions on our ability to sell our products due to expected or alleged infringements of third-party IPR and any IPR claims, regardless of merit, could result in a material loss of profits, costly litigation, the obligation to pay damages and other compensation, the diversion of the attention of our key employees, product shipment delays or the need for us to develop non-infringing technology or to enter into a licensing agreement on unfavorable commercial terms. If licensing agreements are not available on commercially acceptable terms, we could be precluded from making and selling the affected products, or could face increased licensing costs. As new features are added to our products, we may need to acquire further licenses, including from new and sometimes unidentified owners of intellectual property. The cumulative costs of obtaining any necessary licenses are difficult to predict and may over time have a material adverse effect on our operating results.

Our business is subject to direct and indirect regulation. As a result, changes in various types of regulations or their application, as well as economic and trade policies applicable to current or new technologies or products, may adversely affect our business and results of operations. Our governance, internal controls and compliance processes could also fail to prevent regulatory penalties, both at operating subsidiaries and in joint ventures.

Our business is subject to direct and indirect regulation in each of the countries and regions where we, the companies with which we collaborate and our customers operate. We develop many of our products based on existing regulations and technical standards, our interpretation of unfinished technical standards or, in certain cases, in the absence of applicable regulations and standards. As a result, changes in various types of regulations or their application, as well as economic and trade policies applicable to current or new technologies or products, may adversely affect our business and results of operations. For example, changes in regulation affecting the construction of base stations and other network infrastructure could adversely affect the timing and costs of new network constructions or the expansion and commercial launch and ultimate commercial success of such networks. Also, changes in applicable privacy-related regulatory frameworks, such as EU Data Protection Regulation effective as of May 2018, or their application may adversely affect our business, including possible changes that increase costs, limit or restrict possibilities to offer products or services, or reduce or could be seen to reduce the privacy aspects of our offerings, including if further governmental interception capabilities or regulations aimed at allowing governmental access to data are required for the products and services that we offer. An increase in the protectionist stances of governments around the world, which impact the free flow of data across borders, is already affecting our global service delivery model. Due to the increase in terrorism (including cyber terrorism), we are observing that the adoption of surveillance, data localization, national sourcing and national hiring requirements, regulations and policies are increasing.

An increase in regulation of digital telecommunications, especially in the European Union, might impose additional costs or burdens on our customers and on Nokia itself. Our operations and employee recruitment and retention depend on our ability to obtain the necessary visas and work permits for our employees to travel and work in the jurisdictions in which we operate. Restrictive government policies, such as limitations on visas, may make it difficult for us to move our employees into and out of these jurisdictions. Changes in political regimes will also likely impact the way Nokia does business, due to potential changes in trade, privacy, cybersecurity, telecommunications, immigration and environmental policies.

Moreover, countries could require governmental interception capabilities or regulations aimed at allowing governmental access to data that could adversely affect us by reducing our sales to such markets or limiting our ability to use components or software that we have developed or sourced from other companies. Furthermore, our business and results of operations may be adversely affected by regulation, as well as economic and trade policies favoring the local industry participants, as well as other measures with potentially protectionist objectives that host governments in various countries may take, particularly in response to challenging global economic conditions or following changes in political regimes. The impact of changes in or uncertainties related to regulation and trade policies could affect our business and results of operations adversely or indirectly in certain cases where the specific regulations do not directly apply to us or our products and services.

The regulatory, exports and sanctions legal environment can also be difficult to navigate for companies with global operations, impacting our ability to grow business in specific markets or enter newer market opportunities. Our ability to protect our intellectual property and generate intellectual property-related net sales is dependent on regulatory developments in various jurisdictions, as well as the application of the regulations, for instance through administrative bodies. Export control, tariffs or other fees or levies imposed on our products and environmental, health, product safety and data protection, security, consumer protection, money laundering and other regulations that adversely affect the export, import, technical design, pricing or costs of our products could also adversely affect our sales and results of operations. Reduced availability of export credits supporting our sales as well as reduced government funding for our R&D activities could affect our ability to enter new markets and to develop new technology or products. Additionally, changes in various types of regulations or their application with respect to taxation or other fees collected by governments or governmental agencies may result in unexpected payment obligations, and in response to prevailing difficult global economic conditions there may be an increased aggressiveness in collecting such fees. We may be subject to new, existing or tightened export control regulations, sanctions, embargoes or other forms of economic and trade restrictions imposed on certain countries. Such actions may trigger additional investigations, including tax audits by authorities or claims by contracting parties. The results and costs of such investigations or claims may be difficult to predict and could lead to lengthy disputes, fines or fees, indemnities or a costly settlement.

Our provision of services and adaptation of Cloud-based solutions has resulted in us being exposed to a variety of new regulatory issues or different exposure to regulatory issues (e.g., related to data privacy) and makes us subject to increased regulatory scrutiny. Our current business models rely on certain centralized data processing solutions and Cloud or remote delivery-based services for distribution of services and software or data storage. Cloud and remote delivery-based business models and operations have certain inherent risks, including those stemming from potential security breaches, and applicable regulatory regimes may cause limitations in implementing such business models or expose us to adverse effects stemming for instance from regulatory or contractual issues, including penalties, fines, sanctions and limitations on conducting business. Moreover, our competitors have employed and will likely continue to employ significant resources to shape the legal and regulatory regimes in countries where we have significant operations. Governments and regulators may make legal and regulatory changes or interpret and apply existing laws in ways that make our products and services less appealing to end users or require us to incur substantial costs, change our business practices or prevent us from offering our products and services.

We operate on a global scale and our business and activities cover multiple jurisdictions and are subject to complex regulatory frameworks. Current international trends show increased enforcement activity and enforcement initiatives in areas such as competition law, export control and sanctions, privacy, cybersecurity and anti-corruption. Despite our Group-wide annual ethical business training and other measures, we may not be able to prevent breaches of law or governance standards within our business, subsidiaries and joint ventures.

Nokia is a publicly listed company and, as such, subject to various securities and accounting rules and regulations. While Nokia has determined that its internal control over financial reporting was effective as of December 31, 2017, it must continue to monitor and assess its internal control over financial reporting and its compliance with the applicable rules and regulations. Our operating subsidiaries or our joint ventures' failure to maintain effective internal controls over financial reporting or to comply with the applicable securities and accounting rules and regulations, could adversely affect the accuracy and timeliness of our financial reporting, which could result, for instance, in loss of confidence in us or in the accuracy and completeness of our financial reports, or otherwise in the imposition of fines or other regulatory measures, which could have a material adverse effect on us.

We are exposed to risks related to information security. Our business model relies on solutions for distribution of services and software or data storage, which entail inherent risks relating to applicable regulatory regimes, cybersecurity breaches and other unauthorized access to network data or other potential security risks that may adversely affect our business.

We are exposed to information security-related risk, for instance as our business and operations rely on confidentiality of proprietary information as well as sensitive information, for instance related to our employees. Also, our business models rely on certain centralized data processing solutions and Cloud or remote delivery-based services for distribution of services and software or data storage. Our business, including our Cloud or remote delivery-based business models and operations have certain inherent risks, including those stemming from potential security breaches and applicable regulatory regimes, which may cause limitations in implementing Cloud or remote delivery-based models or expose us to regulatory or contractual sanctions.

Although we endeavor to develop products and services that meet the appropriate security standards, including effective data protection, we or our products and online services, marketing and developer sites may be subject to cybersecurity breaches, including hacking, viruses, worms and other malicious software, unauthorized modifications, or illegal activities that may cause potential security risks and other harm to us, our customers or consumers and other end-users of our products and services. IT is rapidly evolving, the techniques used to obtain unauthorized access or sabotage systems change frequently and the parties behind cyber-attacks and other industrial espionage are believed to be sophisticated and have extensive resources, and it is not commercially or technically feasible to mitigate all known vulnerabilities in a timely manner or to eliminate all risk of cyber-attacks and data breaches. Additionally, we contract with multiple third parties in various jurisdictions who collect and use certain data on our behalf. Although we have processes in place designed to ensure appropriate collection, handling and use of such data, third parties may use the data inappropriately or breach laws and agreements in collecting, handling or using or leaking such data. This could lead to lengthy legal proceedings or fines imposed on us, as well as adverse effects to our reputation and brand value.

In connection with providing products and services to our customers and consumers, certain customer feedback, information on consumer usage patterns and other personal and consumer data are collected, stored and processed through us, either by us or by our business partners or subcontractors. Loss, improper disclosure or leakage of any personal or consumer data collected by us or which is available to our partners or subcontractors, made available to us or stored in or through our products, could have a material adverse effect on us and harm our reputation and brand. We have outsourced a significant portion of our IT operations, as well as the network and information systems that we sell to third parties or for whose security and reliability we may otherwise be accountable. Additionally, governmental authorities may use our networks products to access the personal data of individuals without our involvement; for example, through the so-called lawful intercept capabilities of network infrastructure. Even the perception that our products do not adequately protect personal or consumer data collected by us, made available to us or stored in or through our products or that they are being used by third parties to access personal or consumer data could impair our sales, results of operations, reputation and brand value.

Additionally, cyber-attacks can be difficult to prevent, detect or contain. We cannot rule out the possibility that there may have been cyber-attacks that have been successful and/or evaded our detection. We continue to invest in risk mitigating actions; however, there can be no assurance that such investments and actions will prevent or detect future cyber-attacks.

Our business is also vulnerable to theft, fraud or other forms of deception, sabotage and intentional acts of vandalism by third parties and employees. Unauthorized access to or modification, misappropriation or loss of our intellectual property and confidential information, including personal data, could result in litigation and potential liability to customers, suppliers and other third parties, harm our competitive position, reduce the value of our investment in R&D and other strategic initiatives or damage our brand and reputation, which could have a material adverse effect on our business, results of operations or financial condition. Additionally, the cost and operational consequences of implementing further information system protection measures, especially if prescribed by national authorities, could be significant. We may not be successful in implementing such measures in due time, which could cause business disruptions and be more expensive, time consuming and resource-intensive. Such disruptions could adversely impact our business.

As our business operations, including those we have outsourced, rely on complex IT systems, networks and related services, our reliance on the precautions taken by external companies to ensure the reliability of our and their IT systems, networks and related services is increasing. Consequently, certain disruptions in IT systems and networks affecting our external providers could have a material adverse effect on our business.

Inefficiencies, breaches, malfunctions or disruptions of information technology systems and processes could have a material adverse effect on our business and results of operations.

Our operations rely on the efficient and uninterrupted operation of complex and centralized IT systems, networks and processes, which are integrated with those of third parties. Additionally, certain personal, consumer and customer data is stored and processed on our IT service provider’s equipment as part of our business operations. All IT systems, networks and processes are potentially vulnerable to damage, breaches, malfunction or interruption from a variety of sources. We are, to a significant extent, relying on third parties for the provision of IT services. We may experience disruptions if our partners do not deliver as expected or if we are unable to successfully manage systems and processes together with our business partners. The ongoing trend to Cloud-based architectures and network function virtualization has introduced further complexity and associated risk.

We are constantly seeking to improve the quality and security of our IT systems. For instance, we have introduced new significant IT solutions in recent years and outsourced certain functions, increasing our dependence on the reliability of external providers as well as the security of communication with them. We will often need to use new service providers and may, due to technical developments or choices regarding technology, increase our reliance on certain new technologies, such as Cloud or remote delivery on demand-based services and certain other services that are used over the internet rather than using a traditional licensing model. Switching to new service providers and introducing new technologies is inherently risky and may expose us to an increased risk of disruptions in our operations, for instance, due to network inefficiency, a cybersecurity breach, malfunctions or other disruptions resulting from IT systems and processes.

We pursue various measures in order to manage our risks related to system and network malfunctions and disruptions, including the use of multiple suppliers and their strong technical and contractual engagements in IT security. However, despite precautions taken by us, any malfunction or disruption of our current or future systems or networks, such as an outage in a telecommunications network used by any of our IT systems, or a breach of our cybersecurity, such as an attack, malware or other event that leads to an unanticipated interruption or malfunction of our IT systems, processes, networks or data leakages, could have a material adverse effect on our business, results of operations and brand value. Additionally, if we fail to successfully secure our IT, this may have a material adverse effect on our business and results of operations. A disruption of services relying on our IT, for instance, could cause significant discontent among users resulting in claims, contractual penalties or deterioration of our brand value.

Our Nokia Technologies business group aims to generate net sales and profitability through licensing of the Nokia brand and technologies in addition to the development and sales of products and services, especially in the area of digital health. We are also engaged with other business ventures including technology innovation and incubation. Expected net sales and profitability for these businesses may not materialize as planned or at all.

Our Nokia Technologies business group pursues various business opportunities building on our innovations and the Nokia brand. In addition to patent licensing and monetization, the Nokia Technologies business group is focused on generating net sales and profits through business ventures related to Nokia brand and technology licensing and digital health.

In 2017, we continued to integrate the acquired Withings business into the Nokia Technologies portfolio and rebranded the Withings products to be Nokia-branded products in June 2017. Refer to “Overview–Strategy” and “Business Overview–Our businesses–Nokia Technologies” for more information. However, there can be no assurance that we will achieve the intended benefits from the Withings acquisition or rebranding of the products under the Nokia brand; for instance, we may not be able to maintain or increase the sales of the business acquired though the Withings acquisition. Competition in the consumer health market is intensifying, and Nokia Technologies needs to continue innovating, building differentiating technologies, and creating competitive health products that respond to consumer needs and deliver on brand promise. In 2017, we faced some quality challenges with some products in the portfolio and they resulted in delayed and/or reduced product sales. There can be no assurances that we are able to reach our targets with respect to growing the business, including being able to successfully make the right strategic bets and investments, including choices for the growth segments, product categories, product portfolio, target consumer segments and geographies, sales and marketing expansion, scaling up the supply chain and manufacturing, and strategic partnerships.

Nokia Technologies has a strategic agreement covering branding rights and intellectual property licensing with HMD Global. Refer to “Overview–Strategy” and “Business Overview–Our businesses–Nokia Technologies” for more information. Under the agreement, Nokia receives royalty payments from HMD Global for sales of Nokia branded mobile phones and tablets, covering both brand and intellectual property rights. As such, the amount of income for Nokia is dependent on the business and success of HMD Global. In 2017, HMD Global continued to ramp up its business and launched the initial devices in its Nokia-branded mobile phone portfolio. For some products, HMD Global had a limited supply for critical components which resulted in reduced sales in some markets and geographies. There can be no assurance that we will successfully reach additional new brand licensing arrangements at all or on terms that prove satisfactory to us. The agreement with HMD Global limits Nokia’s possibilities to license the Nokia brand for certain types of devices over an agreed time and as such limiting Nokia’s licensing possibilities with respect to such devices.

Additionally, licensing the Nokia brand to HMD Global or licensing the Nokia brand to other manufacturers could – in cases where the licensee acts inconsistently with our ethical, compliance or quality standards – negatively affect our reputation and the value of our brand, thus diminishing the business potential with respect to utilizing our brand for licensing opportunities or otherwise having a negative effect on our business. Nokia is not an investor or shareholder of HMD Global and Nokia has limitations in its ability to influence HMD Global in its business and other operations, exposing Nokia to potential adverse effects from the use of the Nokia brand by HMD Global or other adverse developments encountered by HMD Global that become attributable to Nokia though association and HMD Global being a licensee of the Nokia brand.

In 2017, Nokia Technologies ceased further development of its OZO virtual reality camera and related software technologies (“Digital Media”) business. The decision to end our investment in the Digital Media business was based on our assessment that the virtual reality industry segment did not grow as fast as we had anticipated it would grow and on our inability to meet the revenue targets for this business. Nokia Technologies is in the process of settling outstanding liabilities with contract manufacturers and other suppliers arising from the cessation of the Digital Media business.

The Nokia Technologies business group develops and licenses various innovations as well as developing its own products and services, including digital health-related products. The manufacturing and selling of devices and services can expose us to risks, including product liability claims, claims from contract manufacturers and/or suppliers, negative consumer feedback and reputational harm. The digital health device portfolio comprises connected health devices, such as scales, watches, trackers, blood pressure monitors, thermometers, sleep and home products. With such products, there exists a possibility of actual or claimed device or software malfunctions which, if realized, could injure or harm users. Some products are subject to regulatory approvals and/or compliance with regulatory standards in countries where such products are sold. Product malfunctions, failure to obtain appropriate regulatory approvals or a failure to comply with regulatory standards may result in product recalls; litigation; claims for compensation; reputational harm; leakage of consumer data; brand deterioration; and/or criminal, civil, or regulatory actions, penalties and/or fines.

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The industries in which we operate, or may operate in the future, are generally fast-paced, rapidly evolving and innovative. Such industries are at different levels of maturity, and there can be no assurances that any investment we make will yield an expected return or result in the intended benefits. Our business will likely require significant well-placed investments to innovate and grow successfully. Such investments may include R&D, licensing arrangements, acquiring businesses and technologies, recruiting specialized expertise and partnering with third parties. Such investments may not, however, result in technologies, products or services that achieve or retain broad or timely market acceptance or are preferred by our customers and consumers. Additionally, we are entering into new business areas based on our technology assets and may explore new business ventures. Such business areas or plans may be adversely affected by adverse industry and market developments in the numerous diverse markets in which we operate, as well as by general economic conditions globally and regionally. As such, the investments may not be profitable or achieve the targeted rates of return. There can be no assurances that we will be able to identify and understand the key market trends and user segments enabling us to address customers' and consumers' expanding needs in order to bring new innovative and competitive products and services to market in a timely manner.

There can be no assurances that our Nokia Technologies business group will be successful in innovation and incubation or in generating net sales and profits through its business plans, for instance in technology and brand licensing, or products in the digital health area. Additionally, entering into new business areas may expose us to additional liabilities or claims, for instance through product liability or other regulatory frameworks and related government investigations, litigation, penalties or fines.

We operate in a number of different jurisdictions around the world and we are subject to various legal frameworks regulating corruption, fraud, trade policies, and other risk areas. At any given time we may be subject to inspections, investigations, claims, and government proceedings, and the extent and outcome of such proceedings may be difficult to estimate with any certainty. We may be subject to material fines, penalties and other sanctions as a result of such investigations.

Bribery and anti-corruption laws in effect in many countries prohibit companies and their intermediaries from making improper payments to public officials for the purpose of obtaining new business or maintaining existing business relationships. Certain anti-corruption laws such as the United States Foreign Corrupt Practices Act ("FCPA") also require the maintenance of proper books and records, and the implementation of controls and procedures in order to ensure that a company's operations do not involve corrupt payments. Since we operate throughout the world, and given that some of our clients are government-owned entities and that our projects and agreements often require approvals from public officials, there is a risk that our employees, consultants or agents may take actions that are in violation of our policies and of anti-corruption laws. In many parts of the world where we currently operate or seek to expand our business, local practices and customs may be inconsistent with our policies, including the Nokia Code of Conduct, and could violate anti-corruption laws, including the FCPA and the UK Bribery Act 2010, and applicable European Union regulations, as well as applicable economic sanctions and embargoes. Our employees, or other parties acting on our behalf, could violate policies and procedures intended to promote compliance with anti-corruption laws or economic sanctions. Violations of these laws by our employees or other parties acting on our behalf, regardless of whether we had participated in such acts or had knowledge of such acts at certain levels within our organization, could result in us or our employees becoming subject to criminal or civil enforcement actions, including fines or penalties, disgorgement of profits and suspension or disqualification of sales. Additionally, violations of law or allegations of violations may result in reputational harm and loss of business and adversely affect our brand and reputation. Detecting, investigating and resolving such situations may also result in significant costs, including the need to engage external advisers, and consume significant time, attention and resources from our management and other key employees. The results and costs of such investigations or claims may be difficult to predict and could lead to, for instance, lengthy disputes, fines, fees or indemnities, costly settlement or the deterioration of the Nokia brand.

Through our Human Rights Due Diligence process, we aim to ensure via our sales interface that human rights are not infringed through the misuse of the products and technology we provide. Potential product misuse is by far the most salient human rights risk in our operations. We also operate in many countries with a diverse supply chain, and there is a risk that our employees, partners or agents may take actions that are in contradiction to our Code of Conduct or that customers and suppliers may similarly violate these principles, which could also have an adverse impact on our reputation, brand, or financial position. We therefore employ a range of processes and procedures to mitigate these risks.

As Nokia has now completed its acquisition of Alcatel Lucent, any historical issues with Alcatel Lucent's operations may be attributed to or the responsibility of Nokia. In the past, Alcatel Lucent has experienced both actual and alleged violations of anti-corruption laws. As a result of FCPA violations in the past, Alcatel Lucent had to pay substantial amounts in fines, penalties and disgorgement of profits to government enforcement agencies in the United States and elsewhere. We may be subject to claims, fines, investigations or assessments for conduct that we failed to or were unable to discover or identify in the course of performing our due diligence investigations of Alcatel Lucent, including unknown or unasserted liabilities and issues relating to fraud, non-compliance with applicable laws and regulations, improper accounting policies or other improper activities.

Any damages, fines, penalties or other sanctions attributable to us could have a material adverse effect on our brand, reputation or financial position.

We may be adversely affected by developments with respect to the customer financing or extended payment terms that we provide our customers.

Mobile operators in certain markets may require their suppliers, including us, to arrange, facilitate or provide financing in order to obtain sales or business. Similarly, operators may require extended payment terms. In certain cases, the amounts and duration of these financings and trade credits, and the associated impact on our working capital, may be significant. Requests for customer financing and extended payment terms are typical for our industry.

Uncertainty in the financial markets may result in increased customer financing requests. As a strategic marketing requirement, we arrange and facilitate financing or provide extended payment terms to a number of our customers, typically supported by export credit agencies or through the sale of related deferred receivables. In the event, that export credit agencies face future constraints on their ability or willingness to provide financing to our customers, or there is insufficient demand to purchase their receivables, such events could have a material adverse effect on our business and financial condition. We have agreed to extended payment terms for a number of our customers, and may continue to do so in the future. Extended payment terms may result in a material aggregate amount of trade credits. Even when the associated risk is mitigated by a diversified customer portfolio, defaults in the aggregate could have a material adverse effect on us.

We cannot guarantee that we will be successful in arranging, facilitating or providing required financing, including extended payment terms to our customers, particularly in difficult financial conditions on the market. Additionally, certain of our competitors may have greater access to credit

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financing, which could adversely affect our ability to compete successfully for business opportunities in the markets in which we operate. Our ability to manage our total customer financing and trade credit exposure depends on a number of factors, including capital structure, market conditions affecting our customers, the levels and terms of credit available to us and our customers, the cooperation of export credit agencies and our ability to mitigate exposure on acceptable terms. We may be unsuccessful in managing the challenges associated with the customer financing and trade credit exposure that we may face from time to time. While defaults under financings, guarantees and trade credits to our customers resulting in impairment charges and credit losses have not been significant for us in the past, these may increase in the future, and commercial banks may not continue to be able or willing to provide sufficient long-term financing, even if backed by export credit agency guarantees, due to their own constraints.

We have sold certain receivables to banks or other financial institutions to mitigate the payment risk and improve our liquidity, and any significant change in our ability to continue this practice could impair our capability to mitigate such payment risk and to manage our liquidity.

We may not be able to collect outstanding guarantees and bonds that could limit our possibilities to issue new guarantees and/or bonds, which are required in customer agreements or practices. We also face risks that such commercial guarantees and bonds may be unfairly called.

We have operations in many countries with different tax laws and rules, which may result in complex tax issues and disputes.

We may be obliged to pay additional taxes for past periods as a result of changes in law, or changes of tax authority practice or interpretation (possibly with retroactive effect in certain cases), resulting potentially in a material adverse effect on our cash flow and financial position. As a company with global operations we are subject to tax investigations in various jurisdictions, and such proceedings can be lengthy, involve actions that can hinder local operations and affect unrelated parts of our business, and the outcome of such proceedings is difficult to predict. While we have made provisions for certain tax issues, the provisions we have made may not be adequate to cover such increases.

The taxes for which we make provisions, such as income taxes, indirect taxes and social taxes, could increase significantly in the future as a result of changes in applicable tax laws in the countries in which we operate. Our business and the investments we make globally, especially in emerging markets, are subject to uncertainties, including unfavorable or unpredictable changes in tax laws (possibly with retroactive effect in certain cases), taxation treatment and regulatory proceedings, including tax audits. The impact of these factors is dependent on the types of revenue and mix of profit we generate in various countries, for instance, income from sales of products or services may have different tax treatments.

We may face adverse tax consequences due to our past acquisitions and divestments, including, but not limited to, stamp duties, land transfer taxes, franchise taxes and other levies. Additionally, there may be other potential tax liabilities which we are not currently aware but which may result in significant tax consequences now or in the future.

In the context of our sale of the D&S business to Microsoft, we are required to indemnify Microsoft for certain tax liabilities, including (i) tax liabilities of the Nokia entities acquired by Microsoft in connection with the closing of the Sale of the D&S Business, (ii) tax liabilities associated with the assets acquired by Microsoft and attributable to tax periods ending on or prior to the closing date of the Sale of the D&S Business, and (iii) tax liabilities relating to the pre-closing portion of any taxable period that includes the closing date of the Sale of the D&S Business.

In relation to the sale of the HERE business, we are also required to indemnify the Consortium for certain tax liabilities, including tax liabilities of the HERE entities acquired by the Consortium in connection with the closing of the Sale of the HERE Business attributable to (i) tax periods ending on or prior to the closing date of the Sale of the HERE Business, and (ii) the pre-closing portion of any taxable period that includes the closing date of the Sale of the HERE Business.

There may also be unforeseen tax expenses that turn out to have an unfavorable impact on us. As a result, and given the inherently unpredictable nature of taxation, there can be no assurance that our tax rate will remain at the current level or that cash flows regarding taxes will be stable.

Our actual or anticipated performance, among other factors, could reduce our ability to utilize our deferred tax assets.

Deferred tax assets recognized on tax losses, unused tax credits and tax deductible temporary differences are dependent on our ability to offset such items against future taxable income within the relevant tax jurisdiction. Such deferred tax assets are also based on our assumptions on future taxable earnings and these may not be realized as expected, which may cause the deferred tax assets to be materially reduced. There can be no assurances that an unexpected reduction in deferred tax assets will not occur. Any such reduction could have a material adverse effect on us. Additionally, our earnings have in the past been and may in the future continue to be unfavorably affected in the event that no tax benefits are recognized for certain deferred tax items.

We may be unable to retain, motivate, develop and recruit appropriately skilled employees.

Our success is dependant on our ability to retain, motivate, develop and recruit appropriately skilled employees. The market for skilled employees and leaders in our business is extremely competitive. We work on creating a corporate culture that is motivational, based on equal opportunities and encourages creativity and continuous learning to meet the challenges.

Our workforce has fluctuated over recent years as we have introduced changes in our strategy to respond to our business targets and endeavors. Such changes and uncertainty have caused and may in the future cause disruption and dissatisfaction among employees, as well as fatigue due to the cumulative effect of several reorganizations over the past years, our efforts to continue to evolve our business, maximize operational efficiency and capitalize on the benefits following the acquisition of Alcatel Lucent. These efforts might include implementing new organizational structures such as reorganization, strategic changes, M&A activity, competence development, relocation of employees, the closing or consolidation of sites, or insourcing/outsourcing parts of the business operations. As a result, employee motivation, energy, focus, morale and productivity may be reduced, causing inefficiencies and other problems across the organization resulting in the loss of key employees and increased costs in resolving and addressing such matters. The loss of key employees could result in resource gaps, some of which may only be noticed after a certain period of time or which negatively impact our relationship with customers, vendors or other business partners. Accordingly, we may need to take measures to attract, retain and motivate skilled employees.

Also, planned efforts to rebalance our workforce may not be completed as planned and may result in larger than expected costs, or we may not be able to complete such efforts as planned, for instance, due to legal restrictions, resulting in a non-optimal workforce that could hinder our ability to reach targeted cost savings. Succession planning, especially with respect to key employees and leaders, is crucial to avoid business disruptions and to ensure the appropriate transfer of knowledge. We have, and may from time to time, acquire businesses or complete other transactions where retaining key employees may be crucial to obtain the intended benefits of such transactions. We must ensure that key employees of such acquired businesses are retained and appropriately motivated. However, there can be no assurances that we will be able to implement measures

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successfully to retain or hire the required employees. We believe this will require significant time, attention and resources from our senior management and other key employees within our organization and may result in increased costs. We have encountered, and may in the future encounter, shortages of appropriately skilled employees or lose key employees or senior management, which may hamper our ability to implement our strategies and may have a material adverse effect on our business and results of operations. Relationships with employee representatives are generally managed at the site level in accordance with country-specific legislation and most collective bargaining agreements have been in place for several years. Our inability to negotiate successfully with employee representatives or failures in our relationships with such representatives could result in strikes by the employees, increased operating costs as a result of higher wages or benefits paid to employees as the result of such strike or other industrial action or inability to implement changes to our organization and operational structure in the planned timeframe or expense level, or at all. If our employees were to engage in a strike or other work stoppage, we could experience a significant disruption in our day-to-day operations and higher ongoing labor costs, which could have a material adverse effect on our business and results of operations.

We may face problems or disruptions in our manufacturing, service creation, delivery, logistics or supply chain. Additionally, adverse events may have a profound impact on production sites or the production sites of our suppliers, which are geographically concentrated.

Our product manufacturing, service creation and delivery, as well as our logistics, or the components of such activities that we have outsourced to third parties, expose us to various risks and potential liabilities, including those related to compliance with laws and regulations and exposure to environmental liabilities or other claims. Additionally, if we are subjected to negative publicity with respect to the activities that we manage or that are managed by third parties, we may experience an adverse impact to our reputation that can have a negative effect, for instance, on our brand and sales. These operations are continuously modified in an effort to improve the efficiency and flexibility of our manufacturing, service creation and delivery, as well as our logistics function and ability to produce, create and distribute continuously changing volumes. We, or third parties that we outsource services to, may experience difficulties in adapting our supply to meet the changing demand for our products and services, ramping up and down production at our facilities, adjusting our network implementation capabilities as needed on a timely basis, maintaining an optimal inventory level, adopting new manufacturing processes, finding the most timely way to develop the best technical solutions for new products, managing the increasingly complex manufacturing process, service creation and delivery process or achieving required efficiencies and flexibility.

Our manufacturing operations depend on obtaining sufficient quantities of fully functional products, components, sub-assemblies, software and services on a timely basis. Our principal supply requirements for our products are for electronic components, mechanical components and software, which all have a wide range of applications in our products.

In certain cases, a particular component or service may be available only from a limited number of suppliers or from a single supplier in the supply chain. Our product manufacturing, service creation and delivery, as well as our logistics, or the components of such activities that we have outsourced to third parties may also be adversely affected by various developments, including adverse changes in trade policies or laws or regulations, geopolitical disturbances, pandemic outbreaks or other similar events. For instance, a component supplier may experience delays or disruptions to our manufacturing processes or financial difficulties or even insolvency, bankruptcy or closure of our business, in particular due to difficult economic conditions.

Additionally, our dependence on third-party suppliers has increased as a result of our strategic decisions to outsource certain activities. Suppliers may from time to time extend lead times, limit supplies, change their partner preferences, increase prices, provide poor quality supplies or be unable to adapt to changes in demand due to capacity constraints or other factors, which could adversely affect our ability to deliver our products and services on a timely basis. For example, our efforts to meet our customer needs during major network roll-outs in certain markets may require sourcing large volumes of components and services from suppliers and vendors at short notice and simultaneously with our competitors. If we fail to properly anticipate customer demand, an over-supply or under-supply of components and production or services delivery capacity could occur. In many cases, some of our competitors utilize the same contract manufacturers, component suppliers and service vendors. If they have purchased capacity or components ahead of us, or if there is significant consolidation in the relevant supplier base, this could prevent us from acquiring the required components or services, which could limit our ability to supply our customers or increase our costs.

We may not be able to secure components on attractive terms from our suppliers or a supplier may fail to meet our supplier requirements, such as our and our customers' product quality, safety, security and other standards. Certain suppliers may not comply with local laws, including, among others, local labor laws. Consequently, some of our products may be unacceptable to us or to our customers. Our products are highly complex and defects in their design, manufacture and associated hardware, software and content have occurred in the past and may continue to occur in the future. Defects and other quality issues may result from, among other things, failure in our own product manufacturing and service creation and delivery, as well as failure of our suppliers to comply with our requirements, or failures in products and services created jointly with business partners or other third parties where the development and manufacturing process is not fully within our control. Quality issues may cause, for instance, delays in deliveries, loss of intellectual property, liabilities for network outages, court fees and fines due to breaches of significantly increasing regulatory privacy requirements and related negative publicity, and additional repair, product replacement or warranty costs to us, and harm our reputation and our ability to sustain or obtain business with our current and potential customers. With respect to our services, quality issues may relate to the challenges of having the services fully operational at the time they are made available to our customers and maintaining them on an ongoing basis. We may also be subject to damages due to product liability claims arising from defective products and components. We make provisions to cover our estimated warranty costs for our products and pending liability claims. We believe our provisions are appropriate, although the ultimate outcome may differ from the provisions that are provided for, which could have a material adverse effect on our results of operations, particularly profitability and financial condition.

We may experience challenges caused by third parties, or other external difficulties in connection with our efforts to modify our operations to improve the efficiency and flexibility of our manufacturing, service creation and delivery, as well as our logistics, including, but not limited to, strikes, purchasing boycotts, public harm to our brand and claims for compensation resulting from our decisions on where to place and how to utilize our manufacturing facilities. Such difficulties may result from, among other things, delays in adjusting production at our facilities, delays in expanding production capacity, failures in our manufacturing, service creation and delivery, as well as logistics processes, failures in the activities we have outsourced, and interruptions in the data communication systems that run our operations. Any of these events could delay our successful and timely delivery of products that meet our and our customers' quality, safety, security and other requirements, cause delivery of insufficient or excess volumes compared to our own estimates or customer requirements, or otherwise have a material adverse effect on our sales and results of operations or our reputation and brand value.

Many of our production sites or the production sites of our suppliers are geographically concentrated, with a majority of our suppliers based in Asia. Also, we rely on efficient logistic chain elements, e.g. regional distribution hubs or transport chain elements (main ports, streets, and airways), which

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may be affected by various events, including natural disasters, civil unrest, political instability or public health-related issues. In the event that any of these geographic areas are affected by any adverse conditions, such as natural disasters, geopolitical disruptions, civil unrest or health crises that disrupt production or deliveries from our suppliers, our ability to deliver our products on a timely basis could be adversely affected, which may have a material adverse effect on our business and results of operations.

An unfavorable outcome of litigation, arbitrations, agreement-related disputes or product liability-related allegations against our business could have a material adverse effect on us.

We are a party to lawsuits, arbitrations, agreement-related disputes and product liability-related allegations in the normal course of our business. Litigation, arbitration or agreement-related disputes can be expensive, lengthy and disruptive to normal business operations and divert the efforts of our management. Moreover, the outcomes of complex legal proceedings or agreement-related disputes are difficult to predict. An unfavorable resolution of a particular lawsuit, arbitration or agreement-related dispute could have a material adverse effect on our business, results of operations, financial condition and reputation. The investment or acquisition decisions we make may subject us to litigation arising from minority shareholders' actions and investor dissatisfaction with the activities of our business. Shareholder disputes, if resolved against us, could have a material adverse effect on our financial condition and results of operations as well as expose us to disputes or litigation.

We record provisions for pending claims when we determine that an unfavorable outcome is likely and the loss can reasonably be estimated. Due to the inherent uncertain nature of legal proceedings, the ultimate outcome or actual cost of settlement may materially differ from estimates. We believe our provisions for pending claims are appropriate. The ultimate outcome, however, may differ from the provided estimate, which could have either a positive or an adverse impact on our results of operations and financial condition.

Although our products are designed to meet all relevant safety standards and other recommendations and regulatory requirements globally, we cannot guarantee we will not become subject to product liability claims or be held liable for such claims or be required to comply with future regulatory changes in this area, which could have a material adverse effect on our business and financial condition. We have been involved in several lawsuits alleging adverse health effects associated with our products, including those caused by electromagnetic fields, and the outcome of such procedures is difficult to predict, including potentially significant fines or settlements. Even a perceived risk of adverse health effects of mobile devices or base stations could have a material adverse effect on us through a reduction in the demand for mobile devices having an adverse effect, for instance, through a decreased demand for mobile networks or increased difficulty in obtaining sites for base stations.

For a more detailed discussion of litigation to which we are a party, refer to Note 29, Provisions, of our consolidated financial statements included in this annual report on Form 20-F.

We may not have access to sources of funding on favourable terms, or at all.

We rely on multiple sources of funding for short-term and long-term capital and aim to minimize the liquidity risk by maintaining a sufficient cash position and having committed credit lines in place. However, there can be no assurances that we will be able to generate sufficient amounts of capital or to maintain an efficient capital structure from time to time.

We also may not be able to have access to additional sources of funds that we may need from time to time with reasonable terms, or at all. If we cannot access capital on a commercially viable basis, our business, financial condition and cash flow could materially suffer.

We may not be able to re-establish investment grade rating or maintain our credit ratings.

Moody's, Standard & Poor's and other credit rating agencies have assigned credit ratings to us and we have set a goal of re-establishing investment grade credit rating. There can be no assurances that we will be able achieve an investment grade credit rating at the targeted time, or at all.

In the event our credit rating is downgraded that could have a material adverse effect, for instance, our cost of funds and related margins, our business, financial condition, results of operations, liquidity, or access to capital markets.

We may be unable to achieve targeted benefits from, or successfully implement, planned transactions or transactions may result in liabilities.

From time to time, we may consider possible transactions that could complement our existing operations and enable us to grow our business or divest our existing businesses or operations. We have made a number of acquisitions and divestments, in addition to the recent acquisitions of Alcatel Lucent and Comptel. We may engage in further transactions, such as acquisitions, divestments, mergers or joint ventures in the future. Additionally, we make investments to companies through certain investment funds, including NGP Capital, and there can be no assurance that such investments will result in new successful technologies that we will be able to monetize.

We cannot provide any assurances that any transactions we initiate, such as acquisitions, divestments, mergers or joint ventures, will ultimately be completed on favorable terms or provide the benefits or return on investment that we had originally anticipated. After reaching an agreement for a transaction, we may need to satisfy pre-closing conditions on acceptable terms, which may prevent us from completing the transaction or result in changes to the scope of the transaction. Furthermore, we may not succeed in integrating acquired operations with our existing business.

Transactions, including acquisitions, divestments, mergers or joint ventures, involve inherent risks, and the assumptions may be incorrect in evaluating a transaction. Therefore, we may be exposed to unknown or contingent liabilities of acquired businesses, such as those related to contractual obligations, taxes, pensions, environmental liabilities, disputes and compliance matters. Additionally, there are multiple risks that can hamper or delay our ability to integrate acquired businesses and to achieve identified and anticipated operating and financial synergies, including;

§ unanticipated delays or inability to proceed with transactions as planned, for instance, due to issues in obtaining regulatory or shareholder approvals, completing public offers or proposals, the imposition of conditions on the acquirer of a business to divest certain assets or impose other obligations due to competition laws or other regulations;
§ unanticipated costs or changes in scope, for instance, due to issues with regulators or courts imposing terms on a transaction or obstacles that result in changes required in the scope of the transaction;
§ the diversion of management attention from the existing business;
§ the potential loss of key employees, customers and suppliers;

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- § unanticipated changes in business, industry or general economic conditions that affect the assumptions underlying the acquisition;
- § potential disputes with sellers, purchasers or other counterparties;
- § impairments related to goodwill and other intangible assets, for instance, due to business performance after an acquisition or differences in evaluating the goodwill with respect to the acquired businesses;
- § potential limitations on our ability to control any joint ventures; accordingly such transactions may result in increased exposure to operational, compliance, legal or financial risks;
- § unexpected costs associated with the separation of the business which is to be divested or with the integration of the business which is acquired;
- § additional payment obligations and higher costs resulting from non-performance by divested businesses;
- § exposure to contingent liabilities in connection with any indemnity we provide to the purchaser in connection with such divestment;
- § potential post-closing claims for indemnification and disputes with purchasers or sellers;
- § our dependence on some of the divested businesses as our suppliers in the future; and
- § high transaction costs.

Significant transactions may result in claims between the parties, (including, but not limited to, any indemnification claims), which can consume time and management attention, and the outcome of any claims related to significant transactions may be difficult to predict and could have a material adverse effect on our financial condition.

We are involved in joint ventures and are exposed to risks inherent to companies under joint management.

We have a number of joint ventures in various parts of the world. The agreements related to our joint ventures may require unanimous consent or the affirmative vote of a qualified majority of the shareholders to take certain actions, thereby possibly slowing down the decision-making process. In addition, joint venture companies involve inherent risks such as those associated with a complex corporate governance structure, including lack of transparency and consequent risks of compliance breaches or other similar issues, or issues in dissolving such entities or divesting their shareholdings, assets and liabilities, and also may involve negative public perceptions caused by the joint venture partner that are adverse to us.

Performance failures of our partners, as well as failures to agree to partnering arrangements with third parties could adversely affect us.

If any of the companies we partner and collaborate with were to fail to perform as expected, or if we fail to achieve the collaboration or partnering arrangements needed to succeed, we may be unable to bring our products, services or technologies to market successfully or in a timely manner, which could have a material adverse effect on our operations. We are increasingly collaborating and partnering with third parties to develop technologies, products and services, as well as seeking new revenue streams through partnering arrangements. We also depend on third-party partners in our efforts to monetize our brands, including the Nokia and Nokia Bell Labs brands and technologies, for instance, through arrangements where the brands are licensed to third-party products and the product development and distribution are handled partly or in full by third parties. Additionally, we have outsourced various functions to third parties and are relying on them to provide certain services to us. These arrangements involve the commitment of certain resources, including technology, R&D, services and employees. Although the objective of the collaborative and partnering arrangements is a mutually beneficial outcome for each party, our ability to introduce and provide products and services that are commercially viable and meet our, our customers' and consumers' quality, safety, security and other standards in a timely manner could be hampered from performance or other failures.

For instance, in many areas, including finance and human resources-related arrangements, a failure to maintain an efficient relationship with the selected partner may lead to ongoing operational problems or even to severe business disruptions, and we cannot give assurances that the availability of the processes and services upon which we rely on will not be interrupted, which could have a material adverse effect on our business operations, in particular related to the integration of Alcatel Lucent. Performance problems may result in missed reporting deadlines, financial losses, missed business opportunities and reputational harm. In addition, as management's focus shifts from a direct to an indirect operational control in these areas, there is a risk that without active management and monitoring of the relationship, the services provided may be below appropriate quality standards. Partners may not meet agreed service levels, in which case, depending on the impacted service, our contractual remedies may not fully cure all of the damages we may suffer. This is particularly true for any deficiencies that would impact the reporting requirements applicable to us as a company listed on multiple stock exchanges.

In order to implement outsourcing arrangements, we may be required to implement changes in our business practices and processes, for instance, to capture economies of scale and operational efficiencies, and to reflect a different way of doing business. Consequently, business processes that were customized for individual business groups or for us generally may be converted to a more standardized format. During a transition to outsourcing, our employees may need to train the partner's staff or be trained in the partners' systems, potentially resulting in the distraction of our employees. Adjustments to staff size and transfer of employees to the partner's companies could have an adverse effect on us, for instance, through impacting the morale of our employees and raising complex labor law issues and resulting in the loss of key personnel.

There is also a risk that we may not be able to determine whether controls have been effectively implemented, and whether the partner company's performance monitoring reports are accurate. Concerns could equally arise from giving third parties access to confidential data, strategic technology applications and books and records.

Additionally, we have a brand licensing partnership with HMD Global. HMD Global is responsible for following our brand and quality guidelines. If HMD Global or other partners act inconsistently with our ethical, sustainability, compliance, brand, or quality standards, this can negatively affect our reputation, the value of our brand, and the business outcome of our partnerships.

Additionally, partnering and outsourcing arrangements can create a dependency on the outsourcing company, causing issues in our ability to learn from day-to-day responsibilities, gain hands-on experience and adapt to changing business needs.

The carrying amount of our goodwill may not be recoverable.

We assess the carrying amount of goodwill annually, or more frequently if events or changes in circumstances indicate that such carrying amount may not be recoverable. We assess the carrying amount of other identifiable assets if events or changes in circumstances indicate that their

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carrying amounts may not be recoverable. If we do not generate revenues from our businesses as anticipated, our businesses may not generate sufficient positive operating cash flows. This, or other factors, may lead to a decrease in the value of our assets, including intangible assets and the goodwill attributed to our businesses, resulting in impairment charges that may adversely affect our net profit for the year. While we believe the estimated recoverable values are reasonable, actual performance in the short- and long-term and our assumptions on which we base our calculations could materially differ from our forecasts, which could impact future estimates of our businesses' recoverable values, and may result in impairment charges.

The amount of dividend and equity return distributed to shareholders for each financial period is uncertain and is affected by exchange rate fluctuations.

We cannot assure that we will pay dividends or deliver return on equity on the shares issued by us, nor is there any assurance as to the amount of any dividend or return of equity we may pay, including but not limited to situations where we make commitments to increase our dividends. The payment and the amount of any dividend or return of equity is subject to the discretion of our Board and, ultimately, the general meeting of our shareholders and will depend on available cash balances, retained earnings, anticipated cash needs, the results of our operations and our financial condition and terms of outstanding indebtedness, as well as other relevant factors such as restrictions, prohibitions or limitations imposed by applicable law.

We are exposed to pension, employee fund-related and employee healthcare-related risks and we may be unsuccessful in our ability to avoid or control costs resulting from a need for increased funding.

We are exposed to various employee cost-related risks, including those related to pension, employee fund-related obligations and employee healthcare-related risks. In the United States, we maintain significant employee pension benefit plans and a significant retiree welfare benefit plan (providing post-retirement healthcare benefits and post-retirement life insurance coverage). Outside the United States, we contribute to pension schemes for large numbers of current and former employees. The U.S. and non-U.S. plans and schemes have funding requirements that depend on, among other things, various legal requirements, how assets set aside to pay for those obligations are invested, the performance of financial markets, interest rates, assumptions regarding the life expectancy of covered employees and retirees, and medical cost inflation and medical care utilization. To the extent that any of those variables change, the funding required for those plans/schemes may increase, and we may be unsuccessful in our ability to avoid or control costs resulting from such increased funding requirements. Our inability to avoid or control such costs could have a material adverse effect on our results of operations and our financial position.

With respect to our employee costs and pension and other post-retirement obligations, we face the following risks, among others:

§ financial market performance and volatility in asset values and discount rates affect the funded status of our pension obligations and could increase funding requirements, including legally required minimum contributions;
§ our pension plan participants and post-retirement health plan participants may live longer than has been assumed, which would result in an increase in our benefit obligations. We cannot be certain that the longevity of the participants in our pension plans or retiree healthcare plan will not exceed that indicated by the mortality tables we currently use or that future updates to those tables will not reflect materially longer life expectancies;
§ we currently fund, and expect to be able to continue to fund, our United States post-retirement healthcare and group life insurance costs for our formerly represented retirees with excess pension assets in our (United States) formerly represented pension plan, as permitted under Section 420 of the United States Internal Revenue Code. A deterioration in the funded status of that pension plan could negatively affect our ability to continue making Section 420 transfers. Section 420 is currently set to expire in 2025.
§

we currently provide post-retirement group life insurance coverage for a closed group of former non-represented employees who meet stated age and service criteria. This benefit obligation is largely insured through an experience-rated group life insurance policy issued by a reputable insurer, the premiums for which are paid from a voluntary employees' beneficiary association (veba) trust. Based on current actuarial and return-on-asset assumptions and the present level and structure of this group life insurance obligation, we believe that we can continue to fund the premiums for this policy from this trust for several more years. Once the trust's assets are depleted, however, the company will bear the annual premium cost associated with this benefit. Although we expect to be able, in the future, to fund this cost from excess pension assets in our (United States) non-represented pension plan, the level of excess pension assets in that plan in any given year may be insufficient to cover the annual premium cost.

We engage in the installation and maintenance of undersea telecommunications cable networks, and in the course of this activity we may cause damage to existing undersea infrastructure, for which we may ultimately be held responsible.

We engage in the supply of submarine optical fiber cable networks linking mainland to islands, island to island or several points along a coast, with activities also expanding to the supply of broadband infrastructure to oil and gas platforms and other offshore installations. Although thorough surveys, permit processes and safety procedures are implemented during the planning and deployment phases of all of these activities, there is a risk that previously-laid infrastructure, such as electric cables or oil pipelines, may go undetected despite such precautions, and be damaged during the process of installing the telecommunications cable, potentially causing business interruption to third parties operating in the same area and accidental pollution or other disturbances or damage to the environment. While we have contractual limitations in place and maintain insurance coverage to limit our exposure, we cannot provide any assurance that these protections will be sufficient to cover such exposure entirely.

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Shares and share capital

Nokia has one class of shares. Each Nokia share entitles the holder to one vote at General Meetings of Nokia.

As of December 31, 2017, the total number of Nokia shares was 5 839 404 303 and our share capital equaled EUR 245 896 461.96. As of December 31, 2017, Nokia and its subsidiary companies owned a total of 259 887 597 Nokia shares, representing approximately 4.5% of the total number of the shares and voting rights of the company.

In 2017, we did not cancel any shares.

In 2017, under the authorization held by the Board of Directors and in line with the capital structure optimization program, Nokia repurchased 153 601 462 shares representing approximately 2.6% of share capital and total voting rights as of December 31, 2017. In 2016, we had repurchased 54 296 182 shares. The price paid for the shares was based on the current market price of the Nokia share on the securities market at the time of the repurchase. The 207 897 644 repurchased shares representing approximately 3.6% of share capital and total voting rights on December 31, 2017 were cancelled, effective as of February 2, 2018.

In 2017, under the authorization held by the Board of Directors, we issued 415 750 new shares following the holders of stock options issued in 2011, 2012 and 2013 exercising their option rights. In addition, we issued 2 933 541 new shares without consideration to Nokia to be transferred to fulfil our obligation under the Nokia Equity Programs.

In 2017, under the authorization held by the Board of Directors, we issued a total of 12 199 284 treasury shares to our employees, including certain members of the Group Leadership Team, as settlement under Nokia's equity-based incentive plans. The shares were issued without consideration and in accordance with the plan rules. The total number of treasury shares issued represented 0.2% of the total number of shares and the total voting rights as of December 31, 2017. The issuances did not have a significant effect on the relative holdings of other Nokia shareholders, or on their voting power.

Information on the authorizations held by the Board of Directors in 2017 to issue shares and special rights entitling to shares, to transfer shares and repurchase own shares, as well as information on related party transactions, the shareholders, stock options, shareholders' equity per share, dividend yield, price per earnings ratio, share prices, market capitalization, share turnover and average number of shares is available in the "Corporate Governance—Compensation", "Financial Statements", "General facts on Nokia—Shares and shareholders" and "General facts Nokia—Related party transactions" sections.

Refer to Note 20, Shares of the Parent Company, of our consolidated financial statements included in this annual report on Form 20 F for further information regarding Nokia shares.

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Board of Directors and management

Pursuant to the Articles of Association of Nokia Corporation, our Board of Directors is composed of a minimum of seven and a maximum of 12 members. The Board of Directors is elected at least annually at the Annual General Meeting of the shareholders for a term ending at the end of the next Annual General Meeting, which convenes annually by June 30.

The Board of Directors has responsibility for appointing and discharging the President and CEO, the Chief Financial Officer and other members of the Group Leadership Team.

For information on remuneration, shares and stock options held by the Board of Directors, the President and CEO and the other members of the Group Leadership Team, refer to “Corporate governance—Compensation”. For more information regarding corporate governance at Nokia, refer to “Corporate governance—Corporate governance statement” or to our website at http://www.nokia.com/en_int/investors/corporate-governance.

Articles of Association

Our Articles of Association are available on our website www.nokia.com/en_int/investors/corporate-governance. Amendment of the Articles of Association requires a resolution of the general meeting of shareholders, supported by two-thirds of the votes cast and two-thirds of the shares represented at the meeting. For information on our Articles of Association, refer to “General facts on Nokia—Memorandum and Articles of Association”.

Our Articles of Association include provisions for obligation to redeem. Amendment of the provisions of Article 13 of the Articles of Association, “Obligation to purchase shares”, requires a resolution supported by three-quarters of the votes cast and three-quarters of the shares represented at the meeting.

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Corporate governance

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Corporate governance statement

This corporate governance statement is prepared in accordance with Chapter 7, Section 7 of the Finnish Securities Markets Act (2012/746, as amended) and the Finnish Corporate Governance Code 2015 (the "Finnish Corporate Governance Code").

Regulatory framework

Our corporate governance practices comply with Finnish laws and regulations as well as with our Articles of Association. We also comply with the Finnish Corporate Governance Code, available at www.cgfinland.fi, with the following exception:

In 2017, we complied with the Finnish Corporate Governance Code, with the exception that we were not in full compliance with recommendation 24, because our restricted share plans did not include performance criteria but were time-based only. The restricted shares vest in three equal tranches on the first, second and third anniversary of the award subject to continued employment with Nokia. Restricted Shares were to be granted on a limited basis for exceptional purposes related to retention and recruitment, primarily in the United States, to ensure Nokia is able to retain and recruit vital talent for the future success of the company. The restricted share plan for 2018 is designed in a similar manner. The Board approves, upon recommendation from the Board's Personnel Committee, any long-term incentive compensation and all equity plans, programs or similar arrangements of significance that the company establishes for its employees.

We comply with the corporate governance standards of Nasdaq Helsinki, which are applicable due to the listing of our shares on the exchange. Furthermore, as a result of the listing of our American Depositary Shares on the New York Stock Exchange (the "NYSE") and our registration under the U.S. Securities Exchange Act of 1934, we must comply with the U.S. federal securities laws and regulations, including the Sarbanes-Oxley Act of 2002 as well as the rules of the NYSE, in particular the corporate governance standards under Section 303A of the NYSE Listed Company Manual, which is available at http://nysemanual.nyse.com/lcm/. We comply with these standards to the extent such provisions are applicable to foreign private issuers.

To the extent any non-domestic rules would require a violation of the laws of Finland, we are obliged to comply with Finnish law. There are no significant differences in the corporate governance practices applied by Nokia compared to those applied by United States companies under the NYSE corporate governance standards, with the exception that Nokia complies with Finnish law with respect to the approval of equity compensation plans. Under Finnish law, stock option plans require shareholder approval at the time of their launch. All other plans that include the delivery of company stock in the form of newly issued shares or treasury shares require shareholder approval at the time of the delivery of the shares, unless shareholder approval has been granted through an authorization to the Board, a maximum of five years earlier. The NYSE corporate governance standards require that the equity compensation plans be approved by a company's shareholders. Nokia aims to minimize the necessity for, or consequences of, conflicts between the laws of Finland and applicable non-domestic corporate governance standards.

The Board has also adopted corporate governance guidelines ("Corporate Governance Guidelines") to reflect our commitment to good corporate governance. Our Corporate Governance Guidelines are available on our website at http://www.nokia.com/en_int/investors/corporate-governance.

Main corporate governance bodies of Nokia

Pursuant to the provisions of the Finnish Limited Liability Companies Act (2006/624, as amended) (the "Finnish Companies Act") and Nokia's Articles of Association, the control and management of Nokia are divided among the shareholders at a general meeting, the Board, the President and CEO and the Group Leadership Team, chaired by the President and CEO.

General meeting of shareholders

The shareholders may exercise their decision-making power and their right to speak and ask questions at the general meeting of shareholders. Each Nokia share entitles a shareholder to one vote at general meetings of Nokia. Pursuant to the Finnish Companies Act, an Annual General Meeting must convene annually by June 30. The Annual General Meeting decides, among other things, on the election and remuneration of the Board, the adoption of the annual accounts, the distribution of profit shown on the balance sheet, and discharging the members of the Board and the President and CEO from liability, as well as on the election and fees of the external auditor.

In addition to the Annual General Meeting, an Extraordinary General Meeting shall be convened when the Board considers such meeting to be necessary, or when the provisions of the Finnish Companies Act mandate that such a meeting must be held.

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Board of Directors

The operations of Nokia are managed under the direction of the Board, within the framework set by the Finnish Companies Act and Nokia's Articles of Association as well as any complementary rules of procedure as defined by the Board, such as the Corporate Governance Guidelines and the charters of the Board's committees.

Election and composition of the Board of Directors

Pursuant to the Articles of Association of Nokia Corporation, we have a Board that is composed of a minimum of seven and a maximum of 12 members. The Board is elected at least annually at each Annual General Meeting with a simple majority of the shareholders' votes cast at the meeting. The term of a Board member shall begin at the closing of the general meeting at which he or she was elected, or later as resolved by the general meeting, and expire at the closing of the following Annual General Meeting. The Annual General Meeting convenes by June 30 annually.

The Annual General Meeting held on May 23, 2017 elected the following ten members to the Board for a term ending at the close of the Annual General Meeting in 2018: Bruce Brown, Jeanette Horan, Louis R. Hughes, Edward Kozel, Jean C. Monty, Elizabeth Nelson, Olivier Piou, Risto Siilasmaa, Carla Smits-Nusteling and Kari Stadigh.

Our Board's leadership structure consists of a Chair and Vice Chair elected annually by the Board, and confirmed by the independent directors of the Board, from among the Board members upon the recommendation of the Corporate Governance and Nomination Committee. On May 23, 2017, the Board elected Risto Siilasmaa to continue to serve as the Chair and Olivier Piou as the Vice Chair of the Board. The Chair of the Board has certain specific duties as stipulated by Finnish law and our Corporate Governance Guidelines. The Vice Chair of the Board assumes the duties of the Chair of the Board in the event he or she is prevented from performing his or her duties.

We do not have a policy concerning the combination or separation of the roles of the Chair of the Board and the President and CEO, but the leadership structure is dependent on our needs, shareholder value and other relevant factors applicable from time to time, while respecting the highest corporate governance standards. In 2017, Rajeev Suri served as the President and CEO, while Risto Siilasmaa served as the Chair of the Board.

The current members of the Board are all non-executive. For the term of the Board that began at the Annual General Meeting on May 23, 2017, all Board member candidates were determined to be independent under the Finnish corporate governance standards and the rules of the NYSE.

The Board has adopted principles concerning Board diversity describing (a) our commitment to promoting diverse Board composition, and (b) how diversity is embedded into our processes and practices when identifying and proposing new Board candidates as well as re-election of current Board members.

At Nokia, Board diversity consists of a number of individual elements, including gender, age, nationality, cultural and educational backgrounds, skills and experience. At Nokia diversity is not a static concept, but rather a relevant mix of required elements for the Board as a whole that evolves with time based on, among other things, the relevant business objectives and future needs of Nokia. Board diversity is treated as a means of improvement and development rather than an end in itself.

Nokia acknowledges and supports the resolution adopted by the Finnish Government on February 17, 2015 on gender equality on the boards of directors of Finnish large and mid-cap listed companies. Accordingly, we aim to have representation of 40% of both genders in our Board by January 1, 2020 by proposing a corresponding Board composition for shareholder approval in the Annual General Meeting of 2019, at the latest. At the Annual General

Meeting on May 23, 2017, Jeanette Horan was elected to the Board after which the gender balance of the Board was 70% male and 30% female. We report annually our objectives relating to both genders being represented on our Board, the means to achieve them, and the progress we have made in achieving them.

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Members of the Board of Directors

Set forth below are the current members of the Board and their biographical details. Information about the share ownership of the Board members is disclosed in the Remuneration Statement, refer to "–Compensation" below.

Chair Risto Siilasmaa

b. 1966

Chair of the Nokia Board. Board member since 2008. Chair since 2012. Chair of the Corporate Governance and Nomination Committee.

Master of Science (Eng.), Helsinki University of Technology, Finland.

President and CEO of F-Secure Corporation 1988–2006.

Chairman of the Board of Directors of F-Secure Corporation. Chairman of the Board of Directors of the Federation of Finnish Technology Industries. Vice Chairman of the Board of Directors of the Confederation of Finnish Industries (EK). Member of European Roundtable of Industrialists.

Chairman of the Board of Directors of Elisa Corporation 2008–2012.

Vice Chair Olivier Piou

b. 1958

Vice Chair of the Nokia Board. Board member and Vice Chair since 2016. Member of the Personnel Committee and the Corporate Governance and Nomination Committee.

Engineer, École Centrale de Lyon, France.

Chief Executive Officer of Gemalto N.V. 2006–2016. Chief Executive Officer of Axalto N.V. 2004–2006. With Schlumberger Ltd 1981–2004, including numerous management positions in the areas of technology, marketing and operations, in France and the United States.

Member of the Board of Directors of Gemalto N.V. Member of the Board of Directors of the PESH foundation.

Member of the Board of Directors of Alcatel Lucent SA 2008–2016.

Bruce Brown

b. 1958

Nokia Board member since 2012. Chair of the Personnel Committee. Member of the Corporate Governance and Nomination Committee.

MBA (Marketing and Finance), Xavier University, the United States. BS (Chemical Engineering), Polytechnic Institute of New York University, the United States.

Retired from The Procter & Gamble Company in 2014. Chief Technology Officer of the Procter & Gamble Company 2008–2014. Various executive and managerial positions in Baby Care, Feminine Care, and Beauty Care units of The Procter & Gamble Company since 1980 in the United States, Germany and Japan.

Member of the Board of Directors of Agency for Science, Technology & Research (A*STAR) in Singapore. Member of the Board of Directors, the Audit Committee and the Nominating and Corporate Governance Committee of P. H. Glatfelter Company. Member of the Board of Directors, the Audit Committee and the Compensation Committee of Medpace, Inc.

Jeanette Horan

b. 1955

Nokia Board member since 2017. Member of the Audit Committee.

MBA, Business Administration and Management, Boston University, the United States. BSc, Mathematics, University of London, United Kingdom.

Various executive and managerial positions in IBM 1998-2015. Vice President of Digital Equipment Corporation 1994-1998. Vice President, Development, of Open Software Foundation 1989-1994.

Member of the Supervisory Board at Wolters Kluwer, and the Chair of the Remuneration Committee. Member of the Board of Advisors at Jane Doe No More, a non-profit organization.

Member of the Board of Advisors of Cyberreason 2017-2018. Member of the Board of Directors of West Corporation 2016-2017. Member of the Board of Directors of Microvision 2006-2017.

Louis Hughes

b. 1949

Nokia Board member since 2016. Member of the Audit Committee.

Master's Degree in Business Administration, Harvard University, Graduate School of Business, the United States. Bachelor of Mechanical Engineering, General Motors Institute, now Kettering University, the United States.

President & Chief Operating Officer of Lockheed Martin in 2000. Executive Vice President of General Motors Corporation 1992–2000. President of General Motors International Operations 1992–1998. President of General Motors Europe 1992–1994.

Chairman of InZero Systems (formerly GBS Laboratories) (the United States). Independent director and member of the Audit Committee of AkzoNobel. Independent director and chairman of the Audit, Finance and Compliance Committee of ABB. Executive advisor partner of Wind Point Partners.

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Member of the Board of Directors of Alcatel Lucent SA 2008–2016.

Edward Kozel

b. 1955

Nokia Board member since 2017. Member of the Audit Committee.

Degree in Electrical Engineering and Computer Science, University of California, the United States.

President and CEO of Range Networks 2013-2014, Owner of Open Range 2000-2013, Chief Technology and Innovation Officer and member of the Board of Management of Deutsche Telecom 2010-2012, CEO of Skyrider 2006-2008, Managing Director of Integrated Finance 2005-2006, Senior Vice President, Business development and Chief Technology Officer and Board Member of Cisco 1989-2001.

Various Board Memberships in 1999–2009.

Jean Monty

b. 1947

Nokia Board member since 2016. Member of the Personnel Committee.

Bachelor of Arts, Collège Sainte-Marie de Montréal, Canada. Master of Arts in Economics, University of Western Ontario, Canada. Master of Business Administration, University of Chicago, the United States.

Chairman of the Board and Chief Executive Officer of Bell Canada Enterprises until 2002. President and Chief Executive Officer of Nortel Networks Corporation until 1997.

Member of the Board of Directors of Fiera Capital Inc. Member of the Boards of Directors of Bombardier 1998-2017. Member of the Board of Directors of Alcatel Lucent SA 2008–2016.

Elizabeth Nelson

b. 1960

Nokia Board member since 2012. Chair of the Audit Committee.

MBA (Finance), the Wharton School, University of Pennsylvania, the United States. BS (Foreign Service), Georgetown University, the United States.

Executive Vice President and Chief Financial Officer, Macromedia, Inc. 1997–2005. Vice President, Corporate Development, Macromedia, Inc. 1996–1997. Various roles in Corporate Development and International Finance, Hewlett-Packard Company 1988–1996.

Chairman of the Board of Directors of DAI. Independent Lead Director and Chair of the Audit Committee of Zendesk Inc.

Member of the Board of Directors of Pandora Media 2013-2017. Member of the Boards of Directors of Brightcove, Inc. 2010–2014, SuccessFactors, Inc. 2007–2012 and Ancestry.com, Inc. 2009–2012.

Carla Smits-Nusteling

b. 1966

Nokia Board member since 2016. Member of the Audit Committee.

Master's Degree in Business Economics, Erasmus University Rotterdam, the Netherlands. Executive Master of Finance and Control, Vrije University Amsterdam, the Netherlands.

Member of the Board of Directors and Chief Financial Officer of KPN 2009–2012. Various financial positions in KPN 2000–2009. Various financial and operational positions in TNT/PTT Post 1990–2000.

Member of the Supervisory Board since 2013 and Chair of the Audit Committee of ASML. Member of the Board of Directors since 2013 and Chair of the Audit Committee of TELE2 AB. Member of the Management Board of the Unilever Trust Office since 2015. Lay Judge in the Enterprise Court of the Amsterdam Court of Appeal since 2015.

Kari Stadigh

b. 1955

Group CEO and President of Sampo plc. Nokia Board member since 2011. Member of the Personnel Committee and the Corporate Governance and Nomination Committee.

Master of Science (Eng.), Helsinki University of Technology, Finland. Bachelor of Business Administration, Hanken School of Economics, Helsinki, Finland.

Deputy CEO of Sampo plc 2001–2009. President of Sampo Life Insurance Company Limited 1999–2000. President of Nova Life Insurance Company Ltd 1996–1998. President and COO of Jaakko Pöyry Group 1991–1996.

Member of the Board of Directors and Chair of the Board's Risk Committee of Nordea Bank AB (publ). Chairman of the Board of Directors of If P&C Insurance Holding Ltd (publ) and Mandatum Life Insurance Company Limited. Member of the Board of Directors of the Federation of Finance Finland (previously Finnish Financial Services). Member of the Board of Directors of Waypoint Capital Group Holdings SA. Member of the Board of Directors of Niilo Helanderin Säätiö.

Election of the Chair of the Board of Directors and Vice Chair of the Board of Directors and the chair and members of the Board's Committees

The Chair of the Board and the Vice Chair of the Board of Directors are elected from among the members of the Board by the new Board and confirmed by the independent directors of the Board based on the recommendation of the Corporate Governance and Nomination Committee. The independent directors of the new Board also confirm the election of the members and chairs for the Board's committees from among the Board's independent directors upon the recommendation of the Corporate Governance and Nomination Committee and based on each committee's member qualification standards. These elections will take place at the Board's assembly meeting following the Annual General Meeting in 2018.

Operations of the Board of Directors

The Board represents and is accountable to the shareholders of Nokia. The Board's responsibilities are active, not passive, and include the responsibility to evaluate the strategic direction of Nokia, its management policies and the effectiveness of the implementation of such by the management on a regular basis. It is the responsibility of the members of the Board to act in good faith and with due care, so as to exercise their business judgment on an informed basis, in a manner which they reasonably and honestly believe to be in the best interests of Nokia and its shareholders. In discharging that obligation, the members of the Board must inform themselves of all relevant information reasonably available to them. The Board and each Board committee also have the power to appoint independent legal, financial or other advisors as they deem necessary from time to time.

The Board is ultimately responsible for monitoring and reviewing Nokia's financial reporting process, effectiveness of related control and audit functions and the independence of Nokia's external auditor, as well as for monitoring the statutory audit of the annual and consolidated financial statements. The Board's responsibilities also include overseeing the structure and composition of our top management and monitoring legal compliance and the management of risks related to our operations. In doing so, the Board may set annual ranges and/or individual limits for capital expenditures, investments and divestitures and financial commitments that may not be exceeded without separate Board approval.

In risk management policies and processes, the Board's role includes risk analysis and assessment in connection with financial, strategy and business reviews, updates and decision-making proposals. Risk management policies and processes are integral parts of Board deliberations and risk-related updates are provided to the Board on a recurring basis. For a more detailed description of our risk management policies and processes, refer to "—Risk management, internal control and internal audit functions at Nokia—Main features of risk management systems" below.

The Board has the responsibility for appointing and discharging the President and CEO and the other members of the Group Leadership Team. Since May 2014, Rajeev Suri has served as the President and CEO. His rights and responsibilities include those allotted to the President under Finnish law and he also chairs the Group Leadership Team.

Subject to the requirements of Finnish law, the independent directors of the Board confirm the compensation and terms of employment of the President and CEO upon the recommendation of the Personnel Committee of the Board. The compensation and employment conditions of the other members of the Group Leadership Team are approved by the Personnel Committee upon the recommendation of the President and CEO.

The Board has three committees: the Audit Committee, the Corporate Governance and Nomination Committee and the Personnel Committee. These committees assist the Board in its duties pursuant to their respective committee charters. The independent directors of the Board elect the members and chairs of the Board's committees from among the Board's independent directors based on the recommendation of the Corporate Governance and Nomination Committee and based on each committee's member qualification standards. The Board may also establish ad hoc committees for detailed reviews or consideration of particular topics to be proposed for the approval of the Board.

In line with our Corporate Governance Guidelines, the Board conducts annual performance evaluations, which also include evaluations of the Board committees' work as well as the Board and Committee Chairs and individual Board members. In 2017, an external evaluator assisted in the Board evaluation process consisting of self-evaluations and peer evaluations, as well as interviews. The evaluation process included both numeric assessments and the possibility to provide more detailed written comments. The feedback from selected members of management was also requested as part of this evaluation process. The results of the evaluation are discussed and analyzed by the entire Board and improvement actions are agreed based on such discussion.

Meetings of the Board of Directors

The Board held 21 meetings excluding committee meetings during 2017, of which approximately 40% were regularly scheduled meetings held in person, complemented by meetings via video or conference calls or by other means. Additionally, in 2017, the non-executive directors held meetings regularly without management in connection with Board meetings.

Directors' attendance at Board meetings, including committee meetings but excluding meetings among the non-executive directors or independent directors only, in 2017 is set forth in the table below:

	Board meetings %	Audit Committee meetings %	Corporate Governance and Nomination Committee meetings %	Personnel Committee meetings %
Bruce Brown	100		100	100
Jeanette Horan (from May 23, 2017)	100	100		
Louis Hughes	100	100		
Edward Kozel (from May 23, 2017)	100	100		
Jean Monty	100			100
Elizabeth Nelson	100	100		
Olivier Piou	95		80	88
Risto Siilasmaa	100		100	
Carla Smits-Nusteling	100	100		
Kari Stadigh	90		100	100

Additionally, many of the directors attended, as non-voting observers, meetings of a committee of which they were not a member.

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According to Board practices, the non-executive directors meet without management in connection with each regularly scheduled meeting. Such sessions are chaired by the non-executive Chair of the Board. If the non-executive Chair of the Board is unable to chair these meetings, the non-executive Vice Chair of the Board chairs the meeting. Additionally, the independent directors meet separately at least once annually.

All the directors who served on the Board for the term until the close of the Annual General Meeting in 2017 attended Nokia's Annual General Meeting held on May 23, 2017. The Finnish Corporate Governance Code recommends that the Chair and members of the Board and the President shall be present at the general meeting of shareholders to ensure the possibility for the shareholders to exercise their right to present questions to both the Board and management.

Committees of the Board of Directors

The Audit Committee consists of a minimum of three members of the Board who meet all applicable independence, financial literacy and other requirements as stipulated by Finnish law, the rules of Nasdaq Helsinki and the NYSE. From May 23, 2017, the Audit Committee consisted of the following five members of the Board: Elizabeth Nelson (Chair), Jeanette Horan, Louis Hughes, Edward Kozel and Carla Smits-Nusteling.

The Audit Committee is established by the Board primarily for the purpose of oversight of the accounting and financial reporting processes of Nokia and the audits of its financial statements. The Committee is responsible for assisting the Board in the oversight of:

§ the quality and integrity of the company's financial statements and related disclosures;
§ the statutory audit of the company's financial statements;
§ the external auditor's qualifications and independence;
§ the performance of the external auditor subject to the requirements of Finnish law;
§ the performance of the company's internal controls and risk management and assurance function;
§ the performance of the internal audit function; and
§ the company's compliance with legal and regulatory requirements, including the performance of its ethics and compliance program.

Audit Committee also maintains procedures for the receipt, retention and treatment of complaints received by the company regarding accounting, internal controls, or auditing matters and for the confidential, anonymous submission by our employees of concerns relating to accounting or auditing matters. Nokia's disclosure controls and procedures, which are reviewed by the Audit Committee and approved by the President and CEO and the Chief Financial Officer, as well as the internal controls over financial reporting, are designed to provide reasonable assurance regarding the quality and integrity of the company's financial statements and related disclosures. For further information on internal control over financial reporting, refer to "–Risk management, internal control and internal audit functions at Nokia–Description of internal control procedures in relation to the financial reporting process" below.

Under Finnish law, an external auditor is elected by shareholders by a simple majority vote at the Annual General Meeting for one year at a time. The Audit Committee prepares the proposal to the shareholders, upon its evaluation of the qualifications and independence of the external auditor, of the nominee for election or re-election. Under Finnish law, the fees of the external auditor are also approved by the shareholders by a simple majority vote at the Annual General Meeting. The Committee prepares the proposal to the shareholders in respect of the fees of the external auditor, and approves the external auditor's annual audit fees under the guidance given by the Annual General Meeting. For information about the fees paid to Nokia's external auditor, PricewaterhouseCoopers Oy, during 2017, refer to "–Auditor fees and services" below.

In discharging its oversight role, the Audit Committee has full access to all company books, records, facilities and personnel. The Committee may appoint counsel, auditors or other advisors in its sole discretion, and must receive appropriate funding, as determined by the Audit Committee, from Nokia for the payment of compensation to such outside advisors.

The Board has determined that all members of the Audit Committee, including its Chair, Elizabeth Nelson, are “audit committee financial experts” as defined in the requirements of Item 16A of the annual report on Form 20-F filed with the U.S. Securities and Exchange Commission (“SEC”). Ms. Nelson and each of the other members of the Audit Committee are “independent directors” as defined by Finnish law and Finnish Corporate Governance Code and in Section 303A.02 of the NYSE Listed Company Manual.

The Audit Committee meets a minimum of four times a year based on a schedule established at the first meeting following the appointment of the Committee. The Committee meets separately with the representatives of Nokia’s management, heads of the internal audit, and ethics and compliance functions, and the external auditor in connection with each regularly scheduled meeting. The head of the internal audit function has, at all times, direct access to the Audit Committee, without the involvement of management.

The Audit Committee held nine meetings in 2017. Attendance at the meetings was 100%. Additionally, any director who so wishes may attend meetings of the Audit Committee as a non-voting observer.

The Corporate Governance and Nomination Committee consists of three to five members of the Board who meet all applicable independence requirements as stipulated by Finnish law, the rules of Nasdaq Helsinki and the NYSE. From May 23, 2017, the Corporate Governance and Nomination Committee has consisted of the following four members of the Board: Risto Siilasmaa (Chair), Bruce Brown, Olivier Piou and Kari Stadigh.

The Corporate Governance and Nomination Committee’s purpose is to prepare the proposals for the general meetings in respect of the composition of the Board and the director remuneration to be approved by the shareholders, and to monitor issues and practices related to corporate governance and to propose necessary actions in respect thereof.

The Committee fulfills its responsibilities by:

§ actively identifying individuals qualified to be elected members of the Board as well as considering and evaluating the appropriate level and structure of director remuneration;
§ preparing proposal to the shareholders on the director nominees for election at the general meetings as well as director remuneration;

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§ monitoring significant developments in the law and practice of corporate governance and of the duties and responsibilities of directors of public companies;
§ assisting the Board and each Committee of the Board in its annual performance evaluations, including establishing criteria to be applied in connection with such evaluations;
§ developing and recommending to the Board and administering Nokia's Corporate Governance Guidelines; and
§ reviewing Nokia's disclosure in the corporate governance statement.

The Committee has the power to appoint recruitment firms or advisors to identify appropriate candidates. The Committee may also appoint counsel or other advisers, as it deems appropriate from time to time. The Committee has the sole authority to appoint or terminate the services of such firms or advisers and to review and approve such firm's or adviser's fees and other retention terms. It is the Committee's practice to appoint a recruitment firm to identify new director candidates.

The Corporate Governance and Nomination Committee held five meetings in 2017. The average attendance at the meetings was 95%. Additionally, any director who so wishes may attend meetings of the Corporate Governance and Nomination Committee as a non-voting observer.

The Personnel Committee consists of a minimum of three members of the Board who meet all applicable independence requirements as stipulated by Finnish law, the rules of Nasdaq Helsinki and the NYSE. From May 23, 2017, the Personnel Committee has consisted of the following four members of the Board: Bruce Brown (Chair), Jean Monty, Olivier Piou and Kari Stadigh.

The primary purpose of the Personnel Committee is to oversee the personnel-related policies and practices at Nokia, as described in the Committee charter. It assists the Board in discharging its responsibilities in relation to all compensation, including equity compensation, of the company's executives and their terms of employment. The Committee has overall responsibility for evaluating, resolving and making recommendations to the Board regarding:

§ compensation of the company's top executives and their terms of employment;
§ all equity-based plans;
§ incentive compensation plans, policies and programs of the company affecting executives; and
§ other significant incentive plans.

The Committee is responsible for overseeing compensation philosophy and principles and ensuring the above compensation programs are performance-based, and designed to contribute to long-term shareholder value creation and alignment to shareholders' interests, properly motivate management, and support overall corporate strategies.

The Personnel Committee held eight meetings in 2017. The average attendance at the meetings was 97%. Additionally, any director who so wishes may attend meetings of the Personnel Committee as a non-voting observer.

Further information

The Corporate Governance Guidelines concerning the directors' responsibilities, the composition and election of the members of the Board, its committees and certain other matters relating to corporate governance are available on our website at http://www.nokia.com/en_int/investors/corporate-governance. We have a Code of Conduct that is applicable to all of our employees, directors and management and, in addition, we have a Code of Ethics applicable to the President and CEO, Chief Financial Officer and Corporate Controller. These documents and the charters of the Audit Committee, the Corporate Governance and Nomination Committee and the Personnel Committee are available on our website at http://www.nokia.com/en_int/investors/corporate-governance.

Group Leadership Team and the President and CEO

We have a Group Leadership Team that is responsible for the operative management of Nokia. The Chair and members of the Group Leadership Team are appointed by the Board. The Group Leadership Team is chaired by the President and CEO. The President and CEO's rights and responsibilities include those allotted to the President and CEO under Finnish law.

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Members of the Nokia Group Leadership Team

Set forth below are the current and appointed members of the Group Leadership Team and their biographical details. Information about the shares and share-based rights of the members of the Group Leadership Team is disclosed in the Remuneration Statement; refer to "–Compensation" below.

During 2017 and thereafter, the following new appointments were made to the Group Leadership Team:

§ Kristian Pullola was appointed Chief Financial Officer and member of the Group Leadership Team as of January 1, 2017;
§ Monika Maurer was appointed Chief Operating Officer and member of the Group Leadership Team as of April 1, 2017;
§ Igor Leprince was appointed President of Global Services and member of the Group Leadership Team as of April 1, 2017;
§ Marcus Weldon was appointed Chief Technology Officer and President of Nokia Bell Labs, and member of the Group Leadership Team as of April 1, 2017;
§ Gregory Lee was appointed President of Nokia Technologies and member of the Group Leadership Team as of June 30, 2017;
§ Joerg Erlemeier was appointed Chief Operating Officer and member of the Group Leadership Team as of December 11, 2017; and
§ Sanjay Goel was appointed President of Global Services and member of the Group Leadership Team as of April 1, 2018.

Further, during 2017 and thereafter, the following members of the Group Leadership Team resigned:

§ Samih Elhage, formerly President of Mobile Networks, stepped down from the Group Leadership Team as of March 31, 2017;
§ Monika Maurer, formerly Chief Operating Officer, stepped down from the Group Leadership Team as of December 11, 2017; and
§ Igor Leprince, President of Global Services, will step down from the Group Leadership Team as of March 31, 2018.

Rajeev Suri

b. 1967

President and Chief Executive Officer of Nokia Corporation. Chair of the Group Leadership Team since 2014. Joined Nokia in 1995.

Bachelor of Engineering (Electronics and Communications), Manipal Institute of Technology, Karnataka, India.

CEO, Nokia Solutions and Networks 2009–2014. Head of Services, Nokia Siemens Networks 2007–2009. Head of Asia Pacific, Nokia Siemens Networks April 2007. Senior Vice President, Nokia Networks Asia Pacific 2005–2007. Vice President, Hutchison Customer Business Team, Nokia Networks 2004–2005. General Manager, Business Development, Nokia Networks Asia Pacific 2003. Sales Director–BT, O2 and Hutchison Global Customers, Nokia Networks 2002. Director, Technology and Applications, BT Global Customer, Nokia Networks 2000–2001. Head of Global Competitive Intelligence, Nokia Networks 1999–2000. Head of Product Competence Center, Nokia Networks South Asia 1997–1999. System Marketing Manager, Cellular Transmission, Nokia Networks India 1995–1997. Head of Group Procurement, imports and special projects, Churchgate Group, Nigeria 1993–1995. National Account Manager–Transmission/Manager–Strategic Planning, ICL India (ICIM) 1990–1993. Production Engineer, Calcom Electronics 1989.

Basil Alwan

b. 1962

President of IP/Optical Networks. Group Leadership Team member since 2016. Joined Nokia in 2016.

Bachelor in Computer Engineering, University of Illinois at Urbana-Champaign, the United States.

Previously President of IP Routing and Transport, Alcatel Lucent 2012–2016. President of IP Division, Alcatel Lucent 2003–2012. Founder, President and CEO, TiMetra Networks 2000–2003. Vice President and General Manager, Bay Networks (acquired by Nortel) Enterprise Products Division (EPD) 1997–2000. Vice President of Product Management and Marketing, Rapid City Communications 1996–1997.

Hans-Jürgen Bill

b. 1960

Chief Human Resources Officer. Group Leadership Team member since 2016. Joined Nokia Siemens Networks in 2007.

Diploma in Telecommunications from the University of Deutsche Bundespost, Dieburg/Darmstadt, Germany. Diploma in Economics from the University of Applied Sciences, Pforzheim, Germany.

Executive Vice President, Human Resources, Nokia Corporation 2014–2016. Head of Human Resources, NSN 2009–2014. Head of West South Europe region, NSN 2007–2009. Head of Asia Pacific for Mobile Networks, Siemens 2003–2007. Head of Operations for Mobile Networks, Siemens 2001–2003. Head of Region Central-East and North Europe for Mobile Networks, Siemens 1998–2001. Head of Mobile Networks in Indonesia, Siemens 1994–1998. Various management positions, Siemens 1983–1994.

Kathrin Buvac

b. 1980

Chief Strategy Officer. Group Leadership Team member since 2016. Joined Nokia Siemens Networks in 2007.

Degree in Business Information Systems from University of Cooperative Education, Germany. Bachelor Degree in Business Administration from Open University, London, the United Kingdom.

Vice President, Corporate Strategy, Nokia Networks 2014–2016. Chief of staff to the CEO, Nokia Solutions and Networks 2011–2013. Head of Strategic Projects, Business Solutions, Nokia Siemens Networks 2009–2011. General Manager, Integration Programme, Nokia Siemens Networks 2007–2009. General Manager, Corporate Audit, Siemens Holding S.p.A. 2006–2007. Head of Controlling International Businesses, Siemens

Communications 2003–2006. Head of Performance Controlling USA, Siemens Communications 2002–2003. Business Process Manager Global IT Strategy, Siemens Communications 2001–2002. Business Analyst, EADS Aerospace and Defence 1999–2000.

Ashish Chowdhary

b. 1965

Chief Customer Operations Officer. Group Leadership Team member since 2016. Joined Nokia in 2003.

MBA, Wharton School, University of Pennsylvania, Philadelphia, the United States. MS Computer Science, Emory University, Atlanta, the United States. BA Mathematics from University of Delhi, India.

Executive Vice President and Chief Business Officer at Nokia Networks 2015–2016. Head of Customer Operations Asia, Middle East & Africa (AMEA), Nokia Networks 2011–2015. Head of Global Services, Nokia Siemens Networks 2009–2010. Head of Managed Services, Nokia Siemens Networks 2007–2009. Country Head India, Nokia Networks 2003–2007. Vice President for Enterprise Business, Hughes Communications Ltd 2000–2003 and 1994–1998. Software and Project Engineer, Hughes Network Systems 1989–1993. Teaching Assistant, Computer Science, Emory University 1987–1989.

Joerg Erlemeier

b. 1965

Chief Operating Officer. Group Leadership Team member since 2017. Joined Nokia in 1994.

Bachelor of Engineering (Electronics and Telecommunications), Fachhochschule, Aachen, Germany.

Senior Vice President, Integration, Nokia, 2015. Vice President, Global Services, Europe, Nokia, 2015. Head of Delivery, North America market, Nokia, 2013/14. Head of Program Management Office, Nokia Siemens Networks, 2012. Head of Middle East & Africa, Nokia Siemens Networks, 2009–2011. Held several executive level positions in Nokia/Nokia Siemens Networks, 1994–2009.

Barry French

b. 1963

Chief Marketing Officer. Group Leadership Team member since 2016. Joined Nokia in 2006.

Master’s Degree in International Affairs from Columbia University’s School of International and Public Affairs, New York, the United States. Bachelor of Arts degree in Political Science, Bates Colleges, Lewiston, Maine, the United States.

Chief Marketing Officer and Executive Vice President, Marketing and Corporate Affairs, Nokia 2014–2016. Head of Marketing and Corporate Affairs, Nokia Siemens Networks 2010–2014. Head of Communications, Nokia Siemens Networks 2006–2010. Vice President, Corporate Communications, United Airlines 2004–2006. Director, Corporate Communications, Dell 2000–2004. Additional roles included communications, government relations and management positions, Engineering Animation, Raytheon, KRC Research and the Sawyer/Miller Group.

Board member, World Affairs Council of Dallas.

Sanjay Goel

b. 1967

Senior Vice President, Global Services. President of Global Services and Group Leadership Team member as of April 1, 2018. Joined Nokia Networks in 2001.

Bachelor's Degree in Engineering in Electronics and Communications from Manipal Institute of Technology, Karnataka, India.

Senior Vice President, Services Portfolio Sales, Global Services, Nokia since 2015. Vice President, Services, Customer Operations, Asia, Middle East & Africa, Nokia Networks 2012 – 2015. Head of Global Services, Asia Pacific & Japan, Nokia Siemens Networks 2009-2012. Head of Managed Services, Asia Pacific (including India & Japan), Nokia Siemens Networks 2007-2009. Several director and manager level positions in Nokia Networks 2001-2007. Manager in IBM India 1996-2001. Several engineer positions in Asea Brown Boveri Ltd 1990-1996.

Bhaskar Gorti

b. 1966

President of Nokia Software. Group Leadership Team member since 2016. Joined Nokia in 2016.

Master's degree in Electrical Engineering from Virginia Polytechnic Institute and State University, Blacksburg, the United States. Bachelor's degree in Technology and Electrical Engineering from National Institute of Technology, Warangal, India.

Previously President of IP Platforms, Alcatel Lucent 2015–2016. Senior Vice President and General Manager, Communications Global Business Unit, Oracle 2006–2015. Senior Vice President, Portal Software 2002–2006.

Federico Guillén

b. 1963

President of Fixed Networks. Group Leadership Team member since 2016. Joined Nokia in 2016.

Degree in Telecommunications Engineering, ETSIT at Universidad Politécnica de Madrid, Spain. Master's degree in Switching & Communication Architectures, ETSIT at Universidad Politécnica de Madrid, Spain. Master's Degree in International Management, ESC Lyon and Alcatel, France.

President of Fixed Networks, Alcatel Lucent 2013–2016. President and CEO of Alcatel Lucent Spain & Global Account Manager Telefonica, Alcatel Lucent 2009–2013. Vice President Sales of Vertical Market Sales in Western Europe, Alcatel Lucent 2009. Head of Regional Support Centre within Alcatel Lucent's Fixed Access Division for South Europe, MEA, India and CALA 2007–2009. CEO, Alcatel Mexico & Global Account Manager, Telmex 2003–2007. Various R&D, Portfolio and Sales Management Positions, Telettra and then Alcatel in Spain, Belgium and the United States. 1989–2003.

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Gregory Lee

b. 1963

President of Nokia Technologies. Group Leadership Team member since 2017. Joined Nokia in 2017.

Bachelor of Science degree in Biochemistry, University of California at San Diego, the United States.

President and Chief Executive Officer, North America and Director, Media Solutions Center of America, Samsung Electronics Co. Ltd 2014–2017. President, Samsung Telecommunications America (STA) 2013–2014. President, Samsung Asia 2010–2013. Global Chief Marketing Officer, Samsung Electronics Co. Ltd 2004–2010. Vice President, Franchises and Customer Development, Johnson & Johnson Consumer Asia Pacific 2002–2004. President, Vision Care, Asia Pacific, Johnson & Johnson Medical Devices 1999–2002.

Member of the Board of Directors of HMD Global.

Igor Leprince

b. 1971

President of Global Services until March 31, 2018. Group Leadership Team member since 2017. Joined Nokia Siemens Networks in 2007.

Master's degree in Telecommunications and Network Engineering, E.N.S.T. Paris, France. Bachelor's and Master's degree in Computer Science and Systems and Networks, University Paris 7, Paris, France.

Executive Vice President, Global Services, Nokia since 2014. Senior Vice President and Head of Middle East & Africa, Nokia Networks 2011–2014. Vice President, Head of Care, Global Services, Nokia Siemens Networks 2010–2011. Vice President, Head of Network Planning & Optimization, Global Services, Nokia Siemens Networks 2007–2010. Senior Vice president, LCC International 2007. Managing Director EMEA, WFI 2005–2007.

Kristian Pullola

b. 1973

Chief Financial Officer. Group Leadership Team member since 2017. Joined Nokia in 1999.

Master of Science (Economics), the Hanken School of Economics, Helsinki, Finland. Finance diploma, the Stockholm School of Economics, Stockholm, Sweden.

Senior Vice President, Corporate Controller, Nokia 2011–2016. Vice President, Treasury & Investor Relations, Nokia 2009–2011. Vice President, Corporate Treasurer, Nokia 2006–2008. Director, Treasury Finance & Control, Nokia 2003–2006. Various roles in Nokia Treasury 1999–2003. Associate, Citibank International 1998–1999.

Member of the Board of Directors of Ilmarinen Mutual Pension Insurance Company.

Marc Rouanne

b. 1963

President of Mobile Networks. Group Leadership Team member since 2016. Joined Nokia Siemens Networks in 2008.

Ph.D. in Information Theory from University of Notre Dame, Indiana, the United States. Engineering degree in Signal Processing from Supélec, France. Degree in Computer Science from Université d'Orsay, France.

Executive Vice President, Mobile Broadband, Nokia Networks 2011–2016. Head of Network Systems, Nokia Siemens Networks 2010–2011. Head of Radio Access, Nokia Siemens Networks 2008–2009. Executive Vice President of Alcatel, President of Convergence Business Group, Alcatel Lucent 2006–2008. Chief Operating Officer, then President Wireless Business Group, then Executive Vice President, Alcatel 2003–2006. VP positions, then Chief Operating Officer, then President Wireless Business Division, Alcatel 1997–2003. R&D and Engineering Director positions, Matra and Nortel Matra Cellular 1988–1997.

Chairman of Advisory Board of Dhatim.

Maria Varsellona

b. 1970

Chief Legal Officer. Group Leadership Team member since 2016. Joined Nokia Siemens Networks in 2013.

Law Degree from University of Palermo (Juris Doctor), Italy.

Executive Vice President and Chief Legal Officer, Nokia 2014–2016. General Counsel, NSN 2013–2014. Tetra Pak Group General Counsel, Tetra Laval Group 2011–2013. Sidel Group General Counsel, Tetra Laval Group 2009–2011. Senior Counsel Commercial Operations and Global Services, GE Oil & Gas 2006–2009. Senior Counsel Europe, Hertz Europe 2005–2006. Senior Counsel Global Services, GE Oil & Gas 2001–2005. Lawyer, Pini Birmingham & Partners 1998–2001. Lawyer, Greco Law Firm 1994–1998.

Member of the Board of Directors of Nordea Bank AB (publ).

Marcus Weldon

b. 1968

Corporate Chief Technology Officer and President of Nokia Bell Labs. Group Leadership Team member since 2017. Joined Nokia in 2016.

Ph.D (Physical Chemistry) degree, Harvard University, Cambridge, Massachusetts, United States. Bachelor of Science (Computer Science and Chemistry) joint degree, King's College, London, United Kingdom.

Corporate Chief Technology Officer and President of Bell Labs, Alcatel Lucent (then Nokia) 2013–2016. Corporate Chief Technology Officer, Alcatel Lucent 2009–2013. Chief Technology Officer, Broadband Networks & Solutions, Alcatel Lucent 2006–2009. Member of Technical Staff, Bell Labs, Lucent Technologies 1997–2006.

Network Partner to Keen Venture Partners. Advisor to Mundi Ventures.

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Risk management, internal control and internal audit functions at Nokia

Main features of risk management systems

We have a systematic and structured approach to risk management. Key risks and opportunities are primarily identified against business targets either in business operations or as an integral part of strategy and financial planning. Risk management covers strategic, operational, financial and hazard risks. Key risks and opportunities are analyzed, managed and monitored as part of business performance management with the support of risk management personnel and the centralized Enterprise Risk Management function.

The principles documented in the Nokia Enterprise Risk Management Policy, which is approved by the Audit Committee of the Board, require risk management and its elements to be integrated into key processes. One of the core principles is that the business or function head is also the risk owner, although all employees are responsible for identifying, analyzing and managing risks, as appropriate, given their roles and duties. Our overall risk management concept is based on managing the key risks that would prevent us from meeting our objectives, rather than solely focusing on eliminating risks. In addition to the principles defined in the Nokia Enterprise Risk Management Policy, other key policies reflect implementation of specific aspects of risk management.

Key risks and opportunities are reviewed by the Group Leadership Team and the Board in order to create visibility on business risks as well as to enable prioritization of risk management activities. Overseeing risk is an integral part of the Board's deliberations. The Board's Audit Committee is responsible for, among other matters, risk management relating to the financial reporting process and assisting the Board's oversight of the risk management function. The Board's role in overseeing risk includes risk analysis and assessment in connection with financial, strategy and business reviews, updates and decision-making proposals.

Description of internal control procedures in relation to the financial reporting process

The management is responsible for establishing and maintaining adequate internal control over financial reporting for Nokia. Our internal control over financial reporting is designed to provide reasonable assurance to the management and the Board regarding the reliability of financial reporting and the preparation and fair presentation of published financial statements.

The management conducts a yearly assessment of Nokia's internal controls over financial reporting in accordance with the Committee of Sponsoring Organizations framework (the "COSO framework", 2013) and the Control Objectives for Information and related technology of internal controls. The assessment is performed based on a top-down risk assessment of our financial statements covering significant accounts, processes and locations, corporate-level controls and information systems' general controls.

As part of its assessment the management has documented:

§ the corporate-level controls, which create the "tone from the top" containing the Nokia values and Code of Conduct and which provide discipline and structure to decision-making processes and ways of working. Selected items from our operational mode and governance principles are separately documented as corporate-level controls;
§ the significant processes, structured under so-called financial cycles. Financial cycles have been designed to: (i) give a complete end-to-end view of all financial processes; (ii) identify key control points; (iii) identify involved organizations; (iv) ensure coverage for important accounts and financial statement assertions; and (v) enable internal control management within Nokia;
§ the control activities, which consist of policies and procedures to ensure the management's directives are carried out and the related documentation is stored according to our document retention practices and local statutory

requirements; and

- the information systems' general controls to ensure that sufficient IT general controls, including change management, system development and computer operations, as well as access and authorizations, are in place.

Further, the management has also:

- assessed the design of the controls in place aimed at mitigating the financial reporting risks;
- tested operating effectiveness of all key controls; and
- evaluated all noted deficiencies in internal controls over financial reporting in the interim and as of year-end.

In 2017, Nokia has followed the procedures as described above and has reported on the progress and assessments to the management and to the Audit Committee of the Board on a quarterly basis.

Description of the organization of the internal audit function

We also have an internal audit function that acts as an independent appraisal function by examining and evaluating the adequacy and effectiveness of our system of internal control. Internal audit reports to the Audit Committee of the Board. The head of the internal audit function has direct access to the Audit Committee, without involvement of the management. Internal Audit staffing levels and annual budget are approved by the Audit Committee. All authority of the internal audit function is derived from the Board. Internal audit aligns to the business regionally and by business and function.

Annually, an internal audit plan is developed with input from the management, including key business risks and external factors. This plan is approved by the Audit Committee of the Board. Audits are completed across the business focused on country level, customer level, IT system implementation, IT security, operations activities or at a Group function level. The results of each audit are reported to the management identifying issues, financial impact, if any, and the correcting actions to be completed. Quarterly, internal audit communicates the progress of the internal audit plan completion, including the results of the closed audits.

Internal audit also works closely with our Ethics and Compliance office to review any financial concerns brought to light from various channels and, where possible, works with Enterprise Risk Management to ensure priority risk areas are reviewed through audits.

In 2017, the internal audit plan was completed and all results of these reviews were reported to the management and to the Audit Committee of the Board.

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Main procedures relating to insider administration

Our insider administration is organized according to the applicable European Union and Finnish laws and regulations. In addition, the Board of Directors has approved Nokia Insider Policy, which sets out Nokia-wide rules and practices to ensure full compliance with applicable rules and that inside information is recognized and treated in an appropriate manner and with the highest integrity. The policy is applicable to all Nokia employees.

Persons discharging managerial responsibilities

Nokia has identified members of the Board of Directors and the Group Leadership Team as persons discharging managerial responsibilities who, along with persons closely associated with them, are required to notify Nokia and the Finnish Financial Supervisory Authority of their transactions with Nokia's financial instruments. Nokia publishes the transaction notifications on a stock exchange release.

In addition, under the Nokia Insider Policy, persons discharging managerial responsibilities are obligated to clear with the Vice President, Corporate Legal, a planned transaction in Nokia's financial instruments in advance. It is also recommended that trading and other transactions in Nokia's financial instruments are carried out in times when the information available to the market is as complete as possible.

Closed Window

Persons discharging managerial responsibilities are subject to a closed window period of 30 calendar days preceding the disclosure of Nokia's quarterly or annual result announcements, as well as the day of the disclosure. During the closed window period persons discharging managerial responsibilities are prohibited from dealing in Nokia's financial instruments.

Nokia has imposed this closed window period also on separately designated Financial Reporting Persons who are recurrently involved with the preparation of Nokia's quarterly and annual results announcements. These persons are separately notified of their status as Financial Reporting Persons.

Insider Registers

Nokia does not maintain a permanent insider register. Insiders are identified on a case-by-case basis for specific projects and are notified of their insider status. Persons included in a project-specific insider register are prohibited from dealing in Nokia's financial instruments until the project ends or is made public.

Supervision

Our insider administration's responsibilities include internal communications related to insider matters and trading restrictions, setting up and maintaining our insider registers, arranging related trainings as well as organizing and overseeing compliance with the insider rules.

Violations of the Nokia Insider Policy must be reported to the Vice President, Corporate Legal. Nokia employees may also use channels stated in the Nokia Code of Conduct for reporting incidents involving alleged violations of the Nokia Insider Policy.

Auditor fees and services

PricewaterhouseCoopers Oy has served as our auditor for each of the fiscal years in the three-year period ended December 31, 2017. The auditor is elected annually by our shareholders at the Annual General Meeting for the fiscal year in question. The Audit Committee of the Board prepares the proposal to the shareholders in respect of the appointment of the auditor based upon its evaluation of the qualifications and independence of the auditor to be proposed for election or re-election on an annual basis.

The following table presents fees by type paid to PricewaterhouseCoopers for the years ended December 31:

EURm	2017	2016
Audit fees(1)	25.3	31.3
Audit-related fees(2)	1.8	1.8
Tax fees(3)	1.2	3.4
All other fees(4)	0.1	–
Total	28.4	36.5

(1) Audit fees consist of fees incurred for the annual audit of the Group's consolidated financial statements and the statutory financial statements of the Group's subsidiaries.
(2) Audit-related fees consist of fees billed for assurance and related services that are reasonably related to the performance of the audit or review of the Group's financial statements or that are traditionally performed by the independent auditor, and include consultations concerning financial accounting and reporting standards; advice on tax accounting matters; advice and assistance in connection with local statutory accounting requirements; due diligence related to mergers and acquisitions; employee benefit plan audits and reviews; and audit procedures in connection with investigations in the pre-litigation phase and compliance programs. They also include fees billed for other audit services, which are those services that only the independent auditor can reasonably provide, and include the provision of comfort letters and consents in connection with statutory and regulatory filings and the review of documents filed with the SEC and other capital markets or local financial reporting regulatory bodies.
(3) Tax fees include fees billed for: (i) services related to tax compliance including preparation and/or review of tax returns, preparation, review and/or filing of various certificates and forms and consultation regarding tax returns and assistance with revenue authority queries; customs duties reviews and advice; compliance reviews, advice and assistance on other indirect taxes; and transaction cost analysis; (ii) service related to tax audits; (iii) services related to individual compliance (preparation of individual tax returns and registrations for employees (non-executives), assistance with applying visa, residency, work permits and tax status for expatriates); (iv) services related to technical guidance on tax matters; (v) services related to transfer pricing advice and assistance with tax clearances; and (vi) tax consultation and planning (advice on stock-based remuneration, local employer tax laws, social security laws, employment laws and compensation programs and tax implications on short-term international transfers).
(4) Other fees include fees billed for company establishments; liquidations; forensic accounting, data security, other consulting services and reference materials and services.

Audit Committee pre-approval policies and procedures

The Audit Committee of the Board is responsible, among other matters, for oversight of the external auditor's independence, subject to the requirements of applicable legislation. The Audit Committee has adopted a policy regarding an approval procedure of audit services performed by the external auditors of Nokia Group and permissible non-audit services performed by the principal external auditor of the Nokia Group (the "Pre-approval Policy").

Under the Pre-approval Policy, proposed services either: (i) may be pre-approved by the Audit Committee in accordance with certain service categories described in the Pre-approval Policy ("general pre-approval"); or (ii) require the specific pre-approval of the Audit Committee ("specific

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pre-approval"). The Pre-approval Policy sets out the audit, audit-related, tax and other services that have received the general pre-approval of the Audit Committee. All other audit, audit-related (including services related to internal controls and significant mergers and acquisitions projects), tax and other services are subject to specific pre-approval by the Audit Committee. All service requests concerning generally pre-approved services will be submitted to an appointed Audit Committee delegate within management, who will determine whether the services are within the services generally pre-approved. The Pre-approval Policy is subject to annual review by the Audit Committee.

The Audit Committee establishes budgeted fee levels annually for each of the categories of audit and non-audit services that are pre-approved under the Pre-approval Policy, namely, audit, audit-related, tax and other services. At each regular meeting of the Audit Committee, the auditor provides a report in order for the Audit Committee to review the services that the auditor is providing, as well as the cost of those services.

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Compensation

This section sets out our remuneration governance, policies and how they have been implemented within Nokia and includes our Remuneration Report where we provide disclosure of the compensation of our Board, the President and CEO and aggregated compensation information for the Group Leadership Team for 2017. We report information related to executive compensation in accordance with Finnish regulatory requirements and with requirements set forth by the U.S. Securities and Exchange Commission.

Introduction

2017 was a challenging year, with our primary addressable market declining in the range of 4 to 5%. Despite this, we continued to execute well on our "rebalancing for growth" strategy, maintain cost and pricing discipline, and deliver solid financial results, though lower than the annual plan. On a compensation front this led to lower than target annual bonuses, though a little higher than last year driven by the performance of the patent licensing business.

Compensation in 2017

Our compensation approach is driven by our fundamental belief in pay for performance and aligning the interests of employees and shareholders. We strive to pay competitively compared to peer companies and we pay based on performance. Compensation received in any one year consists primarily of base salary, annual short-term incentive and a long-term incentive awarded three years prior to vesting.

The business delivered weaker revenue than planned, but resilient operating profit and cash flow, resulting in an annual short-term incentive being below target (76%) for our President and CEO.

The settlement of the Apple patent litigation was not built into the 2017 forecast and target, as it was not expected to be resolved in 2017, but it did have a significant impact on the results in 2017. The Board exercised discretion on the treatment of the settlement of the Apple patent litigation providing credit for the financial benefit of an earlier settlement, but not recognizing the full value of the settlement in 2017.

Long-term incentive payments received in the year reflect the performance share award granted in 2014. Based on strong performance in 2014 and 2015 the payout under that plan was 125.72% of target. The President and CEO also received the payment under the first tranche of a special award granted in 2016 to incentivize the delivery of synergies from the Alcatel Lucent acquisition. That award was based on financial synergies and cultural integration and the targets were achieved in full. The three-tranche vesting of the award ensures continued interest in delivering sustainable integration.

In 2017, the President and CEO was awarded a long-term incentive award, which will vest to him in 2020 based on performance in 2017 and 2018.

The base salary of the President and CEO will remain at EUR 1 050 000 for 2018, the third year in which his salary has remained at this level. His target short-term incentive will also remain at 125% of base salary.

Looking forward on long-term incentives

The change to our long-term incentive resulted from the Personnel Committee's review of the performance measures used in our long-term incentive plan. The review resulted in two recommendations to the Board. First, while earnings per share remains core to the plan, the committee recommended to introduce a relative measure by changing the measure of revenue to revenue relative to market, measuring Nokia's revenue relative to its primary addressable market to recognize cyclicality in the industry. The weighting of the measure was also reduced from 50% to 33.3% with the second change to introduce a free cash flow measure. In any business managing cash flow is critical and in the challenging market environment ahead it is essential to ensure the management remain focused on the dual priorities of managing for cash and investing in 5G.

The Personnel Committee continues to monitor the effectiveness of the long-term incentive plans comparing performance and payout to that of our peers and then comparing performance of the plans with the total shareholder return of Nokia over time. The analysis is discussed in more detail below in the Remuneration Report with a headline that there is strong correlation between performance of the plans and total shareholder return over time and within a given year. However, the nature of long-term incentives means that there is a delay between the time they are earned and the time they are received which can distort the snapshot at any one point in time. In 2017 the 2014 long-term incentive award vested which rewarded for strong performance in 2014 and 2015 while the results in 2017 showed a weaker revenue and impact on the share price.

The pattern of performance of the performance share plans follows the movement in the share price of the company with the most recent performance being the 2016 cycle where 46.25% of the target award will vest. In the recent years, the payout of our long-term incentive plans has been as follows:

The 2014 performance share plan vested on January 1, 2017 with 125.72% of the target award vesting based on the achievement against the revenue and earnings per share targets during the performance period (financial years 2014 and 2015); and

The 2015 performance share plan vested on January 1, 2018 with 123.75% of the target award vesting based on the achievement against the revenue and earnings per share targets during the performance period (financial years 2015 and 2016); and

The 2016 performance share plan will vest on January 1, 2019 with 46.25% of the target award vesting based on the achievement against the revenue and earnings per share targets during the performance period (financial years 2016 and 2017).

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Employee Share Purchase Plan

Finally, a word about our employee share purchase plan, Share in Success. The plan offers the opportunity for our employees to own shares in Nokia, fosters share ownership as a component of the culture in Nokia and is a key part of aligning everyone's interests and helping Nokia grow. We are particularly proud of Share in Success, under which participating employees receive one matching share for every two purchased shares that the participant still holds at the end of the 12-month plan cycle. In 2017, Nokia offered the plan to employees in 57 countries and 36% of those eligible joined the plan. In 2018, it is intended for employees in 18 new countries to be invited to join, taking the total number of participating countries to 75.

Remuneration governance

We manage our remuneration through clearly defined processes, with well-defined governance principles, ensuring that no individual is involved in the decision-making process related to their own remuneration and that there is appropriate oversight of any compensation decision. Remuneration of the Board is annually presented to shareholders for approval at the Annual General Meeting and the remuneration of the President and CEO is approved by the Board.

The General Meeting of Shareholders

§ Shareholders approve the composition of the Board and the director remuneration based on proposals of the Board's Corporate Governance and Nomination Committee, which actively considers and evaluates the appropriate level and structure of director remuneration. The composition of the Board and director remuneration are resolved by a majority vote of the shareholders represented at the General Meeting and determined as of the date of the General Meeting, until the close of the next Annual General Meeting.
§ Shareholders authorize the Board to resolve to issue shares, for example, to settle the company's equity-based incentive plans based on the proposal of the Board.

The Board of Directors

§ Approves, and the independent members of the Board confirm, the compensation of the President and CEO, upon recommendation of the Personnel Committee;
§ Approves, upon recommendation of the Personnel Committee, any long-term incentive compensation and all equity plans, programs or similar arrangements of significance that the company establishes for its employees; and
§ Decides on the issuance of shares (under authorization by shareholders) to fulfill the company's obligations under equity plans in respect of vested awards to be settled.

The Personnel Committee

The Personnel Committee assists the Board in discharging its responsibilities relating to all compensation, including equity compensation, of the company's executives and the terms of employment of the executives.

§ In respect of the President and CEO, the Committee is accountable to the Board for:
- reviewing and recommending to the Board the goals and objectives relevant to compensation;
- evaluating and presenting to the Board the assessment of performance in light of those goals and objectives; and
- proposing to the Board the total compensation based on this evaluation.

§ In respect of the other members of the Group Leadership Team (other than the President and CEO) and the direct reports to the President and CEO in Vice President-level positions and above, the Committee:
- reviews and approves the goals and objectives relevant to the compensation, upon recommendation of the President and CEO;
- reviews the results of the evaluation of performance in relation to the approved goals and objectives. The Committee approves the incentive compensation based on such evaluation;

- approves and oversees the total compensation recommendations made by the President and CEO; and
- reviews and approves compensation proposals made by the President and CEO in the event of termination of employment of a member of the Group Leadership Team.

§ The Committee reviews periodically, and makes recommendations to the Board regarding any equity programs, plans and other long-term incentive compensation arrangements, or similar arrangements of significance that the company establishes for, or makes available to, its employees, the appropriateness of the allocation of benefits under the plans and the extent to which the plans are meeting their intended objectives.

§ The Committee reviews and resolves, at its discretion, any other significant compensation arrangements applicable to the wider executive population in the Nokia Group.

§ The Committee reports to the Board at least annually on its views as to whether the President and CEO is providing the necessary leadership for the company in the long- and short-term.

§ The Committee reviews and discusses with management the compensation philosophy, strategy, principles, and management compensation to be included in our Remuneration Report.

§ The Committee reviews annually the company's share ownership policy to determine the appropriateness of the policy against its stated objectives.

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- The Committee has the power, in its sole discretion, to retain compensation consultants having special competence to assist the Personnel Committee in evaluating director and executive compensation.
- The Committee reviews and approves changes to the company's peer group for the assessment of the competitiveness of our compensation from time to time.

The committee consults regularly with the President and CEO and the Chief Human Resources Officer though they are not present when their own compensation is reviewed or discussed.

Work of the Personnel Committee

The Personnel Committee convened five times during 2017 with a general theme for each meeting. The discussion and timing of certain remuneration-related elements was unique in 2017, given the specific needs following the acquisition of Alcatel Lucent and any associated integration-related matters, as required.

January:

2016 achievement review and short-term incentive plan payment approvals including review of the performance of the President and CEO

Budget approval for the 2017 Nokia equity program and performance review for the 2015 performance share plan

Review of the Group Leadership Team succession planning

March:

Share ownership policy compliance review

Review of the 2016 Remuneration Statement and Report

Group Leadership Team compensation reviews

August:

Review of:

Talent summit outcomes,

diversity, and

policy

September:

Compensation strategy and philosophy review

Risk review

Update on:

market and legal environment; and

adviser market practices

November:

Review of:

framework for the short-term incentive program for 2018;

framework for the long-term incentive program for 2018; and

the Remuneration Statement and Report for 2017

The President and CEO

The President and CEO has an active role in the compensation governance and performance management processes for the Group Leadership Team and the wider employee population at Nokia.

The President and CEO is not a member of the Personnel Committee and does not vote at Personnel Committee meetings, nor does he participate in any conversations regarding his own compensation.

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Advisors

The Personnel Committee engaged Aon, an independent external consultant, to assist in the review and determination of executive compensation and program design and provide insight into market trends and regulatory developments. The Personnel Committee has reviewed and established that Aon is independent of Nokia and does not have any other material business relationships with Nokia.

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Authorizations and resolutions of the Board concerning remuneration

Valid authorizations

The Annual General Meeting held on May 23, 2017 resolved to authorize the Board to resolve to issue a maximum of 560 million shares through one or more issuances of shares or special rights entitling to shares. The authorization may be used to develop the company's capital structure, diversify the shareholder base, finance or carry out acquisitions or other arrangements, to settle the company's equity-based incentive plans or for other purposes resolved by the Board.

The authorization is effective until November 23, 2018 and the authorization terminated the earlier shareholder authorization for the Board to issue shares and special rights entitling to shares resolved at the Annual General Meeting on June 16, 2016. The authorization did not terminate the authorization granted by the Extraordinary General Meeting held on December 2, 2015 to the Board for the issuance of shares in order to implement the acquisition of Alcatel Lucent.

Board resolutions

On January 31, 2018, the Board approved the Nokia equity program for 2018 and the issuance, without consideration, of a maximum of 10.5 million Nokia shares held by the company to settle its commitments to Nokia's equity plan participants during 2018.

Remuneration policy

This section of our statement describes our remuneration policy, the aspects considered when setting the policy and how we currently compensate our directors and executives.

Board of Directors

The objective of the Board's Corporate Governance and Nomination Committee when determining director remuneration is to ensure that Nokia is able to compete for top-of-class board competence in order to maximize shareholder value. Therefore, it is the practice of the Corporate Governance and Nomination Committee to review and compare the total remuneration levels and their criteria paid in other global companies with net sales, geographical coverage and complexity of business comparable to that of Nokia's. The Corporate Governance and Nomination Committee's aim is to ensure that Nokia has an efficient Board consisting of international professionals representing a diverse and relevant mix of skills and experience. Nokia believes that a competitive Board remuneration contributes to the achievement of this target.

Director remuneration at Nokia consists of an annual fee and a meeting fee. Director remuneration for the term that began at the Annual General Meeting held on May 23, 2017 and ends at the close of the Annual General Meeting in 2018 consists of the following fees:

Annual fee	EUR
Chair	440 000
Vice Chair	185 000
Member	160 000
Chair of Audit Committee	30 000
Member of Audit Committee	15 000
Chair of Personnel Committee	30 000

Meeting fee(1)	EUR
Meeting requiring intercontinental travel	5 000
Meeting requiring continental travel	2 000

(1) Paid for a maximum of seven meetings per term. Not paid to the Chair of the Board.

Approximately 40% of the annual fee is paid in Nokia shares purchased from the market or by using treasury shares. According to our policy, the directors shall retain until the end of their directorship such number of shares as corresponds to the number of shares they have received as Board remuneration during their first three years of service on the Board (the net amount received after deducting those shares needed to offset any costs relating to the acquisition of the shares, including taxes). The shares shall be purchased from the market on behalf of the directors, or, if treasury shares are used, transferred to the directors, as soon as practicable after the Annual General Meeting. The remainder of the annual fee is payable in cash, most of which is typically used to cover taxes arising from the paid remuneration.

A meeting fee for Board and Committee meetings is paid to all members of the Board except the Chair of the Board based on cost of travel required between the home location of the member of the Board and the location of a meeting. Only one meeting fee is payable for multiple Board and Committee meetings per eligible travel. The meeting fee is paid for a maximum of seven meetings per term. The meeting fee is paid in cash.

According to our policy, non-executive directors do not participate in any of Nokia's equity programs and do not receive performance shares, restricted shares or any other equity-based or other form of variable compensation for their duties as members of the Board.

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The President and CEO

Our focus when considering policies related to remuneration of the President and CEO is to:

§ attract, retain and motivate the right individuals to lead Nokia;
§ drive performance and appropriate behaviors; and
§ align the interests of the President and CEO and the results of our compensation programs with the interests and returns of our shareholders.

These principles are then also applied to the compensation of the Group Leadership Team.

Compensation philosophy, design and strategy

Our compensation programs are designed to attract, drive and retain the talent necessary to deliver long-term sustainable results to the ultimate benefit of our shareholders. Rewards are tied to the execution of our strategy by adopting an appropriate mix of fixed and variable compensation to engage and incentivize delivery of these objectives and ensure alignment with shareholder interests.

A single compensation framework is used across the Nokia Group with a varying mix of fixed and variable compensation for each level of responsibility. Higher levels of performance-based compensation and equity compensation are used to reward executives for delivering long-term sustainable results and creating value for our shareholders.

We aim to provide a globally competitive compensation offering, which is comparable to that of our peer group companies, taking into account industry, geography, size and complexity. The peer group is reviewed annually and external advice is sought to confirm the appropriateness of the peer group, the quantum and the relative mix of compensation packages. The peer group for 2017 is presented in "—Remuneration Report" below. We also monitor a wider group of companies as emerging competitors in the labor markets from which we hire.

In designing our variable compensation programs key consideration is given to:

§ incorporating specific performance measures that align directly with the execution of our strategy and driving long-term sustainable success;
§ delivering an appropriate amount of performance-related variable compensation for the achievement of strategic goals and financial targets in both the short and long term;
§ appropriately balancing rewards between company and individual performance; and
§ fostering an ownership culture that promotes sustainability and long-term value creation that aligns the interests of participants with those of our shareholders.

Compensation structure and target setting

In line with our overall compensation philosophy, our executives are rewarded using a mix of fixed and variable pay. The variable pay is determined based on performance against a mix of targets, either short- or long-term in nature, depending on the strategic impact for the business.

Targets for the short- and long-term incentive plans are set by the Board. The Board reviews business plans, external analysts' expectations, previous year's performance and the overall macro-economic environment to arrive at suitable targets for the plans. The goal of target-setting is to set targets that are achievable and sufficiently demanding to create shareholder value.

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The elements of the compensation structure for the President and CEO are further detailed below.

Element	Purpose	Operation	Opportunity
Base salary	To attract and retain the best individual with the requisite level of knowledge, skills and experience to lead our businesses and provide a degree of financial certainty and stability.	Base pay is reviewed annually taking into consideration a variety of factors, including, for example, the following: performance of the individual; changes in the market and the remuneration of our external comparator group; changes in individual responsibilities; and average employee salary increases across Nokia and in the local market.	Base salary increases are expected to be set in the context of wider employee increases.
Short-term incentives	To incentivize and reward performance against delivery of the annual business plan.	Short-term incentives are based on performance against single year targets and paid in cash. Targets for the short-term incentives are set at the start of the year, in the context of analyst expectations and the annual plan, selecting measures that align to delivery of Nokia's strategy. Achievement is assessed at the end of the year.	As a percentage of base salary Min 0% Target 125% Max 281.25%
Long-term incentives	To reward for delivery of sustainable long-term performance, align the President and CEO's interests with those of shareholders and aid retention.	Annual long-term incentive awards are made in performance shares and paid for performance against longer-term targets. Targets are set in the context of the Nokia long-term plans which are validated against analyst forecasts ensuring that they are considered both demanding and motivational. The target value of a long-term incentive award is determined by reference to Nokia's peer group and informed by reference to a wider group of emerging competitors in the markets where we recruit our talent including a range of technology companies. The Board retains the discretion to make exceptional awards in circumstances where there is a strategically significant change in Nokia for which they believe that additional incentives would increase or accelerate value creation.	Payout as a percentage of target award Min 0% Target 100% Max 200%

Benefits & perquisites	To attract, retain and protect the President and CEO.	Benefits are made available as part of the same policy that applies to employees more broadly in the relevant country, with additional security provisions, as appropriate.	n/a

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Element	Purpose	Operation	Opportunity
Relocation & mobility	To support the international mobility and ensure the right person is in the right location to meet business needs.	Support may be offered to cover additional costs related to relocation to and working in a location other than home country based on business need. The policy supports the mobility needs of an individual and their dependants or the reasonable costs of commuting. Benefits are market-specific and are not compensation for performing the role but provided to defray costs or additional burdens of a relocation or residence outside the home country.	n/a
Retirement plans	To provide for retirement with a level of certainty.	Retirement age is defined and pensions are provided in line with local country arrangements; in Finland this is the statutory Finnish pension system ("Finnish TyEL"). Under the TyEL arrangements, base salary, incentives and other taxable benefits are included in the definition of earnings while gains from equity related plans are not. No supplemental pension arrangements are provided in Finland.	As mandated by Finnish law
Change of control arrangements	To ensure the continuity of management in connection with a possible change of control event.	Change of control arrangements are offered on a very limited basis only and are based on a double trigger structure, which means that both a specified change of control event and termination of the individual's employment must take place for any change of control-based severance payment to materialize. Refer to "—Termination provisions of the President and CEO".	n/a

Compensation mix and opportunity

To align the interests of the President and CEO with those of our shareholders, the compensation mix for the President and CEO is heavily geared towards performance-based pay with only 19.5% of core target compensation in 2017 consisting of fixed pay. The total remuneration of the President and CEO is thus dependent on performance and the range of possible outcomes is shown below:

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Remuneration on recruitment

Our policy on recruitment is to offer a compensation package which is sufficient to attract, retain and motivate the individual with the right skills for the required role. On occasion, we may offer compensation to buy out awards or other lost compensation which the candidate held prior to joining Nokia, but which lapsed upon the candidate leaving their previous employer. Due consideration is given to the potential value and timing of such awards, taking into account any conditions attached to the awards and the likely performance against such conditions.

Clawback

The President and CEO is subject to a clawback policy where any restatement of financial results may result in the reclaiming of amounts previously paid which had been based on numbers which have since been materially restated. Any such reclaimed amount, and the period over which payments can be reclaimed, will take into account the circumstances and duration of any misstatement.

Share ownership requirement

Nokia believes that it is desirable for its executives to own shares in Nokia to align their interests with those of shareholders and to ensure that their decisions are in the long-term interest of the company. The President and CEO is required to own three times his base salary in Nokia shares and is given a period of five years from appointment to achieve the required level of share ownership.

Termination provisions

In the event of a termination of employment, any payable compensation is determined in line with legal advice regarding local legislation, country policies, contractual obligations and the rules of the applicable incentive and benefit plans. Current termination provisions of the President and CEO's service agreement are described under "—Termination provisions of the President and CEO".

Group Leadership Team

Remuneration of the Group Leadership Team

The remuneration of the members of the Group Leadership Team (excluding the President and CEO) consists of base salary, fringe benefits and short- and long-term incentives and follows the same policy framework as the President and CEO and other eligible employees, except that the quantum differs by role. Short-term incentive plans are based on rewarding the delivery of business performance utilizing certain, or all, of the following metrics as appropriate to the member's role: revenue, operating profit, free cash flow and defined strategic objectives. The revenue and operating profit metrics exclude costs related to the acquisition of Alcatel Lucent and related integration, goodwill impairment charges, intangible asset amortization and other purchase price fair value adjustments, restructuring and associated charges and certain other items.

Remuneration on recruitment

Our policy on recruitment is to offer a compensation package which is sufficient to attract, retain and motivate individuals with the right skills for the required role. On occasion, we may offer compensation to buy out awards or other lost compensation which the candidate held prior to joining Nokia, but which lapsed upon the candidate leaving their previous employer. Due consideration is given to the potential value and timing of such awards, taking into account any conditions attached to the awards and the likely performance against such conditions.

Clawback

Our executives are subject to a clawback policy where any restatement of financial results may result in the reclaiming of amounts previously paid which had been based on numbers which have since been materially restated. Any such reclaimed amount, and the period over which payments can be reclaimed, will take into account the circumstances and duration of any misstatement.

Share ownership policy

Members of the Group Leadership Team are required to own two times their base salary in Nokia Shares. They are given five years from joining the Group Leadership Team to meet the requirements of the policy.

Pension arrangements of the Group Leadership Team

The members of the Group Leadership Team participate in the local retirement plans applicable to employees in the country of residence. Executives based in Finland participate in the statutory Finnish pension system, as regulated by the Finnish TyEL.

Executives based outside Finland participate in arrangements relevant to their location. Retirement plans vary by country and include defined benefit, defined contribution and cash balance plans. The retirement age for the members of Group Leadership Team varies between 60 and 65.

Termination provisions

In all cases, if an executive is dismissed for cause, no compensation will be payable and no outstanding equity will vest.

In the event of termination by Nokia for any other reason than cause, where Nokia pays compensation in lieu of notice period salary, the benefits and target short-term incentive amounts are taken into account.

The Board has discretion to implement change of control agreements if there is a period of significant instability in the business to facilitate stable and effective leadership during such a time, for example during a merger. At the end of 2017 there were no change of control agreements in place for the Group Leadership Team members.

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Nokia Equity Program

The Nokia equity program includes the following equity instruments:

	Performance shares	Restricted shares	Employee share purchase plan
Eligible employees	Grade-based eligibility	Grade-based eligibility	Employees in participating countries
Purpose	Annual long-term incentive awards, to reward delivery of sustainable long-term performance, align with the interests of shareholders and aid retention of key employees	Limited use for recruitment and retention	Encourage share ownership within the Nokia employee population, increasing engagement and sense of ownership in the company
Vesting schedule	Two-year performance period based on financial targets and one-year restriction period	Vest equally in three tranches on the 1st, 2nd and 3rd anniversary of grant	Matching shares vest at the end of the 12 month savings period

Performance share plans

In accordance with previous years' practice, the primary equity instruments granted to eligible employees are performance shares. The performance shares represent a commitment by Nokia to deliver Nokia shares to employees at a future point in time, subject to our fulfillment of the performance criteria.

The table below illustrates the performance criteria of the performance share plans that are currently active.

Performance criteria(1) (Nokia group)	2018	2017	2016
Annual earnings per share (diluted)	Yes		
Annual free cash flow	Yes		
Revenue relative to market	Yes		
Average annual net sales		Yes	Yes
Average annual earnings per share (diluted)		Yes	Yes
Minimum settlement at below threshold performance(2)	–	–	25 %

(1) Measures exclude costs related to the acquisition of Alcatel Lucent and related integration, goodwill impairment charges, intangible asset amortization and other purchase price fair value adjustments, restructuring and associated charges and certain other items.

(2) In 2014, a minimum payout level was introduced to reinforce the retentive impact of the plan by giving some certainty to remaining employees during the transformation of Nokia following the Sale of the D&S Business and integration of the Nokia Networks business. The 2017 plan removes the minimum payout of 25% of the grant amount for executive employees. Employees who are not executives at the time the awards are granted to them will continue to benefit from a minimum payout of 25% with the intention of this continuing to provide a retention effect.

Under the 2018 performance share plan, the pay-out will depend on whether the performance criteria have been met by the end of the performance period. The performance criteria are: Nokia annual earnings per share (diluted), annual free cash flow and revenue relative to market. The criteria exclude costs related to the acquisition of Alcatel Lucent and related integration, goodwill impairment charges, intangible asset amortization and other purchase price fair value adjustments, restructuring and associated charges and certain other items.

The 2018 performance share plan has a two-year performance period (2018-2019) and a subsequent one-year restriction period. The number of performance shares to be settled would be determined with reference to the performance targets during the performance period. For non-executive participants, 25% of the performance shares granted in 2018 will settle after the restriction period, regardless of the satisfaction of the applicable performance criteria. In case the applicable performance criteria are not satisfied, employees who are executives at the date of the performance share grant in 2018 will not receive any settlement.

The grant under the 2018 performance share plan could result in an aggregate maximum settlement of 94 million Nokia shares, in the event that maximum performance against all the performance criteria is achieved.

Until the Nokia shares are delivered, the participants will not have any shareholder rights, such as voting or dividend rights associated with these performance shares.

Restricted share plan

Restricted shares are granted to Nokia's executives and other eligible employees on a more limited basis than performance shares for purposes related to retention and recruitment to ensure Nokia is able to retain and recruit vital talent for the future success of Nokia.

Under the 2018 restricted share plan, the restricted shares are divided into three tranches, each tranche consisting of one third of the restricted shares granted. The first tranche has a one-year restriction period, the second tranche a two-year restriction period, and the third tranche a three-year restriction period.

The grant under the 2018 restricted share plan could result in an aggregate maximum settlement of 8 million Nokia shares. Until the Nokia shares are delivered, the participants will not have any shareholder rights, such as voting or dividend rights, associated with the restricted shares.

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Employee Share Purchase Plan

Under our employee share purchase plan 2018 “Share in Success”, eligible employees can elect to make monthly contributions from their salary to purchase Nokia shares. The contribution per employee cannot exceed EUR 1 800 per year. The share purchases are made at market value on predetermined dates on a quarterly basis during a 12-month savings period. Nokia intends to deliver one matching share for every two purchased shares the employee still holds at the end of the plan cycle. Participation in the plan is voluntary for all employees in countries where the plan is offered. The Employee Share Purchase Plan is planned to be offered to Nokia employees in up to 75 countries for the plan cycle commencing in 2018.

Legacy equity programs

Stock Options

The granting of stock options ceased at the end of 2013; however, awards granted under the 2011 stock option plan remain in force. Under the plan, each stock option entitles the holder to subscribe for one new Nokia share. The stock options are non-transferable and may be exercised for shares only. The vesting schedule of the 2011 stock option plan is as follows:

Plan	Vesting schedule
2011 stock option plan	50% on third anniversary of grant 50% on fourth anniversary of grant Term is approximately six years The final subscription periods end on December 27, 2019

Shares will be eligible for dividends in respect of the financial year in which the share subscription takes place. Other shareholder rights will commence on the date on which the subscribed shares are entered in the trade register. The stock option grants are generally forfeited if the employment relationship is terminated with Nokia.

Alcatel Lucent liquidity agreements

In 2016, Nokia and Alcatel Lucent entered into liquidity agreements with beneficiaries of the 2015 Alcatel Lucent performance share plan. Pursuant to the agreements, the 2015 Alcatel Lucent performance shares (as well as other unvested performance share plans, where the employee elected to enter into a liquidity agreement rather than accelerate their equity), would be exchanged for Nokia shares, or for the cash equivalent of the market value of such Nokia shares, shortly after expiration of the vesting period. The exchange ratio would be aligned with the exchange ratio of Nokia’s exchange offer for all outstanding Alcatel Lucent securities, subject to certain adjustments in the event of financial transactions by either Nokia or Alcatel Lucent.

Remuneration Report

The Remuneration Report provides information on the Board and executive remuneration between January 1, 2017 and December 31, 2017. We provide disclosure of the compensation of our Board, the President and CEO and aggregated compensation information for the Group Leadership Team. Revenue, operating profit and earnings per share measures referred to in the Remuneration Report exclude costs related to the acquisition of Alcatel Lucent and related integration, goodwill impairment charges, intangible asset amortization and other purchase price fair value adjustments, restructuring and associated charges and certain other items.

Board of Directors

In 2017, the aggregate amount of compensation paid to the members of the Board for their services on the Board and its committees equaled EUR 2 138 000.

The Annual General Meeting held on May 23, 2017 resolved to elect ten members to the Board. The following members of the Board were re-elected for a term ending at the close of the Annual General Meeting in 2018: Bruce Brown, Louis R. Hughes, Jean C. Monty, Elizabeth Nelson, Olivier Piou, Risto Siilasmaa, Carla Smits-Nusteling and Kari Stadigh. Jeanette Horan and Edward Kozel were elected as new members of the Board for the same term. For director remuneration resolved by the Annual General Meeting for the current term refer to “Remuneration Policy—Board of Directors” above.

The following table outlines the total annual compensation paid in 2017 to the members of the Board for their services, as resolved by shareholders at the Annual General Meeting on May 23, 2017. The table does not include the meeting fees as resolved by the Annual General Meeting in 2017. The meeting fees for applicable Board and Committee meetings held in 2017 will be paid in 2018. For details of Nokia shares held by the members of the Board, refer to “—Share ownership—Share ownership of the Board of Directors” below.

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Compensation paid in 2017:

	EUR [1]	Shares [2]
Risto Siilasmaa, Chair	440 000	30 497
Olivier Piou, Vice Chair(3)	199 000	12 823
Bruce Brown(4)	209 000	13 169
Jeanette Horan	175 000	12 129
Louis R. Hughes(6)	194 000	12 129
Edward Kozel	175 000	12 129
Jean C. Monty(8)	174 000	11 090
Elizabeth Nelson	207 000	13 169
Carla Smits-Nusteling(10)	195 000	12 129
Kari Stadigh(11)	170 000	11 090
Total	2 138 000	140 354

(1) The meeting fees for the term that ended at the close of the Annual General Meeting in 2017 were paid in cash in 2017 and are included in the table above. The meeting fees for the current term as resolved by the Annual General Meeting in 2017 will be paid in cash in 2018 and are not included in the table above.
(2) Approximately 40% of each Board member's annual fee was paid in Nokia shares purchased from the market and the remaining amount of approximately 60 % was paid in cash.
(3) Consists of EUR 185 000 for services as the Vice Chair of the Board and meeting fees of EUR 14 000.
(4) Consists of EUR 160 000 for services as a member of the Board, EUR 30 000 for services as the Chair of the Personnel Committee and meeting fees of EUR 19 000.
(5) Consists of EUR 160 000 for services as a member of the Board and EUR 15 000 for services as a member of the Audit Committee.
(6) Consists of EUR 160 000 for services as a member of the Board, EUR 15 000 for services as a member of the Audit Committee and meeting fees of EUR 19 000.
(7) Consists of EUR 160 000 for services as a member of the Board and EUR 15 000 for services as a member of the Audit Committee.
(8) Consists of EUR 160 000 for services as a member of the Board and meeting fees of EUR 14 000.
(9) Consists of EUR 160 000 for services as a member of the Board, EUR 30 000 for services as the Chair of the Audit Committee and meeting fees of EUR 17 000.
(10) Consists of EUR 160 000 for services as a member of the Board, EUR 15 000 for services as a member of the Audit Committee and meeting fees of EUR 20 000.
(11) Consists of EUR 160 000 for services as a member of the Board and meeting fees of EUR 10 000.

The President and CEO

The following table shows the remuneration received by the President and CEO in 2017 and 2016. The long-term incentive payments reflect actual payments in the respective years attributable to the vesting of the 2014 Nokia performance share plan in 2017 and the 2012 Nokia Networks equity incentive plan that vested in 2016.

EUR	2017	2016
Salary	1 050 000	1 049 044
Short-term incentive [1]	997 369	780 357

Long-term incentive		
From role as Nokia President and CEO	4 261 633	–
From role as NSN CEO [2]	–	7 556 598
Other compensation	114 557	122 157
Total	6 423 559	9 508 156

(1)Short-term incentives represent amounts earned in respect of the financial year, but that are paid in April of the following year.

(2)Amount represents the value of the 2012 Nokia Networks equity incentive plan.

(3)Other compensation includes compensation for housing equaling EUR 44 463 (2016: EUR 41 312); travel assistance equaling EUR 22 628 (2016: EUR 33 482); Tax services equaling EUR 17 595 (2016: EUR 19 260) and other benefits including mobile phone, driver and supplemental medical and disability insurance equaling EUR 29 871 (2016: EUR 28 103).

Pursuant to Finnish legislation, Nokia is required to make contributions to the Finnish TyEL pension arrangements in respect of the President and CEO. Such payments can be characterized as defined contribution payments. In 2017, payments to the Finnish state pension system equaled EUR 304 546 (EUR 469 737 in 2016).

Variable pay

Targets for the short-term incentives are set annually at or before the start of the year, balancing the need to deliver value with the need to motivate and drive the performance of the President and CEO. Targets are selected from a set of strategic metrics that align with driving sustainable value for shareholders and are set in the context market expectations and analyst consensus forecasts. The long-term incentive targets are set in a similar context and are set for the life of the plan at the start of the performance period and locked in for the life of the plan.

The variable pay of the President and CEO is determined based on performance against a mix of targets, either short- or long-term in nature, depending on the strategic impact for the business.

Based on the Board's assessment, the most appropriate measures for driving sustainable business performance at Nokia in 2017 were:

§ revenue;
§ operating profit;
§ earnings per share;
§ free cash flow; and
§ personal strategic objectives.

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The variable compensation focused on these measures including personal strategic objectives to support the strategic development of Nokia, which is not necessarily measurable or easily measured in purely financial terms.

Short-term incentive

The 2017 short-term incentive framework for the President and CEO was based on three core metrics: revenue, operating profit and free cash flow.

The short-term incentive for the President and CEO were based on the achievement of key financial targets and other strategic objectives, as defined below. Performance against these defined targets was then multiplied by a business results multiplier, which acts as a funding factor for the incentive plan for most employees, to determine the final payment.

% of base salary			
Minimum performance	Target performance	Maximum performance	Measurement criteria
0 %	125 %	281.25 %	80% of the incentive was based on performance against the Nokia scorecard: • revenue ( ); • operating profit (;) and • free cash flow ( ). The final 20% of the incentive was determined based on the achievement of personal strategic objectives set for President and CEO by the Board.

Short-term incentive targets and achievements reflect the challenging market conditions yet also show the operational resilience of our business. In line with Nokia's performance in 2017, the short-term incentive of the President and CEO equaled EUR 997 369, or 76% of the target award, reflecting the challenging market environment. Achievement by each element of the short-term incentive plan was as follows:

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Metric	Target EURm	Achievement	
Revenue	24 283	22.11	%
Operating profit	2 483	96.94	%
Free cash flow(1)	(244)	105.31	%

(1) Free cash-flow target was negative due to expected restructuring costs and roadmap integration issues.

The Board reviewed the impact of the settlement of the Apple patent litigation on the short-term Incentive and decided not to recognize the impact of the settlement itself on either revenue or operating profit on the basis that it had not been included in targets due to the unpredictable nature of such large litigations. It was deemed appropriate to give credit for the cash flow benefit, value a swift settlement and recognize the cost savings achieved by avoiding extensive litigation.

Long-term incentive

In 2017, the President and CEO's 2014 performance share award vested at 125.72% of the target award valued at EUR 3 968 064.

In 2016, the President and CEO was granted a restricted share award subject to the fulfillment of predetermined and demanding performance conditions related to the successful integration of Nokia and Alcatel Lucent. This award vests in three equal tranches, the first of which was in 2017 and worth EUR 293 569.

In 2017, the President and CEO was awarded the following equity awards under the Nokia equity program:

Award	Units awarded	Grant date fair value (EUR)	Grant date	Vesting date
Performance shares(1)	596 421	3 040 554	July 5, 2017	January 1, 2020

(1)The 2017 performance share plan has a two-year performance period based on financial targets and a one-year restriction period. There is no minimum payout at below threshold performance for executive employees. The maximum payout would be 200% subject to maximum performance against all the performance criteria. Vesting is subject to continued employment.

Share ownership

Our share ownership policy requires that the President and CEO holds a minimum of three times his base salary in Nokia shares in order to ensure alignment with shareholder interests over the long term. This requirement has been met.

	Units	Value (EUR)
Beneficially owned shares as of December 31, 2017(1)	1 366 994	5 317 607
Vested shares under the 2015 performance share plan delivered on February 14, 2018(2)	436 530	1 964 385
Unvested shares under outstanding Nokia equity plans(3)	1 032 533	4 015 553
Total	2 836 057	11 294 545

(1) The value is based on the closing price of a Nokia share of EUR 3.89 on Nasdaq Helsinki on December 29, 2017.
(2)

The value and number of units represent fair market value of a Nokia share of EUR 4.50 on Nasdaq Helsinki on February 14, 2018 and the net number of shares delivered after the applicable taxes were withheld from the number of shares that vested to the President and CEO.

(3) The number of units represents the number of unvested awards as of December 31, 2017 including the payout factor of the 2016 performance share plan and excluding the 2015 performance share plan that vested on January 1, 2018. The value is based on the closing price of a Nokia share of EUR 3.89 on Nasdaq Helsinki on December 29, 2017. Vesting is subject to continued employment.

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Termination provisions of the President and CEO

Currently the termination provisions for the President and CEO's service agreement specify alternatives for termination and associated compensation in accordance with the following table:

Termination by	Reason	Notice	Compensation
Nokia	Cause	None	The President and CEO is entitled to no additional compensation and all unvested equity awards would be forfeited.
Nokia	Reasons other than cause	Up to 18 months	The President and CEO is entitled to a severance payment equaling up to 18 months of compensation (including annual base salary, benefits, and target incentive) and unvested equity awards would be forfeited.
President and CEO	Any reason	Six months	The President and CEO may terminate his service agreement at any time with six months' prior notice. The President and CEO would either continue to receive salary and benefits during the notice period or, at Nokia's discretion, a lump sum of equivalent value. Additionally, the President and CEO would be entitled to any short- or long-term incentives that would normally vest during the notice period. Any unvested equity awards would be forfeited.
President and CEO	Nokia's material breach of the service agreement	Up to 18 months	In the event that the President and CEO terminates his service agreement based on a final arbitration award demonstrating Nokia's material breach of the service agreement, he is entitled to a severance payment equaling up to 18 months of compensation (including annual base salary, benefits and target incentive). Any unvested equity awards would be forfeited.

The President and CEO's service agreement includes special severance provisions in the event of a termination of employment following a change of control event. Such change of control provisions are based on a double trigger structure, which means that both a change of control event and the termination of the President and CEO's employment within a defined period of time must take place in order for any change of control-based severance payment to become payable. More specifically, if a change of control event has occurred, as defined in the service agreement, and the President and CEO's service with Nokia is terminated by either Nokia or its successor without cause, or by the President and CEO for "good reason", in either case within 18 months from such change of control event, the President and CEO would be entitled to a severance payment equaling up to 18 months of compensation (including annual base salary, benefits, and target incentive) and cash payment (or payments) for the pro-rated value of his outstanding unvested equity awards, restricted shares, performance shares and stock options (if any), payable pursuant to the terms of the service agreement. "Good reason" referred to above includes a material reduction of the President and CEO's compensation and a material reduction of his duties and responsibilities, as defined in the service agreement and as determined by the Board.

The President and CEO is subject to a 12-month non-competition obligation that applies after the termination of the service agreement or the date when he is released from his obligations and responsibilities, whichever occurs earlier.

Group Leadership Team

In 2017, our Group Leadership Team grew following the realignment of the business to accelerate delivery of our strategy, bringing a Chief Operating Officer, Chief Technology Officer and the President of the new business group, Global Services onto the Group Leadership Team. At the end of 2017, the Group Leadership Team consisted of 15 persons split between Finland, other European countries and the United States.

Name	Position in 2017	Appointment date
Rajeev Suri	President and CEO	May 1, 2014
Federico Guillén	President of Fixed Networks	January 8, 2016
Basil Alwan	President of IP/Optical Networks	January 8, 2016
Bhaskar Gorti	President of Nokia Software	January 8, 2016
Igor Leprince(1)	President of Global Services	April 1, 2017
Marc Rouanne	President of Mobile Networks	January 8, 2016
Samih Elhage(2)	President of Mobile Networks	May 1, 2014
Gregory Lee	President of Nokia Technologies	June 30, 2017
Kristian Pullola	Chief Financial Officer	January 1, 2017
Monika Maurer(3)	Chief Operating Officer	April 1, 2017
Joerg Erlemeier	Chief Operating Officer	December 11, 2017
Hans-Jürgen Bill	Chief Human Resources Officer	January 8, 2016
Kathrin Buvac	Chief Strategy Officer	January 8, 2016
Ashish Chowdhary	Chief Customer Operations Officer	January 8, 2016
Barry French	Chief Marketing Officer	January 8, 2016
Maria Varsellona	Chief Legal Officer	January 8, 2016
Marcus Weldon	Chief Technology Officer and President of Bell Labs	April 1, 2017

(1) Igor Leprince will step down from the Group Leadership Team as of March 31, 2018. Sanjay Goel was nominated as President of Global Services and member of the Group Leadership Team from April 1, 2018.

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(2) Samih Elhage was a member of the Group Leadership Team until March 31, 2017.
(3) Monika Maurer was a member of the Group Leadership Team until December 11, 2017.

Remuneration of the Group Leadership Team (excluding the President and CEO) in 2017 and 2016, in the aggregate, was as follows:

	2017 EURm [1]	2016 EURm [1]
Salary, short-term incentives and other compensation(2)	20.3	22.7
Long-term incentives(3)	7.0	25.5
Total	27.3	48.2

(1) The values represent each member's time on the Group Leadership Team.
(2) Short-term incentives represent amounts earned in respect of 2017 performance. Other compensation includes mobility related payments, local benefits and pension costs.
(3) The 2016 amount represents the value of the 2012 Nokia Networks equity incentive plan or other equity awards vesting or stock options exercised during 2016 and share awards from Alcatel Lucent where appropriate.

In 2017, the Group Leadership Team (excluding the President and the CEO) was awarded the following equity awards under the Nokia equity program:

Award	Units awarded [2]	Grant date fair value (EUR)	Grant date	Vesting date
Performance shares(1)	1 333 567	6 798 525	July 5, 2017	January 1, 2020
Restricted shares	696 835	3 548 981	July 5, 2017	October 1, 2018, 2019 and 2020

(1) The 2017 performance share plan has a two-year performance period based on financial targets and a one-year restriction period. There is no minimum payout at below threshold performance for executive employees. The maximum payout would be 200% subject to maximum performance against all the performance criteria. Vesting is subject to continued employment.
(2) Includes units awarded to persons who were Group Leadership Team members during 2017.

Review of our incentive plans

Each year we monitor the performance of our incentive plans against the targets for the plan, total shareholder return and the impact that the plans have on total compensation compared to market peers.

Target setting

Targets for the short-term incentives are set annually at or before the start of the year, balancing the need to deliver value with the need to motivate and drive performance of the Group Leadership Team. Targets are selected from a set of strategic metrics that align with driving sustainable value for shareholders and are set in the context market expectations and analyst consensus forecasts. Targets for our long-term incentive plans are set in a similar context. The long-term incentive targets are set at the start of the performance period and locked in for the life of the plan.

Short-term incentives

Short-term incentive targets and achievements for the members of the Group Leadership Team (excluding the President and CEO) were based on a mix of revenue, operating profit and cash flow targets. These targets are measured either at a Nokia Group level or, alternatively, a mix of Nokia Group and business group level for business group presidents. Payout levels for 2017 represent the challenging business environment in which Nokia has been operating with median payout at 83% of target.

Long-term incentives

We have actively introduced a rolling review of compensation against key metrics such as total shareholder return and share price to validate the effectiveness of our equity plans.

The 2014 performance share plan vested on January 1, 2017 with 125.72% of the target award vesting based on the achievement against the revenue and earnings per share targets during the performance period (financial years 2014 and 2015).

The 2015 performance share plan vested on January 1, 2018 with 123.75% of the target award vesting based on the achievement against the revenue and earnings per share targets during the performance period (financial years 2015 and 2016).

The 2016 performance share plan will vest on January 1, 2019 with 46.25% of the target award vesting based on the achievement against the revenue and earnings per share targets during the performance period (financial years 2016 and 2017).

While short-term performance in 2017 was affected by a challenging market and the integration of Alcatel Lucent, the performance under long-term incentive plans represents the significant turnaround of Nokia from 2013 when it acquired the remainder of Nokia Siemens Networks and the continued focus on delivering profit despite challenging market conditions. The performance of the business in 2014, 2015 and 2016 against targets set in the context of analyst forecasts shows fair rewards for a business well positioned for the longer term.

Pay for performance

Core to our compensation philosophy is a desire to pay for performance.

We conduct two tests each year on our long-term incentives:

1.We compare ourselves to a group of peer companies ranking our performance against the peer group based on total shareholder return and total compensation paid. Data are only publicly available for our peer group for financial years to December 31, 2016.

2.Overall total shareholder return is compared to long-term incentive payouts mapping the performance of the plans against the total shareholder return curve.

The first test is a snapshot at any given point in time, showing the compensation received in a year compared to peers versus total shareholder return over the three years prior. The second test looks over time at the progress of the long-term incentive plans. While the comparison to a group

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of peers shows Nokia with a low performance rank and relatively high pay compared to its peers the comparison of long-term incentive payouts over time aligns well to the total shareholder return performance of the business over a longer time frame. The key driver of much of this is timing with long-term incentives paid sometime after the share price (and total shareholder return) has moved. To highlight this point, in 2019 Nokia would expect to see 46.25% of the 2016 performance share plan award vest to the President and CEO.

Based on the peer group comparison, Nokia was tenth over the three preceding years, as measured by total shareholder return. Whilst the compensation paid out to the President and CEO (as opposed to awarded) was ranked second, reflecting the final payment to him of the Nokia Networks equity incentive plan award granted in 2012 and rewarding the transformation of the Nokia Networks business which has since become the core of Nokia.

However, looking at the performance of our long-term incentive plans against total shareholder return there is a stronger alignment with the performance of the plans declining as total shareholder return declines and the trend lines are reasonably aligned.

The Board continues to actively monitor the performance of its long-term incentive plans to ensure that they deliver value for shareholders. Accordingly, the Board has changed the performance metrics in the 2018 long-term incentive plan to better fit with the needs of the business.

Our Peers

In looking for suitable comparators, we have considered ourselves a European technology company and looked at businesses of similar size, global scale and complexity, such as:

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ABB	Infineon
ASML	Kone
BT	Phillips
Deutsche Telekom	Rolls-Royce
Ericsson	SAP
Hexagon	Vodafone

Share ownership

Share ownership of the Board of Directors

As of December 31, 2017, the members of our Board held a total of 4 915 481 shares and ADSs in Nokia, which represented approximately 0.09% of our outstanding shares and total voting rights excluding shares held by Nokia Group.

The following table sets forth the number of shares and ADSs held by the members of the Board as of December 31, 2017:

Name(1)	Shares(1)	ADSs(1)
Risto Siilasmaa	1 313 205	–
Olivier Piou	265 583	–
Bruce Brown	–	113 130
Jeanette Horan	12 129	–
Louis R. Hughes	53 956	–
Edward Kozel	12 129	20 525
Jean C. Monty	2 778 647	–
Elizabeth Nelson	–	59 037
Carla Smits-Nusteling	26 050	–
Kari Stadigh	261 090	–

(1) The number of shares or ADSs includes shares and ADSs received as director compensation as well as shares and ADSs acquired through other means. Stock options or other equity awards that are deemed as being beneficially owned under the applicable SEC rules are not included. For the number of shares or ADSs received as director compensation, refer to Note 35, Related party transactions, of our consolidated financial statements included in this annual report on Form 20 F.

Share ownership of the Nokia Group Leadership Team

The following table sets forth the share ownership of the President and CEO, and the other members of the Group Leadership Team in office as of December 31, 2017. The share ownership of all members of the Group Leadership Team, including the President and CEO, was 2 569 891 Nokia shares, which represented 0.05% of the outstanding shares and total voting rights excluding shares held by Nokia Group as of December 31, 2017.

Name	Position in 2017	Beneficially owned shares number

Rajeev Suri	President and Chief Executive Officer	1 366 994
Federico Guillén	President of Fixed Networks	24 761
Basil Alwan	President of IP/Optical Networks	176 716
Bhaskar Gorti	President of Nokia Software	25 417
Igor Leprince	President of Global Services	50 288
Marc Rouanne	President of Mobile Networks	239 362
Gregory Lee	President of Nokia Technologies	–
Kristian Pullola	Chief Financial Officer	126 156
Joerg Erlemeier	Chief Operating Officer	5 125
Hans-Jürgen Bill	Chief Human Resources Officer	150 853
Kathrin Buvac	Chief Strategy Officer	38 569
Ashish Chowdhary	Chief Customer Operations Officer	88 481
Barry French	Chief Marketing Officer	108 603
Maria Varsellona	Chief Legal Officer	149 613
Marcus Weldon	Chief Technology Officer and President of Nokia Bell Labs	18 953

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Stock option ownership of the Nokia Group Leadership Team

The following table sets forth the aggregate stock option ownership of the Group Leadership Team in office as of December 31, 2017.

Category	Number of stock options	Exercise price (EUR)	Expiration date
2012 Q2	40 000	2.08	December 27, 2018
2012 Q3	50 000	1.82	December 27, 2018
2013 Q2	45 000	2.35	December 27, 2019

Unvested equity awards held by the Nokia Group Leadership Team

The following table sets forth the potential aggregate ownership interest through the holding of equity-based incentives of the Group Leadership Team in office, including the President and CEO, as of December 31, 2017:

	Shares receivable through stock options	Shares receivable through performance shares at grant	Shares receivable through performance shares at maximum(4)	Shares receivable through restricted shares
Number of equity awards held by the Group Leadership Team(1)	135 000	4 625 484	9 250 968	1 440 039
% of the outstanding shares(2)	0.002 %	0.08 %	0.16 %	0.02 %
% of the total outstanding equity incentives (per instrument)(3)	30.17 %	7.64 %	7.64 %	25.86 %

(1) Includes the 15 members of the Group Leadership Team in office as of December 31, 2017. The number of units held under awards made before June 30, 2016 was adjusted to reflect the impact of the special dividend paid in 2016.
(2) The percentages are calculated in relation to the outstanding number of shares and total voting rights of Nokia as of December 31, 2017, excluding shares held by Nokia Group. No member of the Group Leadership Team owns more than 1% of the outstanding Nokia shares.
(3) The percentages are calculated in relation to the total outstanding equity incentives per instrument. The number of units outstanding under awards made before June 30, 2016 reflects the impact of the special dividend paid in 2016.
(4) At maximum performance, under the performance share plans outstanding as of December 31, 2017, the payout would be 200% and the table reflects this potential maximum payout. The restriction period for the performance share plan 2015 and the performance period for the performance share plan 2016 ended on December 31, 2017 and Nokia's performance against the performance criteria set out in the plan rules, was above the threshold performance level for both plans. The settlement to the participants under the performance share 2015 plan took place in February 2018 and the settlement for the performance share 2016 plan is expected to take place in the

beginning of 2019 after the restriction period ends.

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General facts on Nokia

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General facts on Nokia

Our history

Few companies have Nokia's storied capacity for transforming, developing new technologies and adapting to shifts in market conditions. From its beginning in 1865 as a single paper mill operation, Nokia has found and nurtured success in several sectors over the years, including cable, paper products, rubber boots and tires, mobile devices and telecommunications infrastructure equipment.

Nokia's sector-by-sector success over the years has mirrored its geographical rise: from a Finnish-focused company until the 1980s with a growing Nordic and European presence; to a genuine European company in the early 1990s; and on to a truly global company from the mid-1990s onward. With our recent acquisitions of Alcatel Lucent, Gainspeed, Withings, Deepfield, and Comptel, we can deliver today a near 100% end-to-end portfolio on a global scale.

Nokia has been producing telecommunications equipment since the 1880s—almost since telephony began.

A storied past

When Finnish engineer Fredrik Idestam set up his initial wood pulp mill in Southern Finland in 1865, he took the first step in laying the foundation of Nokia's capacity for innovating and finding opportunity. Sensing growing pulp product demand, Idestam opened a second mill a short time later on the Nokianvirta River, inspiring him to name his company Nokia AB.

Idestam's sense of endeavor would continue to prevail in the different phases Nokia would take.

In the 1960s, Nokia became a conglomerate, comprised of rubber, cable, forestry, electronics and power generation businesses, resulting from the merger of Idestam's Nokia AB, and Finnish Cable Works Ltd, a phone and power cable producer founded in 1912, and other businesses.

Transformation anew

It was not long before transformation would occur again.

Deregulation of the European telecommunications industries in the 1980s triggered new thinking and fresh business models.

In 1982, Nokia introduced both the first fully-digital local telephone exchange in Europe and the world's first car phone for the Nordic Mobile Telephone analog standard. The breakthrough of GSM (global system for mobile communications) in the 1980s introduced more efficient use of radio frequencies and higher-quality sound. The first GSM call was made with a Nokia phone over the Nokia-built network of a Finnish operator called Radiolinja in 1991.

It was around this time that Nokia made the strategic decision to make telecommunications and mobile phones our core business. Our other businesses, including aluminum, cable, chemicals, paper, rubber, power plant, and television businesses were subsequently divested.

By 1998, Nokia was the world leader in mobile phones, a position it enjoyed for more than a decade.

And still, the business and technology worlds would continue to evolve, as would Nokia.

A shifting industry

In 2007, Nokia combined its telecoms infrastructure operations with those of Siemens to create the NSN joint venture. We later bought Siemens' stake in NSN in 2013 as the business was emerging from a successful strategy shift and the reality of what Nokia calls a Programmable World of connected devices, sensors and people was starting to take shape.

In 2011, we joined with Microsoft to strengthen our position in the highly competitive smartphone market, which in 2014 resulted in the closing of the Sale of the D&S Business. Nokia emerged from the transaction with a firm financial footing and three strong businesses—Nokia Networks, HERE and Nokia Technologies—focused on connecting the things and people of the Programmable World.

Nokia's transformation was not complete. Our former HERE digital mapping and location services business, an arena we entered in 2006, had been a key pillar of Nokia's operational performance. However, following a strategic review of the business by the Board in light of plans to acquire Alcatel Lucent, Nokia decided to sell its HERE Business.

Acquisition of Alcatel Lucent and beyond

The acquisition of Alcatel Lucent positions Nokia as an innovation leader in next-generation technology and services.

Our reputation as an innovation powerhouse has been bolstered by the addition of Bell Labs, now known as Nokia Bell Labs. It joins a future-focused business backed by tens of thousands of engineers and thousands of patent families, a reflection of Nokia's innovation pedigree which has produced a huge array of benefits for consumers, business, and society as a whole.

The acquisition helps us shape the connectivity and digitization revolution before us—the Programmable World—in which billions of people, devices, and sensors are connected in a way that opens up a world of possibilities. These can make our planet safer, cleaner, healthier, more sustainable, more efficient and more productive.

Nokia's long history is marked by change and reinvention. We have always been excited by where technology will lead us as we seek to enable the human possibilities of a connected world. We will continue to innovate, reimagining how technology works for us discreetly while blending into, and enriching, our daily lives.

Memorandum and Articles of Association

Registration

Nokia is organized under the laws of the Republic of Finland and registered under the business identity code 0112038 9. Under its current Articles of Association, Nokia's corporate purpose is to research, develop, manufacture, market, sell and deliver products, software and services in a wide range of consumer and business-to-business markets. These products, software and services relate to, among others, network infrastructure for telecommunication operators and other enterprises, the IoT, human health and well-being, multimedia, big data and analytics, mobile devices and consumer wearables and other electronics. The company may also create, acquire and license intellectual property and software as well as engage in other industrial and commercial operations, including securities trading and other investment activities. The company may carry on its business operations directly, through subsidiary companies, affiliate companies and joint ventures.

Director's voting powers

Under Finnish law, resolutions of the Board shall be made by a majority vote. A director shall refrain from taking any part in the consideration of an agreement between the director and the company or third party, or any other issue that may provide any material benefit to him or her, which may be contradictory to the interests of the company. Under Finnish law, there is no age limit requirement for directors, and there are no requirements under Finnish law that a director must own a minimum number of shares in order to qualify to act as a director. However, in accordance with the current company policy, approximately 40% of the annual fee payable to the Board members is paid in Nokia shares purchased from the market or alternatively by using treasury shares held by Nokia, and the directors shall retain until the end of their directorship such number of shares that corresponds to the number of shares they have received as Board remuneration during their first three years of service (the net amount received after deducting those shares used for offsetting any costs relating to the acquisition of the shares, including taxes).

Share rights, preferences and restrictions

Each share confers the right to one vote at general meetings. According to Finnish law, a company generally must hold an Annual General Meeting called by the Board within six months from the end of the fiscal year. Additionally, the Board is obliged to call an Extraordinary General Meeting, whenever such meeting is deemed necessary, or at the request of the auditor or shareholders representing a minimum of one-tenth of all outstanding shares. Under our Articles of Association, the Board is elected at least annually at the Annual General Meeting of the shareholders for a term ending at the end of the next Annual General Meeting.

Under Finnish law, shareholders may attend and vote at general meetings in person or by proxy. It is not customary in Finland for a company to issue forms of proxy to its shareholders. Accordingly, Nokia does not do so. However, registered holders and beneficial owners of ADSs are issued forms of proxy by the Depositary.

To attend and vote at a general meeting, a shareholder must be registered in the register of shareholders in the Finnish book-entry system on or prior to the record date set forth in the notice of the general meeting. A registered holder or a beneficial owner of the ADSs, like other beneficial owners whose shares are registered in the company's register of shareholders in the name of a nominee, may vote with their shares provided that they arrange to have their name entered in the temporary register of shareholders for the general meeting.

The record date is the eighth business day preceding the meeting. To be entered in the temporary register of shareholders for the general meeting, a holder of ADSs must provide the Depositary, or have his broker or other custodian provide the Depositary, on or before the voting deadline, as defined in the proxy material issued by the

Depositary, a proxy with the following information: the name, address, and social security number or another corresponding personal identification number of the holder of the ADSs, the number of shares to be voted by the holder of the ADSs and the voting instructions. The register of shareholders as of the record date of each general meeting is public until the end of the respective meeting. Other nominee registered shareholders can attend and vote at the general meetings by instructing their broker or other custodian to register the shareholder in Nokia's temporary register of shareholders and give the voting instructions in accordance with the broker's or custodian's instructions.

By completing and returning the form of proxy provided by the Depositary, a holder of ADSs also authorizes the Depositary to give notice to us, required by our Articles of Association, of the holder's intention to attend the general meeting.

Each of our shares confers equal rights to share in the distribution of the company's funds. For a description of dividend rights attaching to our shares, refer to "—Shares and shareholders". Dividend entitlement lapses after three years if a dividend remains unclaimed for that period, in which case the unclaimed dividend will be retained by Nokia.

Under Finnish law, the rights of shareholders are related to the shares as set forth in law and our Articles of Association. Neither Finnish law nor our Articles of Association sets limitations on the rights to own Nokia securities, including the rights of foreign shareholders to hold or exercise voting rights in the said securities. Amendment of the Articles of Association requires a decision of the general meeting, supported by two-thirds of the votes cast and two-thirds of the shares represented at the meeting.

Disclosure of shareholder ownership or voting power

According to the Finnish Securities Market Act, which entered into effect on January 1, 2013, a shareholder shall disclose their ownership or voting power to the company and the Finnish Financial Supervisory Authority when the ownership or voting power reaches, exceeds or falls below 5, 10, 15, 20, 25, 30, 50 or 90% of all the shares or the voting rights outstanding. The term "ownership" includes ownership by the shareholder, as well as selected related parties, and calculating the ownership or voting power covers agreements or other arrangements, which when concluded would cause the proportion of voting rights or number of shares to reach, exceed or fall below the aforementioned limits. Upon receiving such notice, the company shall disclose it by a stock exchange release without undue delay.

Purchase obligation

Our Articles of Association require a shareholder that holds one-third or one-half of all of our shares to purchase the shares of all other shareholders that so request, at a price generally based on the historical weighted average trading price of the shares. A shareholder who becomes subject to the purchase obligation is also obligated to purchase any subscription rights, stock options or convertible bonds issued by the company if so requested by the holder. The purchase price of the shares under our Articles of Association is the higher of: (a) the weighted average trading price of the shares on Nasdaq Helsinki during the ten business days prior to the day on which we have been notified by the purchaser that its holding has reached or exceeded the threshold referred to above or, in the absence of such notification or its failure to arrive within the specified period, the day on which our Board otherwise becomes aware of this; or (b) the average price, weighted by the number of shares, which the purchaser has paid for the shares it has acquired during the last 12 months preceding the date referred to in (a).

Under the Finnish Securities Market Act, a shareholder whose voting power exceeds 30% or 50% of the total voting rights in a company shall, within one month, offer to purchase the remaining shares of the company, as well as any other rights entitling to the shares issued by the company, such as subscription rights, convertible bonds or stock options issued by the company. The purchase price shall be the market price of the securities in question. The market price is determined on the basis of the highest price paid for the security during the preceding six months by the shareholder or any party in close connection to the shareholder. This price can be deviated from for a specific reason. If the shareholder or any related party has not during the six months preceding the offer acquired any securities that are the target for the offer, the market price is determined based on the average of the prices paid for the security in public trading during the preceding three months weighted by the volume of trade. This price can be deviated from for a specific reason.

Under the Finnish Companies Act, a shareholder whose holding exceeds nine-tenths of the total number of shares or voting rights in Nokia has both the right and, upon a request from the minority shareholders, the obligation to purchase all the shares of the minority shareholders for the current market price. The market price is determined, among other things, on the basis of the recent market price of the shares. The purchase procedure under the Finnish Companies Act differs, and the purchase price may differ, from the purchase procedure and price under the Finnish Securities Market Act, as discussed above. However, if the threshold of nine-tenths has been exceeded through either a mandatory or a voluntary public offer pursuant to the Finnish Securities Market Act, the market price under the Finnish Companies Act is deemed to be the price offered in the public offer, unless there are specific reasons to deviate from it.

Pre-emptive rights

In connection with any offering of shares, the existing shareholders have a pre-emptive right to subscribe for shares offered in proportion to the amount of shares in their possession. However, a general meeting of shareholders may vote, by a majority of two-thirds of the votes cast and two-thirds of the shares represented at the meeting, to waive this pre-emptive right provided that, from the company's perspective, weighty financial grounds exist.

Under the Finnish Act on the Monitoring of Foreign Corporate Acquisitions (2012/172 as amended), a notification to the Ministry of Employment and the Economy is required for a non-resident of Finland, directly or indirectly, when acquiring one-tenth or more of the voting power or corresponding factual influence in a company. The Ministry of Employment and the Economy has to confirm the acquisition unless the acquisition would jeopardize important national interests, in which case the matter is referred to the Council of State. If the company in question is operating in the defense sector, an approval by the Ministry of Employment and the Economy is required before the acquisition is made. These requirements are not applicable if, for instance, the voting power is acquired in a share issue that is proportional to the holder's ownership of the shares. Moreover, the requirements do not apply to residents of countries in the European Economic Area or EFTA countries.

Selected financial data

Five-year consolidated financial information

The financial data set forth below as of and for the years ended December 31, 2017 and 2016 and for each of the three years ended December 31, 2017, 2016 and 2015 has been derived from our audited consolidated financial statements included in this annual report on Form 20 F.

The financial data as of December 31, 2017 and 2016 and for each of the three years ended December 31, 2017, 2016 and 2015 should be read in conjunction with, and are qualified in their entirety by reference to, our audited consolidated financial statements.

We acquired Alcatel Lucent in January 2016; consequently the acquisition is reflected in the financial data presented as of and for the years ended December 31, 2017 and 2016 only. Refer to Note 5, Acquisitions, of our consolidated financial statements included in this annual report on Form 20 F. For information on material trends affecting our business and results of operations, refer to “Operating and financial review and prospects—Principal industry trends affecting operations” above.

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The audited consolidated financial statements from which the selected consolidated financial data set forth below have been derived were prepared in accordance with IFRS. For information on our critical accounting policies refer to Note 3, Use of estimates and critical accounting judgments, of our consolidated financial statements included in this annual report on Form 20 F.

For the year ended December 31	2017 USDm(1)	2017 EURm	2016	2015	2014	2013
From the consolidated income statement(2)						
Net sales	26 378	23 147	23 641	12 560	11 762	11 795
Operating profit/(loss)	18	16	(1 100)	1 697	1 414	672
(Loss)/profit before tax	(581)	(510)	(1 369)	1 540	999	399
(Loss)/profit for the year from Continuing operations	(1 638)	(1 437)	(912)	1 194	2 718	128
(Loss)/profit for the year from Discontinued operations	(24)	(21)	(15)	1 274	758	(867)
(Loss)/profit for the year	(1 662)	(1 458)	(927)	2 468	3 476	(739)
(Loss)/profit from Continuing operations attributable to equity holders of the parent	(1 679)	(1 473)	(751)	1 192	2 710	273
(Loss)/profit attributable to equity holders of the parent	(1 703)	(1 494)	(766)	2 466	3 462	(615)
Earnings per share (for profit/(loss) attributable to equity holders of the parent)						
Basic earnings per share, EUR						
From Continuing operations	(0.30)	(0.26)	(0.13)	0.32	0.73	0.07
From the (loss)/profit for the year	(0.30)	(0.26)	(0.13)	0.67	0.94	(0.17)
Diluted earnings per share, EUR						
From Continuing operations	(0.30)	(0.26)	(0.13)	0.31	0.67	0.07
From the (loss)/profit for the year	(0.30)	(0.26)	(0.13)	0.63	0.85	(0.17)
Cash dividends per share, EUR(2)	0.22	0.19	0.17	0.26	0.14	0.37
Average number of shares (millions of shares)						
Basic	5 652	5 652	5 732	3 671	3 699	3 712
Diluted						
Continuing operations	5 652	5 652	5 741	3 949	4 132	3 733
Group	5 652	5 652	5 741	3 949	4 132	3 712

(1) In 2017, average rate of USD per EUR 1.1396 has been used to translate the consolidated income statement items.
(2) The Board proposes a cash dividend of EUR 0.19 per share for 2017, subject to shareholders' approval at the Annual General Meeting convening on May 30, 2018.

For the year ended December 31	2017 USDm(1)	2017 EURm	2016	2015	2014	2013
From the consolidated statement of financial position						
Non-current assets	25 439	21 160	24 182	5 102	7 339	6 048

Cash and other liquid assets(2)	9 954	8 280	9 326	9 849	7 715	8 971
Other current assets	13 899	11 561	11 349	5 975	6 009	4 825
Assets held for sale and assets of disposal groups classified as held for sale	28	23	44	–	–	5 347
Total assets	49 319	41 024	44 901	20 926	21 063	25 191
Capital and reserves attributable to equity holders of the parent	19 401	16 138	20 094	10 503	8 611	6 468
Non-controlling interests	96	80	881	21	58	192
Long-term interest-bearing liabilities	4 156	3 457	3 657	2 023	2 576	3 286
Other non-current liabilities	10 345	8 605	7 664	1 988	2 530	1 067
Current borrowings	371	309	370	51	116	3 376
Other current liabilities	14 949	12 435	12 235	6 340	7 172	6 074
Liabilities of disposal groups classified as held for sale	–	–	–	–	–	4 728
Total shareholders' equity and liabilities	49 319	41 024	44 901	20 926	21 063	25 191
Net cash(3)	5 427	4 514	5 299	7 775	5 023	2 309
Share capital	296	246	246	246	246	246

(1) In 2017, end of period rate of USD per EUR 1.2022 has been used to translate the consolidated statement of financial position items.

(2) Cash and other liquid assets consist of the following line items from our consolidated statement of financial position: cash and cash equivalents, available-for-sale investments, liquid assets and investments at fair value through profit and loss, liquid assets. Net interest-bearing liabilities consist of borrowings due within one year and long-term interest-bearing liabilities, less cash and other liquid assets.

(3) Total cash and other liquid assets less long-term interest-bearing liabilities (including the current portion thereof) less short-term borrowings.

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Exchange rate data

Our business and results of operations are, from time to time, affected by changes in exchange rates, particularly between the euro, our reporting currency, and other currencies such as the U.S. dollar, the Chinese yuan, the Japanese yen and the Korean won. The following table sets forth information concerning the noon buying rate for the years 2013 to 2017 and for each of the months in the six-month period ended February 28, 2018, expressed in U.S. dollars per euro. The average rate for a year means the average of the exchange rates on the last day of each month during a year. The average rate for a month means the average of the daily exchange rates during that month.

For the year ended December 31 (unless otherwise specified)	End of period rate	Average rate	Highest rate	Lowest rate
	(USD per EUR)			
2013	1.3779	1.3303	1.3816	1.2774
2014	1.2101	1.3210	1.3927	1.2101
2015	1.0859	1.1032	1.2015	1.0524
2016	1.0552	1.1029	1.1516	1.0375
2017	1.2022	1.1396	1.2041	1.0416
September 30, 2017	1.1813	1.1913	1.2041	1.1747
October 31, 2017	1.1648			