

2018

SAP Integrated Report

Excerpt

About This Report

Content

The SAP Integrated Report 2018 presents our full-year financial, social, and environmental performance in one integrated report ("SAP Integrated Report") available at www.sapintegratedreport.com. Since 2012, we have taken into consideration the recommendations of the International Integrated Reporting Framework.

The Integrated Report also serves as our United Nations (UN) Global Compact progress report. In 2018, for the first time, we also report on our contribution to the UN Sustainable Development Goals (SDGs).

Basis of Presentation

Our Combined Management Report is prepared in accordance with sections 289, 289a, 289f, 315, 315a, and 315d of the German Commercial Code and German Accounting Standards No. 17 and 20. The Combined Management Report is also a management commentary complying with the International Financial Reporting Standards (IFRS) Practice Statement Management Commentary.

Our Consolidated Financial Statements are prepared in accordance with IFRS. Our executive management has confirmed the effectiveness of our internal controls over financial reporting.

Our Non-Financial Report is prepared in accordance with sections 289b and 315b of the German Commercial Code, which require us to report, for both, SAP SE and SAP Group, on social, environmental, and other non-financial matters. All non-financial information stipulated in the German Commercial Code, sections 315c and 289c that is relevant to understand SAP's development, performance of the business, and the position of the Group and SAP SE is included in our Combined Management Report. Rather than repeating this information, our Non-Financial Report (which is part of this integrated report at <http://www.sap.com/investors/sap-2018-combined-non-financial-report>) provides references to the sections of our Combined Management Report in which the required disclosures are made.

The social and environmental data and information included in the SAP Integrated Report is prepared in accordance with the GRI Standards: Core option. This GRI option indicates that a report contains the minimum information needed to understand the nature of the organization, its material topics and related impacts, and how these are managed. We apply the GRI principles (sustainability context, stakeholder inclusiveness, materiality, and completeness) for defining report content. We also report on SDGs identified as material.

Greenhouse gas data is prepared based on the Greenhouse Gas Protocol.

Data

All financial and non-financial data and information for the reporting period is reported utilizing SAP software solutions and sourced from the responsible business units.

The reporting period is fiscal year 2018. The report encompasses SAP SE and all subsidiaries of the SAP Group. To make this report as current as possible, we have included relevant information available up to the auditor's opinion and the responsibility statement dated February 20, 2019. The report is available in English and German.

Independent Audit and Assurance

KPMG AG Wirtschaftsprüfungsgesellschaft has audited our Consolidated Financial Statements and our Combined Management Report (including the information to which our Non-Financial Report makes references). Additionally, KPMG has provided assurance on selected non-financial data and information in accordance with the International Standard on Assurance Engagements (ISAE) 3000 and 3410 ("Assurance Engagements on Greenhouse Gas Statements"), two pertinent standards for the assurance of sustainability reporting. Where our SAP Integrated Report makes reference to SAP's public Web site, that Web site information is unaudited. Both the Independent Auditor's Report and the Independent Assurance Report for non-financial information are available in the *Independent Auditor's Report* section and the *Independent Assurance Report* section.

Concept and Realization

This report was designed by SAP and created with SAP S/4HANA software and the SAP Disclosure Management application.

Key Facts

€ millions, unless otherwise stated	2018	2017	Δ in %
Revenues			
Cloud subscriptions and support (IFRS)	4,993	3,769	32
Cloud subscriptions and support (non-IFRS)	5,027	3,771	33
Software licenses (IFRS)	4,647	4,872	-5
Software licenses (non-IFRS)	4,647	4,872	-5
Software support (IFRS)	10,981	10,908	1
Software support (non-IFRS)	10,982	10,908	1
Cloud and software (IFRS)	20,622	19,549	5
Cloud and software (non-IFRS)	20,655	19,552	6
Total revenue (IFRS)	24,708	23,461	5
Total revenue (non-IFRS)	24,741	23,464	5
Applications, Technology & Services Segment revenue	20,806	20,218	3
SAP Business Network Segment revenue	2,629	2,261	16
Customer Experience Segment revenue	951	643	48
Share of predictable revenue (IFRS, in %)	65	63	3
Share of predictable revenue (non-IFRS, in %)	65	63	3
Operating expenses			
Cost of cloud subscriptions and support (IFRS)	-2,068	-1,660	25
Cost of cloud subscriptions and support (non-IFRS)	-1,855	-1,427	30
Cost of software licenses and support (IFRS)	-2,092	-2,234	-6
Cost of software licenses and support (non-IFRS)	-1,962	-2,044	-4
Cost of cloud and software (IFRS)	-4,160	-3,893	7
Cost of cloud and software (non-IFRS)	-3,817	-3,471	10
Total cost of revenue (IFRS)	-7,462	-7,051	6
Total cost of revenue (non-IFRS)	-6,969	-6,462	8
Research and development (IFRS)	-3,624	-3,352	8
Profits and Margins			
Cloud subscriptions and support margin (in % of corresponding revenue, IFRS)	58.6	56.0	5
Cloud subscriptions and support margin (in % of corresponding revenue, non-IFRS)	63.1	62.2	1
Software and support gross margin (IFRS, in %)	86.6	85.8	1
Software and support gross margin (non-IFRS, in %)	87.4	87.0	0
Cloud and software margin (in % of corresponding revenue, IFRS)	79.8	80.1	0
Cloud and software margin (in % of corresponding revenue, non-IFRS)	81.5	82.2	-1
Total gross margin (in % of total revenue, IFRS)	69.8	69.9	0
Total gross margin (in % of total revenue, non-IFRS)	71.8	72.5	-1
Applications, Technology & Services Segment gross margin (in % of corresponding revenue)	73	74	-1
SAP Business Network Segment gross margin (in % of corresponding revenue)	69	68	2
Customer Experience Segment gross margin (in % of corresponding revenue)	79	80	-2
Operating profit (IFRS)	5,703	4,877	17
Operating profit (non-IFRS)	7,163	6,769	6
Operating margin (in % of total revenue, IFRS)	23.1	20.8	11
Operating margin (in % of total revenue, non-IFRS)	29.0	28.9	0
Free cash flow	2,843	3,770	-25

€ millions, unless otherwise stated	2018	2017	Δ in %
Net liquidity	-2,493	-1,479	69
Days' sales outstanding (DSO, in days)	70	70	0
Equity ratio (total equity in % of total assets)	56	60	-7
Effective tax rate (IFRS, in %)	27.0	19.5	38
Effective tax rate (non-IFRS, in %)	26.3	22.8	16
Order Entry			
New cloud bookings	1,814	1,448	25
Deferred cloud subscriptions and support revenue (IFRS) ¹⁾	3,047	2,771	10
Orders – Number of on-premise software deals (in transactions)	58,530	59,147	-1
Share of software orders greater than € 5 million (in % of total software order entry)	29	30	-3
Share of software orders less than € 1 million (in % of total software order entry)	39	40	-3
Key SAP Stock Facts			
Earnings per share, basic (in €)	3.42	3.35	2
Earnings per share, basic (non-IFRS, in €)	4.35	4.43	-2
Dividend per share ²⁾ (in €)	1.50	1.40	7
Market capitalization ¹⁾ (in € billions)	106.80	114.80	-7
Employees and personnel expenses			
Number of employees ^{1), 3)}	96,498	88,543	9
Personnel expenses per employee – excluding share-based payments (in € thousands)	115	121	-5
Women working at SAP (in %)	33.0	32.8	0
Women in management ¹⁾ (total, in % of total number of employees)	25.7	25.4	1
Employee Engagement Index (in %)	84	85	-1
Business Health Culture Index (in %)	78	79	-1
Leadership Trust Index (LTI, in %)	60	61	-2
Employee retention (in %)	93.9	94.6	-1
Customer			
Customer Net Promoter Score ⁴⁾ (in %)	-5.0	17.8	-128
Environment			
Net Greenhouse gas emissions (in kilotons)	310	325	-5
Total energy consumption (in GWh)	919	920	0
Total data center electricity (in GWh)	318	265	20

¹⁾ Numbers based on at year-end.

²⁾ Numbers are based on the proposed dividend and on level of treasury stock at year-end.

³⁾ Full-time equivalents.

⁴⁾ Due to changes in sampling, Customer NPS is not fully comparable to the prior year's score.

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Letter from the CEO



Dear Stakeholders,

Thank you for investing your time in the SAP Integrated Report 2018. In this experience, you will find a comprehensive assessment of a strong growth company. For seven years now, we have measured ourselves in a holistic fashion. This report is to empower you, our stakeholders, to make an informed judgement about the quality and sustainability of SAP.

What we accomplished in 2018 is the latest in our track record of innovation and growth. This does not happen by accident. On the contrary, it reflects the talent, dedication, and professional excellence of our customers, partners, and employees around the world.

As CEO, I can tell you that I am proud of SAP, honored by the opportunity to represent this company, and highly optimistic about our ability to help the world run better and improve people's lives far into the foreseeable future.

Earning Your Trust

Trust is the ultimate human currency.

This is one reason our strong performance in 2018 means so much to us. We made promises and we kept them. Our cloud revenue is now larger than our software revenue and it became a main growth driver in our business, growing at 38% (non-IFRS at constant currencies). We delivered over €24.7 billion in total revenue (non-IFRS) and €7.2 billion in operating profit (non-IFRS) – the most ever. We met or exceeded every aspect of our financial guidance to the capital markets, guidance we increased three times during the year to account for strong momentum.

We have a loyal, committed, and engaged workforce. Ninety-three percent of our employees told us they are proud to work for SAP, which is eight percentage points higher than the industry average. Through our corporate social responsibility initiatives, our colleagues volunteered a quarter of a million hours and reached four million people in 2018 alone. While growing the entire size of the company by 10%, we beat our ambition to shrink our carbon footprint by nearly 5%.

Even as we feel the momentum behind the company, we face the same turmoil in the macro environment that impacts all companies. Our stock reached a record high in September but also came under pressure as world markets experienced a very turbulent final quarter. While we ended 2018 down 7%, the stock still outperformed the DAX index by 11 percentage points. And we are already seeing a return to positive momentum in the early weeks of 2019.

One of the hallmarks of any strong company is the distribution of success to its stakeholders. In this spirit, I am pleased to announce that, pending approval at the Annual General Meeting, SAP will return a dividend of €1.50 per share to shareholders, a 7% increase over last year's dividend.

Securing Our Future

Looking back, we have always based SAP's strategy on where the world is going, not where it has already been.

We did this with SAP HANA, a business data platform that shattered the status quo database market. We did this with a new era of applications built on SAP HANA. Now we move to a new and defining chapter in our SAP HANA journey.

This is now, beyond any doubt, an experience economy. Each of us are shaped by our experiences. We have real power not only to express our sentiment but also to actively shape the relationships we have with the institutions around us – public, private, and non-profit.

For SAP, this is the burning question we must help our customers to address.

Throughout our 47-year history, SAP has helped companies operate in a constantly changing economy. Our solutions are industrial-grade, capable of powering the most sophisticated businesses as they help deliver highly complex business models in nearly every country on Earth.

"Experience Management" is a paradigm-shifting category in the business software industry. No longer can enterprises operate without constantly asking "why?" We acquired Qualtrics to help us provide this operational capacity to the individuals our customers are serving.

Why are people frustrated? Why are they loyal? Why are they looking elsewhere?

The answers to these questions will not only pave the road to sustainable business success but they will also help intelligent enterprises recapture the US\$1.6 trillion that is currently lost due to customer attrition.

Our stakeholders should expect SAP will reach new heights when experience data ("X") from the Qualtrics platform joins the operational data ("O") from 77% of transactions on the SAP platform.

X+O is the essential equation for winning in this experience economy. We expect this highly differentiated offering to drive SAP to grow our cloud revenue more than three times, reaching more than €35 billion total revenue by 2023, and powering strong operating profit growth.

Confronting Our Challenges

Rather than leave you with the many unique attributes that make us strong, I will close with the candor to tell you where we must be stronger.

SAP is the only truly global business software company. We serve 425,000 customers and counting, worldwide. There is no finish line when it comes to meeting the needs of our growing customer base.

Customers expect SAP to lead more aggressively in the responsible use of artificial intelligence. Even as we embed these algorithms into our applications, we must answer the question of how these use cases will impact the human workforce. We must help leaders in all sectors find the proper balance between human judgement and machine speed, including a comprehensive strategy for worker retraining to address a growing digital skills gap.

Customers expect SAP to be a role model when it comes to compliant business practices and integrity. We on the Executive Board share this belief. Unfortunately, we, like many other companies, have experienced the challenges of non-compliance. Moving forward, even as SAP expands our own internal focus, we strive to help others understand the risks and warning signs. When businesses do not act in accordance with the highest ethical standards, the resulting decline in public trust is harmful for all sides. Therefore, we call for other interested groups to come together to support these values.

Finally, customers expect SAP to do more than celebrate a purposeful vision for our company. They want our solutions to help them be responsible, sustainable best-run businesses. They want our solutions to help them remove bias from the workplace, eliminate unfair labor practices, reduce carbon emissions, and educate a new generation of inspired workers. Underpinning what we do is our support of the UN Sustainable Development Goals, which will help us achieve our purpose and have a positive impact on the world.

You should always expect that SAP's pride in engineering will continue to propel our products to improve. In all areas where we compete, we will not rest until SAP is #1 or fastest growing.

But beyond our ambitions for profitable growth, you should always expect us to be a humble and hungry company – ever proud about what makes us strong and ever vigilant to confront our challenges.

With your continued trust, not only will we seize the opportunities of the experience economy but we will also do so in a manner befitting the class and character of those who came before us.

I thank you, especially, for standing behind us on this journey.

Very truly yours,

Bill McDermott
Chief Executive Officer
SAP SE

SAP Executive Board



Bill McDermott
Chief Executive Officer



Robert Enslin
President, Cloud Business Group



Adaire Fox-Martin
Global Customer Operations EMEA, MEE and Greater China



Christian Klein
Chief Operating Officer, Intelligent Enterprise Group



Michael Kleinemeier
SAP Digital Business Services



Bernd Leukert
SAP Digital Business Services (until February 2019)
Products & Innovation (until end of 2018)



Luka Mucic
Chief Financial Officer



Jürgen Müller
Chief Technology Officer / Technology & Innovation
(as of January 2019)



Jennifer Morgan
Global Customer Operations Americas and Asia Pacific Japan



Stefan Ries
Chief Human Resources Officer

Investor Relations

SAP Is the Most Valuable DAX Company, Despite Declining Stock Markets

Clouded competitive prospects and political uncertainties left their mark on global stock markets in 2018. This was driven, among other things, by the trade conflict between the United States and China, the U.S. Federal Reserve's monetary policy, the tug-of-war in the Brexit negotiations, and the budget dispute between Italy and the European Union (EU). Though unable to escape these developments, SAP stock finished the year significantly higher than the benchmark indices: it declined 7.0%, whereas the DAX 30 and EURO STOXX 50 indexes lost as much as 18.3% and 14.8%, respectively. In terms of market capitalization, SAP is the most valuable DAX company.

SAP Stock Reaches New All-Time High

Having started the year at €93.45, the Xetra closing price on December 31, 2017, SAP stock initially experienced a short pull-back but then proceeded to develop largely in line with market developments. Considerable turbulence caused by recurring interest rate fears and an ever-stronger euro, however, dominated the markets, and SAP's excellent financial results for fiscal year 2017 were not able to stop this trend. SAP's announcement of a higher dividend at the end of February, at least, managed to spark a slight recovery before the United States' confrontation course with international trading partners at the beginning of March put renewed pressure on the stock markets. On March 2, SAP stock touched its lowest point of the year at €82.47. The trade dispute repeatedly impacted the stock markets as the year progressed.

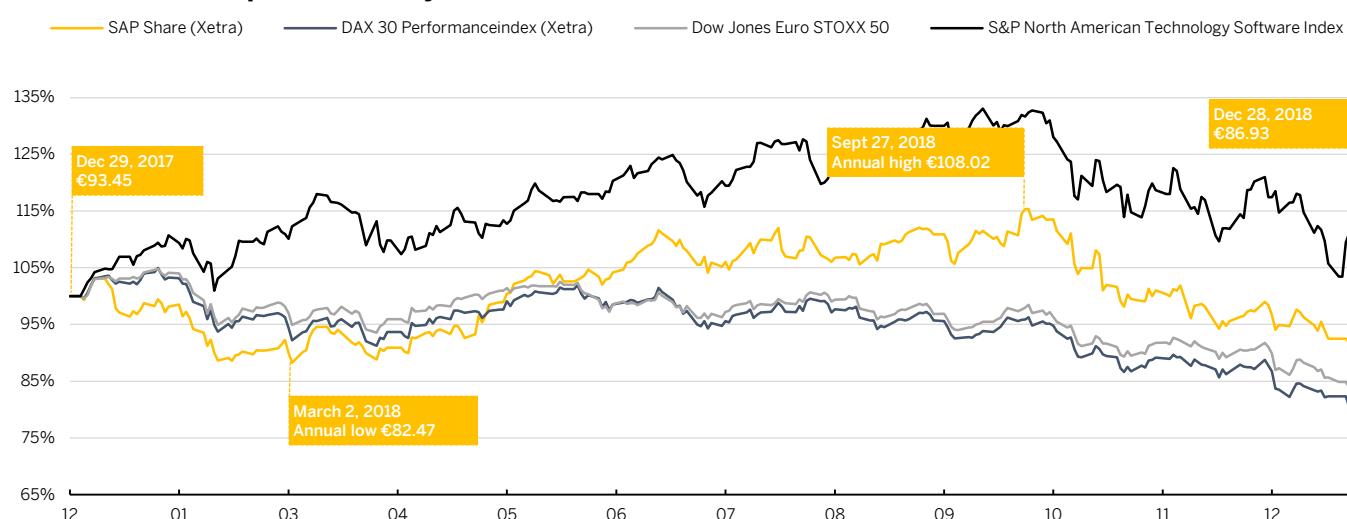
The markets were initially able to free themselves from this negative influence in April, and remained buoyant through to mid-June. Boosted additionally by strong first-quarter 2018 results and

a weakening euro, SAP stock rallied even higher, gaining a clear lead over the rising market as a whole. By May 17, the date of the Annual General Meeting of Shareholders, the SAP share price had risen to €96.95. Shareholders subsequently approved a 12% higher dividend of €1.40 per share at this Meeting, lifting SAP stock to an interim high of €104.30 on June 14. A renewed flare-up of the trade dispute, however, put an end to this rise in the short term, with the turbulent political and monetary policy environment causing increasing volatility on the stock markets.

Not even the publication of our favorable second-quarter results on July 19 could stimulate SAP stock in this climate. Increasing demand for technology shares in August, however, ultimately pushed SAP stock to a new all-time high of €108.02 on September 27, before presentation of the Italian government's debt budget ushered in the markets' transition to a bear market in the fourth quarter.

In the wake of the many uncertainties mentioned above, coupled with the increasing number of profit warnings including from some large DAX enterprises, the stock markets experienced broad-scale losses in a continuous downward trend that lasted until the end of the year. Share prices were hit particularly hard in December following the arrest of Huawei's chief financial officer in Canada and the Federal Reserve's decision to raise interest rates again. SAP was not immune: despite our renewed forecast increases, the publication of SAP's third-quarter results on October 18 failed to impress the markets, and SAP stock declined 5.9% that same day. On November 11, SAP announced its acquisition of Qualtrics International Inc., yet investors initially felt the acquisition was too expensive, prompting a 5.6% drop in the SAP share price the following day. SAP stock closed the year on December 28 at €86.93, down 7.0% for 2018 overall.

SAP Stock in Comparison to Major Indices December 29, 2017 to December 28, 2018



Continued Dialog with Investors

We are continuously engaged with the investment community through a number of channels. Over the course of the year, senior management at SAP and the Investor Relations (IR) team discussed our strategy and business development with institutional investors and analysts worldwide.

Once again, a highlight of our global IR program in 2018 was the Capital Markets Day held at our Hudson Yards office in New York City. This engaging event was attended by more than 90 financial analysts and investors, the SAP Executive Board discussed the details of SAP's strong market position and how SAP innovations support customers' digitization. The Executive Board also discussed the business model and future outlook of the company. SAP customers Whirlpool, Pregis, and DoTerra presented their perspective on how SAP software supports their business. In addition, we hosted events for buy-side analysts in Walldorf, New York, and San Francisco. Further, we hosted events for investors and financial analysts at the CeBIT fair in Hanover, Germany and at the SAPPHIRE NOW conference in Orlando, Florida. Members of the Investor Relations team as well as senior management participated in more than 25 conferences worldwide. We continued our regular dialog with socially responsible investors (SRI), providing them with insights into our environmental, social, and corporate governance policies. SAP representatives engaged with retail shareholders at multiple events. The Investor Relations team and the Treasury teams also maintained regular communication with the debt investor community.

Investors can access a wide range of information about SAP and its shares online. Our channels of communication include our Twitter feed @sapinvestor and the quarterly SAP INVESTOR magazine. Shareholders can reach the IR team directly through a telephone hotline and through an e-mail at investor@sap.com. We also publish an overview of the latest analyst consensus in collaboration with Vara Research.

We webcast all key investor events at which members of our Executive Board speak, and we post all relevant presentations on the Investor Relations Web site.

Key Facts About SAP Stock/SAP ADRs

Listings

Germany	Berlin, Frankfurt, Stuttgart
United States (ADRs)	New York Stock Exchange

IDs and symbols

WKN/ISIN	716460/DE0007164600
NYSE (ADRs)	803054204 (CUSIP)
Reuters	SAPG.F or .DE
Bloomberg	SAP GR

Weight (%) in indexes at 12/31/2018

DAX 30	10.13
Prime All Share	7.55
CDAX	8.52
HDAX	8.07
Dow Jones STOXX 50	2.83
Dow Jones EURO STOXX 50	4.36

Return on SAP Common Stock – WKN 716460/ISIN DE007164600

Percent, unless otherwise stated

Initial investment €10,000

Date of investment	12/31/2008	12/31/2013	12/31/2017
Period of investment	10 years	5 years	1 year
Value at 12/31/2018 ¹⁾ (in €)	34,441	13,951	9,302
Average annual return	13.2	6.9	-7.0
Performance comparators			
DAX 30 Performance — total return index	8.2	2.0	-18.3
REX General Bond — total return index	1.5	1.4	0.9
S&P 500 Composite — total return index	13.0	10.3	-1.7
S&P North American Technology Software Index	20.2	18.2	6.8

¹⁾ Assuming all dividends were reinvested

Source: Bloomberg / Deutsche Bank

Return on SAP ADRs – 803054204 (CUSIP)

Percent, unless otherwise stated

Initial investment US\$10,000

Date of investment	12/31/2008	12/31/2013	12/31/2017
Period of investment	10 years	5 years	1 year
Value at 12/31/2018 ¹⁾ (in US\$)	27,485	11,424	8,860
Average annual return	10.6	2.7	-11.4
Performance comparators			
S&P 500 Composite — total return index	10.7	6.3	-6.2

¹⁾ Assuming all dividends were reinvested

Source: Datastream / Deutsche Bank

Dividend Increased to €1.50

We had a very successful year in 2018, as customers continue to turn to SAP to support them to become intelligent enterprises. We believe our shareholders should share greatly in this success, therefore it is our policy to pay a dividend totaling 40% or more of IFRS profit after tax.

At the Annual General Meeting of Shareholders, the Executive Board and the Supervisory Board will recommend increasing the total dividend for fiscal year 2018 by more than 7% to €1.50 per share (2017: €1.40). This represents a payout ratio of 43.8% (2017: 41.3%).

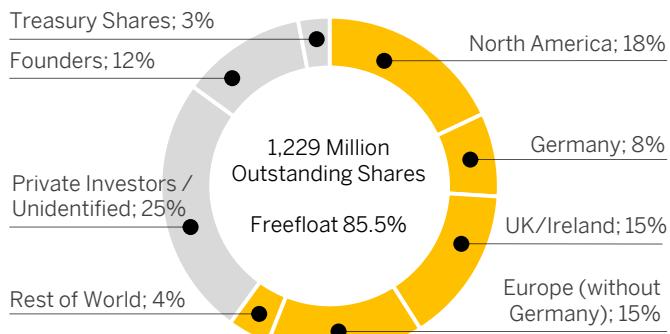
Capital Stock Unchanged

SAP's capital stock as of December 31, 2018, was €1,228,504,232 (2017: €1,228,504,232). It is issued as 1,228,504,232 no-par shares, each with an attribute value of €1 in relation to capital stock.

Shareholder Structure

Applying the definition accepted on the Frankfurt Stock Exchange, which excludes treasury stock from the free float, as of December 31, 2018, the free float stood at 85.5% (December 31, 2017: 85.2%).

Shareholder Structure



*12% of institutional investors (marked yellow) are classified as socially responsible investors (SRIs)

Corporate Governance Report

We are a global company with an international shareholder base, so we need sound governance. Good corporate governance means managing the Company accountably and transparently to secure long-term value. We believe our shareholders, business partners, employees, and the financial markets reward good corporate governance with the increased trust they place in our Company.

Corporate Governance Principles at SAP

SAP is an international firm with European roots, having the legal form of a European company (Societas Europaea, or SE). Being an SE headquartered in Germany, we are now subject to European and German law for SEs while remaining subject to German stock corporation law. Major characteristics of our governance structure remain in place since the conversion, notably our two-tier board comprising a Supervisory Board and an Executive Board, and parity for workforce representatives on the Supervisory Board. Because SAP SE is listed on a German stock exchange, our corporate governance is still based on the German Corporate Governance Code (the "Code" in this report).

Since SAP is also listed in the United States, we comply with the rules that apply to non-U.S. companies listed on the New York Stock Exchange (NYSE). These include the requirements, as they apply to foreign private issuers, of the NYSE Corporate Governance Standards, the U.S. Sarbanes-Oxley Act of 2002, and the U.S. Securities and Exchange Commission (SEC).

Section 161 Declaration

Every year, as required by the German Stock Corporation Act, Section 161, the Executive Board and Supervisory Board issue a *Section 161 Declaration* stating whether SAP has implemented and is following the Code's recommendations, and identifying any recommendations that the Company has not followed – with a full explanation of why it has not done so. Our latest Section 161 Declaration, published in October 2018, is on the SAP Web site along with our declarations from previous years and links to the current and previous editions of the Code. As our latest declaration shows, we have followed since February 21, 2018, all of the 115 recommendations and all of the suggestions in the current Code (while we followed all but two of the recommendations of the Code from the issuance of our Section 161 Declaration on October 27, 2017, through the update issued on February 21, 2018).

Corporate Governance Statement

On February 19, 2019, the Executive Board published a *Corporate Governance Statement* for 2018 pursuant to Sections 315d and 289f of the German Commercial Code. The statement is on the SAP Web site. It comprises the current declaration pursuant to the German Stock Corporation Act, Section 161, certain details of our corporate governance practices, and an account of how the Executive Board and the Supervisory Board work, who serves on which Supervisory Board committees, and how those committees work. It also sets out the targets for the percentage of women on

the Executive Board and the two management levels below Executive Board level, as well as information on the implementation of the minimum quota of men and women on the Supervisory Board, and details about the Diversity Policy of SAP SE.

Executive Board

The Executive Board currently has ten members. It is solely responsible for managing the Company. It has a duty to exercise its management powers in the interest of the Company and in pursuit of the sustained growth of corporate value. It discusses and agrees its strategy for the Company with the Supervisory Board, ensures compliance with the requirements of the law throughout the Group, and maintains effective risk management structures and internal risk controls. The members of the Executive Board are appointed by the Supervisory Board which set a regular age limit of 65 years for the Executive Board. Information about each Executive Board member's portfolio of responsibilities is available on the SAP Web site.

Supervisory Board

The size and composition of the Supervisory Board are governed not by the German Codetermination Act (which does not apply, because we are a European company) but by the Articles of Incorporation and the SAP SE Employee Involvement Agreement. Both documents are available on the SAP Web site.

The Supervisory Board has 18 members who, in equal numbers, represent the shareholders and the employees. It appoints, monitors, and advises the Executive Board. The Executive Board involves the Supervisory Board in decisions on matters of fundamental importance for the Company. The Supervisory Board has reserved to itself the approval of certain transactions of fundamental importance, as set out in the Articles of Incorporation and detailed in the Supervisory Board's list of reserved categories of transactions. The Executive Board regularly provides the Supervisory Board with full and timely reports on all material matters of strategy, business planning, and performance, including any deviations of actual business performance from plan, risks, risk management, and corporate compliance. We provide our shareholders with in-depth information about how the Executive Board and the Supervisory Board work, how the committees are composed, and how these committees work, in our corporate governance statement. For more information about the joint work of the Executive Board and the Supervisory Board and about the work of the Supervisory Board and its committees in 2018, see the *Report by the Supervisory Board*.

Composition of the Supervisory Board

The Supervisory Board members as a group possess the knowledge, ability, and expert experience required to properly perform its duties in our global IT company. At least one independent member has financial reporting and auditing

expertise. The Supervisory Board has defined the following objectives for its own composition:

- There should never be fewer than three persons of non-German origin on the shareholder representatives' side of the Supervisory Board.
- No employee, consultant, or director of a significant SAP competitor should be a Supervisory Board member.
- At least five shareholder representatives on the Supervisory Board, and at least ten members of the entire Supervisory Board, should be independent members in the meaning of Section 5.4.2 of the Code; the Supervisory Board considers these numbers as appropriate.
- No member of the Supervisory Board should be older than 75 years.
- Length of service on the Supervisory Board generally shall not exceed a period of 12 years. For a transition period, the Supervisory Board may, notably to retain valuable experience of SAP Supervisory Board work, propose from the nine shareholder representatives up to three candidates who exceed this regular limit to the Supervisory Board members' term of office. After financial year 2023, the regular limit may only be exceeded in justified individual cases. The eligibility of employee representatives remains unaffected.

In addition to these objectives, the Supervisory Board adopted a *Profile of Skills and Expertise* for the Supervisory Board which comprises general personal requirements applicable to each Supervisory Board member, as well as company-specific and professional requirements which must be fulfilled by the Supervisory Board as a whole. This means that the company-specific and professional requirements stated in the Profile of Skills and Expertise do not have to be met by each member of the Supervisory Board individually, but that it is sufficient if the knowledge, skills, and professional experience contributed by each of the Supervisory Board members combine to cover the totality of the company-specific and professional requirements stated in the Profile of Skills and Expertise. Proposals by the Supervisory Board to the General Meeting of Shareholders for the election of shareholders' representatives to the Supervisory Board shall aim at fulfilling the Profile of Skills and Expertise. The Profile of Skills and Expertise for the Supervisory Board is available on the SAP Web site.

The Supervisory Board believes that the current composition of the Supervisory Board fulfills all of these objectives and the requirements contained in the Profile of Skills and Expertise. There is information about each member, the committees, and who serves on which committee, on the SAP Web site.

Independence of the Supervisory Board

SAP believes that a sufficient degree of independence of its Supervisory Board members is essential for effective and responsible corporate management and control. The Supervisory Board has a defined objective for its composition regarding the minimum number of independent members on the shareholder representative side, as recommended in the Code, Section 5.4.1, paragraph 2. The objective is five such members. At its meeting on October 25, 2018, the Supervisory Board determined that all of its shareholder representative members (that is, Hasso Plattner, Pekka Ala-Pietilä, Aicha Evans, Anja Feldmann, Diane Greene, Gesche Joost, Bernard Liautaud, Friederike Rotsch and Erhard

Schipporeit) are independent in the meaning of the Code, Section 5.4.2, based on the assumption that the duration of membership in the Supervisory Board does not *per se* exclude the relevant member from being considered as independent.

Furthermore, the Supervisory Board determined that, including the employee representatives and taking into account the shareholder structure of SAP SE, it has an appropriate number of independent members in the meaning of the Code, Section 5.4.2. This was based on the assumption that the employee representatives' capacity as employees does not *per se* raise any concerns as to their independence in the meaning of the Code, Section 5.4.2.

The Audit Committee is chaired by Erhard Schipporeit, who for many years was the chief financial officer of a DAX company that is also listed on a U.S. stock exchange and therefore qualifies as an independent financial expert in the meaning of the Code, Section 5.3.2, and the German Stock Corporation Act, Section 100 (5).

Diversity in the Company

The Supervisory Board of SAP SE, which currently includes six women, meets the mandatory gender quota of 30%. For information on fulfillment of the gender quota obligation in financial year 2018, please see the *Corporate Governance Statement*. The Supervisory Board also aims for diversity with regard to the composition of the Executive Board, which currently has two female members.

The Supervisory Board adopted a *Diversity Policy* for the Executive Board and the Supervisory Board which meets the requirements of Section 289f para. (2) no. 6 of the German Commercial Code. The Diversity Policy as well as information on the targets for the numbers of women on the Executive Board and the first two management levels below the Executive Board are described in the Corporate Governance Statement which is available on the SAP SE Web site.

Generally, the Executive Board follows the recommendation in the Code that executive boards should have regard to diversity when appointing people to leadership positions, and in particular, aim to employ appropriate numbers of women in such positions. In support of this, the Executive Board maintains a policy to enhance diversity in company leadership appointments. This policy comprises a number of elements to increase the percentage of women in management and, in the long term, establish a diverse pool of female and male candidates for senior management positions.

In addition, SAP set itself a voluntary target of increasing the percentage of positions in leadership on a global level held by women to 27% by the end of 2019 and to 28% by the end of 2020. That percentage stood at 25.7% globally at the end of 2018. It goes without saying that ability is still the primary selection criterion for any position at SAP.

Code of Business Conduct

SAP's corporate governance includes our Code of Business Conduct for employees and members of the Executive Board. The Code of Business Conduct expresses the high standards that we require from our employees and Executive Board members and sets out the main principles that guide our business conduct toward customers, business partners, and shareholders. We see our Code of Business Conduct as the standard for our dealings

involving customers, business partners, vendors, shareholders, and competitors. By following our Code of Business Conduct, we demonstrate a commitment against all forms of unfair competitive practice, corruption, and misrepresentation. Our global compliance organization monitors worldwide compliance with the Code of Business Conduct and other policies applying within the Group. It regularly reviews these internal policies, revises them if necessary, and delivers related employee training.

Applying International Corporate Governance Standards

SAP is a NYSE-listed company and we are therefore subject to certain U.S. laws (including the Sarbanes-Oxley Act of 2002, among others) and to the applicable SEC and NYSE regulations. Besides implementing the requirements of the Sarbanes-Oxley Act, Section 404, and other Sarbanes-Oxley Act requirements, including conducting an annual audit of our internal control over financial reporting, we comply with the corporate governance standards of the NYSE Listed Company Manual, Section 303A, which bind foreign private issuers. The Section 303A standards that apply to SAP include the requirement to have an audit committee composed of members who are independent in the meaning of the Sarbanes-Oxley Act, and related reporting requirements. Erhard Schipporeit, the chairperson of the Audit Committee, is an audit committee financial expert in the meaning of the Sarbanes-Oxley Act.

Annual General Meeting of Shareholders

Our shareholders exercise their rights, such as the rights to put questions to the management and to vote, at the Annual General Meeting of Shareholders. Shareholders and the public are able to watch a live broadcast of the entire Annual General Meeting of Shareholders on the Internet. They can vote their shares at the Meeting or instruct a proxy of their choice or one of the proxies provided for that purpose by SAP. Alternatively, they can participate online or vote by mail. The invitation to the Annual General Meeting of Shareholders includes full details and instructions. Every shareholder can access all of the paperwork on the SAP Web site in good time for the meeting.

Transparency, Communication, and Service for Shareholders

Our shareholders can obtain full and timely information about SAP on our Web site and can access current and historical Company data. Among other information, we post all of our financial reports, all relevant news about the Company's governing bodies and their corporate governance documentation, information requiring ad hoc (current) disclosure, press releases, and news of notifiable directors' dealings.

Financial Accounting, Risk Management, and Internal Control

We prepare the SAP SE financial statements in accordance with the German Commercial Code and our consolidated financial statements in accordance with International Financial Reporting Standards (IFRSs). We prepare a combined management report and a separate combined non-financial report for SAP SE and the

SAP Group as required by the German Commercial Code, and the Form 20-F annual report in accordance with SEC requirements. The Executive Board is responsible for financial accounting. The Supervisory Board approves the SAP SE financial statements, the consolidated financial statements, as well as the combined management report and the separate combined non-financial report. The SAP SE financial statements, the consolidated financial statements, and the combined management report are audited by KPMG AG Wirtschaftsprüfungsgesellschaft, the auditor elected for that purpose by the Annual General Meeting of Shareholders.

In addition to our annual financial statements, we also prepare quarterly statements for all four quarters in accordance with the rules and regulations of the Frankfurt Stock Exchange, as well a half-year financial report on June 30 pursuant to the legal requirements of the German Securities Trading Act. Our quarterly statements and half-year financial report are submitted to the Audit Committee of the Supervisory Board before they are published.

In German stock corporation and commercial law, there are special requirements for internal risk management that apply to SAP. To meet them, our global risk management system supports risk planning, identification, analysis, handling, and minimization. We maintain standard documentation of all our internal control structures, especially those that affect financial reporting, and continually evaluate their effectiveness. As a company listed on the NYSE, we instruct our auditor, KPMG, to conduct an annual audit of our internal control over financial reporting in accordance with the requirements of the U.S. Sarbanes-Oxley Act of 2002, Section 404. The audit as of December 31, 2018, confirmed that our internal control is effective. In compliance with the reporting requirements in the German Commercial Code, Sections 289 (4) and 315 (4), the combined SAP SE and SAP Group management report contains full information about the principal features of the internal controls and risk management structure applying to SAP's consolidated financial reporting.

Report by the Supervisory Board

Dear Shareholders,

In the following, we would like to inform you about the work of the Supervisory Board in the past fiscal year.

Collaboration Between the Supervisory Board and the Executive Board

In 2018, the Supervisory Board advised the Executive Board on an ongoing basis with regard to the management of the Company and kept the Executive Board's global management of the Company under observation and scrutiny for legal compliance, adherence to proper accounting principles, business focus, and efficiency. The Supervisory Board was always directly involved when the Executive Board made any decisions of fundamental importance to SAP.

We regularly received full and timely reports from the Executive Board, both from members in person and in written documents. This ensured that we were always kept up to date on the Company's strategy, planning, business performance, risks, risk management, compliance (in other words, adherence to laws, to the Company's Articles of Incorporation, and to internal policies), and on transactions of special significance for SAP. In its reports, the Executive Board also advised us in particular when business deviated from plan or target, and why. In addition, the Supervisory Board members can use the SAP Digital Boardroom solution to stay abreast of the Company's performance whenever they wish, not just in their meetings. This digital decision and analysis cockpit is an analytical software solution that allows us to call up comprehensive metrics for all business areas in real time and generate evaluations and analyses as required. As such, SAP Digital Boardroom affords the Supervisory Board members an up-to-date view of SAP's business processes, data, and key figures – and maximum transparency.

The content and scope of the Executive Board's reports to us fully met our requirements for them, and the questions raised by

the Supervisory Board were always answered in detail. The Executive Board came to Supervisory Board meetings for discussion of the agenda items. We questioned and probed the Executive Board to satisfy ourselves that the information it gave us was plausible. All transactions requiring approval by the Supervisory Board whether by law, the Articles of Incorporation, or the Supervisory Board's list of transactions requiring its consent were carefully examined and discussed with the Executive Board, focusing on the benefits, potential risks, and other effects of each transaction. The Supervisory Board agreed to all transactions for which its consent was sought by the Executive Board.

The Supervisory Board chairperson and the CEO were in continuous contact, which meant the Supervisory Board chairperson was always informed without delay of all important events that were significant for assessing SAP's situation and progress or for the management and governance of the Company. Moreover, the chairperson of the Supervisory Board met regularly with the CEO to discuss SAP's strategy, planning, business performance, risks, risk management, compliance, and other key topics and decisions. As such, the chairperson of the Supervisory Board was also kept fully informed between meetings of the Supervisory Board and its committees.

Supervisory Board Meetings and Resolutions

In 2018, the Supervisory Board of SAP SE held four ordinary meetings and four extraordinary meetings at which we deliberated and resolved on all matters of relevance to the Company. We also adopted six resolutions by correspondence vote. In the fiscal year, no Supervisory Board member attended only half or less of the meetings of the Supervisory Board and of the committees to which the member belonged. The following table provides an overview of the individual members' attendance at the Supervisory Board's plenary sessions and committee meetings in 2018:

Meeting Participation of SAP Supervisory Board Members During Fiscal Year 2018

Supervisory Board Members	Meetings (incl. Committees)	Meetings (Plenum)	Participation (Plenum)	Meetings (Committees)	Participation (Committees)	Participation in % (all Meetings)
Hasso Plattner	21	8	7	13	11	86%
Pekka Ala-Pietilä	24	8	6	16	14	83%
Panagiotis Bissiritsas	26	8	8	18	17	96%
Martin Duffek	20	8	8	12	12	100%
Aicha Evans	19	8	6	11	8	74%
Anja Feldmann	12	8	7	4	4	92%
Diane Greene (Member as of May 2018)	6	5	3	1	1	67%
Wilhelm Haarmann (Member until May 2018)	10	3	3	7	7	100%

Supervisory Board Members	Meetings (incl. Committees)	Meetings (Plenum)	Participation (Plenum)	Meetings (Committees)	Participation (Committees)	Participation in % (all Meetings)
Andreas Hahn	18	8	8	10	10	100%
Gesche Joost	13	8	8	5	5	100%
Margret Klein-Magar	18	8	8	10	10	100%
Lars Lamade	15	8	8	7	7	100%
Bernard Liautaud	20	8	6	12	11	85%
Christine Regitz	13	8	8	5	5	100%
Friederike Rotsch (Member as of May 2018)	12	5	5	7	7	100%
Erhard Schipporeit	22	8	7	14	14	95%
Robert Schuschnig-Fowler	16	8	8	8	8	100%
Sebastian Sick	21	8	8	13	13	100%
Pierre Thiollet	12	8	8	4	4	100%
Klaus Wucherer (Member until May 2018)	6	3	3	3	2	83%

The Supervisory Board and its committees also convene wholly or partly without the Executive Board as necessary to deliberate on items that pertain to the Executive Board or require internal discussion among Supervisory Board members alone. In 2018, the Executive Board withdrew temporarily from six of the eight plenary sessions and from three of the five meetings of the General and Compensation Committee. In addition, the shareholder representatives and the employee representatives independently discussed individual agenda items as required prior to the adoption of resolutions in plenary sessions. The Supervisory Board addressed the following key topics during the year:

Intelligent Enterprise Strategy and Acquisitions

In the Technology and Strategy Committee meetings and in six meetings of the full Supervisory Board, the Supervisory Board continually discussed with the Executive Board the latter's product strategy aimed at helping SAP customers evolve into "intelligent enterprises" (Intelligent Enterprise strategy). This strategy is based on the conviction that an integrated suite will enable companies and their customers to successfully seize the opportunities of the digital era by means of intelligent applications and platforms. One of the first milestones of the Intelligent Enterprise strategy in 2018 was the acquisition of Callidus Software Inc., a market leader in customer relationship management (CRM) applications. We discussed this acquisition particularly in our extraordinary Supervisory Board meeting on January 29, 2018. We examined all aspects of the acquisition, including the related opportunities and risks, in detail with the Executive Board. We firmly believe the acquisition of Callidus will represent an important addition to SAP's new CRM offering (SAP C/4HANA), and therefore, on the recommendation of the Finance and Investment Committee, approved the acquisition and the financing thereof. In this extraordinary January meeting, we also discussed a number of critical measures to be taken in product development, as well as platform strategy, in connection with this acquisition. The

Executive Board agreed to present all planned strategy measures for realizing the integrated suite to us in detail in our February meeting. Then, on February 21, 2018, the Executive Board presented its planned concept for a new organizational structure. This structure is aimed at standardizing and simplifying the organization, thus forming the operational basis for the intelligent suite, which runs on a joint platform comprising SAP Cloud Platform and SAP HANA Data Management. On April 12, 2018, we examined, as a next step, the Executive Board's detailed plan for the product strategy and its technological implementation. We discussed with the Executive Board its road map for the further development of SAP solutions for the Intelligent Enterprise, particularly the intelligent suite and technologies in the areas of machine learning, artificial intelligence, and the Internet of Things. Experts from across SAP gave us detailed presentations in this regard. In the July 26, 2018, meeting, the Executive Board reported on the strategy's progress. The CEO informed us that the Executive Board's focus in the second half of the year was mainly on the continued development and marketing of the intelligent suite. We reviewed the individual priorities in this regard and asked the Executive Board to keep us up to date at all times. In our plenary session on October 25, 2018, the Executive Board announced its plans for a further key step in its strategy: the acquisition of Qualtrics International Inc., a U.S.-based market leader in Experience Management. The Supervisory Board was subsequently asked to examine and vote on the planned acquisition in an extraordinary meeting on November 11, 2018. In that meeting, the Finance and Investment Committee reported on the meeting it had held immediately beforehand to examine and discuss the acquisition. We then looked in depth at the different aspects of the acquisition, the associated opportunities and risks, and the valuation of Qualtrics. We also examined the fairness opinions of a U.S. bank and an international accounting firm on the appropriateness of the purchase price. Following consideration and

review of all aspects, the Supervisory Board voted in favor of the acquisition of Qualtrics and the associated financing measures.

Expansion of the Executive Board and Reassignment of Portfolios

In our April meeting, we resolved to extend Stefan Ries' appointment to the Executive Board to the end of March 2024.

One of our goals in 2018 was to make the Executive Board more effective for the tasks ahead and to clarify Executive Board succession planning at an early stage. We therefore introduced further changes to the Executive Board in our meeting on October 25, 2018: we appointed SAP's Chief Innovation Officer Jürgen Müller to the Executive Board effective January 1, 2019. Since his appointment, Jürgen Müller has been responsible for the Technology & Innovation Board area, pursuant to the Executive Board's revised portfolio concept. Simultaneously, Bernd Leukert took over the SAP Digital Business Services division effective January 1, 2019, in a co-lead capacity together with Michael Kleinemeier. We also discussed with the Executive Board a further change in portfolio assignments: Christian Klein, who had been responsible for global business processes since January 2018, would additionally be in charge of SAP S/4HANA as well as the global development and delivery of SAP's core applications as of January 2019. The General and Compensation Committee and the Supervisory Board discussed the preparation of the Executive Board appointment contract for Jürgen Müller and the required changes to the Executive Board appointment contract of Christian Klein in the respective October meetings and subsequently approved both measures by circular correspondence vote in November 2018. We resolved each of the above resolutions on the recommendation of the General and Compensation Committee, which had extensively prepared these topics for us. We believe that by adopting these changes, the Executive Board is well positioned for the challenges ahead.

Other key topics addressed at our meetings in 2018 notably included the following:

Meeting in February (Meeting to Discuss the Financial Statements)

At our ordinary Supervisory Board meeting on February 21, 2018, we discussed Executive Board compensation for 2017. Exercising our discretionary powers under the terms of the short-term incentive (STI) 2017, we first determined performance against the defined target for the STI. We then decided on the total target achievement and the payouts for the individual Executive Board members under the STI 2017. We also deliberated on Executive Board compensation for 2018 at the February meeting. We defined the key performance indicators (KPIs) for the STI 2018 and set the target numbers for each KPI and their relative weightings. Prior to this, the Supervisory Board had, on recommendation of the General and Compensation Committee, resolved to remove the discretionary element from the STI 2018, which had long been a sore point among investors. In return, we resolved to increase the weighting of the individual KPIs to varying extents. This move served to further enhance the transparency of the Executive Board compensation system, which was again presented to the Annual General Meeting of Shareholders on

May 17, 2018, for approval. In addition, we resolved the individual allocation amounts for the 2018 tranche of the Long-Term Incentive (LTI) Plan 2016, and the basis of the allocation of the 2019 tranche. For more information about the LTI Plan 2016 and the other elements of the compensation package for Executive Board members, see the *Compensation Report*. The Supervisory Board, as required, evaluated the appropriateness of the Executive Board members' compensation, and in each case found it to be appropriate in terms of amount, structure, objective criteria, and for each member's responsibilities and tasks. We referred in this regard to an appropriateness certificate obtained from Ernst & Young GmbH. We then discussed the results of the 2017 employee survey and the Company's 2017 financial results with the Executive Board. In addition, the Supervisory Board turned its attention to the SAP SE financial statements and the consolidated financial statements for 2017, the audits conducted by KPMG AG Wirtschaftsprüfungsgesellschaft (KPMG), and the Executive Board's proposed resolution on the appropriation of retained earnings for 2017. The auditor attended the meeting and reported in detail on the audit and its findings for each of the focus areas that had been agreed between the auditor and the Audit Committee. The auditor also related the discussions on those matters at the preceding meetings of the Audit Committee. The auditor then discussed the results of the audit with the Supervisory Board and answered our questions. The Audit Committee comprehensively prepared all topics in connection with the financial statements and the consolidated financial statements for 2017, and in particular reported on the form and scope of its examination of the documents relating to the financial statements, which it recommended we approve. The Supervisory Board approved the audit. There were no findings from our own examination, so we gave our consent to the SAP SE and consolidated financial statements for 2017. We checked and endorsed the Executive Board's proposal to appropriate retained earnings in accordance with the Audit Committee's recommendation. We then discussed in detail the annual budget for 2018 as presented to us by the Executive Board, and approved same. In addition, we decided on the (further) resolutions we would propose for the agenda of the May 2018 Annual General Meeting of Shareholders, particularly our recommendation to the Annual General Meeting of Shareholders concerning the auditor to elect for 2018, which followed the recommendation of the Audit Committee to us. We were also informed about SAP's donation activities. Thereafter, we discussed corporate governance matters and the update to SAP's annual declaration of implementation. This update was necessary because SAP's last two deviations from the German Corporate Governance Code (the "Code") were settled at the start of the fiscal year, meaning SAP complied with all recommendations in the Code since February 2018.

Meeting in April

In the plenary session on April 12, 2018, an analyst from Citibank gave a presentation on how analysts viewed SAP and the software market. Attendees discussed, among other things, SAP's current valuation compared to its peers and SAP's transformation to the cloud. We also resolved to adjust Executive Board compensation for acquisition effects from the Callidus acquisition, which had closed sooner than expected. In addition, the Executive Board gave

us an overview of the first-quarter results for 2018 and SAP's performance vis-à-vis its main competitors.

Extraordinary Meeting in May

The Supervisory Board held an extraordinary meeting immediately following the Annual General Meeting of Shareholders on May 17, 2018, to welcome the newly elected members and to decide membership on its committees.

Meeting in July

When the Supervisory Board met on July 26, 2018, we deliberated on the future terms and structure of Executive Board compensation. In addition, we looked at the investment activities of the SAP-financed venture capital funds, Sapphire Ventures. On recommendation from the Finance and Investment Committee, we approved the financing of two new Sapphire Ventures funds in the total amount of US\$1.3 billion. Next, we discussed and approved the directors' and officers' (D&O) group liability insurance policies that we take out from year to year which, besides the statutory deductible, notably included an increase in the insurance coverage. We also reviewed and updated the list of transactions and business management measures for which the Executive Board must obtain the Supervisory Board's consent. The Executive Board then gave us an account of business in the second quarter of 2018 and performance in the first half-year. Referring to the Executive Board's reports, we discussed with the Executive Board our conclusions from the figures and the resulting measures.

Meeting in October

At our meeting in October, the Executive Board reported on business performance in the third quarter. In addition, we discussed the appointment of new members to the committees as of January 2019, and, in agreement with the Executive Board, adopted for regular publication in October 2018 the annual declaration of implementation of the Code, which states that SAP has been following all Code recommendations since February 2018. The Supervisory Board also assessed the independence of its members at regular intervals pursuant to Code specifications, using benchmarks we had set at our own discretion. We ascertained that the Supervisory Board has a sufficient number of independent members and, in accordance with the Code provisions, identified those shareholder representatives whom the Supervisory Board deems independent; these representatives are named in the *Corporate Governance Report*. In 2018, we also reviewed the efficiency of the work of the full Supervisory Board and its committees, as is regularly required pursuant to the recommendations of the Code: In this regard, we first sent an electronic survey to all the Supervisory Board members ahead of the meeting with questions addressing all aspects of our work. After evaluating the questionnaire, we discussed the survey responses and comments in the plenum, taking some of these as an opportunity to talk about improvements to Supervisory Board processes and meeting topics. Ultimately, we came to the conclusion that, on the whole, our work was efficient. Also in the October meeting, the Executive Board explained its strategy for the Cloud ERP and SAP Digital Business Services areas, reported on progress on the process side including cloud infrastructure, and updated us on matters related to cybersecurity and the mechanisms established by SAP in this area.

The Work of the Supervisory Board Committees

The committees made a key contribution to the work of the Supervisory Board in 2018 and reported on their work to us, including their preparatory work for and decisions made on the relevant agenda items of the subsequent Supervisory Board meetings. In connection with the retirement of Wilhelm Haarmann and Klaus Wucherer from the Supervisory Board at the conclusion of the Annual General Meeting of Shareholders, and the election of Aicha Evans, Diane Greene, and Friederike Rotsch to the Supervisory Board by the Annual General Meeting of Shareholders on May 17, 2018, we resolved a number of changes to the composition of the committees that same day. The following committees were in place in 2018, composed as follows:

- **General and Compensation Committee:** Hasso Plattner (chairperson), Pekka Ala-Pietilä (from May 17, 2018), Aicha Evans, Wilhelm Haarmann (until May 17, 2018), Andreas Hahn, Margret Klein-Magar, Lars Lamade, Bernard Liautaud, Sebastian Sick
- **Audit Committee:** Erhard Schipporeit (chairperson), Panagiotis Bissiritsas, Martin Duffek, Friederike Rotsch (from May 17, 2018), Klaus Wucherer (until May 17, 2018)
- **Finance and Investment Committee:** Wilhelm Haarmann (chairperson) (until May 17, 2018), Pekka Ala-Pietilä, Panagiotis Bissiritsas, Friederike Rotsch (from May 17, 2018), Erhard Schipporeit (until May 17, 2018), Robert Schuschnig-Fowler, Sebastian Sick
- **Technology and Strategy Committee:** Hasso Plattner (chairperson), Christine Regitz (deputy chairperson), Pekka Ala-Pietilä, Panagiotis Bissiritsas, Martin Duffek, Aicha Evans, Anja Feldmann (until September 30, 2018), Diane Greene (from October 1, 2018), Andreas Hahn, Gesche Joost, Margret Klein-Magar, Bernard Liautaud, Pierre Thiollet
- **People and Organization Committee:** Hasso Plattner (chairperson), Martin Duffek, Aicha Evans (from May 17, 2018), Anja Feldmann, Wilhelm Haarmann (until May 17, 2018), Gesche Joost, Lars Lamade, Christine Regitz, Robert Schuschnig-Fowler
- **Nomination Committee:** Hasso Plattner (chairperson), Pekka Ala-Pietilä, Bernard Liautaud
- **Special Committee:** Hasso Plattner (chairperson), Pekka Ala-Pietilä, Wilhelm Haarmann (until May 17, 2018), Lars Lamade, Friederike Rotsch (from May 17, 2018), Erhard Schipporeit, Sebastian Sick

Each of the committees was active in 2018 except the Special Committee. For more information about the Supervisory Board committees and their duties, see SAP's corporate governance statement pursuant to the German Commercial Code, sections 315d and 289f, published on the SAP public Web site at www.sap.com/investor.

In 2018, the committees primarily focused on the following topics:

- The General and Compensation Committee held six regular meetings and one extraordinary meeting in 2018; outside these meetings it passed two resolutions by correspondence. In particular, the Committee extensively prepared and discussed

in advance the deliberations of the Supervisory Board and its resolutions on Executive Board compensation and on the human resources (HR) decisions described above. The Committee members addressed compensation matters especially in the January and February meetings. The Committee also dealt with general questions concerning Executive Board compensation in its July meeting and, in its regular October meeting, discussed the expected changes to the recommendations on Executive Board compensation in connection with the forthcoming revision of the Code. In its meeting on April 11, 2018, the Committee prepared the Supervisory Board's resolution to extend Stefan Ries' appointment to the Executive Board to the end of March 2024. When it met in July, the Committee explored general questions regarding the term of Executive Board appointments and the succession planning concept for the Executive Board. The Supervisory Board's decisions with respect to the submission of the declaration of implementation of the Code and ascertaining the independence of Supervisory Board members were prepared in October. In addition, the Committee undertook to follow up on the suggestions for improvement derived from the efficiency review of the Supervisory Board's work. In the fiscal year ended, the Committee also approved the acceptance of two outside supervisory board seats by an Executive Board member.

- The **Audit Committee** held six physical meetings – two of which jointly with the Finance and Investment Committee – and five telephone conference meetings in 2018. At these meetings, the Committee deliberated on the course of business over the quarter concerned, the accounting processes, the preparation of quarterly financial reports, and the quarterly reports to be published. Other regular meeting topics included SAP's risk management system, internal control system, and compliance system. The Committee dealt with current compliance issues at numerous meetings in the reporting year. Together with members of SAP's compliance department, it discussed the existing compliance cases, the status of the respective internal SAP investigations, SAP's case-related collaboration with authorities, and measures to further strengthen SAP's compliance system. During its physical meeting in February, the Committee focused on the financial accounts of SAP SE and the Group for 2017, and prepared the Supervisory Board's recommendations to the Annual General Meeting of Shareholders concerning the election of an auditor and the appropriation of retained earnings. The decision on the recommendation regarding the election of the auditor was preceded by a review of the auditor's independence and qualifications. In addition, the internal audit department reported on the fiscal year 2017, the department's organization and processes, and its audit plan for 2018. At mid-year, the internal audit department informed the Committee about its audit findings to date as well as its plans for the second half of 2018 and the first half of 2019. When the Committee met in April, it reviewed SAP's data protection measures and came to the conclusion that the global initiative for implementing the General Data Protection Regulation (GDPR), which came into force in May 2018, was making good progress. Increasing cybersecurity threats in our business environment worldwide have made the IT security environment much more complex.

Therefore, the Committee turned its attention in the second half of the year to the resulting changes to its risk assessment for this area, and had SAP's IT security officer apprise it of additional security measures. In the second half of 2018, the Executive Board also informed the Committee about planned structural changes to the consolidated financial statements, about the pending audit of the consolidated financial statements and the combined management report by the German Financial Reporting Enforcement Panel (*Deutsche Prüfstelle für Rechnungslegung*), and about SAP's measures in response to the U.S. tax reform. The auditor attended all physical meetings and telephone conference meetings of the Audit Committee and reported in depth on its audit work and on its quarterly reviews of selected software agreements. The Committee discussed the audit focus with the auditor in July, and the audit fees with the auditor in October. As reported in more detail below, the Committee also held two joint meetings with the Finance and Investment Committee in February and December to discuss the Group annual plan for 2018 and the preliminary budget for 2019.

- The **Finance and Investment Committee** held five ordinary meetings and two extraordinary physical meetings in 2018. Two of its ordinary meetings were joint meetings with the Audit Committee. The focus of the Committee's extraordinary meeting in January was the acquisition of Callidus Software Inc., which, after extensively examining all acquisition-related aspects, it recommended the Supervisory Board approve. When the Committee met in February, it concerned itself with SAP's participation in a joint venture to develop software for the energy industry, received an overview of the Company's results and growth in 2018, and was updated on SAP's January 2018 acquisition of Recast.AI, a French startup. This company developed a platform for text-based dialog systems that enables users to chat with technical systems ("chatbots"). In addition, representatives from Sapphire Ventures presented detailed information about the European and U.S. market for venture capital in technology and a status report on the four active SAP venture capital funds. In the joint meeting with the Audit Committee that followed, Committee members discussed the annual plan for 2018 and voted in favor of recommending its approval to the Supervisory Board. In April, the Executive Board gave the Committee an overview of various investor relations activities. In July, the Committee was informed about the Company's acquisition of Coresystems FSM AG, the developer of a leading platform for field service management. The Committee also recommended that the Supervisory Board approve the financing of two new Sapphire Ventures funds in the total amount of US\$1.3 billion as had been presented beforehand. At its extraordinary meeting in November, held immediately prior to the Supervisory Board's plenary session, the Committee examined the planned acquisition of U.S.-based Qualtrics International Inc. The focus of the joint meeting with the Audit Committee in December was the presentation of, and discussion on, the preliminary Group annual plan for 2019. This meeting was held in preparation for the Supervisory Board meeting in February 2019, at which the full Supervisory Board resolved to approve the 2019 Group annual plan.
- The **Technology and Strategy Committee** met four times in 2018. It discussed key technology trends in the software

industry in the years to come and SAP's corporate and product strategies. In February, the Executive Board informed the Committee about SAP Data Hub, a cloud solution that automates and coordinates data flows in complex landscapes, and about the Company's CRM strategy. When it met in April, the Committee was updated by the Executive Board on the SAP Cloud Platform strategy as well as on SAP's strategy with respect to blockchain technology. In July, the Committee and the Executive Board discussed the intelligent suite and how this flexible, integrated solution with additional functions for machine learning capabilities can best support customers in their business processes. At the October meeting, the Executive Board apprised the Committee of current developments in SAP S/4HANA Cloud and SAP C/4HANA.

- The **People and Organization Committee** held one meeting in 2018. This meeting took place in December 2018, with key topics being China as a growth market, the current challenges there, the talent situation inside and outside SAP, and the various business areas in China. In addition, the Committee inquired about SAP's talent acquisition system, focusing particularly on SAP's data-driven recruiting processes.
- The **Nomination Committee** is composed exclusively of shareholder representatives. It met three times in 2018, but members discussed succession planning for the Executive Board outside of these meetings as well. Looking ahead to the 2018 Annual General Meeting of Shareholders, the Committee met in January to deliberate on suitable successors for Wilhelm Haarmann, Klaus Wucherer, and Anja Feldmann, who had all announced their intention to retire from the Supervisory Board. Following personal interviews with potential candidates, the Committee members identified three suitable successors: Friederike Rotsch, Diane Greene, and Gerhard Oswald. Friederike Rotsch has a proven track record as a legal and corporate governance expert. Diane Greene is an outstanding IT expert from the United States whose many years of experience in the cloud domain will greatly benefit the Supervisory Board's deliberations in this key field for SAP. As a former member of the Executive Board, Gerhard Oswald knows SAP, its business, and its customers like no other, and as such can contribute significantly to the Supervisory Board's work going forward. The Committee held two further meetings in October and December to deliberate on the subject of succession planning for the Executive Board, and in particular, to find a candidate for the vital position of financial expert on the Supervisory Board, since Erhard Schipporeit would not be standing for reelection in the regular Supervisory Board elections in 2019. The Committee members are convinced that Gunnar Wiedenfels is a worthy and suitable candidate. As the former chief financial officer (CFO) of a then DAX-listed company, and as current CFO of a company that is listed on a U.S. stock exchange, he fulfills all of SAP's requirements for the position and thus for being proposed – upon approval by the Supervisory Board – for election at the Annual General Meeting in 2019. In the Nomination Committee's opinion, all the selected candidates are perfect fits for augmenting expertise and diversity on the Supervisory Board.

Regular reports from the committees ensured that the Supervisory Board was kept fully informed of all matters covered by the committees and were able to discuss them thoroughly.

Corporate Governance

SAP's corporate governance and insider trading compliance officer monitored our compliance with those recommendations in the Code with which we claim to comply in SAP SE's declaration, and reported in full to the General and Compensation Committee. For more information about compliance with the Code, see the [Corporate Governance Report](#) from the Executive Board and Supervisory Board. Members of the Executive Board and of the Supervisory Board had no conflicts of interest that were required to be disclosed to the Supervisory Board pursuant to sections 4.3.3 and 5.5.2 of the Code. Some Supervisory Board members currently have business dealings with SAP or hold senior positions or material equity in companies that currently have business dealings with SAP, or had done so in the course of the year. SAP's business dealings with these persons or companies are at arm's length. In the Supervisory Board's view, especially given the limited scope and materiality of those dealings, they did not affect the independence of the Supervisory Board members concerned and do not give rise to any substantial and not merely temporary conflict of interest in the meaning of the Code. In its April meeting, the Supervisory Board confirmed the instruction of a law firm, in which a Supervisory Board member was a partner at the time, for legal and tax advice in connection with two court proceedings against the (German) tax authorities. Confirmation of the original engagement approved by the Supervisory Board in 2012 was necessary because the member had left the law firm to which it related to become partner in another firm, where the engagement was to continue. The member concerned did not take part in the deliberations or voting on the matter. There were a number of transactions involving members of the Executive Board in 2017 that were all consistent with industry standards and immaterial. These transactions were approved by the General and Compensation Committee during the year under review. The Company made no other contracts with members of the Executive Board or Supervisory Board that would have required a resolution of the Supervisory Board.

The Supervisory Board closely examined the Executive Board's corporate governance statement. We approved the statement with the combined SAP SE and SAP Group management report.

SAP SE and Consolidated Financial Reports for 2018

KPMG audited the SAP SE and consolidated financial reports for 2018. The Annual General Meeting of Shareholders elected KPMG as the SAP SE and SAP Group auditor on May 17, 2018. The Supervisory Board proposed the appointment of KPMG on the recommendation of the Audit Committee. Before proposing KPMG to the Annual General Meeting of Shareholders as auditor for the year, the chairperson of the Supervisory Board and the Audit Committee obtained confirmation from KPMG that circumstances did not exist that might prejudice or raise any doubt concerning its independence as the Company's auditor. In that connection, KPMG informed us of the volume of the services that were not part of the audit which it had either provided to the Group in the past year or was engaged to provide in the year to come. The Supervisory Board has agreed with KPMG that the auditor should report to the Supervisory Board and record in the auditor's report any fact found during the audit that is inconsistent with the declaration given by

the Executive Board and the Supervisory Board concerning implementation of the Code. KPMG examined the SAP SE financial statements prepared in accordance with the German Commercial Code, the consolidated financial statements prepared in accordance with International Financial Reporting Standards (IFRSs) as required by the German Commercial Code, section 315e, and the combined SAP Group and SAP SE management report prepared in accordance with the German Commercial Code, and certified them without qualification. The auditor thus confirmed that, in its opinion and based on its audit in accordance with the applicable accounting principles, the SAP SE and consolidated financial statements give a true and fair view of the net assets, financial position, and results of operations of SAP SE and the SAP Group. The auditor also confirmed that the combined SAP SE and SAP Group management report is consistent with the corresponding financial statements and as a whole gives a suitable view of the position of SAP SE and the SAP Group and of foreseeable opportunities and risks. KPMG had completed its audit of SAP's internal control over financial reporting and certified without qualification that it complies with the applicable U.S. standards. The auditor stated in its opinion that it considers SAP's internal controls with respect to the consolidated financial statements to be effective in all material respects. All Audit Committee and Supervisory Board members received – initially in the form of drafts that were identical to the final documents – the documents concerning the financial statements mentioned above, the audit reports prepared by KPMG, and the Executive Board's proposal concerning the appropriation of retained earnings in good time.

On February 20, 2019, the Executive Board prepared the financial accounts of SAP SE and the Group for 2018, comprising the SAP SE financial statements, the consolidated financial statements, and the combined management report, as well as the combined non-financial report and submitted them without delay to the Supervisory Board.

The Executive Board explained the financial statements of SAP SE and the SAP Group and its proposal concerning the appropriation of retained earnings at the meeting of the Audit Committee on February 19, 2019 (based on the drafts identical to the final documents) and at the meeting of the Supervisory Board on February 20, 2019. Members of the Executive Board answered questions from the Audit Committee and the Supervisory Board. At the Audit Committee meeting, they also explained the Annual Report on Form 20-F prepared in accordance with the applicable U.S. standards.

After the Executive Board had explained them, the Audit Committee and the Supervisory Board reviewed the financial statement documents along with the combined non-financial report, taking KPMG's audit reports (or the drafts identical to the final documents) into account. The representatives of the auditor who attended presented full reports on the audit and the results of the audit to the Audit Committee and Supervisory Board meetings and explained its audit reports (or final drafts thereof). The auditor also reported that it had not identified any material weaknesses in SAP's internal control and risk management systems for financial reporting. Both the Audit Committee and the Supervisory Board asked detailed questions about the form, scope, and results of the audit. The Audit Committee reported to the Supervisory Board on its own review of the financial statements of SAP SE and the SAP

Group, its discussions with the Executive Board and with the auditor, and its supervision of the financial reporting process. It confirmed that as part of its supervisory work, it had addressed the SAP Group's internal control, risk management, and internal auditing systems, and found the systems to be effective.

The Committee also reported that KPMG had told it that no circumstances had arisen that might give cause for concern about KPMG's impartiality, and informed us about the services KPMG had provided that were not part of the audit. The Committee reported that it had examined the auditor's independence, taking the non-audit services it had rendered into consideration, and stated that in the Committee's opinion the auditor possessed the required degree of independence and expertise.

The Audit Committee and the Supervisory Board satisfied themselves that KPMG had conducted the audit properly. In particular, they concluded that both the audit reports and the audit itself fulfilled the legal requirements. On the basis of the report and the Audit Committee's recommendation, the Supervisory Board approved the audit and, since there were no findings from our own examination, we gave consent to the SAP SE financial statements, the consolidated financial statements, and the combined management report (including the Executive Board's corporate governance statement pursuant to the German Commercial Code, sections 315d and 289f), as well as the combined non-financial report pursuant to the German Commercial Code, sections 315b and 289b. The financial statements and combined management report were thus formally adopted upon approval by the Supervisory Board. The Supervisory Board's opinion of the Company and the Group coincided with that of the Executive Board as set out in the combined management report. The Supervisory Board considered the proposal presented by the Executive Board concerning the appropriation of retained earnings especially with regard to the requirements of dividends policy, the effects on the liquidity of SAP SE and the Group, and the interests of the shareholders. We also discussed these matters with the auditor. We then endorsed the Executive Board's proposal concerning the appropriation of retained earnings, in accordance with the Audit Committee's recommendation. Finally, we approved this present report.

Changes on the Supervisory and Executive Boards

Wilhelm Haarmann and Klaus Wucherer resigned their seats on the Supervisory Board with effect from the conclusion of the Annual General Meeting of Shareholders on May 17, 2018. Anja Feldmann stepped down from the Supervisory Board effective December 31, 2018. To that end, the Annual General Meeting of Shareholders elected Diane Greene and Friederike Rotsch to the Supervisory Board with effect from the conclusion of the Annual General Meeting of Shareholders on May 17, 2018, and Gerhard Oswald to the Supervisory Board effective January 1, 2019. Aicha Evans was likewise elected to the Supervisory Board with effect from the conclusion of the Annual General Meeting of Shareholders on May 17, 2018. She had initially been appointed a Supervisory Board member by Mannheim municipal court on June 21, 2017, as a replacement for Jim Hagemann Snabe who had resigned, but only for a term ending at the conclusion of the Annual General Meeting of Shareholders in 2018.

Christian Klein was appointed to the Executive Board as of January 1, 2018, as Chief Operating Officer (COO). Jürgen Müller has been an Executive Board member since January 1, 2019, and is responsible for the Technology & Innovation Board area. Bernd Leukert left the Executive Board effective February 20, 2019.

The Supervisory Board would like to sincerely thank Bernd Leukert, Wilhelm Haarmann, Klaus Wucherer, and Anja Feldmann for their invaluable contribution to the success of the Company.

The Supervisory Board also thanks the Executive Board, the managing directors of the Group companies, and all SAP employees for their great commitment and dedication in 2018.

For the Supervisory Board

Professor Hasso Plattner
(Chairperson)

Compensation Report

Note: This compensation report is part of the audited management report.

Compensation for Executive and Supervisory Board Members

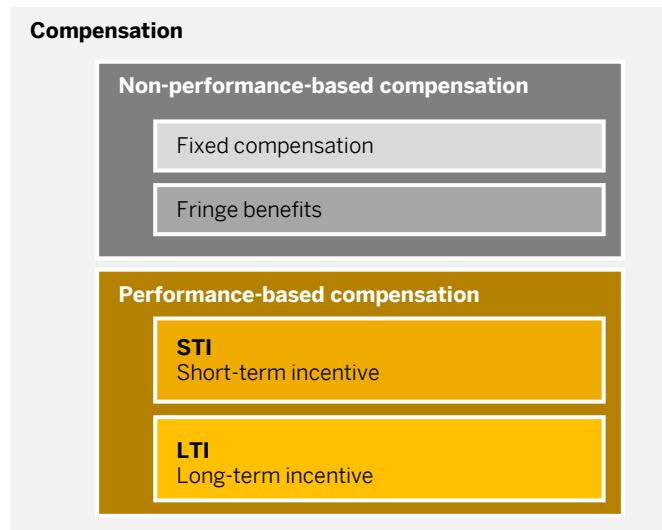
This compensation report describes the compensation system, outlines the criteria that apply to the compensation for Executive Board and Supervisory Board members for the year 2018, and discloses the amount of compensation.

Compensation for Executive Board Members

Compensation System for 2018

The compensation for Executive Board members is intended to reflect the demanding role of Executive Board members leading a global company in a quickly evolving sector. The compensation level is aimed to be competitive to support SAP in the worldwide market for highly skilled executives, especially in the context of the software industry. It is our goal that our Executive Board compensation provides sustainable incentive for committed, successful work in a dynamic business environment.

The Supervisory Board – supported by its General and Compensation Committee – determines the compensation for each Executive Board member based on their individual role and performance in its first regular meeting of each fiscal year. For more information about the work of the Supervisory Board and its committees, see the *Report by the Supervisory Board*. As pictured below, the compensation contains performance-based elements and non-performance-based elements:



The amount of performance-based compensation depends primarily on SAP's performance against predefined financial target

values (Key Performance Indicators, KPIs) and on the SAP share price, and is subject to hurdles and caps. These KPIs and their target values as well as their weighting are set by the Supervisory Board each plan year and are aligned to the SAP budget for that year.

The Supervisory Board sets the individual total target compensation for each Executive Board member, comprised of the fixed compensation element and the two performance-based elements. This target compensation is benchmarked based on SAP's global strategy, market position, business performance and future prospects of economy, and the compensation paid at comparable national and international companies. The Supervisory Board also considers the compensation systems applicable for the rest of the Company, comparing Executive Board pay with the pay of SAP executives and non-executive SAP employees. The performance-based elements each correspond to a target achievement of 100% of all KPIs. The Supervisory Board reviews, assesses, and if appropriate, revises these compensation targets, in its first meeting of each fiscal year (February 21, 2018, for 2018). The Supervisory Board is of the opinion that this approach ensures that the compensation is appropriate.

The compensation system is designed to support the growth in value for the Company over the long term. The long-term incentive element therefore has significant weighting, making up more than two-thirds of the CEO's compensation target, and more than 50% of each Executive Board member's compensation target.

In the case of any extraordinary, unforeseeable events, the Supervisory Board is entitled, at its reasonable discretion, to adjust the performance-based compensation before payout upwards or downwards in the interest of SAP. No corrections to the payout amounts paid in May 2018 were made.

The individual elements of SAP's Executive Board compensation are described in more detail below.

Non-Performance-Based Compensation

Fixed Compensation

The fixed compensation is paid monthly in 12 equal installments in the Executive Board member's home currency¹⁾.

Fringe Benefits

The contractually guaranteed fringe benefits mainly comprise additional benefits such as insurance contributions, benefits in kind, expenses for maintenance of two households, use of aircraft, and tax gross-ups according to local conditions.

¹⁾ Home currency is the currency of the Executive Board member's primary place of residence.

Performance-Based Compensation

Short-Term Incentive

Financial targets (KPIs 2018)

100%

- 40% New cloud bookings**
(at constant currency)
- 35% Cloud and software revenue growth**
(non-IFRS, at constant currency)
- 25% Operating margin increase**
(non-IFRS, at constant currency)

Target achievement

0% if weighted achievement is below a 75% hurdle



STI compensation

STI target achievement (%) x STI target amount (€)

The short-term, one-year performance-based compensation (Short-Term Incentive (STI)) is determined based on a set of financial targets (KPIs).

For the STI 2018, the financial KPIs are: Constant currency new cloud bookings in 2018, year-over-year growth in non-IFRS constant currency cloud and software revenue in 2018, and non-IFRS constant currency operating margin in 2018. The KPIs and their respective target values are derived from SAP's budget for that year. For more information about financial KPIs, see the [Performance Management System](#) section.

If the weighted target achievement for the financial KPIs is below 75%, there is no STI payout for the financial KPIs. In this case, the target achievement for these KPIs is set to zero.

On February 20, 2019, the Supervisory Board assessed SAP's performance against the agreed targets and determined the amount of the STI 2018 for the entire Executive Board. This resulted in a target achievement of 93.0% (cloud and software revenue growth of 125.8%, operating margin increase of 92.2%, and new cloud bookings of 64.9%).

The STI compensation for 2018 will be paid out after the Annual General Meeting of Shareholders in May 2019. It is paid in the Executive Board member's home currency¹⁾. All Executive Board members are obliged to purchase SAP shares worth at least 5% of the actual payout amount according to appropriate trading period regulations. These shares are subject to a three-year holding period.

Long-Term Incentive

The purpose of the long-term, multi-year performance-based compensation (Long-Term Incentive, LTI) is to reward the annual achievement of the non-IFRS constant currency operating profit, to ensure long-term retention of our Executive Board members

("Retention"), and to reward them for a long-term SAP share price performance ("Performance") as compared to its main peer group (Peer Group).

The LTI 2016 plan came into effect on January 1, 2016. It is a virtual share program with a term of four years per tranche.

Under the plan, a new LTI tranche is granted annually. Each grant starts with determining a grant amount in euros. This grant amount is based on the Executive Board members' contractual LTI target amount and the operating profit target achievement (non-IFRS, at constant currency) for the previous year. Taking this target achievement into account, the grant amount can be adjusted upwards or downwards in the range of 80% to 120% of the contractual LTI target amount. The 2017 operating profit target achievement was 95.4%. Considering this, the Supervisory Board set the grant amount of the 2018 tranche at 95.4% of the contractual LTI target amount.

This grant amount is converted into virtual shares (Share Units), so that Executive Board members participate in further share price developments. The grant price is the arithmetic mean of the XETRA closing prices of SAP stock on the 20 trading days following publication of SAP's fourth-quarter results. The grant date of the 2018 tranche was February 21, 2018.

All Share Units granted in this way, comprising 60% Performance Share Units (PSUs) and 40% Retention Share Units (RSUs), have a vesting period of approximately four years, during which the Executive Board member must actively contribute to the Company's operations. The value of the Share Units varies positively and negatively with the performance of SAP's share price. At the end of the vesting period, the corresponding Share Units are non-forfeitable.

¹⁾ Home currency is the currency of the Executive Board member's primary place of residence.

LTI Grant Process

Supervisory Board determines grant amount for current financial year, based on operating profit target achievement (non-IFRS, at constant currency) set for the previous year,

80% to 120%

of the target amount set in the Executive Board member's contract

**Grant amount is converted
into PSUs and RSUs**

resulting in

60% PSUs
**Performance Share
Units**

PSU calculation

40%
RSUs
**Retention
Share Units**

Payout after four years

Final number of PSUs and RSUs x payout price (€)
Cap of payout price = 300% of grant price

The payout price used for the settlement is the simple arithmetic mean of the XETRA closing prices of SAP stock on the 20 trading days following the publication of SAP's fourth-quarter results subsequent to the end of the vesting period. The payout price is capped at 300% of the grant price. The LTI tranche is paid in euros after the Annual General Shareholders' Meeting of the corresponding year. Any potential foreign currency exchange rate risk is borne by the Executive Board members themselves.

The number of Share Units that will finally result in payments to the Executive Board members can and will likely differ from the number originally granted. The number of PSUs ultimately paid out changes depending on the performance of the SAP share relative to the Peer Group Index at the end of the vesting period. This places more weight on SAP's performance within the industry. In contrast, the final number of RSUs is fixed. However, both types of Share Units may expire during the entire term of a tranche under certain conditions (see the "LTI Forfeiture Rules" graphic below).

PSU Calculation

60% PSUs
Originally granted

**SAP share price performance relative
to Peer Group Index performance**

100% = same performance of SAP share price and Peer Group Index

**Peer Group Index
performs better
than SAP share
price**

decreased by percentage
points of outperformance of
Peer Group Index

hurdle at 50% decrease

**SAP share price
performs better
than Peer Group
Index**

increased by percentage
points of outperformance.
If payout price is higher than
grant price, percentage
points are doubled

cap at 50% increase

resulting in a
Performance factor



Final number of PSUs

Originally granted number x performance factor (%)

SAP's share price performance is measured by comparing the grant price against the payout price. We calculate the difference between SAP's share price performance and the Peer Group Index performance. In case of an increased SAP share price and an outperformance against the Peer Group Index, the calculated difference is doubled to reward positive performance. The following examples of the PSU calculation illustrate possible outcomes assuming 1,000 PSUs granted:

SAP share price performs better than Peer Group Index

SAP share price performance	+18%	
Peer Group Index performance	+10%	
Difference	+18% – (+10%)	+8%
Performance factor with doubled difference	(+8% x 2) + 100%	116%
Final number of PSUs	116% x 1,000	1,160

SAP share price performs much higher than Peer Group Index; cap is triggered

SAP share price performance	+30%	
Peer Group Index performance	-5%	
Difference	+30% – (-5%)	+35%
Performance factor with doubled difference	(+35% x 2) + 100%	170%
	Capped at	150%
Final number of PSUs	150% x 1,000	1,500

Peer Group Index performs better than SAP share price

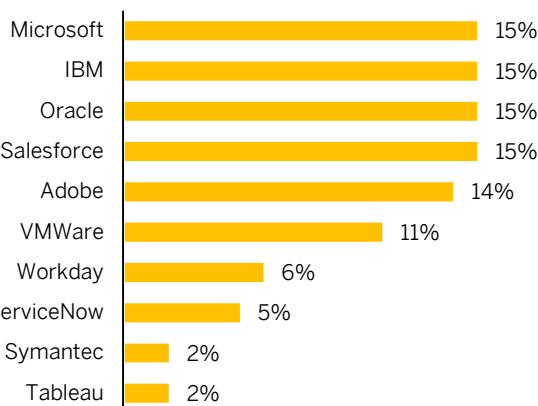
SAP share price performance	+5%	
Peer Group Index performance	+10%	
Difference	+5% – (+10%)	-5%
Performance factor	-5% + 100%	95%
Final number of PSUs	95% x 1,000	950

Peer Group Index performs better than SAP share price; low hurdle triggered

SAP share price performance	-10%	
Peer Group Index performance	+50%	
Difference	-10% – (+50%)	-60%
Performance factor	-60% + 100%	40%
	Hurdle is 50%	0%
Final number of PSUs	0% x 1,000	0

The Peer Group Index currently includes the following major international competitors of SAP: Microsoft, IBM, Oracle, Salesforce, Adobe, VMWare, Workday, ServiceNow, Symantec, and Tableau. The Supervisory Board has defined this group based on internal and external recommendations and, if necessary, adjusts the group, for example, in case of a competitor's delisting. The Peer Group Index is calculated as a price index based on weighted market capitalization. Each Peer Group competitor is applied at a maximum of 15%. Consequently, the weight of smaller, more volatile competitors is increased in relation to their size, resulting in a highly ambitious index. The index is calculated daily by Deutsche Börse Group and can be tracked under ISIN DE000A2BLEB9.

Composition and Weighting of Peer Group Index

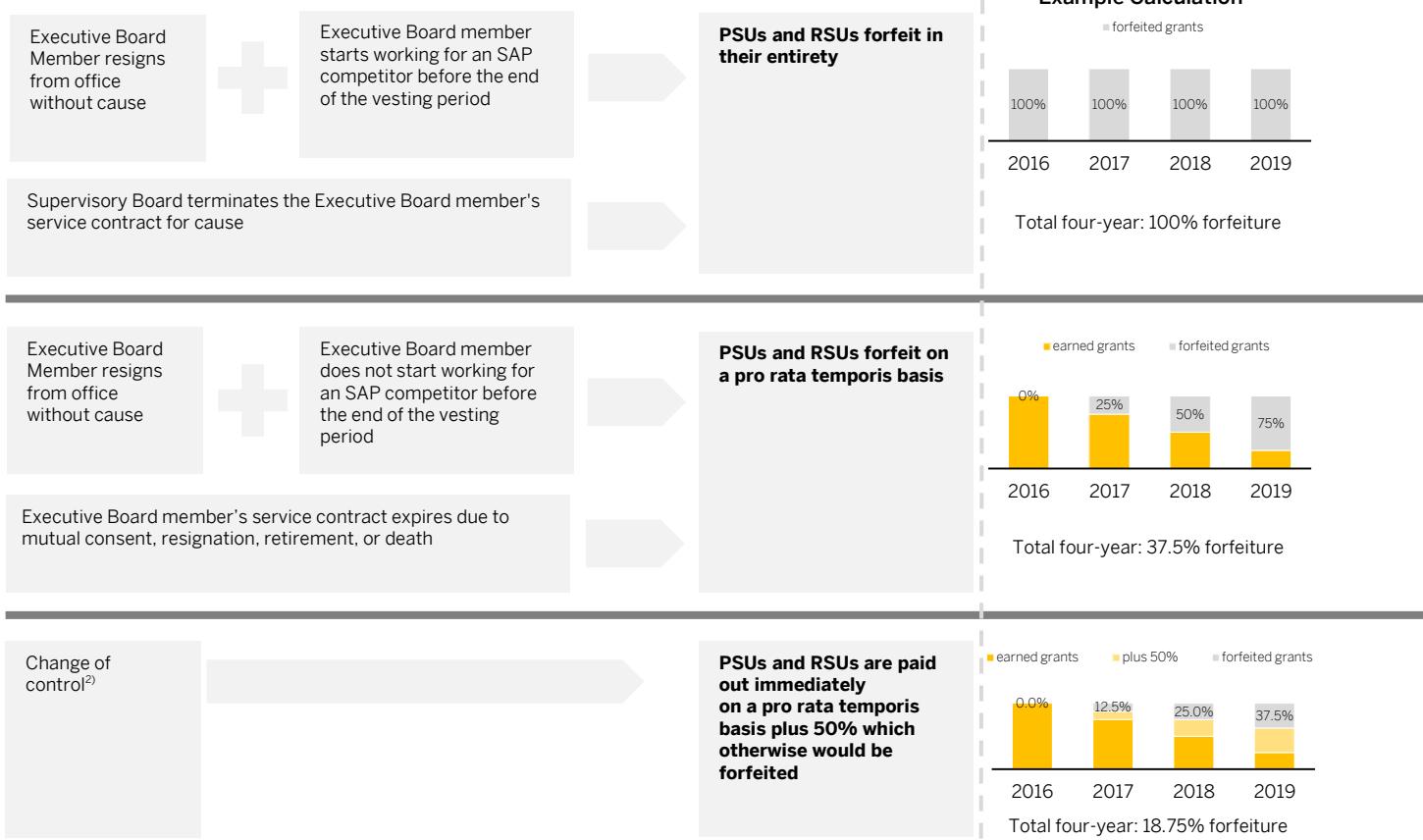


as at December 31, 2018

LTI Forfeiture Rules

If an Executive Board member's service contract is terminated before the end of the third year following the year in which the Share Units were granted, both the PSUs and RSUs are forfeited in whole or in part, depending on the circumstances of the relevant resignation from office or termination of the service contract. In case PSUs and RSUs are forfeited in part, the percentage of the forfeiture is proportional to the four-year vesting period of each grant. This means that 25% of the grant is earned each year of the vesting period. Unearned grants are forfeited.

LTI Forfeiture Rules



¹⁾ Example calculation with four tranches (grant allocation of 100%, stable share price from grant to vest, and no consideration of performance condition); Executive Board member's contract terminates after year four (December 31, 2019)

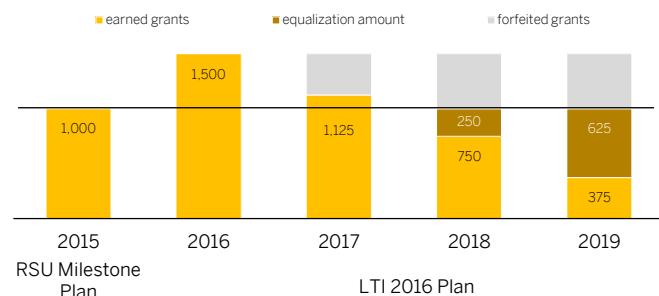
²⁾ For the definition, see the [Early End-of-Service Undertakings](#) section

The change from the previous RSU Milestone Plan to the LTI 2016 Plan required a transition rule in order to avoid unjustified disadvantages for Executive Board members. In the event an Executive Board member leaves the company, the disadvantage arises from the difference in the one-year vesting period in the RSU Milestone Plan in comparison to the four-year vesting period in the LTI 2016 Plan. In order to compensate for this disadvantage related to the vesting periods, an individual equalization amount was determined for Executive Board members who participated in the RSU Milestone Plan.

The equalization amount has been subject to:

- A target achievement of at least 60% of the non-IFRS constant currency operating profit target, and
- An ongoing employment relationship in 2016, 2017, and, in one case, in 2018.

In the event an Executive Board member leaves the company and PSUs would otherwise be forfeited on a pro rata basis, the Executive Board member is entitled to PSUs equal to the equalization amount. The following graphic gives an example of how the equalization amount was derived, assuming a grant of €1,000 for the RSU Milestone Plan, a grant of €1,500 for the LTI 2016 Plan, and a forfeiture of the grants on a pro rata temporis basis on December 31, 2019:



Clawback Provisions

SAP has the contractual right to request that the Executive Board member returns any payments made from STI or LTI if it subsequently emerges that the payment was not justified in whole or in part because targets were not achieved at all or not achieved in the scope assumed when calculating the payment amount due on account of false information having been provided. In such case, the Executive Board member is obliged to repay to SAP the amount by which the payment actually made exceeds the payment amount due on the basis of the targets actually achieved. Such contractually agreed claim to repayment supplements the claim for restitution of unjustified enrichment pursuant to section 812 of the German Civil Code (BGB).

Minimum and Maximum Compensation

The minimum compensation amount reflects the fixed compensation amount and an LTI and STI payout of zero.

The maximum compensation amount is capped at 362% (CEO) and 317% (Executive Board member other than CEO) of the total target compensation. This would be achieved in the event of the maximum possible payout amount of the STI and the LTI, as follows:

- The maximum possible payout amount of the STI is reached when the target achievement of all financial KPIs is 140%.
- The maximum possible payout amount for the LTI tranche is 468% of the contractual target amount.

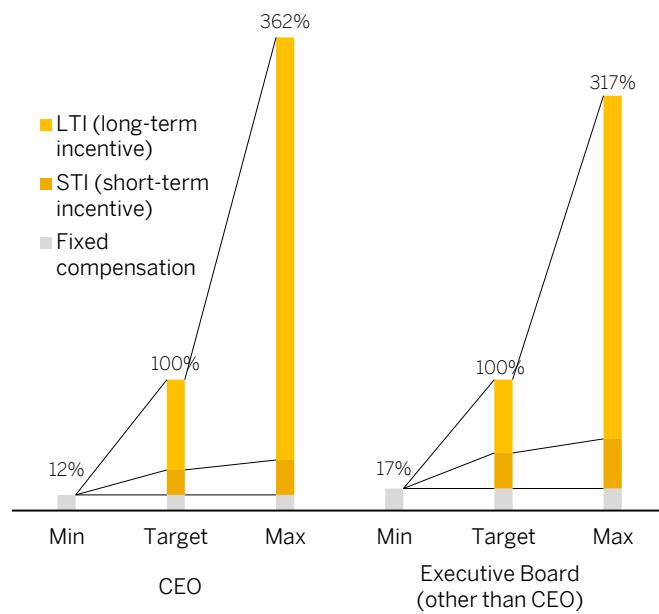
The maximum possible payout amount of the LTI is reached if all of the following conditions are cumulatively met:

- The grant amount for the LTI tranche has been set at its capped maximum of 120% of the contractual target amount.
- SAP's share price outperforms the Peer Group Index by at least 25 percentage points (reaching the capped maximum 150% of the initial PSU allocation for that year).
- The SAP share price has at least tripled (corresponding to an average annual increase of approximately 32%) compared to the grant price (cap on share price development).

In the event of the maximum LTI payout for the entire Executive Board of €123 million in 2022, the shareholders would also benefit through the strong increase in market capitalization, which would be at least €200 billion from 2018 to 2022.

The following graphic illustrates the relation of the fixed and performance-based compensation elements in the Executive Board members' target compensation for 2018 based on € amounts, as well as the minimum and maximum possible compensation. The height of the bars is not indicative of the absolute compensation amount.

Compensation Scheme 2018



Overview of the Relations Between Target and Payout for Performance-Based Compensation

The total target achievements of STI reflect the relation between the target amount and the payout amount. The STIs for the years 2014 to 2017 were already paid out.

STI Total Target Achievement

Percentage	2018	2017	2016	2015	2014
	93.0	88.2	104.4	147.5	109.5

The relation between the LTI target amounts for the 2016 to 2018 tranches and the theoretical payout amounts are based on SAP's share price at year end. The 2014 tranche discloses the relation between the respective target amount and the actual payout amount in May 2018. The 2015 tranche discloses the relation between the respective target amount and the payout amount scheduled for May 2019.

Relation Between Target Amount and Payout Amount of the LTI

Percentage	LTI 2016 Plan					RSU Milestone Plan 2015
	2018 Tranche ¹⁾	2017 Tranche ¹⁾	2016 Tranche ¹⁾	2015 Tranche ²⁾	2014 Tranche	
12/31/2018	90.87	82.65	55.50	233.77	119.61	
12/31/2017	NA	107.76	126.97	240.73	119.61	

¹⁾ Consideration of theoretical payout amounts based on SAP's share price at year end

²⁾ Consideration of individual adjustment factor in addition to target achievement 2015 ranging between 31.62% and 37.38%

Amount of Compensation for 2018

We present the Executive Board compensation disclosures in accordance with the recommendations of the German Corporate Governance Code ("GCGC"). Furthermore, the tables below provide a reconciliation statement following the requirements of sections 314 and 315 of the German Commercial Code (*Handelsgesetzbuch*, or "HGB") as specified in the German Accounting Standards ("GAS 17"). Pursuant to the recommendations of the GCGC, the value of benefits granted for the year under review as well as the benefits received, that is, the amounts disbursed for the year under review, are disclosed below based on the reference tables recommended in the GCGC. In contrast to the disclosure rules stipulated in the German HGB and GAS 17, the GCGC includes the pension expense, that is, the service cost according to IAS 19, in the Executive Board compensation and requires the additional disclosure of the target value for the one-year variable compensation and the maximum and minimum compensation amounts achievable for the variable compensation elements.

Executive Board Members' Compensation

German Corporate Governance Code

€ thousands	Bill McDermott CEO						Robert Enslin Member of the Executive Board					
	Benefits Granted				Benefits Received		Benefits Granted				Benefits Received	
	2018 ¹⁾	2018 (Min)	2018 (Max)	2017 ¹⁾	2018 ¹⁾	2017 ¹⁾	2018 ¹⁾	2018 (Min)	2018 (Max)	2017 ¹⁾	2018 ¹⁾	2017 ¹⁾
Fixed compensation	1,314.7	1,314.7	1,314.7	1,374.3	1,314.7	1,374.3	800.2	800.2	800.2	836.5	800.2	836.5
Fringe benefits ²⁾	794.7	794.7	794.7	1,271.9	794.7	1,271.9	105.1	105.1	105.1	368.1	105.1	368.1
Total	2,109.4	2,109.4	2,109.4	2,646.2	2,109.4	2,646.2	905.3	905.3	905.3	1,204.6	905.3	1,204.6
One-year variable compensation	2,193.0	0	3,070.2	2,093.7	1,846.7	2,486.9	1,327.3	0	1,858.2	1,267.2	1,117.7	1,505.2
Multi-year variable compensation												
LTI 2016 Plan	6,876.6	0	28,535.4	7,741.2			2,270.3	0	9,420.8	2,555.7		
RSU Milestone Plan 2015					5,251.0	5,787.6					1,248.8	
SAP SOP 2010 and 2011						10,178.3						
Total	11,179.0	2,109.4	33,715.0	12,481.1	9,207.1	21,099.0	4,502.9	905.3	12,184.3	5,027.5	3,271.8	2,709.8
Service cost	568.3	568.3	568.3	686.2	568.3	686.2	235.8	235.8	235.8	194.1	235.8	194.1
Total according to GCGC	11,747.3	2,677.7	34,283.3	13,167.3	9,775.4	21,785.2	4,738.7	1,141.1	12,420.1	5,221.6	3,507.6	2,903.9

German Corporate Governance Code

	Adaire Fox-Martin Member of the Executive Board												Christian Klein Member of the Executive Board (from 1/1/2018)			
	Benefits Granted				Benefits Received				Benefits Granted				Benefits Received			
	2018	2018 (Min)	2018 (Max)	2017	2018	2017	2018	2018 (Min)	2018 (Max)	2017	2018	2017	2018	2017	2018	2017
Fixed compensation	700.0	700.0	700.0	466.7	700.0	466.7	700.0	700.0	700.0	700.0	700.0	700.0	0	700.0	700.0	
Fringe benefits ²⁾	54.6	54.6	54.6	82.4	54.6	82.4	13.1	13.1	13.1	13.1	13.1	13.1	0	13.1	13.1	
Total	754.6	754.6	754.6	549.1	754.6	549.1	713.1	713.1	713.1	713.1	713.1	713.1	0	713.1	0	
One-year variable compensation	1,125.8	0	1,576.1	755.6	666.5		1,125.8	0	1,576.1							
Multi-year variable compensation																
LTI 2016 Plan	2,128.8	0	8,833.7	1,680.0			1,793.2	0	7,441.2							
RSU Milestone Plan 2015																
SAP SOP 2010 and 2011																
Total	4,009.2	754.6	11,164.4	2,984.7	1,421.1	549.1	3,632.1	713.1	9,730.4	0	713.1	0				
Service cost																
Total according to GCGC	4,009.2	754.6	11,164.4	2,984.7	1,421.1	549.1	3,632.1	713.1	9,730.4	0	713.1	0				

	Michael Kleinemeier Member of the Executive Board												Bernd Leukert Member of the Executive Board			
	Benefits Granted				Benefits Received				Benefits Granted				Benefits Received			
	2018	2018 (Min)	2018 (Max)	2017	2018	2017	2018	2018 (Min)	2018 (Max)	2017	2018	2017	2018	2017	2018	2017
Fixed compensation	700.0	700.0	700.0	700.0	700.0	700.0	700.0	700.0	700.0	700.0	700.0	700.0	700.0	700.0	700.0	
Fringe benefits ²⁾	29.1	29.1	29.1	29.0	29.1	29.0	10.3	10.3	10.3	10.3	30.3	10.3	30.3	10.3	30.3	
Total	729.1	729.1	729.1	729.0	729.1	729.0	710.3	710.3	710.3	710.3	730.3	710.3	730.3	710.3	730.3	
One-year variable compensation	1,125.8	0	1,576.1	1,125.8	992.9	1,175.3	1,125.8	0	1,576.1	1,125.8	992.9	1,175.3				
Multi-year variable compensation																
LTI 2016 Plan	2,128.8	0	8,833.7	2,396.4			2,397.7	0	9,949.7	2,699.3						
RSU Milestone Plan 2015													1,248.8			
SAP SOP 2010 and 2011																
Total	3,983.7	729.1	11,138.9	4,251.2	1,722.0	1,904.3	4,233.8	710.3	12,236.1	4,555.4	2,952.0	1,905.6				
Service cost																
Total according to GCGC	3,983.7	729.1	11,138.9	4,251.2	1,722.0	1,904.3	4,233.8	710.3	12,236.1	4,555.4	2,952.0	1,905.6				

German Corporate Governance Code

	€ thousands											
	Jennifer Morgan Member of the Executive Board						Luka Munic Member of the Executive Board					
	Benefits Granted			Benefits Received			Benefits Granted			Benefits Received		
	2018 ¹⁾	2018 (Min)	2018 (Max)	2017 ¹⁾	2018 ¹⁾	2017 ¹⁾	2018	2018 (Min)	2018 (Max)	2017	2018	2017
Fixed compensation	634.3	634.3	634.3	430.4	634.3	430.4	700.0	700.0	700.0	700.0	700.0	700.0
Fringe benefits ²⁾	128.4	128.4	128.4	48.4	128.4	48.4	11.8	11.8	11.8	11.0	11.8	11.0
Total	762.7	762.7	762.7	478.8	762.7	478.8	711.8	711.8	711.8	711.0	711.8	711.0
One-year variable compensation	1,052.0	0	1,472.8	674.2	594.6		1,125.8	0	1,576.1	1,125.8	992.9	1,175.3
Multi-year variable compensation												
LTI 2016 Plan	2,128.8	0	8,833.7	1,680.0			2,128.8	0	8,833.7	2,396.4		
RSU Milestone Plan 2015												949.5
SAP SOP 2010 and 2011												
Total	3,943.5	762.7	11,069.2	2,833.0	1,357.3	478.8	3,966.4	711.8	11,121.6	4,233.2	2,654.2	1,886.3
Service cost	51.4	51.4	51.4	8.9	51.4	8.9						
Total according to GCGC	3,994.9	814.1	11,120.6	2,841.9	1,408.7	487.7	3,966.4	711.8	11,121.6	4,233.2	2,654.2	1,886.3

	€ thousands											
	Stefan Ries Member of the Executive Board						Total Executive Board					
	Benefits Granted			Benefits Received			Benefits Granted			Benefits Received		
	2018	2018 (Min)	2018 (Max)	2017	2018	2017	2018	2017	2018	2017	2018	2017
Fixed compensation	700.0	700.0	700.0	700.0	700.0	700.0	6,949.2	5,907.9	6,949.2	5,907.9		
Fringe benefits ²⁾	21.9	21.9	21.9	22.4	21.9	22.4	1,169.0	1,863.5	1,169.0	1,863.5		
Total	721.9	721.9	721.9	722.4	721.9	722.4	8,118.2	7,771.4	8,118.2	7,771.4		
One-year variable compensation	1,125.8	0	1,576.1	1,125.8	992.9	883.1	11,327.1	9,293.9	8,197.1	8,401.1		
Multi-year variable compensation												
LTI 2016 Plan	1,793.2	0	7,441.2	2,018.7			23,646.2	23,167.7				
RSU Milestone Plan 2015											8,698.1	5,787.6
SAP SOP 2010 and 2011												10,178.3
Total	3,640.9	721.9	9,739.2	3,866.9	1,714.8	1,605.5	43,091.5	40,233.0	25,013.4	32,138.4		
Service cost							855.5	889.2	855.5	889.2		
Total according to GCGC	3,640.9	721.9	9,739.2	3,866.9	1,714.8	1,605.5	43,947.0	41,122.2	25,868.9	33,027.6		

¹⁾ The value of the fixed and one-year variable compensation is granted in U.S. dollars. For conversion purposes from U.S. dollars into euro, for fixed compensation the average exchange rate and for the one-year variable compensation the year-end exchange rate of the respective period applies.

²⁾ Insurance contributions, the private use of company cars and aircraft, benefits in kind, expenses for maintenance of two households, payments and related supplements for relocation upon appointment to the Executive Board, reimbursement of fees for the preparation of tax returns and tax gross ups according to local conditions. The fringe benefits of Bill McDermott mainly consist of tax gross ups according to local conditions and expenses for maintenance of two households.

Reconciliation Reporting of Total Compensation Pursuant to Section 314(1)(6a) HGB in Connection with GAS 17

€ thousands	Bill McDermott		Robert Enslin		Adaire Fox-Martin		Christian Klein		Michael Kleinemeier	
	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017
Total according to GCGC	11,747.3	13,167.3	4,738.7	5,221.6	4,009.2	2,984.7	3,632.1	0	3,983.7	4,251.2
Less granted annual variable target compensation	-2,193.0	-2,093.7	-1,327.3	-1,267.2	-1,125.8	-755.6	-1,125.8		-1,125.8	-1,125.8
Plus allocated actual annual variable compensation	2,039.5	1,846.7	1,234.4	1,117.7	1,046.9	666.5	1,046.9		1,046.9	992.9
Less service cost	-568.3	-686.2	-235.8	-194.1						
Total compensation	11,025.5	12,234.1	4,410.0	4,878.0	3,930.3	2,895.6	3,553.2	0	3,904.8	4,118.3

€ thousands	Bernd Leukert		Jennifer Morgan		Luka Mucic		Stefan Ries		Total Executive Board	
	2018	2017	2018	2017	2018	2017	2018	2017	2018	2017
Total according to GCGC	4,233.8	4,555.4	3,994.9	2,841.9	3,966.4	4,233.2	3,640.9	3,866.9	43,947.0	41,122.2
Less granted annual variable target compensation	-1,125.8	-1,125.8	-1,052.0	-674.2	-1,125.8	-1,125.8	-1,125.8	-1,125.8	-11,327.1	-9,293.9
Plus allocated actual annual variable compensation	1,046.9	992.9	978.4	594.6	1,046.9	992.9	1,046.9	992.9	10,534.0	8,197.1
Less service cost			-51.4	-8.9					-855.5	-889.2
Total compensation	4,154.9	4,422.5	3,869.9	2,753.4	3,887.5	4,100.3	3,562.0	3,734.0	42,298.4	39,136.2

Vertical Pay Ratio

The vertical pay ratio compares the total benefits granted to the CEO and the Executive Board members other than CEO with the total benefits granted to the Executives and all employees collectively who were employed at year end. In order to ensure comparability for total benefits granted, only fixed compensation, one-year and multi-year variable compensation are considered. The Executives comprise the first and second management levels below the Executive Board, that is, the Global Executive Team (GET) and the Senior Executive Team (SET).

2018			
Ratio	CEO		Executive Board (Other Than CEO)
	Average Annual Compensation (in € thousands)	10,384.3	3,942.3
Executives	906	11	4
Employees including Executives	99	105	40

2017			
Ratio	CEO		Executive Board (Other Than CEO)
	Average Annual Compensation (in € thousands)	11,209.2	3,880.0
Executives	923	12	4
Employees including Executives	101	111	39

2016			
Ratio	CEO		Executive Board (Other Than CEO)
	Average Annual Compensation (in € thousands)	11,785.4	4,090.8
Executives	823	14	5
Employees including Executives	99	119	41

Share-Based Payment Information Relating to Long-Term Incentives

Members of the Executive Board received, hold, or held share units issued to them under the LTI 2016 Plan and hold or held RSUs issued to them under the RSU Milestone Plan 2015. For more

information about the terms and details of these programs, see the Notes to the Consolidated Financial Statements, [Note \(B.3\)](#).

Grants Under the LTI 2016 Plan

	Year Granted	Total Share Units	(RSU) Retention Share Units (40%)	(PSU) Performance Share Units (60%)	Grant Value per RSU at Time of Grant	Grant Value per PSU at Time of Grant	Total Grant Value at Time of Grant
		Quantity	Quantity	Quantity	€	€	€ thousands
Bill McDermott (CEO)	2018	85,841	34,336	51,505	79.01	80.84	6,876.6
	2017	89,217	35,687	53,530	83.60	88.88	7,741.2
Robert Enslin	2018	28,340	11,336	17,004	79.01	80.84	2,270.3
	2017	29,454	11,782	17,672	83.60	88.88	2,555.7
Adaire Fox-Martin	2018	26,574	10,630	15,944	79.01	80.84	2,128.8
	2017	18,539	7,416	11,123	85.91	93.76	1,680.0
Christian Klein (from 1/1/2018)	2018	22,385	8,954	13,431	79.01	80.84	1,793.2
Michael Kleinemeier	2018	26,574	10,630	15,944	79.01	80.84	2,128.8
	2017	27,619	11,048	16,571	83.60	88.88	2,396.4
Bernd Leukert	2018	29,931	11,972	17,959	79.01	80.84	2,397.7
	2017	31,109	12,444	18,665	83.60	88.88	2,699.3
Jennifer Morgan	2018	26,574	10,630	15,944	79.01	80.84	2,128.8
	2017	18,539	7,416	11,123	85.91	93.76	1,680.0
Luka Mucic	2018	26,574	10,630	15,944	79.01	80.84	2,128.8
	2017	27,619	11,048	16,571	83.60	88.88	2,396.4
Stefan Ries	2018	22,385	8,954	13,431	79.01	80.84	1,793.2
	2017	23,265	9,306	13,959	83.60	88.88	2,018.7
Total		2018	295,178	118,072	177,106		23,646.2
							23,167.7

Executive Board Members' Holdings

LTI 2016 Plan

Quantity of Share Units	Year Granted	Holding on 1/1/2018	Granted		Holding on 12/31/2018
			Retention Share Units (40%)	Performance Share Units (60%)	
Bill McDermott (CEO)	2018	0	34,336	51,505	85,841
	2017	89,217	0	0	89,217
	2016	122,423	0	0	122,423
Robert Enslin	2018	0	11,336	17,004	28,340
	2017	29,454	0	0	29,454
	2016	40,417	0	0	40,417
Adaile Fox-Martin	2018	0	10,630	15,944	26,574
	2017	18,539	0	0	18,539
	2016				
Christian Klein (from 1/1/2018)	2018	0	8,954	13,431	22,385
	2017				
	2016				
Michael Kleinemeier	2018	0	10,630	15,944	26,574
	2017	27,619	0	0	27,619
	2016	37,898	0	0	37,898
Bernd Leukert	2018	0	11,972	17,959	29,931
	2017	31,109	0	0	31,109
	2016	42,687	0	0	42,687
Jennifer Morgan	2018	0	10,630	15,944	26,574
	2017	18,539	0	0	18,539
	2016				
Luka Mucic	2018	0	10,630	15,944	26,574
	2017	27,619	0	0	27,619
	2016	37,898	0	0	37,898
Stefan Ries	2018	0	8,954	13,431	22,385
	2017	23,265	0	0	23,265
	2016	23,987	0	0	23,987
Total		570,671	118,072	177,106	865,849

The Share Units granted in 2018 have a remaining term of 3.08 years, the share units granted in 2017 have a remaining term of 2.08 years, and the share units granted in 2016 have a remaining term of 1.08 years.

RSU Milestone Plan 2015

Quantity of RSUs	Year Granted	Holding on 1/1/2018	Exercised	Holding on 12/31/2018
Bill McDermott (CEO)	2015	113,667	0	113,667
	2014	59,488	59,488	0
Robert Enslin	2015	39,985	0	39,985
	2014	14,148	14,148	0
Michael Kleinemeier	2015	5,221	0	5,221
Bernd Leukert	2015	41,578	0	41,578
	2014	14,148	14,148	0
Luka Mucic	2015	41,130	0	41,130
	2014	10,757	10,757	0
Total		340,122	98,541	241,581

The table above shows the Executive Board members' holdings issued to them under the RSU Milestone Plan 2015. The plan is a cash-settled long-term incentive scheme with a payout subsequent to a performance period of one year (after which the RSUs become non-forfeitable) and an additional holding period of three years. The plan consists of four plan tranches to be issued with respect to the calendar years 2012 through 2015. The RSUs granted in 2015 have a remaining term of 0.08 years.

Total Expense for Share-Based Payment

€ thousands	2018	2017
Bill McDermott (CEO)	2,155.8	7,684.4
Robert Enslin	727.0	2,181.9
Adaire Fox-Martin	796.1	309.7
Christian Klein (from 1/1/2018)	442.2	–
Michael Kleinemeier	914.2	1,509.8
Bernd Leukert	775.2	2,287.4
Jennifer Morgan	796.1	309.7
Luka Mucic	675.8	2,059.0
Stefan Ries	772.0	1,049.3
Total	8,054.4	17,391.2

Total expense for the share-based payment plans of Executive Board members was recorded in accordance with IFRS 2 (Share-Based Payments) and consists exclusively of obligations arising from Executive Board activities.

End-of-Service Benefits

Regular End-of-Service Undertakings

Retirement Pension Plan

The following retirement pension agreements apply to the individual members of the Executive Board:

- Adaire Fox-Martin, Christian Klein, Michael Kleinemeier, Bernd Leukert, Luka Mucic, and Stefan Ries are entitled to receive a retirement pension when they reach the retirement age of 62 and retire from their Executive Board seat; or a disability

pension depending on a health examination if, before reaching the regular retirement age, they become subject to occupational disability or permanent incapacity. A surviving dependent's pension is paid on the death of a former member of the Executive Board. The disability pension is 100% of the vested retirement pension entitlement and is payable until the beneficiary's 62nd birthday, after which it is replaced by a retirement pension. The surviving dependent's pension is 60% of the retirement pension or vested disability pension entitlement at death. Entitlements are enforceable against SAP SE. Current pension payments are reviewed annually for adjustments and, if applicable, increased according to the surplus in the pension liability insurance. If service is ended before the retirement age of 62, pension entitlement is reduced in proportion as the actual length of service stands in relation to the maximum possible length of service. The applied retirement pension plan is contributory. The contribution is 4% of applicable compensation up to the applicable income threshold plus 14% of applicable compensation above the applicable income threshold. For this purpose, applicable compensation is 180% of annual base salary. The applicable income threshold is the statutory annual income threshold for the state pension plan in Germany (West), as amended from time to time.

- Bill McDermott has rights to future benefits under the portion of the pension plan for SAP America classified as "Non-Qualified Retirement Plan" according to the U.S. Employee Retirement Income Security Act (ERISA). This "Non-Qualified" pension plan is a cash balance plan that provides either monthly pension payments or a lump sum on retirement. The pension becomes available from the beneficiary's 65th birthday. Subject to certain conditions, the plan also provides earlier payment or invalidity benefits. The "Non-Qualified" pension plan closed with effect from January 1, 2009. Interest continues to be accrued on the earned rights to benefits within this plan. The rights were partially earned before Bill McDermott became a member of the SAP Executive Board.
- SAP made contributions to a third-party pension plan for Bill McDermott, Robert Enslin, and Jennifer Morgan, as disclosed in the tables 'German Corporate Governance Code'. SAP's matching contributions are based on payments by Bill McDermott, Robert Enslin, and Jennifer Morgan into this pension plan.

Total Defined Benefit Obligations (DBO) and Net Defined Benefit Liability (Asset) to Executive Board Members

€ thousands	Bill McDermott (CEO)	Adaire Fox-Martin ¹⁾	Christian Klein (from 1/1/2018) ¹⁾	Michael Kleinemeier ¹⁾	Bernd Leukert ¹⁾	Luka Mucic ¹⁾	Stefan Ries ¹⁾	Total
DBO 1/1/2017	1,459.2	–	–	154.9	451.6	444.6	257.9	2,768.2
Less plan assets market value 1/1/2017	–	–	–	181.4	389.7	347.6	116.7	1,035.4
Net Defined Benefit Liability (Asset) 1/1/2017	1,459.2	–	–	–26.5	61.9	97.0	141.2	1,732.8
DBO change in 2017	–148.7	93.5	–	117.0	132.9	141.3	86.7	422.7
Plan assets change in 2017	–	100.7	–	164.5	151.2	143.1	159.1	718.6
DBO 12/31/2017	1,310.5	93.5	–	271.9	584.5	585.9	344.6	3,190.9
Less plan assets market value 12/31/2017	–	100.7	–	345.9	540.9	490.7	275.8	1,754.0
Net Defined Benefit Liability (Asset) 12/31/2017	1,310.5	–7.2	–	–74.0	43.6	95.2	68.8	1,436.9
DBO change in 2018	106.2	89.9	112.8	66.7	–16.1	–42.1	–67.2	250.2
Plan assets change in 2018	–	156.3	141.3	161.7	153.9	145.0	143.5	901.7
DBO 12/31/2018	1,416.7	183.4	112.8	338.6	568.4	543.8	277.4	3,441.1
Less plan assets market value 12/31/2018	–	257.0	141.3	507.6	694.8	635.7	419.3	2,655.7
Net Defined Benefit Liability (Asset) 12/31/2018	1,416.7	–73.6	–28.5	–169.0	–126.4	–91.9	–141.9	785.4

¹⁾ The values shown here only reflect the pension entitlements that Adaire Fox-Martin, Christian Klein, Michael Kleinemeier, Bernd Leukert, Luka Mucic, and Stefan Ries will receive from the retirement pension plan for Executive Board members.

The table below shows the annual pension entitlement earned during the Executive Board membership of each member of the Executive Board on reaching the scheduled retirement age of 62, based on entitlements from SAP under performance-based and salary-linked plans.

Annual Pension Entitlement

€ thousands	Vested on 12/31/2018	Vested on 12/31/2017
Bill McDermott (CEO) ¹⁾	105.1	89.5
Adaire Fox-Martin	7.3	2.9
Christian Klein (from 1/1/2018)	4.1	–
Michael Kleinemeier	14.8	9.8
Bernd Leukert	24.6	19.4
Luka Mucic	23.2	18.1
Stefan Ries	12.6	8.5

¹⁾ The rights shown here for Bill McDermott refer solely to rights under the pension plan for SAP America.

These are vested entitlements. To the extent that members continue to serve on the Executive Board and that therefore more contributions are made for them in the future, pensions actually payable at the scheduled retirement age will be higher than the amounts shown in the table.

Postcontractual Non-Compete Provisions

Each Executive Board member's contract includes a 12-month postcontractual non-compete agreement. During this non-compete period, Executive Board members receive abstention payments corresponding to 50% of their average contractual compensation as members. This average is calculated on the basis of the preceding three years. Any other occupational income generated by the Executive Board member is deducted from their compensation.

The following table presents the theoretical amounts for the net present values of the postcontractual non-compete abstention payments. The calculation assumes the following:

- The Executive Board member leaves SAP at the end of their respective current contract term.
- Their final average contractual compensation prior to their departure equals their compensation in 2018.

Actual postcontractual non-compete payments will likely differ from these amounts depending on the time of departure and the compensation levels and target achievements at the time of departure.

Net Present Values of the Postcontractual Non-Compete Abstention Payments

€ thousands	Contract Term Expires	Net Present Value of Postcontractual Non-Compete Abstention Payment ¹⁾
Bill McDermott (CEO)	3/31/2021	5,493
Robert Enslin	3/31/2021	2,197
Adaire Fox-Martin	4/30/2020	1,964
Christian Klein (from 1/1/2018)	12/31/2020	1,772
Michael Kleinemeier	12/31/2019	1,952
Bernd Leukert	3/31/2021	2,070
Jennifer Morgan	4/30/2020	1,934
Luka Mucic	3/31/2021	1,937
Stefan Ries	3/31/2024	1,716
Total		21,035

¹⁾ For the purpose of this calculation, the following discount rates have been applied: Bill McDermott 0.16% (2017: 0.16%); Robert Enslin 0.16% (2017: 0.16%); Adaire Fox.Martin 0.04% (2017: 0.01%); Christian Klein 0.13%; Michael Kleinemeier 0.03% (2017: -0.01%); Bernd Leukert 0.16% (2017: 0.16%); Jennifer Morgan 0.04% (2017: 0.01%); Luka Mucic 0.16% (2017: 0.16%); Stefan Ries 0.71% (2017: -0.09%).

Early End-of-Service Undertakings

Severance Payments

The standard contract for all Executive Board members provides that on termination before full term (for example, by the Company without cause where the member's appointment is revoked, where the member becomes occupationally disabled, or in connection with a change of control), SAP SE will pay to the member the outstanding part of the compensation target for the entire remainder of the term, appropriately discounted for early payment. Starting 2018, in accordance with the German Corporate Governance Code (GCGC), section 4.2.3, payments made to an Executive Board member due to early termination must not exceed twice the annual total compensation, or 150% of the severance payment cap in case of change of control. Members are not entitled to that severance payment if they have not served SAP as a member of the Executive Board for at least one year or if they leave SAP SE for reasons for which they are responsible. Upon the appointment of Christian Klein to the Executive Board, the Supervisory Board abstained from the waiting period of one year in consideration of his long-term successful tenure with SAP.

If an Executive Board member's appointment to the Executive Board expires or ceases to exist because of, or as a consequence of, change or restructuring, or due to a change of control, SAP SE and each Executive Board member has the right to terminate the employment contract within eight weeks of the occurrence by giving six months' notice. A change of control is deemed to occur when:

- A third party is required to make a mandatory takeover offer to the shareholders of SAP SE under the German Securities Acquisition and Takeover Act;

- SAP SE merges with another company and becomes the subsumed entity;
 - A control or profit transfer agreement is concluded with SAP SE as the dependent company.
- An Executive Board member's contract can also be terminated before full term if their appointment as an Executive Board member of SAP SE is revoked in connection with a change of control.

Postcontractual Non-Compete Provisions

Abstention compensation for the postcontractual non-compete period as described above is also payable on early contract termination.

Permanent Disability

In case of permanent disability, the contract will end at the end of the quarter in which the permanent inability to work was determined. The Executive Board member receives, in addition to a potential disability pension under the retirement plan described above, the monthly basic salary (fixed compensation) for a further 12 months starting from the date the permanent disability is determined.

Payments to Former Executive Board Members

In 2018, we paid pension benefits of €2,054,300 to Executive Board members who had retired before January 1, 2018 (2017: €1,997,000). At the end of the year, the DBO for former Executive Board members was €38,373,500 (2017: €39,993,100). Plan assets of €31,615,100 are available to meet these obligations (2017: €31,944,100).

Executive Board: Other Information

We did not grant any compensation advance or credit to, or enter into any commitment for the benefit of, any member of our Executive Board in 2018 or the previous year.

As far as the law permits, SAP SE and its affiliated companies in Germany and elsewhere indemnify and hold harmless their respective directors and officers against and from the claims of third parties. To this end, we maintain directors' and officers' (D&O) group liability insurance. The policy is annual and is renewed from year to year. The insurance covers the personal liability of the insured group for financial loss caused by its managerial acts and omissions. The current D&O policy includes an individual deductible for Executive Board members of SAP SE as required by section 93 (2) of the German Stock Corporation Act.

Compensation for Supervisory Board Members

Compensation System

Supervisory Board members' compensation is governed by our Articles of Incorporation, section 16.

Each member of the Supervisory Board receives, in addition to the reimbursement of their expenses, an annual basic compensation of €165,000. The chairperson receives €275,000 and the deputy chairperson €220,000 annually. In addition, we reimburse members of the Supervisory Board for the value-added tax payable on their compensation.

For membership of the Audit Committee, Supervisory Board members receive an additional fixed annual compensation of

€16,500, and for membership of any other Supervisory Board committee €11,000, provided that the committee concerned has met in the year. The chairperson of the Audit Committee receives €27,500, and the chairpersons of the other committees receive €22,000. The fixed remuneration is payable after the end of the year.

Any members of the Supervisory Board who have served for less than the entire year receive one-twelfth of the annual remuneration for each month of service commenced. This also applies to the increased compensation of the chairperson and the deputy chairperson(s) and to the remuneration for the chairperson and the members of a committee.

Supervisory Board Members' Compensation in 2018

€ thousands	2018			2017		
	Fixed Compensation	Compensation for Committee Work	Total	Fixed Compensation	Compensation for Committee Work	Total
Prof. Dr. h.c. mult. Hasso Plattner (chairperson)	275.0	88.0	363.0	275.0	88.0	363.0
Margret Klein-Magar (deputy chairperson)	220.0	22.0	242.0	220.0	27.5	247.5
Pekka Ala-Pietila	165.0	40.3	205.3	165.0	33.0	198.0
Panagiotis Bissiritsas	165.0	38.5	203.5	165.0	38.5	203.5
Martin Duffek	165.0	38.5	203.5	165.0	33.0	198.0
Aicha Evans (from 7/1/2017)	165.0	29.3	194.3	82.5	11.0	93.5
Prof. Anja Feldmann (until 12/31/2018)	165.0	19.3	184.3	165.0	22.0	187.0
Diane Greene (from 5/17/2018)	110.0	2.8	112.8	NA	NA	NA
Prof. Dr. Wilhelm Haarmann (until 5/17/2018)	68.5	13.8	82.3	165.0	44.0	209.0
Andreas Hahn	165.0	22.0	187.0	165.0	22.0	187.0
Prof. Dr. Gesche Joost	165.0	22.0	187.0	165.0	22.0	187.0
Lars Lamadé	165.0	22.0	187.0	165.0	22.0	187.0
Bernard Liautaud	165.0	33.0	198.0	165.0	33.0	198.0
Christine Regitz	165.0	22.0	187.0	165.0	22.0	187.0
Dr. Friederike Rotsch (from 5/17/2018)	110.0	18.3	128.3	NA	NA	NA
Dr. Erhard Schipporeit	165.0	46.8	211.8	165.0	33.0	198.0
Robert Schuschnig-Fowler	165.0	22.0	187.0	165.0	16.5	181.5
Dr. Sebastian Sick	165.0	22.0	187.0	165.0	22.0	187.0
Jim Hagemann Snabe (until 6/30/2017)	NA	NA	NA	82.5	11.0	93.5
Pierre Thiollet	165.0	11.0	176.0	165.0	11.0	176.0
Prof. Dr.-Ing. Dr.-Ing. E.h. Klaus Wucherer (until 5/17/2018)	68.5	6.9	75.4	165.0	16.5	181.5
Total	3,162.0	540.4	3,702.4	3,135.0	528.0	3,663.0

In 2018, we received services from members of the Supervisory Board (including services from employee representatives on the Supervisory Board in their capacity as employees of SAP) in the amount of €1,206,500 (2017: €1,269,700). This amount includes fees paid in 2018 to Linklaters LLP in Frankfurt am Main, Germany (of which Wilhelm Haarmann, who was a Supervisory Board member until May 17, 2018, is a partner), of €0 (2017: €106,900).

Long-Term Incentives for the Supervisory Board

We do not offer members of the Supervisory Board share-based payment for their Supervisory Board work. Any share-based payment awards received by employee-elected members relate to

their position as SAP employees and not to their work on the Supervisory Board.

Supervisory Board: Other Information

We did not grant any compensation advance or credit to, or enter into any commitment for the benefit of, any member of our Supervisory Board in 2018 or the previous year.

Hasso Plattner, the chairperson of the Supervisory Board, entered into a consulting contract with SAP after joining the Supervisory Board in May 2003. The contract does not provide for any compensation. The only cost we incurred under the contract was the reimbursement of expenses.

As far as the law permits, we indemnify Supervisory Board members against, and hold them harmless from, claims brought by third parties. To this end, we maintain directors' and officers' (D&O) group liability insurance. In accordance with section 3.8 of the GCGC, each member of the Supervisory Board will bear a deductible of at least 10% of any loss. The deductible is capped at 1.5 times a member's fixed annual compensation.

Responsibility Statement

To the best of our knowledge, and in accordance with the applicable reporting principles, the Consolidated Financial Statements give a true and fair view of the assets, finances, and operating results of the SAP Group, and the management report of the Group and SAP SE includes a fair review of the development and performance of the business and the position of the Group and SAP SE, together with a description of the principal opportunities and risks associated with the expected development of the Group and SAP SE.

Walldorf, February 20, 2019
SAP SE
Walldorf, Germany

Executive Board of SAP SE

Bill McDermott

Robert Enslin

Adaire Fox-Martin

Christian Klein

Michael Kleinemeier

Bernd Leukert

Jennifer Morgan

Luka Mucic

Jürgen Müller

Stefan Ries

Independent Auditor's Report

To SAP SE, Walldorf

Report on the Audit of the Consolidated Financial Statements and of the Group Management Report

Opinions

We have audited the consolidated financial statements of SAP SE, Walldorf, and its subsidiaries (the Group), which comprise the consolidated statements of financial position as at December 31, 2018, consolidated income statements, consolidated statements of comprehensive income, consolidated statements of changes in equity and consolidated statements of cash flows for the financial year from January 1 to December 31, 2018 and notes to the consolidated financial statements, including a summary of significant accounting policies.

In addition, we have audited the combined group management report by the SAP Group and the management report of SAP SE, Walldorf ("Group Management Report") for the financial year from January 1 to December 31, 2018.

In our opinion, on the basis of the knowledge obtained in the audit,

- the accompanying consolidated financial statements comply, in all material respects, with the IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to Section 315e (1) HGB [Handelsgesetzbuch: German Commercial Code], as well as the IFRSs as adopted by the International Accounting Standards Board and, in compliance with these requirements, give a true and fair view of the assets, liabilities and financial position of the Group as at December 31, 2018, and of its financial performance for the financial year from January 1 to December 31, 2018 and
- the accompanying Group Management Report as a whole provides an appropriate view of the Group's position. In all material respects, this Group Management Report is consistent with the consolidated financial statements, complies with German legal requirements and appropriately presents the opportunities and risks of future development.

Pursuant to Section 322 (3) sentence 1 HGB, we declare that our audit has not led to any reservations relating to the legal compliance of the consolidated financial statements and of the Group Management Report.

Basis for the Opinions

We conducted our audit of the consolidated financial statements and of the Group Management Report in accordance with Section 317 HGB and the EU Audit Regulation No. 537/2014 (referred to subsequently as "EU Audit Regulation") and in compliance with German Generally Accepted Standards for Financial Statement Audits promulgated by the Institut der Wirtschaftsprüfer [Institute of Public Auditors in Germany] (IDW) as well as in supplementary compliance with the International

Standards on Auditing (ISAs) and guidelines of the Public Company Accounting Oversight Board (United States).

Our responsibilities under those requirements, principles and standards are further described in the "Auditor's Responsibilities for the Audit of the Consolidated Financial Statements and of the Group Management Report" section of our auditor's report. We are independent of the group entities in accordance with the requirements of European law and German commercial and professional law, and we have fulfilled our other German professional responsibilities in accordance with these requirements. In addition, in accordance with Article 10 (2) point (f) of the EU Audit Regulation, we declare that we have not provided non-audit services prohibited under Article 5 (1) of the EU Audit Regulation. We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our opinions on the consolidated financial statements and on the Group Management Report.

Key Audit Matters in the Audit of Consolidated Financial Statements

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the consolidated financial statements for the financial year from January 1 to December 31, 2018. These matters were addressed in the context of our audit of the consolidated financial statements as a whole, and in forming our opinion thereon, we do not provide a separate opinion on these matters.

Revenue

Refer to note (A.1) – Revenue, note (A.5) – Adoption of IFRS 15, and Group Management Report, section Risk Management and Risks.

The Financial Statement Risk

In the financial year 2018 SAP generated revenue of EUR 24.7 billion, of which EUR 15.6 billion relate to revenues from sales of software licenses and support services. The accounting for revenue for software under IFRS 15 is complex and therefore bears the inherent risk that errors are made in the accounting for revenue arrangements. SAP defined detailed policies, procedures and processes to manage the accounting for its customer contracts, which are also described in the notes. Applying them often requires significant judgments, for example in the assessment of whether a multiple element arrangement exists, the identification of different performance obligations, the determination of the stand-alone selling price of a single performance obligation, and the allocation of the transaction price to the different performance obligations.

SAP derives its revenue from different revenue classes. Since 2017 SAP has been using a Revenue Accounting and Reporting software solution for all revenue streams which aimed at increasing the level of automation in SAP's revenue accounting processes. Primarily due to the high number and complexity of SAP's customer contracts, the new software solution as well as the application of the newly designed processes to these contracts

bear a significant risk of error. In response to this significant risk of error, SAP established processes and manual controls to ensure the accurate revenue recognition in the consolidated financial statements. An internal task force was established by SAP to prevent and remediate issues. The additional processes and controls focused on agreeing revenues processed through the Revenue Accounting and Reporting software solution to underlying source documentation such as sales orders or billing plans. Thresholds were determined to focus the control performance on significant deviations.

There is the financial statement risk that revenue recognition cut-off as at the balance sheet date is incorrect and that revenues are allocated incorrectly.

The new revenue recognition standard (IFRS 15) has been effective beginning January 1, 2018. IFRS 15 stipulates for the consolidated financial statements to disclose the impact of the newly adopted standard, including a description of the transition method used and the transition effect including impact on future periods, as well as the amounts that would have been recorded for the current period using the accounting policies under the old revenue recognition standards (IAS 11 and 18) (dual-GAAP reporting).

The financial statement risk for the consolidated financial statements relates to accuracy of the required disclosures under IFRS 15.

Our Audit Approach

On software revenue recognition, we evaluated the compliance of SAP's accounting policies with the IFRS Framework and IFRS 15. We considered the design and tested the operating effectiveness of the key controls implemented by SAP on the identification of multiple-element arrangements, the identification of separate performance obligations and the identification of the stand-alone selling price for all performance obligations other than on premise software (due to the residual method being applied). For all software arrangements that we considered to be individually significant and for a sample of the remaining software arrangements, we also:

- obtained an understanding of the transaction through inspection of the underlying contractual agreements and other related documents as well as discussions with SAP's accounting and/or sales representatives;
- obtained external confirmations of the key terms and conditions from the respective customers to corroborate the information relevant for the accounting that we received from SAP;
- assessed whether SAP appropriately identified all separate performance obligations and allocated the transaction price to such performance obligations on the basis of (relative) stand-alone selling prices, or the residual method for on premise software; and
- evaluated whether the revenue recognition policies applicable to each separate performance obligation were applied appropriately to ensure that revenue is recognized in the correct period.

We evaluated the stand-alone selling prices for each of the deliverables that typically qualify as separate performance obligations in SAP's multiple-element arrangements by assessing the appropriateness of the methodology applied, testing mathematical accuracy of the underlying calculations, and testing

selections to corroborate the data underlying SAP's calculations. We also assessed the accuracy of the related disclosures in the consolidated financial statements.

On the Revenue Accounting and Reporting software solution and the related process we tested the design and operating effectiveness of the manual controls that were implemented to agree revenues processed through the Revenue Accounting and Reporting software solution to underlying source documentation. In this regard, we also assessed whether the reports used by SAP to perform the controls were complete and accurate and evaluated the results of management's testing. For the majority of software support revenue, we compared the actual support revenue with the support revenue that is expected based on last year's support revenue, the loss rate of last year's support contracts and the current year software sales that trigger additional support revenue. For all other significant revenue streams we selected samples to determine the accurate revenue recognition.

On the disclosures relating the new applied revenue recognition standard we assessed whether the described policy changes, transition method and transition impact are accurate. We tested the internal controls and calculations related to SAP's dual-GAAP reporting and assessed the accuracy of the disclosures.

Our Observations

SAP has developed an adequate framework for determining the accounting treatment for its revenue. For the vast majority of the software arrangements entered into during 2018, it was clear which of SAP's revenue recognition policies should be applied. Where there was room for interpretation, SAP's judgment was balanced and appropriate. SAP established adequate processes and manual controls to ensure accurate revenue recognition in the consolidated financial statements. The disclosures on the impact of the newly adopted standard, including the description of the transition method used, the transition effect and the dual-GAAP reporting are appropriate and based on reasonable assumptions.

Measurement of the provision for income tax exposures

Refer to note (C.5) – Income Taxes, and Group Management Report section Risk Management and Risks.

The Financial Statement Risk

SAP operates in multiple tax jurisdictions with complexities of transfer pricing, changing tax laws, and intercompany financing transactions. The determination of provisions for tax contingencies requires SAP to make judgments on tax issues and develop estimates regarding SAP's exposure to tax risks. SAP regularly engages external experts to provide tax opinions to support their own risk assessment. The risk for the consolidated financial statements relates to the completeness, measurement and disclosure of the provision for uncertain tax treatments.

Our Audit Approach

We involved our tax specialists to evaluate the tax opinions of the external experts SAP engaged. We assessed the competency, skill and objectivity of the external experts as well as the opinions they prepared. We evaluated correspondence with the responsible tax authorities as well as the assumptions used to determine tax provisions based on our knowledge and experiences of the current application of the relevant legislation by authorities and courts. Through our international network we involved tax specialists with

the appropriate knowledge on the respective local tax rules and regulations who reported the results of their assessment to us.

Our Observations

SAP's judgments as to the amounts recognized as tax provisions for income tax exposures as at December 31, 2018 are appropriate.

Recoverability of the carrying amount of goodwill for SAP Business Network

Refer to note (D.2) – Goodwill.

The Financial Statement Risk

SAP performed the annual goodwill impairment test at the level of its operating segments as there are no lower levels within SAP at which goodwill is monitored for internal management purposes. SAP's acquisitions executed in prior periods led to a material goodwill in the SAP Business Network Segment in which SAP mainly develops, markets and sells its SAP Ariba, SAP Fieldglass and SAP Concur cloud offerings. Goodwill allocated to the SAP Business Network is material as of December 31, 2018 (13.4 % of consolidated balance sheet total). The respective impairment test is complex and involves significant judgment. The key assumptions relate to the budgeted revenue growth, budgeted operating margins, pre-tax discount rates including the determination of the peer group and terminal growth rates.

The risk for the consolidated financial statements relates to the appropriateness of the determination and recognition of impairments.

Our Audit Approach

SAP has implemented controls designed to ensure that the calculation of the recoverable amount for SAP Business Network is appropriate. We tested the design and operating effectiveness of these controls. We involved our valuation specialists to assess the valuation methodologies applied and key assumptions used in measuring the fair value less cost of disposal and to test the mathematical accuracy of the discounted cash flows and other valuation models. We evaluated SAP's assumptions by comparing the fair value estimates to our own expectations and performed independent sensitivity analysis for each key assumption.

Our Observations

The approaches underlying the impairment testing of goodwill are appropriate and consistent with the applicable accounting and valuation principles. SAP applied a balanced set of assumptions in determining the recoverable amount.

Accounting for the acquisition of Callidus Inc., Dublin/USA

Refer to note (D.1) – Business Combinations.

The Financial Statement Risk

On April 5, 2018 SAP acquired Callidus Inc., Dublin, USA ("Callidus"). The purchase price amounted to USD 2,469 million. In allocating the purchase price to identifiable assets acquired and liabilities assumed, SAP recorded net assets in the amount of EUR 648 million, and goodwill in the amount of EUR 1,483 million. Pursuant to IFRS 3, the identifiable assets acquired and the liabilities assumed are, unless specified otherwise in IFRS 3, recorded at their fair value on the acquisition date. SAP engaged an

external valuation expert to determine and measure the identifiable assets acquired and the liabilities assumed.

The identification and measurement of the assets acquired and the liabilities assumed is complex and is based on the Executive Board's judgmental assumptions. Significant assumptions used in the measurement of intangible assets acquired and liabilities assumed comprise the projections of the acquired business's revenues and margins, asset-specific revenue and margin adjustments, estimated useful lives, royalty and attrition rates, as well as the cost of capital.

The risk for the consolidated financial statements relates to insufficient identification or incorrect measurement of the assets acquired and the liabilities assumed. In addition, there is the risk that the disclosures in the notes to the consolidated financial statements are not accurate.

Our Audit Approach

We assessed the process of the identification of the assets acquired and liabilities assumed in terms of conformity with the requirements of IFRS 3 using our knowledge of SAP's business model. SAP has implemented controls designed to ensure that the assets acquired and the liabilities assumed are sufficiently identified and correctly measured and that the disclosures in the notes are accurate. We tested the design and operating effectiveness of these controls.

With the support of our valuation specialists we assessed, among other things, the appropriateness of the significant assumptions as well as the identification and valuation approaches. We initially obtained an understanding of the acquisition based on inquiries of employees in the finance and M&A departments as well as by assessing the relevant contracts.

We agreed the total purchase price with the underlying purchase agreement and evidence of payment.

We assessed the competency, skills and objectivity of the external valuation expert engaged by SAP. Furthermore, we considered the consistency of the measurement methods used and the measurement principles applicable.

We discussed the expected development of revenues and margins used in the fair value measurements with those responsible for planning. Furthermore, we reconciled these with the budgets approved by the Executive Board and approved by the Supervisory Board and assessed the consistency of the assumptions with external market views of cloud companies. We assessed the appropriateness of significant assumptions by comparing them to our own expectations based on our knowledge of the acquired business, our experience in the software industry and taking into account recent comparable transactions. The assumptions and parameters underlying the cost of capital – in particular the risk-free interest rate, the market risk premium and the beta factor – were compared with own assumptions and publicly available data.

To assess the mathematical accuracy we recalculated amounts selected using a risk-oriented approach. Finally, we assessed whether the disclosures in the notes to the consolidated financial statements with respect to the acquisition of Callidus are accurate.

Our Observations

The approaches underlying the identification and valuation of the assets acquired and the liabilities assumed are appropriate and consistent with the applicable accounting and valuation principles.

SAP applied a balanced set of key assumptions and parameters. The disclosures in the notes to the consolidated financial statements are appropriate.

Other Information

The Executive Board of SAP SE is responsible for the other information. The other information comprises the Integrated Report published on the website of SAP SE and the Annual Report on Form 20-F, except for the audited consolidated financial statements and the Group Management Report and our auditor's report thereon.

Our opinions on the consolidated financial statements and on the Group Management Report do not cover the other information and consequently we do not express, an opinion or any other form of assurance conclusion thereon.

In connection with our audit, our responsibility is to read the other information and, in so doing, to consider whether the other information

- is materially inconsistent with the consolidated financial statements, with the Group Management Report or our knowledge obtained in the audit, or
- otherwise appears to be materially misstated.

If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

In addition, we were engaged to perform an independent assurance engagement on selected qualitative and quantitative sustainability disclosures of the integrated report 2018. In regard to the nature, extent and conclusions of this independent assurance engagement we refer to our Independence Assurance Report dated on February 20, 2019.

Responsibilities of the Executive Board and the Supervisory Board for the Consolidated Financial Statements and the Group Management Report

The Executive Board of SAP SE is responsible for the preparation of the consolidated financial statements that comply, in all material respects, with IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to Section 315e (1) HGB as well as IFRS as adopted by the International Accounting Standards Board and that the consolidated financial statements, in compliance with these requirements, give a true and fair view of the assets, liabilities, financial position, and financial performance of the Group. In addition, the Executive Board is responsible for such internal control as the Executive Board has determined necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, the Executive Board is responsible for assessing the Group's ability to continue as a going concern. The Executive Board also has the responsibility for disclosing, as applicable, matters related to going concern. In addition, the Executive Board is responsible for financial reporting based on the going concern basis of accounting unless there is an intention to liquidate the Group or to cease operations, or there is no realistic alternative but to do so.

Furthermore, the Executive Board is responsible for the preparation of the Group Management Report, that as a whole, provides an appropriate view of the Group's position and is, in all

material respects, consistent with the consolidated financial statements, complies with the German legal requirements and appropriately presents the opportunities and risks of future development. In addition, the Executive Board is responsible for such arrangements and measures (systems) as the Executive Board has considered necessary to enable the preparation of the Group Management Report that is in accordance with the applicable German legal requirements, the German Accounting Standards number 17 and 20 (GAS 17, GAS 20) and the IFRS Practice Statement Management Commentary and to be able to provide sufficient appropriate evidence for the assertions in the Group Management Report.

The Supervisory Board is responsible for overseeing the Group's financial reporting process for the preparation of the consolidated financial statements and of the Group Management Report.

Auditor's Responsibilities for the Audit of the Consolidated Financial Statements and of the Group Management Report

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and whether the Group Management Report as a whole provides an appropriate view of the Group's position and, in all material respects, is consistent with the consolidated financial statements and the knowledge obtained in the audit, complies with the German legal requirements and appropriately presents the opportunities and risks of future development, as well as to issue an auditor's report that includes our opinions on the consolidated financial statements and on the Group Management Report.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Section 317 HGB and the EU Audit Regulation and in compliance with German Generally Accepted Standards for Financial Statement Audits promulgated by the Institut der Wirtschaftsprüfer (IDW) as well as in supplementary compliance with ISAs and guidelines of the Public Company Accounting Oversight Board (United States) will always detect a material misstatement. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements and this Group Management Report.

We exercise professional judgment and maintain professional scepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the consolidated financial statements and of the Group Management Report, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinions. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit of the consolidated financial statements and of arrangements and measures (systems) relevant to the audit of the Group

Management Report in order to design audit procedures that are appropriate in the circumstances.

- Evaluate the appropriateness of accounting policies used by the Executive Board and the reasonableness of accounting estimates made by the Executive Board and related disclosures.
- Conclude on the appropriateness of the Executive Board's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in the auditor's report to the related disclosures in the consolidated financial statements and in the Group Management Report or, if such disclosures are inadequate, to modify our respective opinions. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Group to cease to be able to continue as a going concern.
- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements present the underlying transactions and events in a manner that the consolidated financial statements give a true and fair view of the assets, liabilities, financial position and financial performance of the Group in compliance with IFRSs as adopted by the EU as well as with IFRSs as adopted by the International Accounting Standards Board and the additional requirements of German commercial law pursuant to Section 315e(1) HGB.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express opinions on the consolidated financial statements and on the Group Management Report. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our opinions.
- Evaluate the consistency of the Group Management Report with the consolidated financial statements, its conformity with German law, and the view of the Group's position it provides.
- Perform audit procedures on the prospective information presented by the Executive Board in the Group Management Report. On the basis of sufficient appropriate audit evidence we evaluate, in particular, the significant assumptions used by Executive Board as a basis for the prospective information, and evaluate the proper derivation of the prospective information from these assumptions. We do not express a separate opinion on the prospective information and on the assumptions used as a basis. There is a substantial unavoidable risk that future events will differ materially from the prospective information.

We communicate with the Supervisory Board regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide the Supervisory Board with a statement that we have complied with relevant independence requirements, and communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable the related safeguards.

From the matters communicated with the Supervisory Board, we determine those matters that were of most significance in the audit of the consolidated financial statements of the current period

and are therefore the key audit matters. We describe these matters in our auditor's report, unless law or regulation precludes public disclosure about the matter.

Other Legal and Regulatory Requirements

Report on Internal Control over Financial Reporting in the Consolidated Financial Statements pursuant to PCAOB

Opinion on Internal Control over Financial Reporting in the Consolidated Financial Statements

We have audited the internal control over financial reporting in the consolidated financial statements of SAP SE, Walldorf, and its subsidiaries in place as at December 31, 2018. This control system is based on criteria set out in the Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, SAP maintained, in all material respects, effective internal control over financial reporting in the consolidated financial statements as at December 31, 2018 based on the criteria set out in the Internal Control – Integrated Framework (2013) issued by the COSO.

Executive Board's and Supervisory Board's Responsibility for the Internal Control over Financial Reporting in the Consolidated Financial Statements

SAP SE's Executive Board is responsible for maintaining effective internal control over financial reporting in the consolidated financial statements and assessing its effectiveness, which is included in the Executive Board's report on the internal control over consolidated financial reporting.

A company's internal control over financial reporting in the consolidated financial statements is a process designed to provide reasonable assurance regarding the reliability of financial reporting in the consolidated financial statements and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting in the consolidated financial statements includes policies and procedures to (1) ensure an accounting system that in reasonable detail accurately and fairly reflects the transactions and dispositions of the company's assets, (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the company's assets that could have a material effect on the financial statements.

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

The Supervisory Board is responsible for overseeing the Group's internal control over financial reporting in the consolidated financial statements.

Auditor's Responsibility for the Internal Control over Financial Reporting in the Consolidated Financial Statements

Our responsibility is to express an opinion on the internal control over financial reporting in the consolidated financial statements based on our audit. We conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audits to obtain reasonable assurance about whether effective internal control over financial reporting in the consolidated financial statements was maintained in all material respects. Our audit of internal control over financial reporting in the consolidated financial statements included obtaining an understanding of internal control over financial reporting, assessing the risk of material deficiencies in internal control, testing and evaluating the design and operating effectiveness of internal control based on this assessment, and performing such other procedures as we considered necessary in the circumstances.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Further Information pursuant to Article 10 of the EU Audit Regulation

We were elected as group auditor at the annual general meeting on May 17, 2018. We were engaged by the Chairman of the Audit Committee of the Supervisory Board of SAP SE on May 29, 2018, and this engagement was confirmed on August 9, 2018. We have been the group auditor of SAP SE without interruption since the financial year 2002.

We declare that the opinions expressed in this auditor's report are consistent with the additional report to the audit committee pursuant to Article 11 of the EU Audit Regulation (long-form audit report).

In addition to the financial statement audit, we have provided to group entities the following services that are not disclosed in the consolidated financial statements or in the Group Management Report:

We audited the financial statements of SAP SE and performed various financial statement audits at subsidiaries. Furthermore, other assurance services required by law or on a contractual basis were performed, including an assurance engagement on selected qualitative and quantitative sustainability disclosures of the Integrated Report 2018, an EMIR assurance service pursuant to section 20 of German Securities Trading Act [WpHG], assurance services related to software products, and the issuance of two comfort letters in connection with debt offerings of SAP SE.

German Public Auditor Responsible for the Engagement

The German Public Auditor responsible for the engagement is Bodo Rackwitz.

Mannheim, February 20, 2019

KPMG AG
Wirtschaftsprüfungsgesellschaft
[Original German version signed by:]

Rackwitz
Wirtschaftsprüfer
[German Public Auditor]

Schneider
Wirtschaftsprüferin
[German Public Auditor]

Combined Management Report

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General Information About This Management Report

Basis of Presentation

This combined group management report by the SAP Group (collectively, "we," "us," "our," "SAP," "Group," or "Company") and the management report of SAP SE have been prepared in accordance with sections 289, 289a, 289f, 315, 315a, and 315d of the German Commercial Code and German Accounting Standards (GAS) No. 17 and 20. The management report is also a management commentary complying with the International Financial Reporting Standards (IFRS) Practice Statement "Management Commentary."

German Commercial Code, sections 289b and 315b, requires us to prepare, for both SAP SE and SAP Group, a non-financial statement within the management report or a non-financial report outside of the management report in which we report on social, environmental, and other non-financial matters. The required disclosures can be, but do not need to be, a separate section in our management report. Instead, the information required can also be provided, in an integrated manner, in the different sections of the management report. SAP released a combined non-financial report outside of the combined management report but within our online integrated report with references to the sections of our combined management report. This combined non-financial report is available at <http://www.sap.com/investors/sap-2018-combined-non-financial-report>. We believe that this approach is best aligned with SAP's integrated reporting strategy, also taking into account that all non-financial information stipulated in the German Commercial Code, sections 289c and 315c, that is relevant to understand SAP's development, business performance, and the position of the Group and SAP SE is included in our combined management report.

All of the information in this report relates to the situation as at December 31, 2018, or the fiscal year ended on that date, unless otherwise stated.

Forward-Looking Statements

This management report contains forward-looking statements and information based on the beliefs of, and assumptions made by, our management using information currently available to them. Any statements contained in this report that are not historical facts are forward-looking statements as defined in the U.S. Private Securities Litigation Reform Act of 1995. We have based these forward-looking statements on our current expectations, assumptions, and projections about future conditions and events. As a result, our forward-looking statements and information are subject to uncertainties and risks, many of which are beyond our control. If one or more of these uncertainties or risks materializes, or if management's underlying assumptions prove incorrect, our actual results could differ materially from those described in or inferred from our forward-looking statements and information. We

describe these risks and uncertainties in the *Risk Management and Risks* section.

The words "aim," "anticipate," "assume," "believe," "continue," "could," "counting on," "is confident," "development," "estimate," "expect," "forecast," "future trends," "guidance," "intend," "may," "might," "outlook," "plan," "predict," "project," "seek," "should," "strategy," "want," "will," "would," and similar expressions as they relate to us are intended to identify such forward-looking statements. Such statements include, for example, those made in the *Operating Results* section, our quantitative and qualitative disclosures about market risk pursuant to the International Financial Reporting Standards (IFRS), namely IFRS 7 and related statements in our Notes to the Consolidated Financial Statements; *Expected Developments and Opportunities* section; *Risk Management and Risks* section; and other forward-looking information appearing in other parts of this report. To fully consider the factors that could affect our future financial results, both this report and our Annual Report on Form 20-F should be considered, as well as all of our other filings with the U.S. Securities and Exchange Commission (SEC). Readers are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date specified or the date of this report. We undertake no obligation to publicly update or revise any forward-looking statements as a result of new information that we receive about conditions that existed upon issuance of this report, future events, or otherwise unless we are required to do so by law.

This report includes statistical data about the IT industry and global economic trends that comes from information published by sources including International Data Corporation (IDC), Gartner, the European Central Bank (ECB), and the International Monetary Fund (IMF). This type of data represents only the estimates of IDC, Gartner, ECB, IMF, and other sources of industry data. SAP does not adopt or endorse any of the statistical information provided by sources such as IDC, Gartner, ECB, IMF, or other similar sources that is contained in this report. The data from these sources is subject to risks and uncertainties, and subject to change based on various factors, including those described above, in the *Risk Management and Risks* section, and elsewhere in this report. These and other factors could cause our results to differ materially from those expressed in the estimates made by third parties and SAP. We caution readers not to place undue reliance on this data.

Strategy and Business Model

Overview of SAP

Founded in 1972, SAP is a global company headquartered in Walldorf, Germany. Our legal corporate name is SAP SE. SAP is the market leader in enterprise application software¹⁾ and also the leading analytics and business intelligence company. Globally, more than 77% of all transaction revenue touches an SAP system. With more than 425,000 customers in more than 180 countries, the SAP Group has a global presence and employs more than 96,000 people.

Our ordinary shares are listed on the Frankfurt Stock Exchange. American Depository Receipts (ADRs) representing SAP SE ordinary shares are listed on the New York Stock Exchange (NYSE). SAP is a member of Germany's DAX, TechDAX, the Dow Jones EURO STOXX 50, the Dow Jones Sustainability Index World, and the Dow Jones Sustainability Index Europe. As at December 31, 2018, SAP was the most valuable company in the DAX based on market capitalization. SAP was ranked as the most sustainable software company in the Dow Jones Sustainability Indices for the twelfth consecutive year.

As at December 31, 2018, SAP SE directly or indirectly controlled a worldwide group of 265 subsidiaries that develop, distribute, and provide our products, solutions, and services. For a list of our subsidiaries, associates, and other equity investments, see the Notes to the Consolidated Financial Statements, [Note \(G.10\)](#).

Our Purpose

We are living in a time of global uncertainty that is caused by massive social change and digital disruption. Some of the world's greatest challenges can only be addressed by combining technology-driven innovations and corporate leadership.

At SAP, our purpose is to "help the world run better and improve people's lives" by empowering our customers to create a better economy, society, and environment for the world. With our innovations, we can help customers run at their best. Being the best means our customers can connect people and information to address the world's biggest challenges. That's why we focus on engineering solutions to fuel innovation, foster equality, and spread opportunity across borders and cultures. With our broad customer base and ecosystem of around 18,800 partners, we can amplify our collective economic, social, and environmental impact.

We are committed to supporting the United Nations Sustainable Development Goals (UN SDGs). Technology-driven innovation underpins how SAP, together with our customers and our ecosystem, can execute initiatives across all 17 of the UN SDGs.

The Intelligent Enterprise

Most enterprises today are struggling to address three key challenges: How do they deliver a next-generation customer experience to stay relevant in a world of disruption? How do they

drive maximum cost synergies to fund innovation? How do they better engage their employees to attract and retain top talent?

Enterprises are trying to leverage data-driven insights to solve these challenges. Winners in the digital economy are those that are able to extract intelligence and insights from their data and act faster relative to their competition. SAP can help our customers to win in the marketplace by reimagining entire business processes through injecting predictive insights leveraging technologies such as artificial intelligence (AI)/machine learning (ML), the Internet of Things (IoT), and analytics across an integrated value chain. With SAP innovations, our customers can engage in real time with their users to deliver and continuously improve their experiences.

SAP can deliver the intelligent enterprise by focusing on three key business outcomes:

- Reimagining the **end-to-end customer experience** from predicting the demand to designing the product based on the unique need of the consumer, to procuring the best supplier for the product to manufacturing, and to delivering the product or service that maximizes customer satisfaction
- Delivering a **step change in productivity** through the next level of automation in business processes powered by AI/ML that will be embedded in every part of the business process (across financials, supply chain, manufacturing, procurement, travel, and human resources). The key to doing this is improving cycle time of business processes and injecting speed everywhere
- Transforming the way companies **engage their workforce** by delivering total workforce engagement across full-time and contingent labor and by improving the effectiveness of their workforce by driving touchless processes and voice/chat-enabled systems.

At SAP, our commitment to our customers is to help them meet today's challenges and to prepare for anticipated challenges of the future. Our strategy is to deliver the intelligent enterprise for our customers. Our vision for the intelligent enterprise is an event-driven, real-time business. SAP can deliver on these objectives by leveraging the power of data in SAP software with technologies such as AI/ML to build powerful intelligent applications. With SAP HANA and SAP Cloud Platform, we can embed intelligence into every part of our portfolio. This enables enterprises to get step change in productivity and enables higher focus on innovation, customer experience, and new business models. The intelligent enterprise is how SAP sees the future of business for our customers, the future of work for our customers' employees, and the future of experience for our customers' customers.

Delivering the Intelligent Enterprise

Our integrated end-to-end portfolio enables an intelligent enterprise by offering business value, data-driven innovation, rich customer experience insights, and embedded intelligence. We embed intelligent technologies throughout the extensive platform

¹⁾ Enterprise application software is computer software specifically developed to support and automate business processes.

and rich portfolio of applications we deliver. Our software, technologies, and services address the three core elements of the intelligent enterprise for the 25 industries and 12 lines of business (LoBs) we serve:

- An **intelligent suite** of LoB applications that includes next-generation enterprise resource planning (ERP) in the cloud, as well as solutions for customer experience, manufacturing and supply chain, network and spend management, and people engagement. The intelligent suite is integrated and differentiated by industry-specific business processes for end-to-end scenarios.
- A **digital platform** to help customers manage data orchestration across their entire application footprint. This includes real-time visibility into distributed data silos using next-generation **data management** solutions and an open **cloud platform** as a business platform for integration and business process innovation.
- **Intelligent technologies**, such as AI/ML, IoT, and advanced analytics, help customers optimize their core business processes, extract real-time insights, and reinvent their business models. This intelligence is integrated across applications and helps us deliver unique outcomes to every customer.

For more information about the products and solutions offered as part of our Intelligent Enterprise Framework, see the *Products, Research & Development, and Services* section.

The innovative power of our people is key to delivering the intelligent enterprise, as our people are key in helping our customers transform. We strive to create a workplace that can attract and retain the best talent in the market. We are fully committed to enabling our employees to grow their skills at every stage of their career at SAP.

Expanding to Experience Management

Every digital interaction is an opportunity to positively influence a customer. Each digital interaction is an opportunity to measure customer satisfaction, employee engagement, partner collaboration, and brand impact. It is also an opportunity to derive sentiment on how end users and customers perceive a company or a product. By combining experience data with operational data, SAP can expand from delivering the intelligent enterprise to delivering intelligent experiences to our customers.

Most successful companies do not just react to problems as they occur, they try to predict and mitigate those problems before they ever happen. Experience management is the process of analyzing the interactions that people experience with a company in real time and identifying opportunities for improvement. By analyzing employee surveys and service center tickets and calls, and combining this information with organizational data, SAP can help support a higher level of employee engagement and retention for our customers. By capturing feedback on how consumers experience the physical or digital product in real time, SAP can help our customers design better. By understanding the sentiment of every customer interaction, and correlating this with operational data on price and service delivery, SAP can help our customers drive better topline performance and create better products and services.

Acquisitions

We will continue to focus on investments in technology and innovations that ensure sustainable growth of our solution portfolio to drive our short-term, mid-term, and long-term ambitions. We will continue to unleash the full potential of our employees' talent as well as foster strategic partnerships with our ecosystem to cultivate innovation. Further, we may make targeted acquisitions to complement our solution offerings and improve coverage in key strategic markets.

In April 2018, we acquired **Callidus Software Inc.**, a company offering a cloud-based customer relationship management (CRM) solution marketed under CallidusCloud, which provides SAP and our customers a differentiated, cloud-based CRM solution. This helps put SAP in a leading position to compete in the CRM market. SAP has consolidated the CallidusCloud offerings with SAP Hybris solutions into the SAP C/4HANA suite of customer experience solutions, and is reported as part of the Customer Experience segment. For more information about the acquisition of Callidus Software Inc., see the Notes to the Consolidated Financial Statements, *Note (D.1)*.

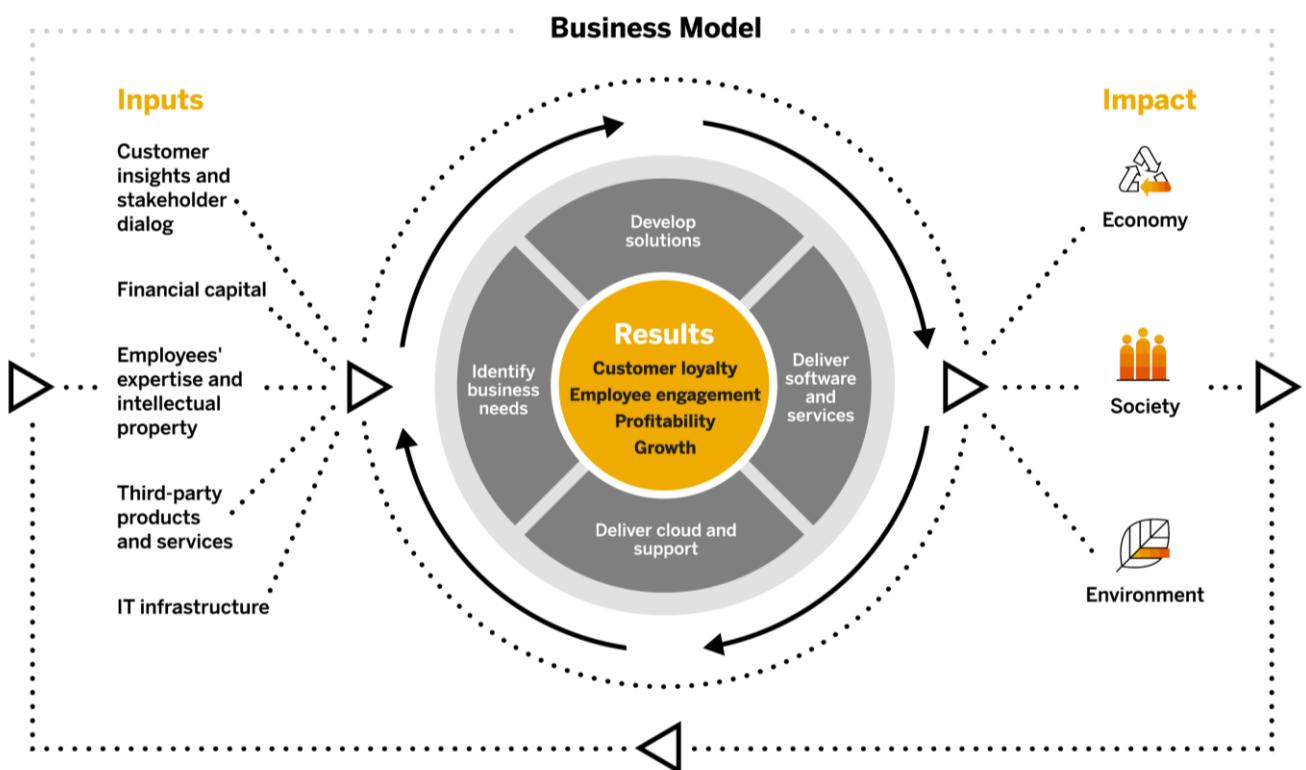
In November 2018, we announced our intent to acquire **Qualtrics International, Inc.**, a global pioneer of the experience management software category that enables organizations to thrive in today's economy. The deal was closed on January 23, 2019. Experience management focuses on obtaining and tapping the value of outside-in customer, employee, product, and brand feedback in real time. Together, SAP and Qualtrics aim to accelerate the new experience management category by combining experience data and operational data to power the experience economy. This creates a highly differentiated offering for businesses to engage with their customers to deliver and continuously improve customer, employee, product, and brand experiences. Qualtrics will be reflected in our Customer Experience segment which we renamed, upon the Qualtrics acquisition in 2019, to "Customer and Experience Management." For more information about the acquisition of Qualtrics International, Inc., see the Notes to the Consolidated Financial Statements, *Note (G.9)*.

Sapphire Ventures

In addition to our investments in organic growth and acquisitions, SAP also supports entrepreneurs that aspire to build industry-leading businesses, through venture capital funds managed by Sapphire Ventures. Sapphire Ventures currently has over US\$3.5 billion under management and has invested in more than 160 companies on five continents. This includes growth-stage technology companies and early-stage venture capital funds. Sapphire Ventures pursues opportunities in which it can help fuel enterprise growth by adding expertise, relationships, geographic reach, and capital. It places a particular focus on companies in Europe, Israel, and the United States. In addition to our venture investments through Sapphire Ventures, SAP also has a dedicated SAP.iO fund, managed by Sapphire Ventures, that focuses on strategic early-stage investments in enterprise software startups. As a part of the SAP.iO Fund, SAP has also committed to invest up to 40% of the investable capital in under-represented groups in technology to foster diversity and inclusion. One of these investment examples is women in technology.

SAP's Impact

Our vision is to help the world run better and improve people's lives.
We innovate software and technology solutions that empower our customers to become intelligent enterprises and create a better and more sustainable economy, environment, and society.



SAP's Impact

Our purpose comes to life through our contribution to the UN Sustainable Development Goals (SDGs). We innovate software and technology solutions that help empower our customers to become intelligent enterprises. It means connecting people and information to address the world's biggest challenges.

For us, delivering the Intelligent Enterprise and helping our customers thrive in the experience economy are essential for a better, more productive world. By unlocking the full potential of innovation, we can transform how businesses and governments impact the economies, societies, and environments in which they exist. In this way, we aim to fulfill our purpose of helping the world run better and improving people's lives.

Our Business Model

We create value by identifying the business needs of our customers, then developing and delivering software, services, and support that address these business needs. The close collaboration with our customers and partners throughout the process helps us continuously improve our solutions, identify further business needs, and deliver enhanced value to our customers.

Results

By developing software, providing our software and services to our customers, and engaging them in feedback, we immediately generate results for SAP such as growth, profitability, employee engagement, and customer loyalty. Value creation for the customer is realized when they implement the software and services to support their business and help achieve their own visions and purposes.

Inputs

This value creation process does not happen in a vacuum. It is enabled by external inputs, most importantly customer insights and broader stakeholder dialog, financial capital, employees' expertise, and intellectual property, third party products and services, as well as the IT infrastructure we rely on.

Impact

Our solutions lead to significant impact at our customers and – through them – in the world. The following are some examples of our impact in various areas.

Economy:

SAP software supports the UN SDGs 8, 9, 10, and 12 by helping provide meaningful work and strengthening industries and infrastructure. For example, SAP software helps as follows:

- Companies work better to bring economic prosperity and fairly-paid jobs to people around the world.
- Organizations optimize resources utilization, aspiring for a world with zero waste

As such, our software supports the responsible growth practices necessary to ensure the survival of future generations.

Society:

SAP software supports the UN SDGs 1, 2, 3, 4, 5, 7, 11, and 16 by helping create a peaceful and just society through better healthcare, education, and access to technology. For example:

- SAP technology is at the epicenter of complex medical issues when it comes to prevention, treatments, and cures for cancer, diabetes and other diseases. We are also deeply committed to empowering the world's youth, working adults, differently-abled people, and the unemployed with the right skills to thrive in the digital economy.

- Cities are facing growing populations and aging infrastructures. SAP solutions for the Internet of Things can help manage and monitor resources so that cities can run more sustainably and help citizens enjoy more enjoyable, safer lives.

Environment:

SAP software supports the UN SDGs 6, 13, 14, and 15 and helps protect the environment by addressing the need for water, clean energy, and responsible development. For example:

- We are all affected by climate change. SAP technology is helping our customers increase their overall resource productivity and transform their businesses to reduce carbon outputs.
- With the world population growing steadily, humanity will need to provide water, food, and shelter to billions of people in the coming years. SAP solutions help our customers reduce water waste and support sustainable management of water and sanitation for all.

Furthermore, SAP knows there is power in collaboration and engages in a wide range of partnerships to address SDG 17.

Measuring Our Success

We use the following financial and non-financial objectives to steer our company:

- Growth
- Profitability
- Customer loyalty
- Employee engagement

The table below provides an overview of the specific KPIs used to measure performance within these objectives, and compares this performance with our goals.

Outlook and Results for 2018

Strategic Objective	KPI	2018 Outlook* (non-IFRS, at constant currencies)	2018 Results (non-IFRS, at constant currencies)
Growth	Cloud subscriptions and support revenue	€5.150 billion to €5.250 billion	€5.205 billion
	Cloud and software revenue	€21.150 billion to €21.350 billion	€21.577 billion
	Total revenue	€25.200 billion to €25.500 billion	€25.961 billion
Profitability	Operating profit	€7.425 billion to €7.525 billion	€7.480 billion
Customer Loyalty	Customer Net Promoter Score	21 to 23	-5.0
Employee Engagement	Employee Engagement Index	84% to 86%	84%

* The outlook was communicated in January 2018 and financial targets were raised in April, July, and October 2018. The 2018 outlook numbers above reflect the raised outlook from October 2018.

Note: A reconciliation of non-IFRS results to IFRS equivalent is available [here](#).

Outlook for 2019

Strategic Objective	KPI	2018 Results (non-IFRS)	2019 Outlook (non-IFRS, at constant currencies)
Growth	Cloud subscriptions and support revenue	€5.03 billion	€6.7 billion to €7.0 billion
	Cloud and software revenue	€20.66 billion	€22.4 billion to €22.7 billion
	Total revenue	€24.74 billion	strong increase, slightly lower rate than operating profit
Profitability	Operating profit	€7.16 billion	€7.7 billion to €8.0 billion
Customer Loyalty	Customer Net Promoter Score	-5.0	+1.0
Employee Engagement	Employee Engagement Index	84%	84% to 86%

Note: A reconciliation of non-IFRS results to IFRS equivalent is available [here](#).

Ambitions for 2020 and 2023

Strategic Objective	KPI	2018 Results (non-IFRS)	2020 Ambition (non-IFRS)	2023 Ambition (non-IFRS)
Growth	Cloud subscriptions and support revenue	€5.03 billion	€8.6 billion to €9.1 billion	More than triple
	Cloud and software revenue	€20.66 billion		
	Total revenue	€24.74 billion	€28.6 billion to €29.2 billion	More than €35 billion
Profitability	Operating profit	€7.16 billion	€8.5 billion to €9.0 billion	7.5% to 10% CAGR
Customer Loyalty	Customer Net Promoter Score	-5.0	steadily increase	
Employee Engagement	Employee Engagement Index	84%	84% to 86%	

Note: A reconciliation of non-IFRS results to IFRS equivalent is available [here](#).

Performance Management System

We use various performance measures to manage our performance with regard to our primary financial objectives, which are growth and profitability, and our primary non-financial objectives, which are customer loyalty and employee engagement. We view growth and profitability as indicators of our current performance, while we see customer loyalty and employee engagement as indicators of our future performance.

Measures to Manage Our Financial Performance

Measures to Manage Our Operating Financial Performance

In 2018, we used the following key measures to manage our operating financial performance:

Cloud subscriptions and support revenue (non-IFRS): This revenue driver comprises the main revenues of our fast-growing cloud business. Revenue from cloud subscriptions and support represents fees earned from providing customers with any of the following:

- Software as a service (SaaS)
 - Platform as a service (PaaS)
 - Infrastructure as a service (IaaS)
 - Premium cloud subscription support beyond regular support
- For more information regarding cloud subscriptions and support revenue and a description of these services, see the Notes to the Consolidated Financial Statements, [Note \(A.1\)](#).

We use the cloud subscriptions and support revenue (non-IFRS) measure at both actual currencies and constant currencies.

Cloud and software revenue (non-IFRS): We use cloud and software revenue (non-IFRS) expressed in both actual currencies and constant currencies to measure our revenue growth. Our cloud and software revenue includes cloud subscriptions and support revenue plus software licenses and support revenue. Cloud subscriptions and support revenue and software revenue are our key revenue drivers because they tend to affect our other revenue streams. Generally, customers that buy software licenses also enter into related support contracts, and these generate recurring revenue in the form of support revenue after the software sale. Support contracts cover standardized support services that comprise unspecified future software updates and enhancements. Software licenses revenue as well as cloud subscriptions and support revenue also tend to stimulate services revenue, which is earned by providing customers with professional services, premium engagement services, training services, messaging services, and payment services.

Total revenue (non-IFRS): We use total revenue (non-IFRS) to measure our growth at both actual currencies and constant currencies. The total of cloud subscriptions and support revenue and software support revenue divided by total revenue is the share of more predictable revenue. This measure provides additional insight into our sustained business success.

New cloud bookings: For our cloud activities, we also look at new cloud bookings (both in actual currencies and constant currencies). This measure reflects the committed order entry from new customers and from incremental purchases by existing customers for offerings that generate cloud subscriptions and support revenue. For new cloud bookings we take into consideration committed deals only, meaning utilization-based payments are not included in this measure. In this way, it is an indicator of cloud-related sales success in a given period and of secured future cloud subscriptions and support revenue. We focus primarily on the average contract value variant of the new cloud bookings measure that generally takes into account annualized amounts for contracts. There are no comparable IFRS measures for these bookings metrics.

Cloud backlog: In addition to new cloud bookings, we use the measure "cloud backlog" to evaluate our sales success in the cloud business. We define cloud backlog as a measure that represents expected future cloud subscriptions and support revenue that, as of period end, is contracted but not yet billed.

Operating profit (non-IFRS): We use operating profit (non-IFRS) expressed in both actual currencies and constant currencies to measure our overall operational process efficiency and overall business performance.

Cloud subscriptions and support gross margin (non-IFRS): We use our cloud subscriptions and support gross margin (non-IFRS) to measure our process efficiency in our cloud business. Cloud subscriptions and support gross margin (non-IFRS) is the ratio of our cloud subscriptions and support gross profit (non-IFRS) to cloud subscriptions and support revenue (non-IFRS), expressed as a percentage.

Operating margin (non-IFRS): We use operating margin to measure our overall operational efficiency. Operating margin (non-IFRS) is the ratio of our operating profit (non-IFRS) to total revenue (non-IFRS), expressed as a percentage.

Measures to Manage Our Non-Operating Financial Performance

We use the following measures to manage our non-operating financial performance:

Financial income, net: This measure provides insight into the return on liquid assets and capital investments and the cost of borrowed funds. To manage our financial income, net, we focus on cash flow, the composition of our liquid assets and capital investment portfolio, and the average rate of interest at which assets are invested. We also monitor average outstanding borrowings and associated finance costs.

Days Sales Outstanding (DSO): We manage working capital by controlling the DSO of trade receivables. DSO measures the average number of days from the raised invoice to cash receipt from the customer. We calculate DSO by dividing the average invoiced trade receivables balance of the last 12 months by the average monthly cash receipt of the last 12 months.

Measures to Manage Overall Financial Performance

We use the following measures to manage our overall financial performance:

Earnings per share (EPS) (IFRS and non-IFRS): EPS measures our overall performance because it captures all operating and non-operating elements of profit as well as income tax expense. It represents the portion of profit after tax allocable to each SAP share outstanding. EPS is influenced not only by our operating and non-operating business and income taxes but also by the number of shares outstanding.

Effective tax rate (IFRS and non-IFRS): We define our effective tax rate as the ratio of income tax expense to profit before tax, expressed as a percentage.

Operating, investing, and financing cash flows and free cash flow: Our consolidated statement of cash flows provides insight into how we generate and use cash and cash equivalents. When applied in conjunction with the other primary financial statements, it provides information that helps us evaluate the changes in our net assets, our financial structure (including our liquidity and solvency), and our ability to affect the amounts and timing of cash flows to adapt to changing circumstances and opportunities. We use our free cash flow measure to determine the cash flow remaining after all expenditures required to maintain or expand our organic business have been paid off. This measure provides management with supplemental information to assess our liquidity needs. We calculate free cash flow as net cash from operating activities minus purchases (other than purchases made in connection with business combinations) of intangible assets and property, plant, and equipment.

Measures to Manage Our Non-Financial Performance

In 2018, we used the following key measures to manage our non-financial performance in the areas of customer loyalty, employee engagement, and leadership trust:

Customer Net Promoter Score (Customer NPS): This score measures the willingness of our customers to recommend or promote SAP to others. It is derived from ongoing customer surveys that identifies, on a scale of 0–10, whether a customer is likely to recommend SAP to friends or colleagues, is neutral, or is unwilling to recommend. We introduced this measure in 2012, as we are convinced that we can achieve our financial goals only when our customers are loyal to, and satisfied with, SAP and our solutions. To derive the Customer NPS, we start with the percentage of “promoters” of SAP, that is, those giving us a score of 9 or 10 on a scale of 0–10. We then subtract the percentage of “detractors,” that is, those giving us a score of 0 to 6. The method ignores “passives,” that is, those giving us a score of 7 or 8. Consequently, the range of achievable scores is –100 to +100, with the latter being the best achievable score for customer loyalty as measured by the Customer NPS methodology.

Employee Engagement Index: We use this index to measure the motivation and loyalty of our employees, how proud they are of our company, and how strongly they identify with SAP. The index is derived from an annual survey of our employees. Applying this measure is recognition that our growth strategy depends on engaged employees.

Leadership Trust Score: We use this score to further enhance accountability and to measure our collective effort to foster a work environment based on trust. It is derived from a question in our annual global employee survey that gauges employees' trust in our leaders. We measure leadership trust by using the same methodology as we do to compute the Net Promoter Score (NPS).

Value-Based Management

Our holistic view of the performance measures described above, together with our associated analyses, comprises the information we use for value-based management. We use planning and control processes to manage the compilation of these key measures and their availability to our decision-makers across various management levels.

SAP's long-term strategic plans are the point of reference for our short-term and midterm planning and controlling processes. We initially identify future growth and profitability drivers at a highly aggregated level. In a first step, the resulting financial plan is broken down into (i) our deployment models “On Premise,” “Software as a Service/Platform as a Service,” “Infrastructure as a Service,” and “Business Networks”; and (ii) functions such as development, sales, and administration. In a second step, the planned total revenues and total expenses are generally allocated to the areas of functional responsibility of the individual members of the Executive Board (the board areas). If a board area represents not only a functional department but also has a responsibility for operating segments within this board area (for example, SAP Business Network segment and Customer Experience segment), the allocation is done at the lower segment level. Budget adjustments may be applied during the year to reflect changes in priorities, to achieve efficiency targets and to reflect endogenous and exogenous factors. Such budget adjustments, as well as the assessment of the Executive Board's performance, are handled at the board area level if the board area is part of a segment, or at the segment level if the board area comprises several segments. It is then the individual board member's responsibility to break down the allocated budget adjustments within the segment budget boundary. Based on an integrated portfolio process running in parallel to the budgeting process, we ensure aligned investment behavior across board areas with regards to specific solutions or solution areas. In a final step, customer-facing revenue targets and cost of sales and marketing targets are broken down into sales regions.

Based on our detailed annual plans, we determine the budget for the respective year. We also have processes in place to forecast revenue and profit on a quarterly basis, to quantify whether we expect to realize our financial goals, and to identify any deviations from plan. We continuously monitor the affected units in the Group to analyze these developments and define any appropriate actions. Our entire network of planning, control, and reporting processes is implemented in integrated planning and information systems, based on SAP software, across all organizational units so that we can conduct the evaluations and analyses needed to make informed decisions.

Non-IFRS Financial Measures Cited in This Report

Explanation of Non-IFRS Measures

We disclose certain financial measures such as revenue (non-IFRS), expense (non-IFRS), and profit measures (non-IFRS) that are not prepared in accordance with IFRS and are therefore considered non-IFRS financial measures. Our non-IFRS financial measures may not correspond to non-IFRS financial measures that other companies report. The non-IFRS financial measures that we report should only be considered in addition to, and not as substitutes for, or superior to, our IFRS financial measures.

We believe that the disclosed supplemental historical and prospective non-IFRS financial information provides useful information to investors because management uses this information, in addition to financial data prepared in accordance with IFRS, to attain a more transparent understanding of our past performance and our anticipated future results. We use non-IFRS revenue and profit measures consistently in our internal planning and forecasting, reporting, and compensation, as well as in our external communications, as follows:

- Our management primarily uses these non-IFRS measures rather than IFRS measures as the basis for making financial, strategic, and operating decisions.
- The variable components of our Executive Board members' and employees' remuneration are based on revenue (non-IFRS), operating profit (non-IFRS), operating margin (non-IFRS), as well as new cloud bookings measures rather than the respective IFRS measures.
- The annual budgeting process for all management units is based on revenue (non-IFRS) and operating profit (non-IFRS) numbers rather than the respective IFRS financial measures.
- All forecast and performance reviews with all senior managers globally are based on these non-IFRS measures, rather than the respective IFRS financial measures.
- Both our internal performance targets and the guidance we provide to the capital markets are based on non-IFRS revenue and profit measures rather than the respective IFRS financial measures.

Our non-IFRS financial measures reflect adjustments based on the items below, as well as adjustments for the related income tax effects.

Revenue (Non-IFRS)

Non-IFRS revenue measures have been adjusted from the respective IFRS financial measures by including the full amount of software support revenue, cloud subscriptions and support revenue, and other similarly recurring revenue that we are not permitted to record as revenue under IFRS due to fair value accounting for the contracts in effect at the time of the respective acquisitions.

Under IFRS, we record at fair value the contracts in effect at the time entities were acquired. Consequently, our IFRS software support revenue, IFRS cloud subscriptions and support revenue, IFRS cloud and software revenue, and IFRS total revenue for periods subsequent to acquisitions do not reflect the full amount of revenue that would have been recorded by entities acquired by SAP had they remained stand-alone entities. Adjusting revenue

numbers for this revenue impact provides additional insight into the comparability of our ongoing performance across periods.

Operating Expense (Non-IFRS)

Operating expense numbers that are identified as operating expenses (non-IFRS) have been adjusted by excluding the following expenses:

- Acquisition-related charges
 - Amortization expense/impairment charges for intangibles acquired in business combinations and certain stand-alone acquisitions of intellectual property (including purchased in-process research and development)
 - Settlements of pre-existing business relationships in connection with a business combination
 - Acquisition-related third-party expenses
- Share-based payment expenses
- Restructuring expenses, that is, expenses resulting from measures which comply with the definition of restructuring according to IFRS.

We exclude certain acquisition-related expenses for the purpose of calculating operating profit (non-IFRS), operating margin (non-IFRS), and earnings per share (non-IFRS) when evaluating SAP's continuing operational performance because these expenses generally cannot be changed or influenced by management after the relevant acquisition other than by disposing of the acquired assets. Since management at levels below the Executive Board does not influence these expenses, we generally do not consider these expenses for the purpose of evaluating the performance of management units. For similar reasons, we eliminate share-based payment expenses as these costs are impacted by share price developments and other factors outside our control. We also eliminate restructuring expenses because they are volatile and mostly cannot be influenced by management at levels below the Executive Board.

Operating Profit (Non-IFRS), Cloud Subscriptions and Support Gross Margin (Non-IFRS), Operating Margin (Non-IFRS), Effective Tax Rate (Non-IFRS), and Earnings per Share (Non-IFRS)

Operating profit, cloud subscriptions and support gross margin, operating margin, effective tax rate, and earnings per share identified as operating profit (non-IFRS), cloud subscriptions and support gross margin (non-IFRS), operating margin (non-IFRS), effective tax rate (non-IFRS), and earnings per share (non-IFRS) have been adjusted from the respective IFRS measures by adjusting for the aforementioned revenue (non-IFRS) and operating expenses (non-IFRS) and the income tax effects thereon.

Constant Currencies Information

We believe it is important for investors to have information that provides insight into our sales. Revenue measures determined under IFRS provide information that is useful in this regard. However, both sales volume and currency effects impact period-over-period changes in sales revenue. We do not sell standardized units of products and services, so we cannot provide relevant information on sales volume by providing data on the changes in product and service units sold. To provide additional information that may be useful to investors in breaking down and evaluating changes in sales volume, we present information about our revenue and various values and components relating to operating profit that are adjusted for foreign currency effects.

We calculate constant currencies measures by translating foreign currencies using the average exchange rates from the comparative period instead of the current period.

Free Cash Flow

Among other measures, we use free cash flow to manage our overall financial performance.

€ millions	2018	2017	Δ in %
Net cash flows from operating activities	4,303	5,045	-15
Purchase of intangible assets and property, plant, and equipment (without acquisitions)	-1,458	-1,275	14
Free cash flow	2,844	3,770	-25

Usefulness of Non-IFRS Measures

We believe that our non-IFRS measures are useful to investors for the following reasons:

- Our revenue (non-IFRS), expense (non-IFRS), and profit (non-IFRS) measures, along with the “new cloud bookings” and “cloud backlog” measures (see above) provide investors with insight into management’s decision making because management uses these measures to run our business and make financial, strategic, and operating decisions. We include the revenue adjustments outlined above and exclude the expense adjustments outlined above when making decisions to allocate resources. In addition, we use these non-IFRS measures to facilitate comparisons of SAP’s operating performance from period to period.
- The non-IFRS measures provide investors with additional information that enables a comparison of year-over-year operating performance by eliminating certain direct effects of acquisitions, share-based compensation plans, and restructuring plans.
- Non-IFRS and non-GAAP measures are widely used in the software industry. In many cases, inclusion of our non-IFRS measures may facilitate comparison with our competitors’ corresponding non-IFRS and non-GAAP measures.

Limitations of Non-IFRS Measures

We believe that our non-IFRS financial measures described above have limitations including but not limited to the following:

- Without being analyzed in conjunction with the corresponding IFRS measures, the non-IFRS measures are not indicative of our

present and future performance, foremost for the following reasons:

- While our profit (non-IFRS) numbers reflect the elimination of certain acquisition-related expenses, no eliminations are made for the additional revenue or other income that results from the acquisitions.
- While we adjust for the fair value accounting of the acquired entities’ recurring revenue contracts, we do not adjust for the fair value accounting of deferred compensation items that result from commissions paid to the acquired company’s sales force and third parties for closing the respective customer contracts.
- The acquisition-related amortization expense that we eliminate in deriving our profit (non-IFRS) numbers is a recurring expense that will impact our financial performance in future years.
- The remaining acquisition-related charges that we eliminate in deriving our profit (non-IFRS) numbers are likely to recur should SAP enter into material business combinations in the future. Similarly, the restructuring expenses that we eliminate in deriving our profit (non-IFRS) numbers are likely to recur should SAP perform restructurings in the future.
- The revenue adjustment for the fair value accounting of the acquired entities’ contracts and the expense adjustment for acquisition-related charges do not arise from a common conceptual basis. This is because the revenue adjustment aims to improve the comparability of the initial post-acquisition period with future post-acquisition periods, while the expense adjustment aims to improve the comparability between post-acquisition periods and pre-acquisition periods. This should particularly be considered when evaluating our operating profit (non-IFRS) and operating margin (non-IFRS) numbers as these combine our revenue (non-IFRS) and expenses (non-IFRS) despite the absence of a common conceptual basis.
- Our restructuring charges resulted in significant cash outflows in the past and could do so in the future. The same applies to our share-based payment expense because most of our share-based payments are settled in cash rather than shares.
- The valuation of our cash-settled share-based payments could vary significantly from period to period due to the fluctuation of our share price and other parameters used in the valuation of these plans.
- In the past, we have issued share-based payment awards to our employees every year and we intend to continue doing so in the future. Thus, our share-based payment expenses are recurring although the amounts usually change from period to period.

We believe that constant currencies measures have limitations, particularly as the currency effects that are eliminated constitute a significant element of our revenue and expenses and could materially impact our performance. Therefore, we limit our use of constant currencies measures to the analysis of changes in volume as one element of the full change in a financial measure. We do not evaluate our results and performance without considering both constant currencies and nominal measures of revenue (non-IFRS) and operating profit (non-IFRS) measures on the one hand, and changes in revenue, operating expenses, operating profit, or other

measures of financial performance prepared in accordance with IFRS on the other. We caution the readers of our financial reports to follow a similar approach by considering nominal and constant currencies non-IFRS measures only in addition to, and not as a substitute for or superior to, changes in revenue, operating expenses, operating profit, or other measures of financial performance prepared in accordance with IFRS.

Despite these limitations, we believe that the presentation of our non-IFRS measures and the corresponding IFRS measures, together with the relevant reconciliations, provide useful information to management and investors regarding present and future business trends relating to our financial condition and results of operations.

Reconciliations of IFRS to Non-IFRS Financial Measures for the Years 2018 and 2017

€ millions, unless otherwise stated	2018					2017		
	IFRS	Adj.	Non-IFRS	Currency Impact	Non-IFRS Constant Currency	IFRS	Adj.	Non-IFRS
Revenue measures								
Cloud subscriptions and support	4,993	33	5,027	179	5,205	3,769	2	3,771
Software licenses	4,647	0	4,647	231	4,877	4,872	0	4,872
Software support	10,981	0	10,982	513	11,494	10,908	0	10,908
Software licenses and support	15,628	0	15,629	743	16,372	15,780	0	15,780
Cloud and software	20,622	33	20,655	922	21,577	19,549	3	19,552
Services	4,086	0	4,086	297	4,384	3,912	0	3,912
Total revenue	24,708	33	24,741	1,219	25,961	23,461	3	23,464
Operating expense measures								
Cost of cloud subscriptions and support	-2,068	213	-1,855			-1,660	233	-1,427
Cost of software licenses and support	-2,092	130	-1,962			-2,234	190	-2,044
Cost of cloud and software	-4,160	343	-3,817			-3,893	423	-3,471
Cost of services	-3,302	151	-3,151			-3,158	166	-2,991
Total cost of revenue	-7,462	494	-6,969			-7,051	589	-6,462
Gross profit	17,246	527	17,773			16,410	592	17,001
Research and development	-3,624	219	-3,406			-3,352	281	-3,072
Sales and marketing	-6,781	589	-6,192			-6,924	700	-6,225
General and administration	-1,098	106	-992			-1,075	138	-936
Restructuring	-19	19	0			-182	182	0
Other operating income/expense, net	-20	0	-20			1	0	1
Total operating expenses	-19,005	1,426	-17,579	-902	-18,481	-18,584	1,889	-16,694
Profit numbers								
Operating profit	5,703	1,459	7,163	317	7,480	4,877	1,892	6,769
Other non-operating income/expense, net	-56	0	-56			-36	0	-36
Finance income	371	0	371			476	0	476
Finance costs	-418	0	-418			-288	0	-288
Financial income, net	-47	0	-47			188	0	188
Profit before tax	5,600	1,459	7,059			5,029	1,892	6,921
Income tax expense	-1,511	-349	-1,860			-983	-592	-1,575
Profit after tax	4,088	1,111	5,199			4,046	1,300	5,346
Attributable to owners of parent	4,083	1,111	5,193			4,008	1,300	5,307
Attributable to non-controlling interests	6	0	6			38	0	38
Key ratios								
Operating margin (in %)	23.1		29.0		28.8	20.8		28.9
Effective tax rate (in %)	27.0		26.3			19.5		22.8
Earnings per share, basic (in €)	3.42		4.35			3.35		4.43

Due to rounding, the sum of the numbers presented in the table above might not precisely equal the totals we provide.

Non-IFRS Adjustments by Functional Areas

€ millions	2018									2017	
	IFRS	Acqui- sition- Related	SBP ¹⁾	Restruc- turing	Non-IFRS	IFRS	Acqui- sition- Related	SBP ¹⁾	Restruc- turing	Non-IFRS	
Cost of cloud and software	-4,160	264	78	0	-3,817	-3,893	307	115	0	-3,471	
Cost of services	-3,302	9	142	0	-3,151	-3,158	8	158	0	-2,991	
Research and development	-3,624	9	210	0	-3,406	-3,352	11	269	0	-3,072	
Sales and marketing	-6,781	277	312	0	-6,192	-6,924	258	442	0	-6,225	
General and administration	-1,098	18	88	0	-992	-1,075	3	135	0	-936	
Restructuring	-19	0	0	19	0	-182	0	0	182	0	
Other operating income/expense, net	-20	0	0	0	-20	1	0	0	0	1	
Total operating expenses	-19,005	577	830	19	-17,579	-18,584	587	1,120	182	-16,694	

¹⁾ Share-based payments

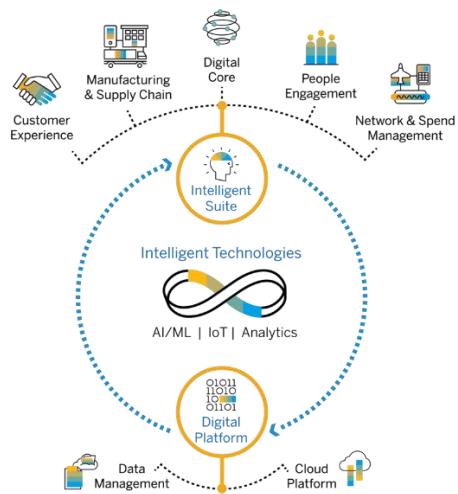
Products, Research & Development, and Services

Bringing Together Machine and Human Intelligence

SAP works to deliver an intelligent enterprise that brings together machine and human intelligence across all business functions to provide value to customers. As we make that happen, we aim to help customers make best use of their data assets to achieve their desired outcomes faster and with less risk.

Intelligent Enterprise Vision

To make good on our commitment to help customers transform themselves into full digital enterprises operating in real time, we have created a framework for the intelligent enterprise, as described in the *Strategy and Business Model* section and illustrated below. This framework is further strengthened with a portfolio of services and support offerings to help customers maximize the value of their SAP software and technology implementations.



By bringing continuous innovation, we not only help our customers succeed as they adopt increasingly more sustainable business strategies, but we also realize our purpose of helping the world run better and improving people's lives.

Intelligent Suite

Whether a business needs to manage its total spend, gain a deeper understanding of its customers, engage its external workforce, or transform its workplace experience, our intelligent suite enables a global enterprise to thrive in the digital economy. Developed with new technologies such as artificial intelligence (AI)/machine learning, including chatbots and voice technology, SAP cloud applications provide businesses with insights and intelligence to anticipate and proactively respond to business

imperatives and identify opportunities for improvement. Together, these solutions support the customer's journey to becoming an intelligent enterprise.

Integrated with SAP S/4HANA, our digital core, and built on an open cloud platform to enable integration across heterogeneous environments, these offerings can be linked easily with third-party applications and data, delivering the real-time and actionable insights that customers need.

With our acquisition of Qualtrics International Inc. on January 23, 2019, SAP adds experience management capabilities to further empower the intelligent enterprise, bringing a new dimension in which every digital interaction is an opportunity to influence a customer positively. A business can use each interaction to measure customer satisfaction, employee engagement, partner collaboration, brand impact, and user sentiment. By combining such experience data with the operational data already maintained in an SAP system, an intelligent enterprise can deliver intelligent experiences for customers.

Network and Spend Management

Every business can benefit from better managing its spend. Our cloud solutions under the SAP Ariba, SAP Concur, and SAP Fieldglass brands give customers the essential visibility and capacity to control their spend. Together, the solutions comprise the largest commerce platform in the world, with approximately \$2.9 trillion in global commerce transacted annually in more than 230 countries and territories. These solutions enable insight and control across sourcing and supplier management, travel and expense, and external workforce. Our network and spend management solutions are built on an open platform of established business networks. They give customers greater understanding of all spend related to vendors and employees and the ability to share master data through SAP S/4HANA to maximize intelligence-based decisions. These solutions deliver best practices for our customers, no matter if they decide to use our entire portfolio or a specific solution to address their needs.

SAP Ariba

SAP Ariba solutions offer an online business-to-business marketplace connecting more than 3.8 million sellers in more than 190 countries, with sellers realizing more than US\$2.6 trillion in goods and services every year.

New innovations in 2018 include the following:

- The **SAP Ariba Spend Analysis** solution leverages AI and machine learning to reduce the time it takes to classify invoice data.
- The **SAP Ariba Snap** program provides simple, affordable, and scalable options for fast-growing companies to implement sourcing solutions and reap the benefits they provide.
- The **SAP Digital Manufacturing Cloud** solution offers a manufacturing network that integrates with the SAP Ariba

Sourcing solution and Ariba Network, and enables manufacturers and service providers to connect and collaborate across the entire manufacturing process.

- **SAP Ariba Strategic Sourcing Suite** significantly expanded its industry capabilities with new retail industry capabilities for direct spend.
- The **SAP Ariba Supplier Risk** solution provides additional insights to help customers track 175 risk incident types in partnership with Semantic Vision, Made In a Free World, World Economic Forum, and other public and private data aggregators. These risk incident types are used to calculate a company's supplier risk-exposure score. This score is then used to analyze exposure to high-risk suppliers. The solution also provides a comprehensive risk-due-diligence process, which helps companies meet third-party regulatory compliance requirements.
- The **SAP Ariba Cloud Integration Gateway** solution enabled by the SAP Cloud Platform Integration service provides with buyers a simple, reliable, and faster way to connect their SAP ERP and SAP S/4HANA systems with SAP Ariba solutions.

SAP Fieldglass

SAP Fieldglass solutions are cloud-based applications for external workforce management and services procurement. The SAP Fieldglass Vendor Management System helps organizations find, engage, and manage all types of flexible resources – including contingent workers, statement-of-work-based consultants, freelancers, and more. In 2018, SAP Fieldglass solutions connected customers with 5.7 million active external workers and more than 131,000 suppliers in over 220 countries and territories.

New innovations in 2018 include the following:

- The **Digital Partner Network** for SAP Fieldglass solutions was launched in 2018 as a new ecosystem network to help customers transform how they engage and manage an external workforce of freelancers, contingent workers, independent contractors, and other service providers.
- We delivered a machine-learning powered **Resume Matching** service that automatically reads and ranks candidates based on role requirements, identifying best-fit candidates while increasing efficiency and speed to hire.

SAP Concur

With close to 58 million users worldwide, SAP Concur is the world's leading travel and expense management software. SAP Concur solutions help companies of all sizes and stages go beyond automation to a connected spend management system that encompasses travel, expense, invoice, compliance, and risk. These solutions help businesses gather instant, actionable insights that support the intelligent enterprise.

New innovations in 2018 include the following:

- The **Expenselt** mobile app, an already established offering, was fully integrated with SAP Concur solutions in 2018, providing valuable functionality that uses receipt scanning technology powered by machine learning to turn receipts into expense report line items.
- The **Budget** add-on is a Web service that aggregates data in near real time from SAP Concur solutions including Concur Expense and Concur Invoice, as well as purchase and travel requests, for a comprehensive dashboard on spend – before and after the spend occurs.

- The **Concur Drive** add-on is a Web service that allows businesses to automatically capture distance driven as an automated alternative to self-reported mileage, reducing overspending in organizations.

People Engagement

SAP SuccessFactors

SAP SuccessFactors Human Capital Management (HCM) solutions help organizations increase the value of their workforce by developing, managing, engaging, and empowering their people. SAP SuccessFactors solutions are delivered as a complete digital suite that addresses all aspects of human resources (HR), from administration, payroll, and benefits to talent management and collaboration across the employee journey. These solutions integrate fully with the customer's other business software, including SAP S/4HANA. SAP SuccessFactors HCM solutions are used by more than 6,700 customers in over 200 countries and territories, and core HR and talent management solutions reach more than 125 million users.

New innovations in 2018 include the following:

- An **SAP SuccessFactors digital assistant** was developed to provide a business' entire workforce with a personalized, engaging experience by applying machine learning to guide and recommend actions based on verbal and written questions or commands.
- **SAP SuccessFactors Visa and Permits Management** is the first SAP SuccessFactors solution built on SAP Cloud Platform. It offers a single place for HR to centrally manage, automate, and gain insight into complex employee work visa and permit processes for international hiring.
- Several key features were also added to existing HCM solutions, including functionality for the **General Data Protection Regulation (GDPR)**, a set of laws that came into force on May 25, 2018, which affects data privacy practices throughout the European Union (EU). This GDPR functionality is now embedded across the entire HCM suite, making it easier for HR leaders to properly handle and protect sensitive employee and candidate data. A candidate relationship management capability is now available as part of the SAP SuccessFactors Recruiting solution, helping recruiters to attract more relevant candidates, engage and nurture targeted talent pools, and manage the application and hiring process more efficiently.

Further improving usability across mobile devices, SAP and Google partnered in 2018 to redesign the SAP SuccessFactors Mobile app for Android. Employees and managers can now more easily engage and complete critical people-related tasks. We also joined forces with Thrive Global to introduce Well-Being at Work, a new initiative that puts employee well-being at the heart of organizations and positions technology as a catalyst for this cultural shift. SAP SuccessFactors Work-Life is the first solution to come from this partnership. It provides real-time insights into well-being needs and makes recommendations to improve employee satisfaction and engagement.

Digital Core

SAP S/4HANA

SAP S/4HANA is our enterprise resource planning (ERP) suite for the intelligent enterprise. Approximately 10,500 customers have chosen it to support their digital transformation. It enables a business to access and analyze data in real time, giving them insights to act in the moment, providing predictive suggestions, and connecting business functions and the people within them. SAP S/4HANA software spans all business functions including finance, human resources, sales, service, procurement, manufacturing, asset management, supply chain, and R&D.

Flexible Deployment Options

Developed first for the cloud, SAP S/4HANA can be delivered as a software-as-a-service (SaaS) solution, on premise, in a private cloud, or as a hybrid deployment. All consumption options are compatible, so that organizations have the flexibility to implement SAP S/4HANA to meet their exact needs. SAP S/4HANA Cloud provides SaaS qualities such as scalability as well as quarterly innovation updates. On-premise customers receive the same updates but on an annual update cycle.

Real Time

Built specifically to take advantage of in-memory computing with SAP HANA, SAP S/4HANA reduces both the complexity of the data model and the data footprint. It enables SAP S/4HANA solutions to process huge amounts of data in real time and end users can flexibly change their perspective of the data. This not only saves time and costs for our customers but also delivers a new interactive experience and new business insights. SAP S/4HANA empowers business users to act in the moment, as they have immediate access to information at the most granular level to help make better, more informed decisions.

Integrated and Extendable

SAP S/4HANA is built with an open architecture and connects to the entire SAP portfolio and beyond. The SAP S/4HANA Cloud software development kit (SDK) allows our customers and partners to innovate quickly and easily on SAP Cloud Platform while leveraging the capabilities of their digital core.

Manufacturing and Supply Chain

Our SAP Digital Supply Chain portfolio offers enterprises an integrated suite of digital supply chain solutions to plan, design, manufacture, deliver, and operate their products. With these solutions, customers can blend the physical and the digital world throughout the complete supply chain – from design, planning, and manufacturing to logistics and ongoing maintenance – embedding intelligence and ensuring their customers are central to every phase of their business. Customers get total visibility as products are designed, delivered, and deployed by connecting their business processes with real-time data from assets, equipment, customers, and suppliers. This visibility is used to adequately anticipate and respond to real-world physical realities.

Integrated Business Planning

The **SAP Integrated Business Planning** solution is powered by SAP HANA and delivers real-time supply chain planning capabilities for sales and operations, demand and supply planning, and

inventory optimization in the cloud. It provides the necessary information to make business decisions using embedded analytics, simulation, prediction, and decision support. Specific SAP Integrated Business Planning applications can be used with the established SAP Fiori user experience interface or with a Microsoft Excel plug-in, allowing users to run optimization scenarios directly in their spreadsheets.

Asset Management

SAP Intelligent Asset Management solutions support manufacturers and asset operators to define, plan, and monitor the optimal service and maintenance strategy for their physical products and assets. The solutions do this by providing the required level of collaboration, integration, and analytical insights, using an asset central foundation, our digital twin for physical assets, as the common data set.

Customer Experience

SAP C/4HANA

In June 2018, we launched SAP C/4HANA, a unified suite of cloud solutions designed as the next generation of customer relationship management. SAP C/4HANA software provides companies with a single, holistic view of each customer across all channels and connects demand to the fulfillment engine in one end-to-end value chain. To complete our portfolio of customer experience solutions, SAP acquired and integrated Gigya, Callidus Software, and Coresystems, and rebranded the SAP Hybris business area to SAP Customer Experience to reflect the depth and breadth of our offerings.

SAP C/4HANA is now a major growth driver for SAP, showing triple-digit growth in cloud subscription revenue during 2018.

New innovations in 2018 include the following:

- **SAP Upscale Commerce** is a commerce solution designed for midmarket retailers, major brands, and direct-to-consumer companies looking to deploy a fast and highly engaging commerce experience. Built for today's mobile-first consumer, it can be deployed in a matter of days, bringing SAP customers speed to market with rich AI-powered experiences.
- **SAP Commerce Cloud on Microsoft Azure** is a partnership that combines SAP's market-leading solution for B2B and B2C scenarios with the Microsoft Azure public cloud infrastructure.

We also announced the **Open Data Initiative**, a partnership between SAP, Microsoft, and Adobe, the goal of which is to meet a core need for our customers – to unlock a single view of their customers by bringing siloed data together.

Winning in the CRM market hinges on our ability to deliver an integrated lead-to-cash process that connects the front office (SAP C/4HANA) with the digital core (SAP S/4HANA) while maintaining competitiveness in each area of the SAP Customer Experience portfolio.

Digital Platform

Helping customers manage data orchestration and system integration across their SAP installation, our digital platform consists of SAP Cloud Platform, the foundation on which the intelligent suite is built, and SAP HANA Data Management Suite, which manages distributed data from any source. The platform not only caters to the runtime and data storage needs of the end-to-

end applications in the intelligent suite, but it also enriches them with intelligent technologies, such as machine learning, Internet of Things (IoT), and analytics capabilities, all offered as cloud services, which are easily embedded in business applications.

SAP Cloud Platform

In the digital economy, companies need both standard applications and a highly flexible platform that allows them to do the following:

- Extend and customize cloud and on-premise SAP applications
- Develop new applications for different processes
- Integrate cloud and on-premise applications

SAP Cloud Platform offers an enterprise platform-as-a-service (PaaS) environment where companies can build, test, run, manage, and expand software applications in the cloud. It is the center of gravity for the intelligent enterprise, as applications can run on SAP Cloud Platform, or run with it, by using the platform's services while running on another stack. It offers comprehensive capabilities to help business users and developers create better, more agile applications in less time. Customers can apply, among other things, mobile services, advanced analytic tools, state-of-the-art authentication mechanisms, and social functionality. For maximum flexibility, portability, and agility, we use open source technologies. SAP Cloud Platform enables businesses to connect and integrate best-of-breed applications to our digital core and to custom-built solutions. The introduction of the SAP Cloud Platform Functions service and SAP Cloud Platform, ABAP environment, simplifies deployments and brings new choices for SAP customers in the cloud.

Giving Customers Freedom of Choice

With SAP Cloud Platform, customers are free to choose from a range of infrastructure-as-a-service (IaaS) providers, and today many enterprise customers are choosing more than one provider. SAP has partnered with Alibaba, Amazon, Google, and Microsoft, so our customers can run their applications in an SAP or a third-party data center, or in a combination thereof. We also offer SAP Cloud Platform as a private cloud deployment.

SAP HANA Data Management

Since 2010, SAP has helped customers realize the value in their data with SAP HANA. Today, customers have a new challenge with distributed data. Data is no longer just in transactional systems, but is distributed across products, machines, and people. This is why SAP has brought together the SAP HANA business data platform and SAP Data Hub as a complete commercial solution to address the emerging challenges enterprises face in managing a distributed data landscape.

The SAP HANA business data platform is our flagship in-memory database, available both on premise and as a service in the cloud. It enables businesses to process and analyze live data and make business decisions based on the most up-to-date information, a requirement in today's digital economy. The innovative architecture in SAP HANA allows both transactional processing for data capture and retrieval, and analytical processing for business intelligence and reporting. It reduces time-consuming database and data management tasks and underpins intelligent applications that use advanced analytic processing. It includes features such as text analysis, multitenant database containers to

support multiple isolated databases in a single SAP HANA system, as well as external machine learning libraries.

The SAP Data Hub solution enables businesses to manage data from numerous sources – SAP or third party – without having to centralize data into one location. SAP Data Hub allows data to be processed "in flow," for example, while data is being recorded to the data store, or being prepared for use in machine learning. It also provides enterprise data governance to see who changed or accessed the data. The solution lets companies safely and effectively move and share their data to enable agile data operations across the enterprise.

Intelligent Technologies

SAP Leonardo

SAP Leonardo is a methodology that combines design thinking services with intelligent technologies for every business process, to enable rapid innovation and create better outcomes for the customer. SAP Leonardo brings together the customer vision, SAP's processes and industry knowledge, and technologies such as analytics, AI/machine learning, and IoT capabilities. SAP Cloud Platform provides the environment for applications to consume these technologies.

Analytics

The SAP Analytics Cloud solution leverages the inherent intersection of business intelligence (BI), planning, and predictive analytics to deliver new capabilities such as simulation and automated discovery in BI, as well as storytelling and predicted forecasts in planning. The solution allows organizations to close the gap between transactions, data preparation, analysis, and action. In addition, the SAP Analytics Cloud solution allows customers to take advantage of high-speed innovation in the cloud, while using their existing on-premise investments. To further enable a smooth transition to the cloud, we offer the SAP Analytics Hub solution. SAP Analytics Hub makes it easier for our customers to find the analytics applications they need, as it delivers a single point of access to all analytics offerings, cloud and on premise, from SAP and our many ecosystem partners.

SAP BW/4HANA

SAP BW/4HANA is a data warehouse solution built entirely on SAP HANA. It offers a unique real-time analytics layer, which can directly query the database, instead of processing data at the application layer like traditional analytical engines do. It integrates data from across an organization to deliver key business intelligence. SAP BW/4HANA provides customers with enhanced data modelling and governance, so they can manage the availability, integrity, and security of data. The solution can be connected to various data sources, including SAP or unstructured third-party data, such as Hadoop.

SAP Leonardo Internet of Things

Intelligent devices that generate contextual sensor data are becoming more commonplace in the enterprise, as older machines are retrofitted with sensors and processing capabilities, while newer machines are made intelligent by design. The data generated from these "things" can be processed with business logic, either at source, in the cloud, or in both; it allows the intelligent enterprise to expand into new business models. Connectivity between these

devices, aptly called the Internet of Things (IoT), has led to a surge of investment in opportunities to optimize and increase business outcomes by connecting things to people and processes.

The enterprise IoT capabilities we provide are catalysts for digital transformation, delivering real-time and forward-looking predictive insights that our customers need for their intelligent enterprises.

SAP Leonardo Machine Learning

Machine learning describes algorithms that learn from data and support employees to focus on higher value work, thus empowering enterprises to scale innovative solutions and make their organization intelligent. SAP Leonardo Machine Learning solutions are already integrated in our SAP portfolio, providing intelligent capabilities in SAP S/4HANA, SAP C/4HANA, SAP Concur, SAP Fieldglass, and SAP SuccessFactors solutions, among others. These intelligent capabilities are orchestrated through the SAP Leonardo Machine Learning Foundation, which runs on SAP Cloud Platform, and provides a variety of functional and business services. In addition to SAP's own software developers, our partners and customers can easily use "pretrained" or "retrainable" machine learning capabilities, train their own machine learning models, and build services on top of this foundation. Likewise, SAP Conversational AI provides a way to build bots that automate conversational interactions through natural language processing within SAP offerings in the SAP C/4HANA suite, for example. SAP customers and partners are also able to create their own custom bots with this service.

SAP Digital Business Services

In addition to our powerful software and technology, SAP provides an entire portfolio of service and support offerings to help customers maximize the value of their SAP implementations. These offerings enable the intelligent enterprise. Our people, processes, and tools help customers to achieve digital transformation, enabling them to produce exceptional business outcomes. In 2018, SAP continued a process that had begun the year before, to simplify its services portfolio, creating three categories – continuous success, premium success, and project success – and expanded the range of intelligent tools designed to underpin service and support offerings.

Continuous Success

SAP helps accelerate the customer's time to value from our technology. As the foundation for customer success plans, the following support offerings are provided for our cloud solutions and on-premise software:

- **SAP Enterprise Support** services provide proactive, predictive, and preventive support for customers across hybrid landscapes to help them move to the cloud, make SAP S/4HANA their digital core, and embrace breakthrough innovations through SAP Leonardo.
- **SAP Preferred Success** service offers a bundle of prescriptive customer success activities for accelerated cloud adoption. It focuses on effective change management, enablement, consumption techniques, and enhanced support. As an add-on to SAP Enterprise Support, cloud editions, SAP Preferred Success is available for SAP SuccessFactors solutions, SAP S/4HANA Cloud, SAP C/4HANA, and SAP Cloud Platform.

Premium Success

The SAP MaxAttention program represents the most exclusive and closest customer partnership with SAP. It was completely redesigned in 2018, following close consultation with customers. The **New SAP MaxAttention** helps customers turn ideas into value-based predictable outcomes with precise business and technical guidance – from innovation to operation – and is composed of the following:

- **One service portfolio** ensures coverage for all SAP solutions and deployments – on premise, cloud, and hybrid.
- **One team** brings a holistic engagement model with clear accountabilities.
- **One commercial framework** offers pay-as-you-use services with predictable outcomes.

As the highest engagement level throughout the software lifecycle, this customized, on-site program orchestrates all SAP experts to work with our customers to innovate, develop ideas, and accelerate their digital transformation. It enables our customers to simplify and optimize their IT operations.

The **SAP ActiveAttention** program is a premium-level engagement similar to the New SAP MaxAttention, but designed to support smaller businesses requiring a less intense engagement level.

Project Success

We standardized our services portfolio to help companies reap the benefits of SAP products and solutions faster. Depending on the needs of the customer, we offer the following services separately or packaged together:

- **SAP Advisory Services** help customers turn their digital business vision into executable strategies and exceptional business outcomes by offering support to reimagine business models, design enterprise architectures, and deliver business transformation to realize business value.
- **SAP Innovation Services** provide a flexible, open innovation approach that helps customers apply emerging technologies such as AI and machine learning to bring commercial value to their business, at scale. With expert guidance from SAP – from ideation to readiness for deployment – customers can bring their novel ideas to life as scaled implementations.
- **SAP Model Company** services provide a preconfigured, ready-to-run reference solution with business content, accelerators, and engineered services for multiple industries or lines of business. It provides the building blocks for a solution, helping customers accelerate deployment and digital transformation.
- **SAP Value Assurance** service packages safeguard implementations led by customers and partners by giving them access to best practices, methodologies, tools, and deep technology expertise, enabling them to accelerate the deployment of SAP S/4HANA and SAP BW/4HANA.
- The **SAP Advanced Deployment** service simplifies and accelerates the deployment of SAP S/4HANA for SAP-led implementations. Based on the proven SAP Activate methodology and tailored to the enterprise's specific transition scenario, the service streamlines the implementation or migration to a high-performing, sustainable digital core.
- In addition to our standardized service offerings, the new **SAP S/4HANA Movement** program guides SAP ERP

customers as they start to think about their transition to SAP S/4HANA. This is an easy-to-use adoption starter engagement that helps customers structure and assess their transformation towards SAP S/4HANA.

Intelligent Tools

Complementing the skills of our people, we develop intelligent tools to help simplify and accelerate our customers' implementation of SAP solutions and ease the transition to an intelligent enterprise. In 2018, we expanded our range of intelligent tools. In addition to established tools such as SAP Transformation Navigator, SAP Readiness Check, SAP Solution Manager, and SAP Innovation and Optimization Pathfinder, we introduced two new offerings:

- **SAP Cloud Platform Integration Advisor** is a service that allows users to define, maintain, share, and deploy business-to-business (B2B) integration content and interfaces using machine-learning algorithms to significantly reduce build time and effort.
- The **SAP Cloud ALM** solution is a cloud-based application lifecycle management (ALM) tool that helps track and manage the needs of customers that use (only or predominantly) cloud solutions from SAP. SAP Cloud ALM starts with an implementation portal for SAP S/4HANA Cloud. Customers subscribing to a cloud solution from SAP automatically receive SAP Cloud ALM.

Ecosystem

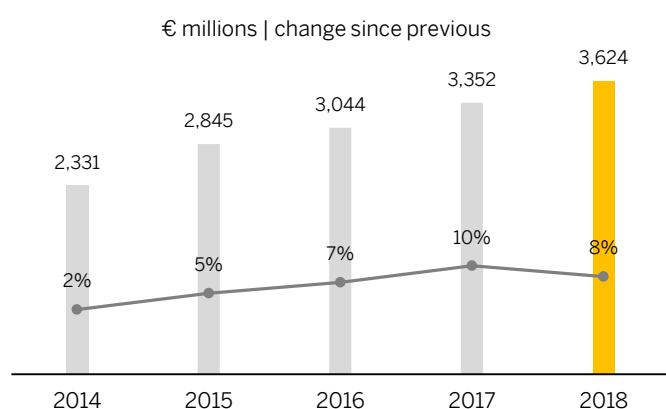
Extending Our Reach Through a Broad Ecosystem

SAP's extensive ecosystem and partner network serves as a vital success driver, extending our reach in the marketplace. Our vibrant ecosystem is made up of more than 18,000 partners worldwide that build, sell, service, and run SAP solutions and technology.

Through the power of partnership and co-innovation, our partner ecosystem drives the bulk of SAP's presence among small and midsize companies, making up more than 80% of SAP customers. Partners are helping SAP break into new markets with SAP Leonardo and SAP Cloud Platform, and are also developing intellectual property by creating prepackaged solutions to simplify cloud implementations for customers. As AI/machine learning, IoT, and blockchain technologies become mainstream, SAP and our partners are enabling our customers to become intelligent enterprises. By taking advantage of these innovative technologies in end-to-end business processes, businesses can drive the next level of automation and drive a next-generation value economy.

Investment in R&D

SAP's strong commitment to R&D is reflected in our expenditures (see figure below).



In 2018, our IFRS R&D ratio, reflecting R&D expenses as a portion of total operating expenses, increased by 1.1 percentage points (pp) to 19.1% (2017: 18.0%). Our non-IFRS R&D ratio increased by 1.0pp to 19.4% year over year (2017: 18.4%). At the end of 2018, our total full-time equivalent (FTE) headcount in development work was 27,060 (2017: 24,872). Measured in FTEs, our R&D headcount was 28% of total headcount (2017: 28%).

Total R&D expense not only includes our own personnel costs but also the external cost of work and services from the providers and cooperation partners we work with to deliver and enhance our products. We also incur external costs for the following:

- Translating, localizing, and testing products
- Obtaining certification for products in different markets
- Patent attorney services and fees
- Consulting related to our product strategy
- Professional development of our R&D workforce

Patents

SAP actively seeks intellectual property protection for innovations and proprietary information. Our software innovations continue to strengthen our market position as a leader in business solutions and services. Our investment in R&D has resulted in numerous patents. As at December 31, 2018, SAP held a total of more than 9,542 validated patents worldwide. Of these, 700 were granted and validated in 2018.

While our intellectual property is important to our success, we believe our business as a whole is not dependent on any particular patent or a combination of patents.

Security, Privacy, and Data Protection

Meeting Today's Data Protection Challenges

Every day, organizations around the world trust SAP with their data – either on their own premises, in the cloud, or when using mobile devices while on the move. Our customers need to know that we will keep that data safe, process it in a manner that complies with local legislation, and protect it from malicious use.

For this reason, data protection and IT security are of paramount importance to us. We have implemented safeguards to help protect the fundamental rights of everyone whose data is processed by SAP, whether they are our customers, prospects, employees, or partners. In addition, we work towards compliance with all relevant legal requirements for data protection. Our chief security officer and our data protection officer report to the SAP chief financial officer (CFO) and monitor the compliance of all activities in these areas.

SAP has a formal security governance model in place. Relevant security topics are discussed at the Executive Board level numerous times each year, during steering committee meetings attended by individual or multiple board members. To meet and ensure consistent data protection compliance, our CFO and our data protection officer (DPO) meet at least monthly. Furthermore, our compliance status related to data protection has been an inherent part of Supervisory Board meetings.

Facing Increasing Risks in IT Security

Safeguarding data is an increasingly challenging task today. Companies are collecting and storing more data than ever before from more varied sources. Data now proliferates outside the four walls of businesses with multiple endpoints exposed and vulnerable to attack. Moreover, the sheer number of and the sophistication of attacks facing businesses are at an all-time high. We are seeing the “commercialization of hacking,” while new advanced persistent threats can bypass many traditional security protection techniques.

Establishing a Comprehensive Security Vision

For SAP and for our customers, security means more than just addressing compliance demands. Companies need to be proactive when securing business-critical data and core information assets.

Several of our security measures extend across all of our company and thus to all of our products and services. These measures include, among other things, the regular training of our employees on IT security, data protection, and privacy, including the handling of confidential information and ensuring controlled and restrictive access to customer information. In addition, we have developed a three-pronged strategy focusing on the security of our products, operations, and organization:

Secure Product Strategy: Championing Product Security

Businesses use SAP applications to process mission-critical transactional data, which can be highly attractive to cyberattackers. Our secure product strategy focuses on incorporating security features into our applications to minimize the risk of a security breach.

Our secure software development lifecycle is at the heart of this strategy. It provides a comprehensive methodological approach for incorporating security features and capabilities into our applications. Before a release decision is made, our software is assessed and validated by internal security experts. The development team then addresses any recommendations made by these security experts before we release the application.

We strive to align our secure software development lifecycle to the recommendations of the ISO/IEC 27034 standard for application security and our ISO 9001-certified process framework for developing standard software, as well as apply the methods for developing secure software.

Secure Operations Strategy: Running Secure Operations

Our secure operations strategy focuses on the security principles of “confidentiality, integrity, and availability” to support the overall protection of our business and our customers’ businesses. To help us achieve our mission to become an intelligent enterprise, we have established a comprehensive IT operations security framework. This includes system and data access, and system security configuration, through security patch management, proactive security event management, thread hunting, and robust incident handling.

Our secure operations strategy involves the implementation of key security measures across all layers, including physical access and process-integrated controls. Furthermore, our secure operations approach concentrates on the early identification of deviations from the standards defined in our security framework. Deviations are identified through a combination of automated and manual reviews that are performed by third parties as well as SAP employees.

Industry certifications are key success factors for our secure operations strategy. Many of our cloud solutions undergo Service Organization Control (SOC) audits, including ISAE3402, SSAE16 SOC 1 Type II, and SSAE16 SOC 2 Type II. The SOC standards are harmonized with a number of certifications from the International Organization for Standardization (ISO), including ISO 9001, 27001, and 22301.

Secure Company Strategy: Taking a Holistic Approach to the Security of Our Business

At SAP, we take a holistic approach to the security of our company, encompassing processes, technology, and employees. At the heart of our secure company strategy are an information

security management system and a security governance model that bring together different aspects of security. These include the following three main areas:

- Security culture: Regular mandatory training, assessments, and reporting on these efforts foster awareness and compliance with our security policy and standards.
- Secure environments: Industry-standard physical security measures are in place to ensure the security of our data centers and development sites so that we can protect buildings and facilities effectively.
- Business continuity: We maintain a corporate continuity framework aimed at having robust governance in place at all times, and review this framework on an annual basis to adapt to new or changed business needs.

In addition to these important measures, up-to-date security mechanisms, such as authentication, authorization, and encryption, serve as a first line of defense. To secure the SAP software landscape, we offer a portfolio of security products, services, and secure support as well as security consulting. These offerings help our customers build security, data protection, and privacy capabilities into their businesses.

Our portfolio includes identity and access management tools and solutions for governance, risk, and compliance.

Furthermore, our SAP Cloud Trust Center site provides transparency for our customers with regard to how SAP helps to improve security, privacy, and compliance in cloud and on-premise landscapes.

Complying with Data Protection and Privacy Legislation

SAP respects and protects the right to data protection and privacy when processing the personal data of employees, applicants, customers, suppliers, and partners. While implementing

appropriate security measures, we develop and pursue our data protection and privacy strategy in accordance with our business strategy.

Our global data protection and privacy policy and global data protection management system (DPMS) are designed to ensure that we comply with applicable data protection laws. These include the harmonized European data protection law, the General Data Protection Regulation (GDPR).

Our policy outlines a group-wide minimum standard for handling personal data in compliance with data protection and privacy laws. It defines requirements for all operational processes that affect the processing of, or access to, personal data. It also clearly allocates responsibilities and establishes organizational structures. We actively monitor changes to applicable laws and regulations so that we can update our standards on an ongoing basis.

Our DPMS conforms to the targets of the globally-recognized standard for data protection management systems, BS 10012:2017. Initially implemented at our global support organization, the DPMS has been successively rolled out and is now in place in all areas critical to data protection. It covers almost all areas and countries in which SAP has operations and will be introduced in all acquired companies. It is audited and certified on a yearly basis by the British Standards Institute and this audit last took place in April 2018.

We have implemented a wide range of measures to protect data controlled by SAP and SAP customers from unauthorized access and processing, as well as from accidental loss or destruction. Also, we are developing our products to support our customers in applying data protection requirements, including GDPR.

In 2018, SAP did not experience any significant incidents in processing personal data – either on our own behalf or on behalf of our customers – that were subject to GDPR or other applicable data protection laws.

Customers

Approaching Our Customers with Empathy

SAP's purpose is to help the world run better and improve people's lives. We achieve this by providing solutions that help our customers tackle the challenges of today's world to be successful. We can only do this with a sharp focus on our customers' needs. We want our customers to see a company that listens and responds to their needs. We want to design and develop with their needs in mind. We want them to experience a constantly improving SAP.

To achieve this, SAP has implemented extensive programs to deepen our relationship with customers. Through these efforts, we reach out to our customers to ensure we understand what works well and not so well in their partnership with SAP.

Measuring customer loyalty is a part of this program, and we use the Customer Net Promoter Score (Customer NPS) as one feedback mechanism to do so. This allows us to directly understand what our customers are thinking and identify key pain points for action. Our customers are of such importance to SAP, it is only logical that Customer NPS is one of our main KPIs.

Specifically, Customer NPS measures the willingness of our customers to recommend or promote SAP to others. It is derived from ongoing customer surveys that identify, on a scale of 0–10, whether a customer is likely to recommend SAP to friends or colleagues, is neutral, or is unwilling to recommend. The responses are divided into three groups as follows:

- 9 or 10: promoters
- 7 or 8: passives
- 6 or below: detractors

To derive the Customer NPS, we start with the percentage of promoters and subtract the percentage of detractors. Passives are ignored. Consequently, the range of achievable scores is –100 to +100, with the latter being the best achievable score for customer loyalty as measured by the NPS methodology. In 2018, after critically reviewing the process of how we contact customers to participate in the survey, we made changes. We implemented a more standardized and more rigorous process to approach customer contacts in a more consistent manner across the company. We believe every customer, rather than only a sample, should have a voice.

To adhere to this, we implemented measures to ultimately ensure all of our customers are invited to give feedback and a random selection of key contacts at each customer is selected to participate in the survey. This increases the quality and representation of the feedback we are receiving and helps us engage in an open dialogue with our customers. We have further reduced the set of criteria for which a customer can be excluded from the survey, designed our Customer NPS survey instrument to best practice standards and with a focus on probing for critical feedback.

68% of customers gave us a score of 7 or higher. This means that a large majority of customers are satisfied or highly satisfied with SAP. Because the percentage of customers who rated us 9 or 10 is slightly smaller than the percentage of customers who rated us 6 or below our Customer NPS for 2018 is –5.0 (2017: +17.8). We did

not reach our target of +21 to +23 in 2018. This was mainly due to the fact that we have a more rigorous process to ensure we receive open and direct feedback. Below you can find some of the programs we have implemented to address pain points customers share with us in their feedback.

As we implement these customer engagement programs and with continued rigor in our processes, we are targeting a Customer NPS of +1.0 in 2019 and a steady increase in 2020 and beyond.

For more information about the Customer NPS, see the *Performance Management System* section.

Focusing on Customer Engagement

In addition to quantitative customer feedback such as Customer NPS, we also utilize numerous executive, customer, and product advisory boards and councils. These committees allow SAP to listen to and engage customers for their feedback and guidance relative to our business and technology strategies, solutions, and services. Through these efforts, SAP gains a more detailed understanding of our strategies, road maps, and potential improvements. The long-term objective for each of these efforts is value generation for our customers and SAP alike.

One of the programs we have introduced to support our customer engagement is **Build Customers for Life**. Customers expect us to deliver one lifecycle experience across our portfolio, all while delivering the promise of integration across our portfolio. To turn this objective into action, the program establishes unified post-sales process standards and supporting IT infrastructure across all cloud offerings. In this way, it enables one harmonized customer experience across both digital and direct interaction points with SAP.

Another example is our global **Customer First** initiative, where efforts are underway to improve the way we work and care for our customers by ensuring we provide a consistent, positive, end-to-end experience that helps deliver successful outcomes for them.

Some specific areas where we have received valuable feedback involve:

- Harmonizing our interactions with customers
- Continuing to evolve our portfolio into a seamless Intelligent Enterprise offering
- Further integrating customer experience for our cloud assets in particular

We engage in this process transparently, as we believe transparency leads to accountability. When feedback is honest, actionable, and transparent, we can address it head on and truly improve our customer experience. Further, the impact of measures and improvements is clearly visible. In this way, SAP continues to take measures to ensure customer feedback is incorporated in our business.

Finally, we not only believe this customer focus is good for SAP, but also for our customers. Our commitment to our customer experience is clearly evidenced by our acquisition of Qualtrics. As we integrate Qualtrics into our portfolio, we will not only be embedding this technology into our software, but will also be offering experience management to our customers.

Employees and Social Investments

Delivering the Intelligent Enterprise with the Best People

Our people are key in enabling our customers to successfully become intelligent enterprises. For this reason, we strive to understand the needs of today's employee and how a 21st-century organization must evolve to keep attracting, retaining, and growing current and future talent.

To address these expectations and to provide intelligent, integrated, and meaningful experiences for our people, we continuously evolve our Human Resources (HR) strategy. Our HR strategy details out people implications, derived from the corporate strategy, into areas of strategic investment that span the entire employee lifecycle. At the same time, it allows us to create a culture that deals successfully with the agility and scope of a digital workplace built on our purpose to help the world run better and improve people's lives. This culture inspires innovation, leads change, and ultimately creates employee satisfaction.

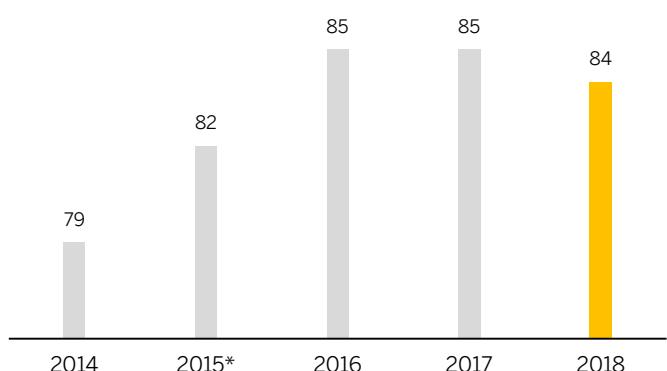
In 2018, we evolved our global HR business model to best serve our SAP workforce. In addition, we are leveraging our own cloud SAP SuccessFactors solutions to make HR services easy to use.

Improving Our Working Culture by Listening to Our People

The People Survey results remained high in 2018. One of our most important survey dimensions, the Employee Engagement Index (EEI), remained very strong with a minor decrease of 1pp to 84%. For 2019 through to 2021, we aim to keep our Employee Engagement Index between 84% and 86%.

Employee Engagement Index

Percent



*The EEI score for 2015 was recalculated from 81% to 82% based on updated questions.

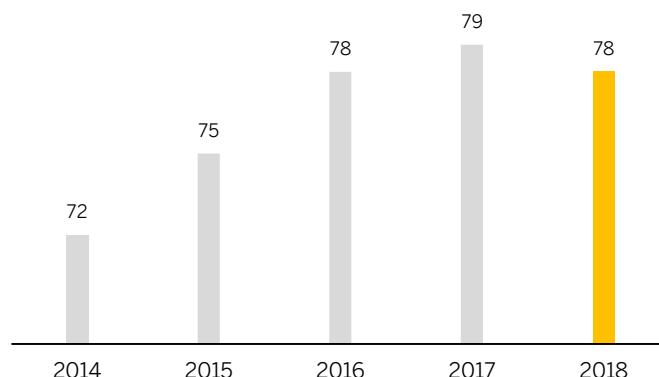
In 2019, we will primarily focus on two topics: Innovation and process simplification. Our innovation capabilities are essential to drive the Intelligent Enterprise. The overall innovation score,

resulting from corresponding questions within our People Survey, is strong at 78% (score of previous year is not comparable due to adjusted question wording in 2018). The process simplification score was 55%, down 2pp from last year. Process simplification has an impact on innovation, so we want to further strengthen our already high innovation score by focusing on process simplification in 2019.

Additionally, our Business Health Culture Index (BHCI) remained high, which shows that we are continuing to sustainably develop our organization. The BHCI assesses the degree to which our workplace culture supports people's well-being, work-life balance, and organizational health. The overall score for the BHCI was 78% (-1pp compared to 2017) and remained within our internal target corridor between 78% and 80%. For 2019 through to 2021, we aim to keep our BHCI within that corridor.

Business Health Culture Index

Percent



Hiring and Retaining the Best People

While remaining focused on a diverse workforce spanning five generations at work (Traditionalists, Baby Boomers, Generations X, Y, and Z), "early talent" hires (employees with up to two years of professional experience) continued to be a key priority. In 2018, approximately 22% of our external hires were early talents. To attract new employees, we expanded our recruiting campaign involving employees and featuring the slogan, "Bring everything you are. Become everything you want."

Being an employer of choice is crucial in hiring and retaining the best talent in the market. In 2018, SAP received 175 global and local awards for diversity, inclusion, employer attractiveness, and people satisfaction. In addition, our initiatives in talent development were recognized externally with 12 Brandon Hall Group HCM Excellence Awards. SAP was also ranked as one of the best brands to work for with a Glassdoor rating of 4.5 out of 5. Furthermore, the Glassdoor rating for CEO Bill McDermott is at an exceptional 98%.

We are passionate about developing deep and lasting relationships with our employees. Our overall retention rate in 2018 was 93.9% compared to 94.6% in 2017. We define retention as the ratio of the average number of employees minus the employees who voluntarily departed, to the average number of employees (in full-time equivalents or FTEs).

The average tenure with SAP remains at the same high level (7.2 years in 2018 and 7.2 years in 2017). The loyalty of our people is an additional indication that SAP is regarded as an employer of choice.

Collaborating with Educational Institutions

SAP works closely with over 3,670 universities on events, executive lectures, office visits, competitions, student club sponsorships, and Webinars to recruit top students and graduates as well as to integrate the latest SAP technologies into the curriculum. In addition, we sponsor several technical competitions and diversity conferences that allow us to meet outstanding candidates.

In 2018, more than 1,000 students were enrolled in SAP's vocational training program (in Brazil, China, Germany, Hungary, India, Ireland, Japan, Switzerland, and the United States). Overall, we measured a conversion rate (number of students who stayed with SAP after completing their dual studies) for vocational training students of 73% in 2018 (2017: 85%).

Developing Careers

We partner with our employees to develop their talents and passions into new opportunities that advance their careers. Our career framework and tools guide our people through their journey, helping them to discover who they are, identify in which areas they want to grow, and develop an action plan to get there.

In 2018, we continued our strategic investment in developing our leaders and experts on different levels. We offer a career path for experts in parallel to our management development track. We successfully delivered two flagship programs, one for experts and one for chief experts, reaching over 2,700 participants.

Our performance management approach, SAP Talk, involving continuous goal and development planning based on frequent dialogue and feedback between employee and manager, has been live globally for more than a year.

Engaging Our People Through Passionate Leaders

Building trust in leaders is a key ingredient for continuously high employee engagement. By the end of 2018, 54.7% of leaders at SAP completed our flagship leadership development program. In 2018, leadership trust remained at a strong score of 60% (2017: 61%). We measure leadership trust using the Net Promotor Score methodology. In April 2018, our Executive Board hosted a multiday corporate strategy workshop with the most senior leaders of the company. This workshop focused on enabling our leaders to deliver the Intelligent Enterprise for our customers.

Making Learning Brilliant

We make high-quality learning opportunities easily accessible to all employees through our cloud-based learning management system. In 2018, we provided more than 960,000 courses (not including compliance training) to 92% of our employees.

Self-paced online programs that include language learning, as well as technical and soft-skills training courses, are open to all employees. Our innovative peer-to-peer learning portfolio encompasses coaching, mentoring, job shadowing, and facilitation opportunities.

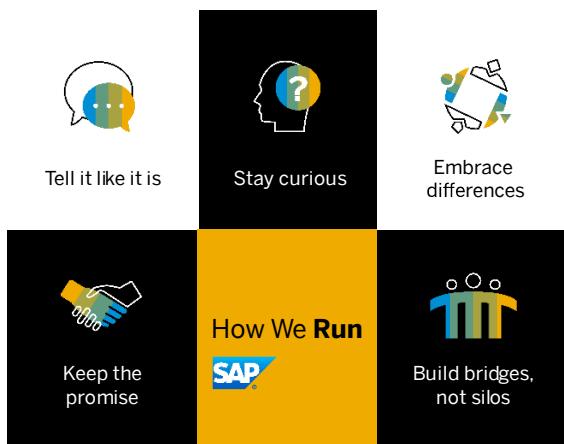
Creating a Workplace That Drives Innovation, Performance, and Engagement

The following benefits and activities are paramount in nurturing an attractive workplace:

- **Own SAP:** Our share purchase plan for SAP employees. In 2018, 66% of our employees participated in Own SAP, purchasing a total of 5.2 million shares. For more information, see the Notes to the Consolidated Financial Statements, [Note \(B.3\)](#).
- **Hasso Plattner Founders' Award:** In its fifth year, this prestigious award provides the highest internal employee recognition at SAP for delivering on our vision and strategy. For 2018, the award went to the "Immersive eXperience", a 360-degree room revolutionizing customer engagement by putting its visitors in the middle of the intelligent enterprise journey with the help of 3D projections. The team of 15 people was chosen from 161 nominations and with a total of 1,752 employees from 34 countries.
- **SAP.iO Venture Studio:** This initiative identifies high-potential entrepreneurial employees at SAP and helps develop them into successful leaders, with the objective of building new ventures that will have a massive impact on business and society. In 2018, the Venture Studio engaged more than 10,000 employees and jump-started close to 600 venture ideas.
- **One Billion Lives:** This initiative addresses the world's biggest social problems through our people, technology, and resources. The goal to improve one billion lives is realized by developing a portfolio of lean, sustainable, shared-value impact ventures, operating at startup speed, with the support of SAP.iO's Venture Studio. In 2018, more than 2,000 SAP employees participated in over 70 ideation events all around the world. Close to 400 submissions were received spanning design challenges focused on the UN Development Goals.
- **SAP SuccessFactors solutions:** Approximately 250 HR experts supported sales teams in deals related to SAP SuccessFactors solutions, by sharing experiences with SAP's own HR transformation journey. We were the first large-scale enterprise to implement the SAP SuccessFactors Employee Central solution running on the SAP HANA business data platform globally. SAP SuccessFactors Employee Central simplifies manager and employee self-services, provides a better user experience, and represents a significant cornerstone of the intelligent enterprise.
- **Klaus Tschira Award:** We continued to run the Klaus Tschira Human Resources Innovation Award. This award honors SAP partners and customers that have contributed a unique and innovative solution in the field of HR.
- **SAP Alumni Network:** This network and online community provides a platform to reconnect with former colleagues and to unleash the power of a trusted network for the benefit of SAP and our ecosystem. In 2018, community members included 3,472 former and 2,160 current SAP employees.

- People Weeks:** In 2018, SAP again sponsored a global event designed to expose employees to trending topics and cultivate greater connections across cultures. With the motto "Thrive in the Intelligent Enterprise," People Weeks 2018 reached over 30,470 participants worldwide through global sessions and local activities in 56 countries.
- How We Run:** Our corporate behaviors continue to be the cornerstone of our value-driven culture.

Our "How We Run" Behaviors



Creating an Inclusive and Bias-Free Culture

An inclusive, bias-free workplace helps us attract, motivate, and retain employees and to better serve the needs of a diverse workforce. It also increases innovation, employee engagement, and group performance and helps us think through challenges in new ways to provide greater customer insights. At SAP, we are committed to reducing bias to make more objective decisions at all levels of our organization.

Increasing Gender Diversity

In 2016, SAP was the first multinational technology company to be awarded the Economic Dividends for Gender Equality (EDGE) certificate. During the recertification with EDGE in 2018, the study showed that SAP had further improved in every category – across hiring, promotions, overall gender balance, career accelerators, and flexible work options.

The ratio of women in management positions continued its upward trajectory and reached 25.7% on December 31, 2018. The Executive Board continues its commitment to increase the percentage of women in management positions by 1% each year with a target of 30% by year-end 2022.

Throughout 2018, SAP sponsored and hosted events to attract, develop, and support women around the world. Ongoing initiatives include the Women's Professional Growth Webinar series, our grassroots Business Women's Network, and our Women@SAP online community. In addition, SAP offers the Leadership Excellence Acceleration Program, a highly respected and award-winning development program that helps prepare high-potential women for leadership roles.

Fostering an Inclusive Environment

More than 100 employee network groups at SAP support initiatives and programs to help attract, retain, train, and promote people of diverse backgrounds. In 2018, we also conducted training and leadership development programs to increase awareness about underrepresented minorities at SAP.

SAP also has a lesbian, gay, bisexual, and transgender (LGBT) program that involves employee engagement actions, external visibility, strategic partnerships, and social engagement. SAP was among the first supporters of the United Nations Global LGBTI Standards of Conduct for Business and has been recognized by organizations including Human Rights Campaign, Stonewall, and Workplace Pride.

Activities to build an inclusive environment at SAP include:

- Accessibility:** These efforts ensure that communications are accessible for differently-abled people so they feel welcome and can be productive at SAP.
- Autism at Work:** In 2018, SAP onboarded people with autism in 23 different roles, in 13 countries, and 28 locations through this program.
- Cross-Generational Mentoring:** A program connecting SAP employees from different generations to form networks, share knowledge, and learn from each other.
- Business Beyond Bias:** A program that enables the use of technology to reduce bias within people processes.
- "Focus on Insight" Diversity and Inclusion:** Award-winning training program that contributes to a shared understanding of the importance and benefits of a diverse workplace.

Caring for the Health and Well-Being of Our People

SAP fosters a culture that empowers people to run at their best by providing innovative health and well-being programs and solutions. When people are healthy, respected, and cared for, it results in higher productivity, engagement, innovation, and customer satisfaction. That is why we design health and well-being benefits and programs in an accessible and easy-to-consume way. We measure the progress of these activities through the Business Health Culture Index. For more information, see Improving Our Working Culture by Listening to Our People above.

Our programs include:

- Run Your Way initiative on Fit@SAP:** This program encourages employees of all generations and physical conditions to integrate physical activity into their daily life through the aid of a Web application. In 2018, more than 10,000 of our people participated actively.
- Employee Assistance Program:** This program provides employees with free, confidential, and impartial expert advice and support for life's challenges, 24x7.
- Mindfulness practice:** Various offerings to support employees in bringing more mindfulness into their daily personal and professional life to increase well-being, productivity, self-management, and leadership skills.
- Travel Emergency Assistance Program:** During business trips, employees receive medical and security assistance, 24x7.
- Corporate Oncology Program for Employees:** Available in Australia, Canada, Germany, United Kingdom, and the United States, the program provides SAP employees facing cancer with

access to an individual molecular genetic tumor analysis and interpretation.

- **Healthy leadership:** Various offerings are available to support SAP leaders in fostering a healthy mindset and culture, such as healthy leadership training and a personalized executive health and well-being program.
- **Local health and well-being offerings:** Services, such as health check-ups, ergonomic consultation, cancer screenings, second medical opinions, financial wellness, enablement sessions, and on-site fitness centers and activity classes, are available to employees in various office locations.

Headcount and Personnel Expense

As at December 31, 2018, we had 96,498 full-time equivalent (FTE) employees worldwide (December 31, 2017: 88,543). This represents an increase in headcount of 7,955 FTEs in comparison to 2017. The average number of employees in 2018 was 93,709 (2017: 86,999).

We define headcount in FTE as the number of people on permanent employment contracts considering their staffing percentage. Students, individuals employed by SAP who are currently not working for reasons such as maternity leave, and temporary employees on limited contracts of less than six months are excluded from our figures. The number of temporary employees is not material.

Our personnel expense for each employee decreased to approximately €124,000 in 2018 (2017: approximately €134,000). This decrease is primarily attributable to a decline of share-based payment expenses as well as lowered average salary expenses in 2018 compared to the previous year. The personnel expense for each employee is defined as the overall personnel expense divided by the average number of employees.

For more information about the number of employees and employee compensation, see the Notes to the Consolidated Financial Statements, [Note \(B.2\)](#).

Employee Headcount by Region and Function

Full-time equivalents	12/31/2018				12/31/2017				12/31/2016			
	EMEA	Americas	APJ	Total	EMEA	Americas	APJ	Total	EMEA	Americas	APJ	Total
Cloud and software	6,341	4,268	5,374	15,983	5,869	3,895	4,719	14,482	6,406	4,184	5,412	16,002
Services	8,120	5,736	5,620	19,476	7,536	4,878	4,965	17,379	6,535	4,119	3,967	14,621
Research and development	12,478	5,651	8,930	27,060	11,349	5,250	8,273	24,872	10,525	4,860	7,977	23,363
Sales and marketing	9,843	9,452	4,918	24,213	9,196	9,169	4,854	23,219	8,542	8,999	4,435	21,977
General and administration	2,906	1,970	1,147	6,024	2,676	1,781	1,047	5,504	2,629	1,746	1,018	5,393
Infrastructure	2,160	951	631	3,742	1,732	855	501	3,087	1,584	788	454	2,827
SAP Group (12/31)	41,848	28,029	26,620	96,498	38,357	25,827	24,359	88,543	36,222	24,696	23,265	84,183
Thereof acquisitions	657	952	434	2,043	149	133	7	289	37	172	0	209
SAP Group (months' end average)	40,496	27,454	25,759	93,709	37,512	25,459	24,029	86,999	34,932	23,532	22,145	80,609

Due to reorganizations in our SAP Digital Business Services in 2017, some employees were reallocated from cloud and software to services. Numbers for 2017 are therefore not fully comparable to prior year.

Powering Opportunity Through Digital Inclusion

As technology and innovation rapidly change the competencies needed to succeed in today's digital world, SAP Corporate Social Responsibility (CSR) is tackling this skills gap head-on, putting SAP's purpose to help the world run better and improve people's lives into action through our mission –powering opportunity through digital inclusion. As such, our initiatives consider issues including access, adoption, and application of skills to ensure everyone can benefit from and participate in the digital economy.

CSR focuses on three strategic program pillars: building digital skills, accelerating best-run non-profits and social enterprises, and connecting employees with purpose. The programs within each pillar embrace the framework of the United Nations Sustainable Development Goals (SDGs), focusing primarily on three of the seventeen goals: quality education (SDG 4), decent work and economic growth (SDG 8), and strengthening partnerships for sustainable development (SDG 17).

In 2018, SAP donated €22.8 million to education and workforce development programs, as well as youth entrepreneurship projects. These programs, focused on digital skills, expanded operations into more than 93 countries, accelerating our ability to build an inclusive, skilled workforce to deliver an intelligent enterprise.

Building Digital Skills

SAP recognizes the responsibility of meeting people where they are on their employment journey. As such, our educational initiatives aim to help people – regardless of age or background – attain the relevant 21st-century skills to thrive, innovate, and secure meaningful work (including entrepreneurial pursuits) in a digital world. In 2018, SAP digital skills and coding programs trained 34,000 teachers, engaged 2.8 million young people, and spanned 93 countries.

One of our long-term CSR investments in building digital skills includes our Early College High School program in North America. Running in four cities and serving 1,016 students, this model blends high-school curriculum with college-level coursework and workplace experience to help students develop strong technical, design, and communication skills. The program connects students to career pathways in technology and improves the long-term pipeline of trained talent for the technology sector in North America. In 2018, SAP hosted 10 student interns in our offices in the United States. The founding school, New York City's Business Technology Early College High School (BTECH), graduated 89% of the legacy class, exceeding city graduation averages.

Accelerating Best-Run Non-Profit Organizations and Social Enterprises

SAP social partners are selected because of their significant impact in areas of quality education and workforce preparedness. SAP provides unique skills, expertise, products, and financial support to partners that, in turn, accelerate their ability to drive sustainable social impact. In 2018, SAP built capacity for over 800 innovative non-profit organizations and social enterprises, resulting in a social investment of €3.4 million and impacting one million lives.

Social enterprises represent a powerful vehicle for a more caring, inclusive, and sustainable economy due to the nature of their socially-driven business models. In 2018, SAP extended investment in this area by formalizing two new long-term collaborations, entering a three-year partnership with the Social Enterprise World Forum (SEWF) as our first global commercial partner. SEWF is one of the world's leading and longest-established international movement-building organizations. Additionally, we formalized our partnership with the We Are Family Foundation's Three Dot Dash global teen leader initiative, supporting teen innovators who are addressing some of the world's most pressing issues. In 2018, the efforts of 32 teens representing five continents focused on improving healthcare, increasing food security, and promoting access to education, among other topics.

Connecting Employees with Purpose

SAP empowers our employees to take action around causes that matter to them personally through easy-to-digest resources including training, a new cloud-based employee engagement platform called SAP Together, as well as funding of non-profit organizations. In this way, SAP works to foster employee engagement and societal impact. In 2018, more than 20,000 SAP employees volunteered, dedicating more than 250,000 hours of service. During SAP Global Month of Service, an annual volunteering campaign, employees executed over 900 projects globally. SAP Together will serve as a digital hub for employee volunteerism and continue to build on the momentum from SAP Month of Service year-round.

Collaborating for Impact

Increasingly, SAP CSR is collaborating with like-minded customers and partners to drive collective impact through exemplary initiatives such as Code Unnati. The program was co-founded in 2017 by SAP India and customer Larsen & Toubro Public Charitable Trust. Code Unnati is a first-of-its-kind multi-company initiative delivering positive social impact across 13 Indian states. Through digital skills access and education as well as ten new community service centers in rural areas, Code Unnati reached 414,460 students and teachers in 2018.

Energy and Emissions

Being a Front-Runner for a Greener Way of Working

SAP takes its environmental responsibilities seriously and strives to be a role model for sustainable business operations. We believe that by running cleaner, greener operations, we can make a difference to our planet. In addition, we aim to enable our customers to reduce their overall carbon footprint through our software.

Our global environmental policy promotes a more productive use of resources by providing transparency in environmental issues, driving efficiency, and leveraging transformational strategies. It also outlines our environmental goals.

The SAP Executive Board sponsor for sustainability, including climate change, is our chief financial officer (CFO). Our chief sustainability officer and our dedicated sustainability organization coordinate our response to climate change, which includes assessing and managing climate-related risks and opportunities. Facilities management staff design and operate our facilities based on robust environmental standards. In addition, our IT operations personnel is committed to optimizing energy consumption in our data centers. We assess our environmental performance and risks in quarterly management reviews.

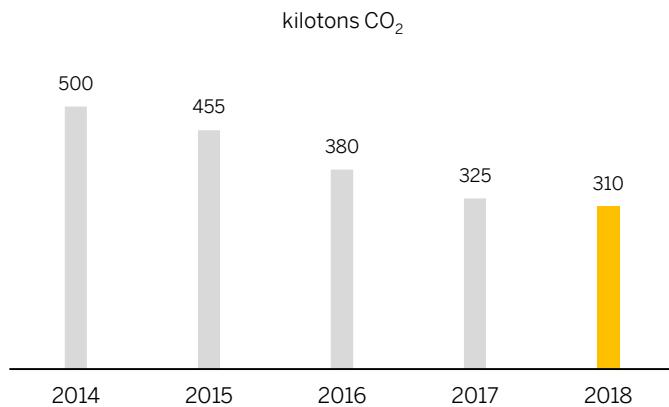
Designed to enable continuous improvement and protect the environment, our environmental management system based on the ISO 14001 standard was rolled out to seven additional SAP sites in 2018. The system now covers 55 SAP sites in 30 countries. In 2018, we successfully audited the Walldorf and St. Leon-Rot sites in Germany, thus fulfilling our target for the system to cover operations affecting about 70% of employees globally. Currently, we are also implementing the ISO 50001 energy management system for the Walldorf and St. Leon-Rot sites.

Cutting Carbon Emissions

In 2017, we announced a commitment to making our operations carbon neutral by 2025. This is the next logical step in our long-term greenhouse gas (GHG) avoidance strategy, which also includes an undertaking to reduce GHG emissions to levels of the year 2000 by 2020, which we achieved in 2017. The target includes all direct emissions from running our business as well as a selected subset of indirect emissions from supply chains and services. Furthermore, as a member of the Science-Based Targets initiative, we were the first German company to release a science-based climate target. This target reflects the level of decarbonization required to keep the global temperature increase below two degrees Celsius compared to pre-industrial temperatures. At SAP, this corresponds to an 85% reduction in our 2016 emissions level by 2050, including energy consumption of our products in use at our customers.

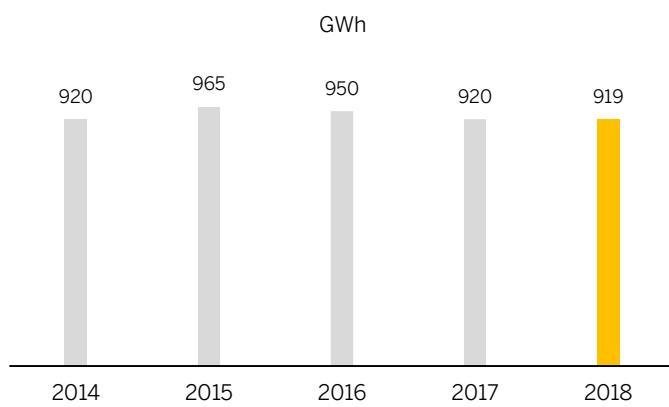
A number of initiatives harness innovative technologies to help us run our operations in a way that minimizes our impact on the environment. In addition, our investment in renewable electricity certificates and carbon credits enables us to support sustainability projects across the globe.

Total Net Emissions



In addition to our long-term commitment for 2025, we have derived annual targets for our internal operational steering. In 2018, we overachieved our annual target to reduce our emissions to 333 kilotonnes (kt) of CO₂ by 23 kt. This result stems primarily from compensation with carbon emission offsets. Our focus on carbon emissions has contributed to a cumulative cost avoidance of €272.8 million in the past three years, compared to a business-as-usual scenario based on 2007. We achieved 39% of this cost avoidance in 2018.

Total Energy Consumption



Strengthening Our “Green Cloud”

At SAP, we have tied our business strategy to our environmental strategy by creating a “green cloud” powered by 100% renewable electricity. As more business moves to the cloud, data centers are a key part of how SAP provides solutions to our customers. By using our green cloud services, customers can significantly reduce their carbon footprint. Given the increasing data center capacity and an

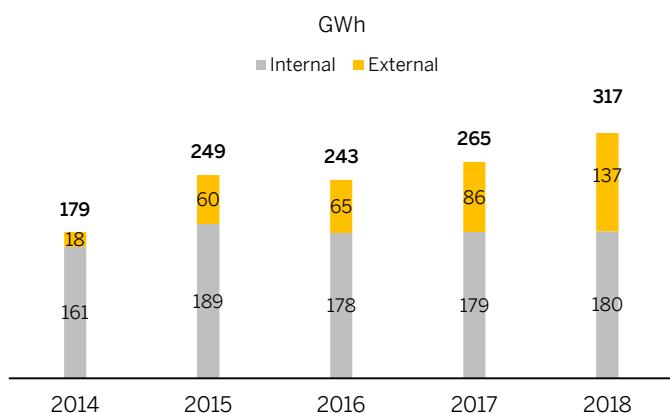
increasing energy consumption, our data centers have become a primary focus of our carbon reduction efforts.

We have introduced initiatives to drive efficiency and innovation with respect to our buildings, data center operations, and infrastructure. For example, in 2018, one of our main data centers in St. Leon-Rot, Germany, had a very efficient power usage effectiveness (PUE) of 1.36. The PUE is a ratio that describes the efficiency of a data center, with 1.0 being the ideal. In early 2019, SAP will open its new state-of-the-art data center in Walldorf, Germany.

Committing to 100% Renewable Electricity

Our commitment to 100% renewable electricity is crucial to making our operations more sustainable. While SAP produces a small amount of renewable electricity through solar panels in some locations, we rely primarily on the purchase of renewable energy certificates (RECs) to achieve our target of 100% renewable electricity. We only invest in Gold Standard RECs, which support renewable energy projects that meet robust criteria in terms of environmental integrity, stakeholder inclusivity, and reporting and verification. All of these RECs are 100% EKOenergy label certified, the highest quality energy ecolabel available.

Total Data Center Electricity



Helping Our Customers Run Greener Operations

The vast majority of our overall emissions result from the use of our software. When our customers run SAP software on their hardware and on their premises, the resulting carbon footprint is about 38 times the size of our own net carbon footprint. To address this, we have developed a downstream emissions strategy to help our customers, hardware providers, and others run greener operations. One of the most important ways we help our customers reduce their energy usage and emissions is by managing their SAP systems through cloud services provided by our carbon-neutral green cloud offerings. In addition, the solutions in our portfolio enable our customers to manage their resources, such as electricity, in an efficient manner.

The SAP HANA platform also plays a vital role in helping our customers cut their carbon emissions. By combining the worlds of analytic and transactional data into one real-time, in-memory

platform, it can help create much leaner operations, further simplifying the system landscape and reducing energy consumption. With the new SAP Profitability and Performance Management application powered by SAP HANA, we have integrated value chain sustainability management and carbon footprint management to support our customers on their path to increased transparency and combine non-financial and financial data into reporting and steering. For example, customers can improve their real-time energy demand response for power demand management.

SAP also works with customers to optimize their on-premise landscapes so that they consume less energy. We achieve this by helping them decommission legacy systems, archive unused data, consolidate business applications, and virtualize their system landscape.

Driving Environmental Initiatives Throughout SAP

We continuously pursue strategies to help us achieve our goal of reducing emissions at a time of ongoing growth in our business. Key initiatives for 2018 included the following:

EKOenergy Certification

Most of our renewable electricity is purchased on the electricity market and is not produced by SAP. As recommended by the Greenhouse Gas Protocol and CDP, we actively look for the best available quality. Therefore, all of our purchased renewable electricity is EKOenergy certified. EKOenergy is the international not-for-profit ecolabel for energy. It certifies electricity from renewable energy installations that fulfill additional sustainability criteria. Through the purchase of EKOenergy certified electricity, we also contribute to EKOenergy's Climate Fund, used to finance solar projects tackling energy poverty.

Electric Vehicles

As a result of our business expansion, the number of SAP employees eligible for a company car has increased annually. We want to ensure that the resulting growth in our car fleet does not undo our successes in cutting emissions. To help address this, SAP aims to increase the number of electric vehicles (battery electric vehicles and plug-in hybrid electric vehicles) in our company car fleet from 7% at the end of 2018 to 20% by 2020.

All electric company cars charged at SAP are powered with 100% renewable electricity. In addition, in Germany, we provide employees with an incentive to switch to electric alternatives by offering a battery subsidy that partially offsets the higher costs of an electric vehicle.

Internal Carbon Pricing for Business Flights

In addition to avoiding business flights by investing in virtual collaboration and communication technologies, we invest in carbon emission offsets for air travel in the majority of countries we travel from by charging an internal carbon price. This offset effort resulted in a compensation of 170 kt of CO₂ in 2018.

Investment in Carbon Credits

In 2018, we continued to realize the benefits of our investment in the Livelihoods Fund. Several years ago, we made a commitment to invest €3 million covering a 20-year participation in a fund that

supports social causes as well as the sustainability of agricultural and rural communities worldwide. The returns from this unique investment in the Livelihoods Fund consist of high-quality carbon credits. Following the success of this scheme, we will invest in a second Livelihoods Fund in 2019, committing another €3 million over the next 30 years and thus increasing our commitment to sustainable initiatives. In 2018, the carbon credits we received from the first fund helped us to offset our carbon footprint by 35.7 kt. SAP has pledged to plant five million trees by 2025 in collaboration with various non-governmental organizations. In 2018, we started by investing in an additional 500,000 trees as part of our carbon offsetting initiatives.

Financial Performance: Review and Analysis

Economy and the Market

Global Economic Trends

In 2018, the global economy remained resilient and continued to expand at a steady pace, but at the same time, it showed signs of moderating momentum. That is what the European Central Bank (ECB) reported in its December 2018 Economic Bulletin¹⁾. Overall, the services sector performed better in 2018 than manufacturing, and advanced economies better than emerging markets, due to more accommodative financial conditions. According to the ECB, economic activity weakened most substantially in those emerging markets that had been subject to financial turmoil in the summer, including Argentina and Turkey.

In the Europe, Middle East, and Africa (EMEA) region, euro area real GDP increased on a broad basis and remained resilient overall, but on a lower level than the ECB had expected in the course of the year. This was mostly due to a diminishing demand for goods exports and temporary sector-specific developments (for example, car production in Germany). Meanwhile, services exports increased slightly, and the construction business showed robust growth. In addition, a strong labor market supported private consumption, while business investment benefitted from domestic demand, favourable financing conditions, and improving balance sheets.

As for the Americas region, economic activity rebounded in the United States in 2018 and remained resilient. However, trade tensions with China escalated when both countries introduced tariffs on each other's exports in the second half of the year.

The Asia Pacific Japan (APJ) region in 2018 saw a rebound in economic activity but the end of fiscal stimulus in Japan. As a result, the Japanese economy even contracted during the third quarter, due also to temporary factors related to natural disasters. At the same time, economic activity in China remained strong, despite the trade tensions with the United States. According to the ECB, robust exports, solid consumption, easing financial conditions, and a supportive government policy strengthened the Chinese economy.

The IT Market

Digital transformation was well on its way in 2018, elaborates the U.S.-based market research firm International Data Corporation (IDC) in its most recent publications³⁾. This is what we described in our previous annual and half-year reports as well. IDC research shows that 46% of companies finished their "experimentation" stage in 2018 and opted for an integrated digital strategy and architecture, not just digitally-enabled products and services. Thus, in nearly every industry and in organizations of every size, digital transformation helped create new sources of revenue through higher competitiveness, with a huge impact on the global economy.

According to IDC, the Internet of Things (IoT) was a major topic again in 2018, as it helped businesses run more efficiently, gain insight into business processes, and make real-time decisions. Worldwide spending on IoT amounted to US\$725.4 billion (+14.9%) in 2018, US\$159.5 billion (+18.8%) of which in the EMEA region, US\$212.9 billion (+15.0%) in the Americas region, and US\$353.0 billion (+13.1%) in the APJ region. The largest portion of these spendings was in the device category, followed by application software, platform, and ongoing services⁵⁾.

In 2018, reports IDC, a further shift towards public cloud platforms took place and made these platforms primary sources for fundamental innovation in the application and service world, such as blockchain, data management, mobile, and security²⁾. However, it was mostly the need for machine learning and advanced analytics, whose workloads require the scalability and elasticity of cloud computing, that drove adoption of these systems into the cloud⁴⁾.

ERP rationalization and modernization were another focus in 2018, with the aim to develop new sources of revenue through data management monetization³⁾. Artificial intelligence (AI) became a part of numerous technologies and solutions and reached more devices, apps, and services than before. IDC calculates that enterprises using this technology made 21% of their revenue with it in 2018.

Sources:

¹⁾ European Central Bank, Economic Bulletin, Issue 8/2018, Publication Date:

December 27, 2018

(<https://www.ecb.europa.eu/pub/pdf/ecbu/eb201808.en.pdf>)

²⁾ IDC FutureScape: Worldwide IT Industry 2019 Predictions, Doc #US44403818, October 2018

³⁾ IDC FutureScape: Worldwide Digital Transformation 2019 Predictions, Doc #US43647118, October 2018

⁴⁾ IDC FutureScape: Worldwide Intelligent ERP 2019 Predictions, Doc #US43262918, October 2018

⁵⁾ IDC Market Forecast: Worldwide Internet of Things Forecast, 2018–2022, September 2018

Impact on SAP

The velocity of the global digital transformation increased further and SAP continued to significantly benefit from this mega trend. The strong momentum across our entire portfolio and in all regions was remarkable, and the share of our more predictable revenue reached a new high.

Overall Financial Position

Executive Board's Assessment

In 2018, we met or exceeded all of our financial targets even though we had raised them multiple times throughout the year.

SAP's rapidly expanding cloud business together with solid growth in support revenue led to robust topline growth and continued to drive the share of more predictable revenue. The combination of strong topline and strict operational discipline led to double-digit operating profit growth for the year.

Earnings per share (EPS) (IFRS) increased whereas operating cash flow and EPS (non-IFRS) decreased in 2018. The decline in operating cash flow was mainly due to higher-than-expected share-based payments, tax, and insurance payments.

To summarize, our consistent fast growth in the cloud, the quality and breadth of our portfolio, and our order entry set us up perfectly for continued, strong profitable growth in 2019. Therefore, we are confident that we will deliver on our operational outlook for 2019 and on our 2020 and 2023 mid-term ambitions.

Performance Against Our Outlook for 2018 (Non-IFRS)

As in previous years, our 2018 operating profit-related goals and published outlook were based on our non-IFRS financial measures at constant currencies. For this reason, in the following section we discuss performance against our outlook only in terms of non-IFRS numbers derived from IFRS measures. The subsequent section about IFRS operating results discusses numbers only in terms of the International Financial Reporting Standards (IFRSs), so the numbers in that section are not expressly identified as IFRS numbers.

Outlook for 2018 (Non-IFRS)

At the beginning of 2018, we projected that our 2018 non-IFRS cloud subscriptions and support revenue would be between €4.8 billion and €5.0 billion at constant currencies (2017: €3.77 billion). This range represents a growth rate of 27% to 33% at constant currencies. The Company expected full-year 2018 non-IFRS cloud and software revenue to be in a range of €20.7 billion to €21.1 billion at constant currencies (2017: €19.55 billion). This range represents a growth rate of 6% to 8% at constant currencies. In addition, we aimed for non-IFRS total revenue in a range of €24.6 billion to €25.1 billion at constant currencies (2017: €23.46 billion). This range represents a growth rate of 5% to 7% at constant currencies. We also projected our full-year non-IFRS operating profit for 2018 would end between €7.3 billion and €7.5 billion (2017: €6.77 billion) at constant currencies. This range represents a growth rate of 8% to 11% at constant currencies. We expected a full-year 2018 effective tax rate (IFRS and non-IFRS) of 27.0% to 28.0% (2017: 19.5% (IFRS) and 22.8% (non-IFRS)).

On April 5, 2018, SAP completed the acquisition of Callidus Software Inc. (CallidusCloud). In light of this acquisition and our strong operating profit in the first quarter, we adjusted our outlook in April 2018 for all parameters. We then expected non-IFRS cloud subscriptions and support revenue to reach a range between €4.95 billion and €5.15 billion at constant currencies. We also raised our forecast for non-IFRS cloud and software revenue to a range of €20.85 billion to €21.25 billion at constant currencies. We expected our non-IFRS total revenue to end between €24.8 billion and €25.3 billion at constant currencies. We also adjusted our outlook for non-IFRS operating profit for 2018 upward to range between €7.35 billion and €7.5 billion at constant currencies.

In July 2018, based on the strong momentum in our cloud business, we raised our forecast for 2018 non-IFRS cloud

subscriptions and support revenue once more, to a range of €5.05 billion to €5.2 billion at constant currencies. We consequently also adjusted our outlook for the other parameters, as follows: The forecast for non-IFRS cloud and software revenue was increased to a range of €21.025 billion to €21.25 billion at constant currencies, the forecast for non-IFRS total revenue was increased to a range of €24.975 billion to €25.3 billion at constant currencies, and the forecast for non-IFRS operating profit was increased to a range of €7.4 billion to €7.5 billion at constant currencies. We continued to expect a full-year 2018 effective tax rate (IFRS and non-IFRS) of 27.0% to 28.0%, but now expected to reach the upper end of these ranges.

In October 2018, based on the continued strong momentum in our cloud business, the Company raised its outlook a third time for non-IFRS cloud subscriptions and support revenue, to range between €5.15 billion and €5.25 billion at constant currencies. This range represents a growth rate of 36.5% to 39% at constant currencies. Consequently, we also raised the forecast for non-IFRS cloud and software revenue to a range of €21.15 billion to €21.35 billion at constant currencies. This range represents a growth rate of 8% to 9% at constant currencies. We expected our non-IFRS total revenue to end between €25.2 billion and €25.5 billion at constant currencies. This range represents a growth rate of 7.5% to 8.5% at constant currencies. We also adjusted our outlook for non-IFRS operating profit for 2018 upward to range between €7.425 billion and €7.525 billion at constant currencies. This range represents a growth rate of 9.5% to 11% at constant currencies. We continued to expect a full-year 2018 effective tax rate (IFRS) at the upper end of the range of 27.0% to 28.0%, but now expected an effective tax rate (non-IFRS) of 26.5% to 27.5%.

2018 Actual Performance Compared to Outlook (Non-IFRS)

We hit or exceeded the raised outlook for all our guidance parameters we published in April, July, and October.

Comparison of Outlook and Results for 2018

	Outlook for 2018 (as reported in Integrated Report 2017)	Revised Outlook for 2018 (Q1 Quarterly Statement)	Revised Outlook for 2018 (Q2 Quarterly Statement)	Revised Outlook for 2018 (Q3 Quarterly Statement)	Results for 2018
Cloud subscriptions and support revenue (non-IFRS, at constant currencies)	€4.80 billion to €5.00 billion	€4.95 billion to €5.15 billion	€5.05 billion to €5.20 billion	€5.15 billion to €5.25 billion	€5.21 billion
Cloud and software revenue (non-IFRS, at constant currencies)	€20.70 billion to €21.10 billion	€20.85 billion to €21.25 billion	€21.025 billion to €21.25 billion	€21.15 billion to €21.35 billion	€21.58 billion
Total revenue (non-IFRS, at constant currencies)	€24.60 billion to €25.10 billion	€24.80 billion to €25.30 billion	€24.975 billion to €25.30 billion	€25.20 billion to €25.50 billion	€25.96 billion
Operating profit (non-IFRS, at constant currencies)	€7.3 billion to €7.50 billion	€7.35 billion to €7.50 billion	€7.40 billion to €7.50 billion	€7.425 billion to €7.525 billion	€7.48 billion
Effective tax rate (IFRS)	27.0% to 28.0%		27.0% to 28.0%*		27.0%
Effective tax rate (non-IFRS)	27.0% to 28.0%		27.0% to 28.0%*	26.5% to 27.5%	26.3%

* In the 2018 Half-Year Report, we confirmed our previous outlook, but now expected to reach the upper end of these ranges.

Despite economic and diplomatic tensions, arising particularly from the trade conflict between China and the United States, and uncertainties regarding the possible outcome and effects of the Brexit negotiations, our new and existing customers in 2018 continued to show a strong willingness to invest in our solutions and services.

At constant currencies, non-IFRS cloud subscriptions and support revenue grew from €3.77 billion in 2017 to €5.21 billion in 2018 and therefore ended in our guidance range of €5.15 billion to €5.25 billion. That represents an increase of 38% on a constant currency basis.

Our new cloud bookings, which are one of our measures for cloud-related sales success and for future cloud subscriptions revenue, increased in 2018 to €1.81 billion (2017: €1.45 billion). This is an increase of 25% (28% on a constant currency basis). In addition to this strong growth, our cloud backlog (unbilled future revenue based on existing cloud contracts) reached €10.1 billion (2017: €7.5 billion). This is an increase of 35% (30% on a constant currency basis). We expect this committed business to contribute to our cloud subscriptions and support growth in 2019 and beyond.

Besides the strong cloud business, our traditional on-premise business again achieved a solid result on a constant currency basis in 2018, at the same strong level as the year before. On a constant currency basis, non-IFRS cloud and software revenue grew from €19.55 billion in 2017 to €21.58 billion in 2018. That represents an increase of 10% on a constant currency basis. This revenue thus overachieved the forecast for 2018, which was raised in April, July, and October.

Our total revenue (non-IFRS) on a constant currency basis rose 11% in 2018 to €25.96 billion (2017: €23.46 billion) and therefore beat our repeatedly increased outlook.

Operating expenses (non-IFRS) in 2018 on a constant currency basis were €18.48 billion (2017: €16.69 billion), an increase of 11%.

Our expense base in 2018 continued to be impacted by our transformation to a fast-growing cloud business. In our initial outlook for 2018, we expected the cloud subscriptions and support

gross margin to be at least stable or to increase slightly compared to 2017. The cloud subscriptions gross margin for 2018 was 63%, an increase of 0.7pp on a constant currency basis year over year. Despite continued investment in our business transformation, the margin improvement was primarily driven by increasing efficiency of our cloud offerings.

All cloud subscriptions and support gross margins on our various cloud offerings developed positively in 2018:

Our cloud subscriptions gross margin (non-IFRS) in our Business Network business increased further by 1.1pp (on a constant currency basis), resulting in 78% for 2018, already close to our long-term ambition of 80% for 2020. This excellent result is attributable to the continued positive gross margin development within the SAP Ariba and SAP Concur portfolio.

The cloud subscriptions gross margin (non-IFRS) on our infrastructure as a service (IaaS) cloud offering continued to develop well in 2018. Our cloud subscription gross margin (non-IFRS) was 13% in 2018, which reflects an improvement of 6.5pp on a constant currency basis.

Profitability in our software as a service/platform as a service (SaaS/PaaS) cloud offering was 60% at constant currencies (non-IFRS) for 2018. Despite ongoing investments in the further development and harmonization of our various software as a service/platform as a service offerings on a single platform, we were able to increase the margin a further 2.4pp compared to our long-term ambition of 70%.

We saw efficiency improvements in both our cloud and traditional on-premise business, which drove continued operating profit expansion. Non-IFRS operating profit in 2018 was €7.48 billion on a constant currency basis (2017: €6.77 billion), reflecting an increase of 10%. As a result, we were able to surpass our excellent results from 2017, despite our continued investment in our business transformation during the reporting year. The positive development of our operating profit was largely influenced by investment decisions focused on customers and products which, among other things, resulted in an increase in our overall

headcount by 7,955 full-time equivalents (thereof 5,912 organic), primarily in research and development, services, cloud, and sales. With these additional resources, we continued to make targeted investments in our innovation areas and growth markets. Thus, constant currency non-IFRS operating profit amounting to €7.48 billion was above the midpoint of our outlook range raised in October (€7.425 billion to €7.525 billion).

We achieved an effective tax rate (IFRS) of 27.0% and an effective tax rate (non-IFRS) of 26.3%, which is at the lower end of the range of 27.0% to 28.0% (IFRS) and below the adjusted outlook of 26.5% to 27.5% (non-IFRS). This mainly resulted from taxes for prior years.

Our constant currency non-IFRS revenues and non-IFRS results in 2018 were driven by our positive business development as well as the following factors:

- The adoption of the new revenue recognition standard IFRS 15 at the beginning of fiscal year 2018 took place without adjusting prior-year figures. Revenue was €0.16 billion higher (non-IFRS at constant currencies) than it would have been under the previous revenue recognition standard, while operating expenses (non-IFRS at constant currencies) were €0.25 billion lower after applying the new standard. For more information about the adoption of IFRS 15, see the Notes to the Consolidated Financial Statements, [Note \(A.5\)](#).
- Revenue and earnings from our acquisitions are reflected in our results as of the respective acquisition date. Callidus Software Inc. (CallidusCloud), as our largest acquisition, had a positive impact of €0.16 billion in cloud subscriptions and support revenue (non-IFRS at constant currencies) and a positive impact of €0.05 billion on operating profit at constant currencies. For more information about our acquisitions in fiscal year 2018, see the Notes to the Consolidated Financial Statement, [Note \(D.1\)](#).
- Besides the financial recognition of hyperinflation in Argentina and Venezuela, our non-IFRS numbers at constant currencies are further impacted by the hyperinflation due to the mechanics of our constant currency adjustments: By applying prior-year currency exchange rates to our current-period numbers, these numbers are adjusted for currency exchange rate changes. In contrast, the 2018 constant currency numbers are not adjusted for the respective change in inflation. This benefitted the non-IFRS software revenue by €0.15 billion at constant currencies, the non-IFRS software support revenue by €0.15 billion at constant currencies, and our non-IFRS total revenue by €0.46 billion at constant currencies. In contrast, the operating expenses (non-IFRS at constant currencies) experienced a negative impact of €0.34 billion, resulting in an increase in our non-IFRS operating profit (non-IFRS) of €0.12 billion at constant currencies. For more information about currency conversion and hyperinflation, see the Notes to the Consolidated Financial Statements, [Note \(N.1\)](#).

Operating Results (IFRS)

This section on operating results (IFRS) discusses results only in terms of IFRS measures, so the IFRS numbers are not expressly identified as such.

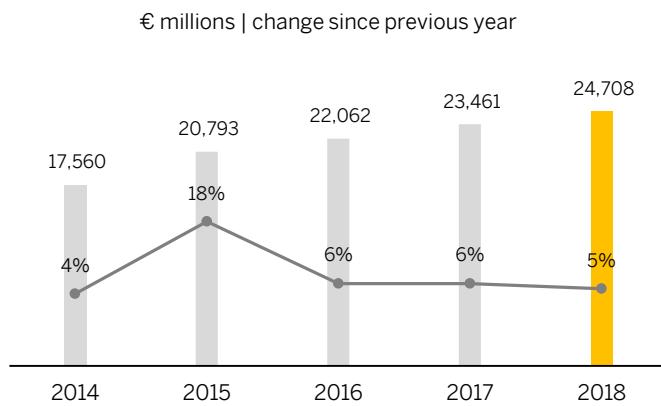
We break our operations down into three regions: the Europe, Middle East, and Africa (EMEA) region, the Americas region, and the Asia Pacific Japan (APJ) region. We allocate revenue amounts

to each region based on where the customer is located. For more information about revenue by geographic region, see the Notes to the Consolidated Financial Statements, [Note \(A.1\)](#).

Revenue

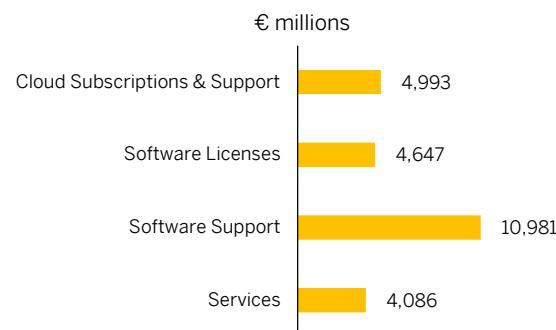
Total Revenue

Total revenue increased from €23,461 million in 2017 to €24,708 million in 2018, representing an increase of €1,247 million, or 5%.



The growth in revenue resulted primarily from a €1,224 million increase in cloud subscriptions and support revenue to €4,993 million. Cloud and software revenue represented 83% of total revenue in 2018 (2017: 83%). Service revenue increased 4% from €3,912 million in 2017 to €4,086 million in 2018, which was 17% of total revenue (2017: 17%).

Revenue by Revenue Type



For more information about our regional performance, see the [Revenue by Region](#) section below.

Cloud and Software Revenue

Revenue from cloud subscriptions and support refers to the income earned from contracts that permit the customer to access specific software solutions hosted by SAP during the term of its contract with SAP. Software revenue results from the fees earned from selling or licensing software to customers. Support revenue represents fees earned from providing customers with technical support services and unspecified software upgrades, updates, and

enhancements. For further information about our revenue types, see the Notes to the Consolidated Financial Statements, [Note \(A.1\)](#).

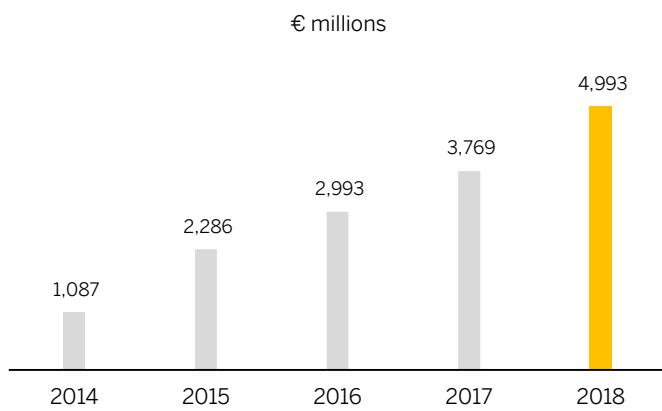
Cloud and software revenue grew from €19,549 million in 2017 to €20,622 million in 2018, an increase of 5%.

Cloud and Software



Cloud subscriptions and support revenue increased from €3,769 million in 2017 to €4,993 million in 2018.

Cloud Subscriptions and Support



Impacted by currency headwinds, our software revenue declined by €225 million from €4,872 million in 2017 to €4,647 million in 2018. Our customer base continued to expand in 2018. Based on the number of contracts concluded, 15% of the orders we received for software in 2018 were from new customers (2017: 15%). The total value of software orders received decreased 9% year over year. The total number of contracts signed for new software decreased 1% to 58,530 (2017: 59,147), with an average order value of €82 thousand in 2018 (2017: €89 thousand). Of all our software orders received in 2018, 29% were attributable to deals worth more than €5 million (2017: 30%), while 39% were attributable to deals worth less than €1 million (2017: 40%).

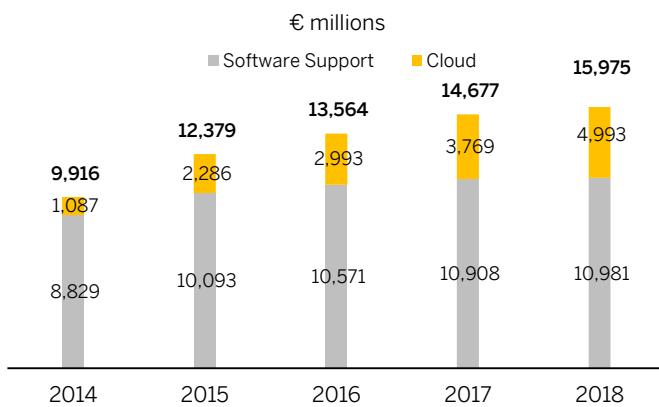
Our stable customer base, the continued demand for our software throughout 2018 and the previous years, and the continued interest in our support offerings resulted in an increase in support revenue from €10,908 million in 2017 to €10,981 million in 2018. The SAP Enterprise Support offering was the largest

contributor to our support revenue. The €73 million, or 1%, growth in support revenue is primarily attributable to our SAP Product Support for Large Enterprises services and our SAP Enterprise Support services. The acceptance rate for SAP Enterprise Support among new customers remained very high in 2018 at 98% (2017: 99%).

Software and support revenue decreased €152 million, or 1%, from €15,780 million in 2017 to €15,628 million in 2018.

We define more predictable revenue as the sum of our cloud subscriptions and support revenue and our software support revenue. Compared to the previous year, our more predictable revenue increased from €14,677 million in 2017 to €15,975 million in 2018. This reflects a rise of 9%. More predictable revenue accounted for 65% of our total revenue in 2018 (2017: 63%).

More Predictable Revenue



Services Revenue

Services revenue combines revenue from professional services, premium support services, and other services such as training services and messaging services. Professional services primarily relate to the implementation of our cloud subscriptions and on-premise software products. Our premium support offering consists of high-end support services tailored to customer requirements. Messaging services are primarily transmission of electronic text messages from one mobile phone provider to another.

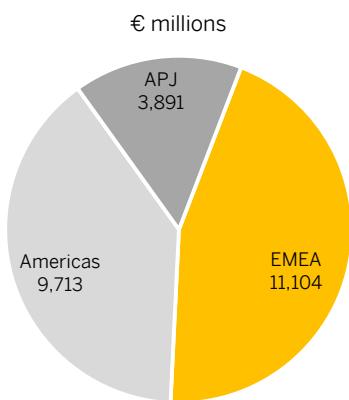
Services revenue increased €175 million, or 4%, from €3,912 million in 2017 to €4,086 million in 2018.

A solid market demand led to a 4% increase of €141 million in consulting revenue and premium support revenue from €3,215 million in 2017 to €3,356 million in 2018. In 2018, consulting and premium support revenue contributed 82% of the total service revenue (2017: 82%) and 14% of total revenue (2017: 14%).

Revenue from other services increased €34 million, or 5%, to €731 million in 2018 (2017: €697 million).

Revenue by Region

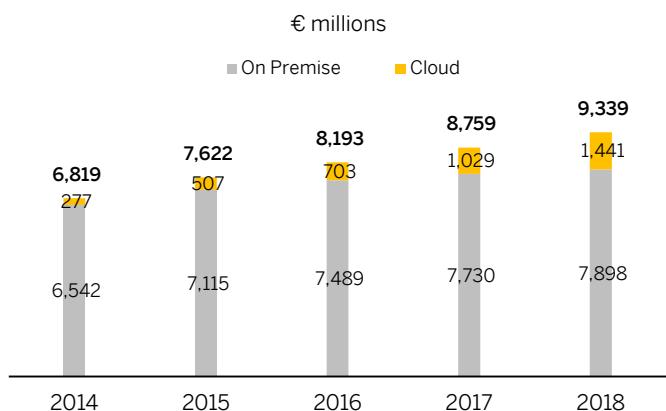
(based on customer location)



EMEA Region

In 2018, the EMEA region generated €11,104 million in revenue (2017: €10,415 million), which was 45% of total revenue (2017: 44%). This represents a year-over-year increase of 7%. Revenue in Germany increased 9% to €3,658 million (2017: €3,352 million). Germany contributed 33% (2017: 32%) of all EMEA region revenue. The remaining revenue in the EMEA region was primarily generated in the United Kingdom, France, Switzerland, the Netherlands, and Italy. Cloud and software revenue generated in the EMEA region totaled €9,339 million (2017: €8,759 million). That was 84% of all revenue from the region (2017: 84%).

EMEA: Cloud and Software Revenue



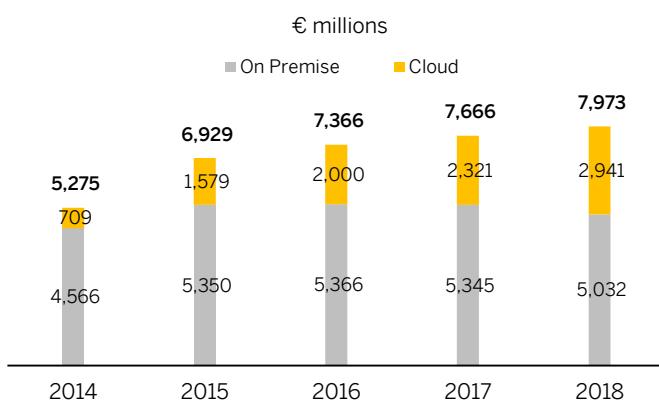
Cloud subscriptions revenue in the EMEA region rose 40% to €1,441 million in 2018 (2017: €1,029 million). Software licenses and software support revenue rose 2% to €7,898 million in 2018 (2017: €7,730 million).

Americas Region

In 2018, 39% of our total revenue was generated in the Americas region (2017: 40%). Total revenue in the Americas region increased 4% to €9,713 million; revenue generated in the United States increased 6% to €7,880 million. The United States contributed 81% (2017: 80%) of all revenue generated in the

Americas region. In the remaining countries of the Americas region, revenue decreased 4% to €1,832 million, induced by a challenging macroeconomic situation in Latin America. Revenue in the remaining countries of the Americas region was generated primarily in Canada, Brazil, and Mexico. Cloud and software revenue generated in the Americas region totaled €7,973 million (2017: €7,666 million). That was 82% of all revenue from the region (2017: 82%).

Americas: Cloud and Software Revenue

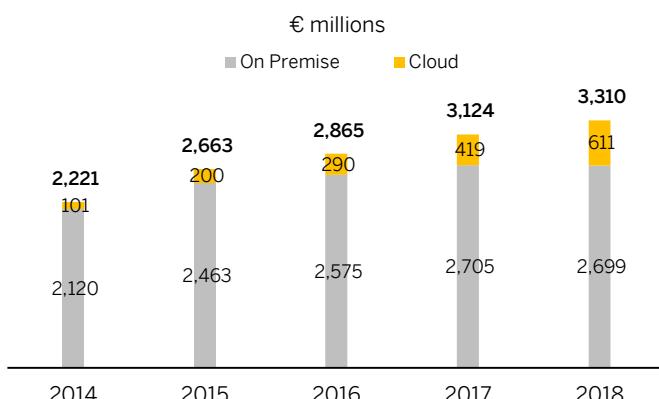


Cloud subscriptions revenue in the Americas region rose 27% to €2,941 million in 2018 (2017: €2,321 million). Software licenses and software support revenue decreased to €5,032 million in 2018 (2017: €5,345 million).

APJ Region

In 2018, 16% (2017: 16%) of our total revenue was generated in the APJ region. Total revenue in the APJ region increased 5% to €3,891 million. In Japan, revenue increased 9% to €963 million. Revenue from Japan was 25% (2017: 24%) of all revenue generated in the APJ region. In the remaining countries of the APJ region, revenue increased 4%. Revenue in the remaining countries of the APJ region was generated primarily in Australia, India, and China. Cloud and software revenue in the APJ region totaled €3,310 million in 2018 (2017: €3,124 million). That was 85% of all revenue from the region (2017: 84%).

APJ: Cloud and Software Revenue



Cloud subscriptions revenue in the APJ region rose 46% to €611 million in 2018 (2017: €419 million). Software licenses and software support revenue slightly decreased from €2,705 million in 2017 to €2,699 million in 2018, reflecting a year-over-year growth of 0%.

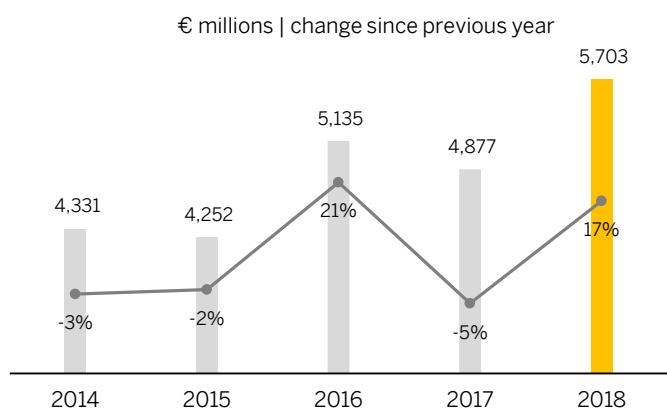
Operating Profit and Operating Margin

SAP posted record revenues in 2018, particularly in Cloud and Services. Total revenue grew 5% to €24,708 million (2017: €23,461 million), representing an increase of €1,247 million.

On the other hand, our operating expenses increased €421 million or 2% to €19,005 million (2017: €18,584 million). The main contributors to that increase were our continued investment in research and development as well as our revenue-related cloud subscriptions and support activities. We also continued our investments in the Services area in line with the increased revenue. Concurrently, the decreased share price in 2018 lead to declining costs of share-based compensation of €830 million (2017: €1,120 million). Restructuring expenses decreased further to €19 million (2017: €182 million). Our employee headcount (measured in full-time equivalents, or FTEs) increased by 7,955 FTEs year over year to 96,498.

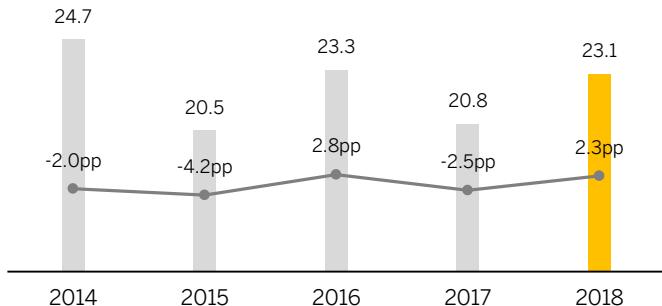
Overall, our growth in revenue exceeded the increase in expenses, leading to a 17% increase in operating profit to €5,703 million (2017: €4,877 million).

Operating Profit



Operating Margin

Percent | change since previous year



As an overall result of these effects on operating profit, our operating margin widened 2.3pp to 23.1% in 2018 (2017: 20.8%). Our revenues and results in 2018 were influenced by positive business developments as well as the following special effects (for the impacts on our non-IFRS results at constant currencies, see the [Performance Against Our Outlook for 2018](#) section):

- In 2018, the adoption of IFRS 15 had a positive effect on software license and support revenue of €170 million. Combined with other counter-effects, this resulted in a total effect on our revenues of €158 million. Our operating expenses benefited by €239 million and our operating profit was positively impacted by €399 million. For more information about the adoption of IFRS 15, see the Notes to the Consolidated Financial Statements, [Note \(A.5\)](#).
- The acquisition of Callidus Software Inc. (CallidusCloud) had a positive impact since the closing date of €126 million on our cloud subscriptions and support revenue, and a negative impact on our operating profit of €70 million. For more information about our acquisitions in 2018, see the Notes to the Consolidated Financial Statement, [Note \(D.1\)](#).
- The financial recognition of hyperinflation in Argentina and Venezuela resulted in a decrease in our total revenue of €19 million and in a decrease in our operating profit of €12 million. For more information about currency conversion and hyperinflation, see the Notes to the Consolidated Financial Statements, [Note \(IN.1\)](#).

Changes to the individual elements in our cost of revenue were as follows:

Cost of Cloud and Software

Cost of cloud and software consists primarily of costs for deploying and operating cloud solutions, the cost of developing custom solutions that address customers' specific business requirements, customer support costs, amortization expenses relating to intangibles, and license fees and commissions paid to third parties for databases and the other complementary third-party products sublicensed by us to our customers.

In 2018, the cost of cloud and software increased 7% to €4,160 million (2017: €3,893 million).

The main impact on costs was an additional €408 million year over year for delivering and operating cloud applications in response to the strength of customer demand. These investments contributed to revenue growth. Our margin on cloud subscriptions and support widened by 2.6pp from 56.0% in 2017 to 58.6% in 2018. This improvement in margin is attributable to strong growth in cloud subscriptions and support revenue of 32% to €4,993 million (2017: €3,769 million) with a lower increase in corresponding costs for cloud subscriptions and support of 25% to €2,068 million (2017: €1,660 million).

A 1% decrease in software license and support revenue to €15,628 million (2017: €15,780 million) and a corresponding decrease of 6% in the software license and support costs to €2,092 million (2017: €2,234 million) enabled us to widen our software license and support margin by 0.8pp to 86.6% (2017: 85.8%). The gross margin on cloud and software, defined as cloud and software profit as a percentage of cloud and software revenue, narrowed by 0.3pp in 2018 to 79.8% (2017: 80.1%). This decline was mainly driven by the change in the cloud and software revenue mix, which now has a higher proportion of cloud subscriptions and support revenues. Due to infrastructure costs, these revenues currently deliver a lower margin simultaneously with a declining proportion of higher-margin software and support revenues.

Cost of Services

Cost of services consists primarily of the cost of consulting, premium services and training courses and the cost of bought-in consulting and training resources.

We were able to increase our service revenue by 4% year over year to €4,086 million in 2018 (2017: €3,912 million). As our service business trends away from traditional software licensing and consulting revenue toward more subscription revenue from cloud solutions, we continue to invest by expanding capacities to meet the increased demand. As a result, cost of services rose 5% to €3,302 million (2017: €3,158 million). Our gross margin on services, defined as services profit as a percentage of services revenue, remained for the most part stable at 19.2% (2017: 19.3%).

Research and Development Expense

Our research and development (R&D) expense consists primarily of the personnel cost of our R&D employees, costs

incurred for independent contractors we retain to assist in our R&D activities, and amortization of the computer hardware and software we use for our R&D activities.

Due to growing personnel costs driven by a 9% increase on average for the year in our R&D headcount, our R&D expense increased by 8% to €3,624 million in 2018 from €3,352 million in 2017. R&D expense as a percentage of total revenue thus increased to 14.7% in 2018 (2017: 14.3%). For more information, see the *Products, Research & Development, and Services* section.

Sales and Marketing Expense

Sales and marketing expense consists mainly of personnel costs, direct sales costs, and the cost of marketing our products and services.

Our sales and marketing expense decreased 2% from €6,924 million in 2017 to €6,781 million in 2018. This decrease is mainly attributable to the adoption of the new IFRS 15 accounting standard and the resulting capitalization of sales commissions. For more information, see the Notes to the Consolidated Financial Statements, *Note (A.5)*. Accordingly, the ratio of sales and marketing expense to total revenue, expressed as a percentage, fell to 27.4% in 2018 (2017: 29.5%), a decrease of 2.1pp.

General and Administration Expense

Our general and administration expense consists mainly of personnel costs to support our finance and administration functions.

General and administration expense increased 2% from €1,075 million in 2017 to €1,098 million in 2018. This increase is primarily the result of higher personnel costs related to job creation in administrative areas, based on the increased business volume related to our growth. Thanks to strong operating results, the ratio of general and administration expense to total revenue improved by 0.1pp year over year to 4.4% (2017: 4.6%).

Segment Information

At the end of 2018, SAP had three reportable segments: the Applications, Technology & Services segment, the SAP Business Network segment, and the Customer Experience segment.

For more information about our segment reporting, see the Notes to the Consolidated Financial Statements, *Notes (C.1)* and *(C.2)*, and the *Performance Management System* section.

Applications, Technology & Services Segment

€ millions, unless otherwise stated (Non-IFRS)	2018		2017		Δ in %	Δ in %
	Actual Currency	Constant Currency	Actual Currency	Actual Currency	Constant Currency	
Cloud subscriptions and support revenue – SaaS/PaaS ¹⁾	1,829	1,894	1,403	30	35	
Cloud subscriptions and support gross margin – SaaS/PaaS ¹⁾ (in %)	58	57	59	-2pp	-2pp	
Cloud subscriptions and support revenue – IaaS ²⁾	488	506	328	49	54	
Cloud subscriptions and support gross margin – IaaS ²⁾ (in %)	13	14	7	6pp	7pp	
Cloud subscriptions and support revenue	2,317	2,400	1,732	34	39	
Cloud subscriptions and support gross margin (in %)	48	48	49	-1pp	-2pp	
Segment revenue	20,806	21,892	20,218	3	8	
Gross margin (in %)	73	73	74	-1pp	-1pp	
Segment profit	8,746	9,183	8,478	3	8	
Segment margin (in %)	42	42	42	Opp	Opp	

¹⁾ Software as a service/platform as a service

²⁾ Infrastructure as a service

The Applications, Technology & Services segment recorded a strong increase in cloud subscriptions and support revenue in 2018. As a consequence of strong demand in our digital core offering and database and data management solutions, and the growing success of our SAP Cloud Platform in the market, SaaS/PaaS revenue increased 30% (35% at constant currencies). We also saw SAP S/4HANA Cloud and SAP Leonardo, our strategic offerings for the future, develop very positively and achieve strong growth rates.

Our software support revenue improved slightly in 2018. It rose 1% (5% at constant currencies) to €10,968 million. Including software licenses revenue, which remained slightly below the prior-year level due to the shift toward cloud subscriptions and support revenue (0% at constant currencies), we achieved a total software licenses and support revenue of €15,201 million in 2018.

Overall, the revenue share of more predictable revenue streams in this segment increased 1.4pp from 62.4% in 2017 to 63.9% in 2018.

The segment's cost of revenue during the same period increased 7% (14% at constant currencies) to €5,625 million (2017: €5,262 million). This increase in expenses was primarily the result of higher investment in expanding our cloud infrastructure and in providing and operating our cloud applications. This applied primarily to the SaaS/PaaS business, whose margin consequently declined 2pp (2pp at constant currencies) compared to the year before. These costs were partially offset by our IaaS business, whose increasing level of maturity achieved significant increases in efficiency. It ended the fiscal year with a margin growth of 6pp (7pp at constant currencies).

SAP Business Network Segment

€ millions, unless otherwise stated (Non-IFRS)	2018	2017	Δ in %	Δ in %
	Actual Currency	Constant Currency	Actual Currency	Actual Currency
Cloud subscriptions and support revenue – SaaS/PaaS ¹⁾	2,178	2,265	1,840	18
Cloud subscriptions and support gross margin – SaaS/PaaS ¹⁾ (in %)	78	78	77	1pp
Cloud subscriptions and support revenue	2,178	2,265	1,840	18
Cloud subscriptions and support gross margin (in %)	78	78	77	1pp
Segment revenue	2,629	2,733	2,261	16
Gross margin (in %)	69	69	68	1pp
Segment profit	531	545	388	37
Segment margin (in %)	20	20	17	3pp

¹⁾ Software as a service/platform as a service

The SAP Business Network segment increased its cloud subscriptions and support gross margin in 2018 by 1pp again, to 78%. The segment's cost of revenue increased 12% in 2018 (17% at constant currencies) to €813 million (2017: €725 million).

The segment revenue increased by 16% (21% at constant currencies) to €2,629 million. As a result, the SAP Business Network segment achieved a segment gross margin of 69% in 2018 (2017: 68%), an increase of 1pp (1pp at constant currencies).

Customer Experience Segment

€ millions, unless otherwise stated (Non-IFRS)	2018	2017	Δ in %	Δ in %
	Actual Currency	Constant Currency	Actual Currency	Constant Currency
Cloud subscriptions and support revenue – SaaS/PaaS ¹⁾	528	539	200	>100
Cloud subscriptions and support gross margin – SaaS/PaaS ¹⁾ (in %)	67	67	59	7pp
Cloud subscriptions and support revenue	528	539	200	>100
Cloud subscriptions and support gross margin (in %)	67	67	59	7pp
Segment revenue	951	970	643	48
Gross margin (in %)	79	79	80	-1pp
Segment profit	138	139	85	62
Segment margin (in %)	14	14	13	1pp

¹⁾ Software as a service/platform as a service

The new Customer Experience segment established in 2018 recorded strong growth in total revenue of 48% (51% at constant currencies). This positive development was mainly influenced by the strong growth in our cloud subscriptions and support revenue of 164% (170% at constant currencies). The acquisition of Callidus Software Inc. and SAP's cloud strategy resulted in an increasing cloud revenue share compared to software licenses and support revenue. Cloud subscription and support gross margin increased

7pp (8pp at constant currencies) favored by Callidus contributing positively with a cloud subscription and support gross margin of 80%. However, changes in internal allocations of cloud delivery costs led to an increase in the cost of cloud subscription and support compared to 2017. Since its acquisition in the second quarter of 2018, Callidus contributed positively to the segment's cloud subscriptions and support revenue by €156 million and to the segment's operating profit by €53 million.

Reconciliation of Cloud Subscription Revenues and Margins

€ millions, unless otherwise stated (Non-IFRS)	2018		2017		Δ in %	Δ in %
	Actual Currency	Constant Currency	Actual Currency	Actual Currency	Constant Currency	
SAP Business Network segment	2,178	2,265	1,840	18	23	
Cloud subscriptions and support revenue – SaaS/PaaS ¹⁾	2,361	2,434	1,604	47	52	
Total	4,539	4,700	3,443	32	36	
Cloud subscriptions and support revenue – IaaS ²⁾	488	506	328	49	54	
Cloud subscriptions and support revenue	5,027	5,205	3,771	33	38	
SAP Business Network segment	78	78	77	1pp	1pp	
Cloud subscriptions and support gross margin – SaaS/PaaS ¹⁾ (in %)	60	59	57	3pp	2pp	
Total	68	68	67	1pp	1pp	
Cloud subscriptions and support gross margin – IaaS ²⁾ (in %)	13	14	7	6pp	7pp	
Cloud subscriptions and support gross margin (in %)	63	63	62	1pp	1pp	

¹⁾ Software as a service/platform as a service

²⁾ Infrastructure as a service

³⁾ Other includes Applications, Technology & Services segment, Customer Experience segment, and miscellaneous. The individual revenue and margin numbers for the Applications, Technology & Services segment and the Customer Experience segment are disclosed on the previous pages.

Financial Income, Net

Financial income, net, changed to –€47 million (2017: €188 million). Our finance income was €371 million (2017: €476 million) and our finance costs were €418 million (2017: €288 million).

Finance income mainly consists of gains from disposal of equity securities and IFRS 9-related fair value adjustments totaling €227 million (2017: €382 million), interest income from loans and receivables, and other financial assets (cash, cash equivalents, and current investments) totaling €62 million (2017: €49 million), and income from derivatives totaling €77 million (2017: €44 million).

Finance costs mainly consist of interest expense on financial liabilities amounting to €106 million (2017: €89 million), negative effects from derivatives amounting to €206 million (2017: €116 million), and losses from disposal or IFRS 9-related fair value adjustments of Sapphire Ventures investments totaling €44 million (2017: €27 thousands). For more information about financing instruments, see the Notes to the Consolidated Financial Statements, [Note \(E.3\)](#).

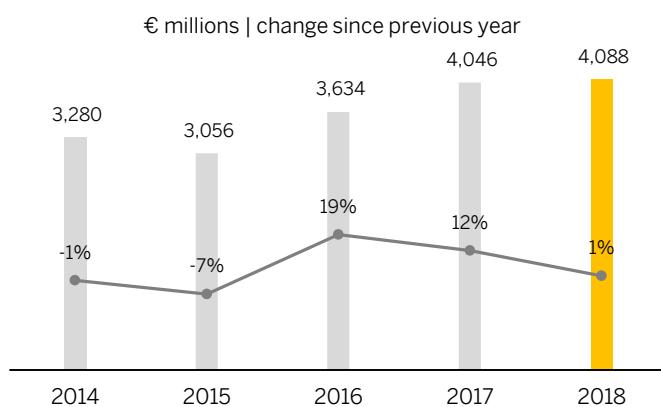
Income Taxes

The effective tax rate in 2018 was 27.0% (2017: 19.5%). The year-over-year increase in the effective tax rate mainly resulted from the absence of one-time tax benefits realized in 2017 relating to an intra-group transfer of intellectual property rights to SAP SE and the U.S. tax reform, and tax effects relating to intercompany financing, which were partly compensated by valuation allowances on deferred tax assets, and changes in the regional allocation of income. For more information about income taxes, see the Notes to the Consolidated Financial Statements, [Note \(C.5\)](#).

Profit After Tax and Earnings per Share

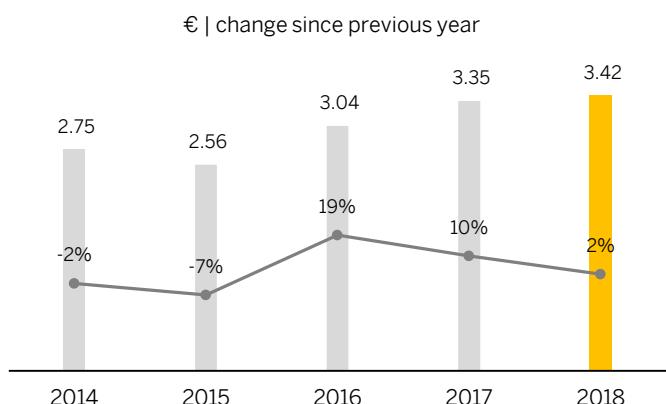
Profit after tax increased to €4,088 million in 2018 (2017: €4,046 million).

Profit After Tax



Basic earnings per share increased to €3.42 (2017: €3.35). The number of shares outstanding decreased to 1,194 million in 2018 (2017: 1,197 million).

Earnings per Share



Dividend

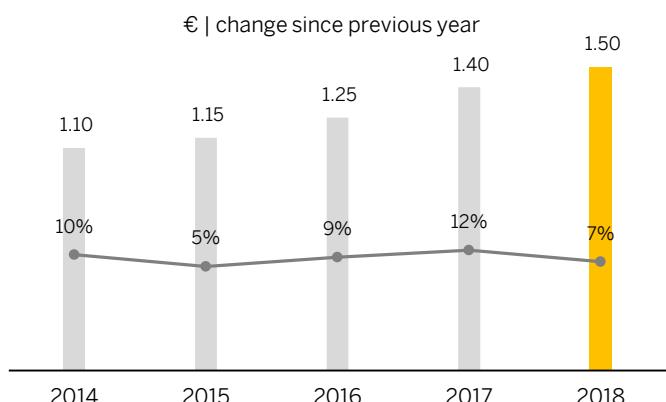
We believe our shareholders should benefit appropriately from the profit the Company made in 2018. Our dividend policy is to pay a dividend totaling 40% or more of profit after tax.

The Executive Board and the Supervisory Board will recommend to the Annual General Meeting of Shareholders that the total dividend be increased by 7% to €1.50 per share (2017: €1.40). Based on this recommendation, the overall dividend payout ratio (which here means the total distributed dividend as a percentage of profit) would be 44% (2017: 41%).

If the shareholders approve this recommendation and if treasury shares remain at the 2018 closing level, the total amount distributed in dividends would be €1,790 million. The actual amount distributed may be different from this total because the number of shares held in treasury may change before the Annual General Meeting of Shareholders. In 2018, we distributed €1,671 million in dividends from our 2017 profit after tax.

Dividend per Share

€ | change since previous year



Finances (IFRS)

Overview

Global Financial Management

We use global centralized financial management to control liquid assets and monitor exposure to interest rates and currencies. The primary aim of our financial management is to maintain liquidity in the Group at a level that is adequate to meet our financial obligations at all times. Most SAP companies have their liquidity managed centrally by the Group, so that liquid assets across the Group can be consolidated, monitored, and invested in accordance with Group policy. High levels of liquid assets help keep SAP flexible, sound, and independent. In addition, various credit facilities are currently available for additional liquidity, if required. For more information about these facilities, see the [Credit Facilities](#) section.

We manage credit, liquidity, interest rate, equity price, and foreign exchange rate risks on a Group-wide basis. We use selected derivatives exclusively for this purpose and not for speculation, which is defined as entering into a derivative instrument for which we do not have corresponding underlying transactions. The rules for the use of derivatives and other rules and processes concerning the management of financial risks are documented in our treasury guideline, which applies globally to all companies in the Group. For more information about the management of each financial risk and about our risk exposure, see the Notes to the Consolidated Financial Statements, [Notes \(F.1\)](#) and [\(F.2\)](#).

Liquidity Management

Our primary source of cash, cash equivalents, and current investments is funds generated from our business operations. Over the past several years, our principal use of cash has been to support operations and our capital expenditure requirements resulting from our growth, to quickly repay financial debt, to acquire businesses, to pay dividends on our shares, and to buy back SAP shares on the open market. On December 31, 2018, our cash, cash equivalents, and current investments were primarily held in euros and U.S. dollars. We generally invest only in the financial assets of issuers or funds with a minimum credit rating of BBB, and pursue a policy of cautious investment characterized by wide portfolio diversification with a variety of counterparties, predominantly short-term investments, and standard investment instruments. Investments in financial assets of issuers with a credit rating lower than BBB were not material in 2018.

We believe that our liquid assets combined with our undrawn credit facilities are sufficient to meet our operating financing needs in 2019 and, together with expected cash flows from operations, will support debt repayments and our currently planned capital expenditure requirements over the near term and medium term. It may also be necessary to enter into financing transactions when additional funds are required that cannot be wholly sourced from free cash flow (for example, to finance large acquisitions).

To expand our business, we have made acquisitions of businesses, products, and technologies. Depending on our future cash position and future market conditions, we might issue additional debt instruments to fund acquisitions, maintain financial flexibility, and limit repayment risk. Therefore, we continuously monitor funding options available in the capital markets and trends

in the availability of funds, as well as the cost of such funding. In recent years, we were able to repay additional debt within a short period of time due to our persistently strong free cash flow. For more information about the financial debt, see the *Cash Flows and Liquidity* section.

Capital Structure Management

The primary objective of our capital structure management is to maintain a strong financial profile for investor, creditor, and customer confidence, and to support the growth of our business. We seek to maintain a capital structure that will allow us to cover our funding requirements through the capital markets at reasonable conditions, and in so doing, ensure a high level of independence, confidence, and financial flexibility.

For more information about the capital structure and its analysis, see the *Analysis of Consolidated Statement of Financial Position* section and the Notes to the Consolidated Financial Statements, *Note (E.1)*.

The long-term credit rating for SAP SE is "A2" by Moody's and "A" by Standard & Poor's, both with a stable outlook.

Aside from our dividend policy, we might return excess liquidity to our shareholders by potentially repurchasing treasury shares in future.

Credit Facilities

Other sources of capital are available to us through various credit facilities, if required.

To retain high financial flexibility, on November 20, 2017, SAP SE entered into a €2.5 billion syndicated revolving credit facility agreement with an initial term of five years plus two one-year extension options, of which one was exercised in November 2018. It replaced the previous credit facility of €2.0 billion from 2013 and may be used for general corporate purposes. A possible future utilization is not subject to any financial covenants. Borrowings under the facility bear interest of EURIBOR or LIBOR for the respective currency plus a margin of 0.17%. We are also required to pay a commitment fee of 0.0595% per annum on the unused available credit. So far, we have not used, and do not currently foresee any need to use, this credit facility.

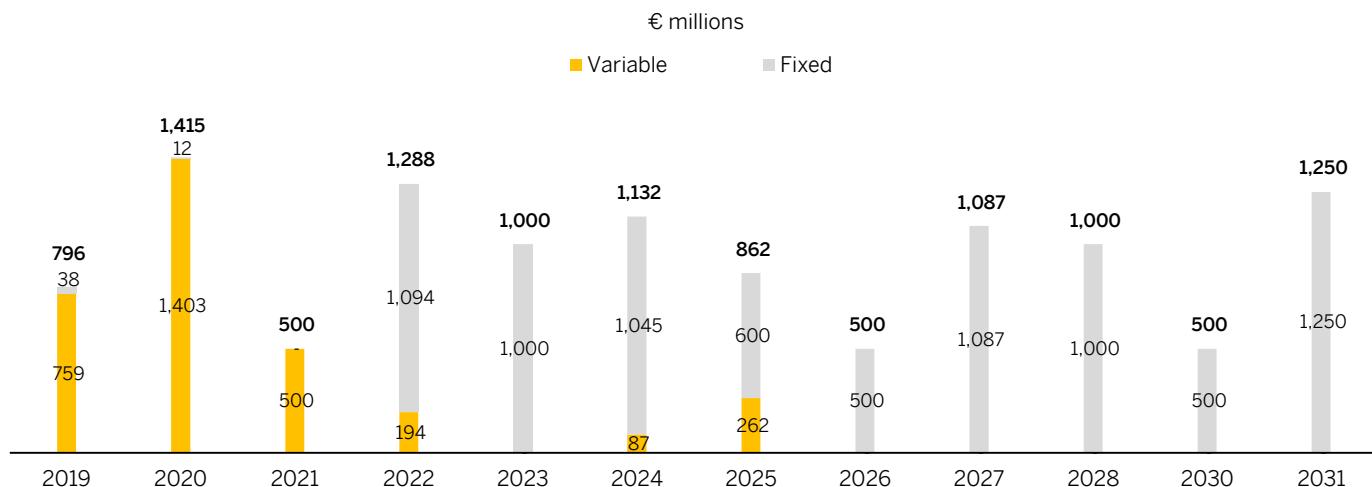
As at December 31, 2018, SAP SE had additional available credit facilities totaling €424 million. Several of our subsidiaries have credit facilities available that allow them to borrow funds at prevailing interest rates. As at December 31, 2018, approximately €21 million was available through such arrangements. There were immaterial borrowings outstanding under these credit facilities from our foreign subsidiaries as at December 31, 2018.

On November 12, 2018, SAP entered into a €7.0 billion credit facility agreement to finance the intended acquisition of Qualtrics. On December 10, 2018, we issued five tranches of Eurobonds with a total volume of €4.5 billion and maturities between two and 12.25 years to refinance the intended acquisition early. The funds were used to cancel the credit facility accordingly, therefore resulting in €2.5 billion still available to SAP on December 31, 2018. The facility was fully drawn on January 23, 2019, and can be flexibly repaid within its lifetime of three years.

Financial Debts

Financial debt is defined as the nominal volume of bank loans, private placements, and bonds.

Maturity Profile of Financial Debts



Nominal volume of financial debt on December 31, 2018, included amounts in euros (€10,050 million) and U.S. dollars (€1,273 million). Approximately 30% of the financial debt was held at variable interest rates, partially swapped from fixed into variable using interest rate swaps.

We intend to repay €750 million in Eurobonds in November 2019. In addition, we might repay portions of the Qualtrics related €2.5 billion acquisition term loan, and plan to repay the first tranches of a €50 million promotional loan with KfW.

Financial Debt

	€ millions
Bonds	10,262
Private Placement	1,011
Bank Loan	58

For more information about our financial debt, see the Notes to the Consolidated Financial Statements, [Note \(E.3\)](#).

Cash Flows and Liquidity

Group Liquidity

	2018	2017	Δ
Cash and cash equivalents	8,627	4,011	4,617
Current investments	211	774	-563
Group liquidity	8,838	4,785	4,053
Current financial debt	-759	-1,299	540
Net liquidity 1	8,080	3,486	4,594
Non-current financial debt	-10,572	-4,965	-5,607
Net liquidity 2	-2,493	-1,479	-1,013

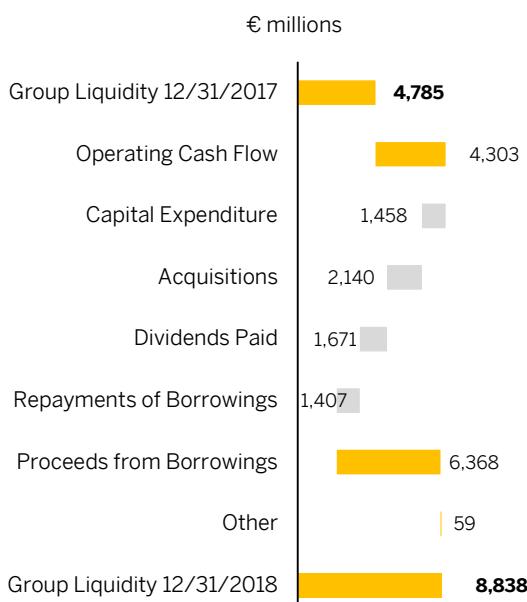
Group liquidity consists of cash and cash equivalents (for example, cash at banks, money market funds, and time deposits with original maturity of three months or less) and current investments (for example, time deposits and debt securities with original maturities of greater than three months and remaining maturities of less than one year included in other financial assets) as reported in our Consolidated Financial Statements. Group liquidity on December 31, 2018, primarily comprised amounts in euros and U.S. dollars. For more information about our liquidity, see the Notes to the Consolidated Financial Statements, [Note \(E.3\)](#).

The increase in Group liquidity compared to 2017 was mainly due to proceeds from borrowings for the Qualtrics acquisition and cash inflows from our operations. They were offset by cash outflows for acquisitions, dividend payments, capital expenditures, and repayments of borrowings.

For information about the impact of cash, cash equivalents, current investments, and our financial liabilities on our income

statements, see the analysis of our financial income, net, in the *Operating Results (IFRS)* section.

Development of Group Liquidity



Analysis of Consolidated Statements of Cash Flow

€ millions	2018	2017	Δ in %
Net cash flows from operating activities	4,303	5,045	-15
Net cash flows from investing activities	-3,066	-1,112	>100
Net cash flows from financing activities	3,283	-3,406	<-100

In 2018, cash inflows from operating activities decreased by €743 million to €4,303 million (2017: €5,045 million). This is particularly due to an increase in income tax payments, higher insurance payments related to employees' time credits compared to the prior year, and higher share-based payments (€1.0 billion in 2018 and €0.8 billion in 2017). Our days sales outstanding (DSO) for receivables, defined as the average number of days from the raised invoice to cash receipt from the customer, remained stable in 2018 at 70 days (2017: 70 days).

Cash outflows from investing activities were €3,066 million in 2018 (2017: €1,112 million). We paid a total of €2,140 million for acquisitions, mainly Callidus, in 2018, compared to €291 million in 2017. Capital expenditures on purchases of intangible assets and property, plant, and equipment increased by €183 million to €1,458 million in 2018. For more information about current and planned capital expenditures, see the *Assets* section and the *Investment Goals* section.

Net cash inflows from financing activities were €3,283 million in 2018, compared to cash outflows of €3,406 million in 2017. In 2018, we issued €6,000 million in Eurobonds financing the

acquisition of Callidus and Qualtrics, and a US\$300 million USD bond. The cash outflows resulted from repayments of €1,150 million in Eurobonds and US\$150 million in U.S. private placements when they matured. Cash outflows in 2017 resulted from repayments of €1,000 million in Eurobonds and US\$442.5 million in U.S. private placements when they matured.

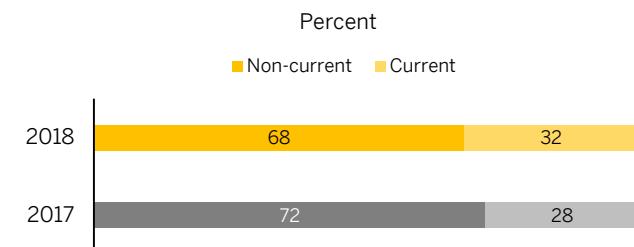
The dividend payment of €1,671 million made in 2018 exceeded the amount of €1,499 million from the prior year, as a result of the increased dividend paid per share from €1.25 to €1.40. In 2017, we repurchased shares in the amount of €500 million (2018: €0).

Assets (IFRS)

Analysis of Consolidated Statements of Financial Position

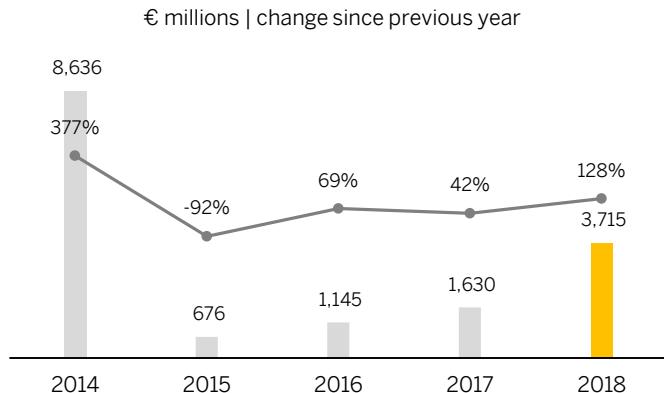
Total assets increased by 21% year over year to €51,491 million.

Assets



Total current assets increased by 39% in 2018 from €11,930 million to €16,620 million. This was mainly due to an increase in cash and cash equivalents based on cash inflows from the issuance of Eurobonds.

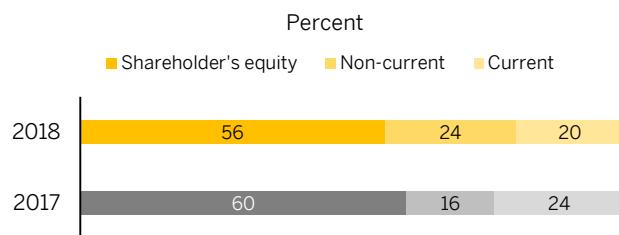
Investment in Goodwill, Intangible Assets, and Property, Plant, and Equipment



Total non-current assets increased by 14% in 2018 to €34,871 million compared to the previous year's figure of €30,554 million. This change was mainly due to foreign-exchange-related revaluations as well as additions to goodwill from the acquisition of Callidus.

Liabilities

Percent



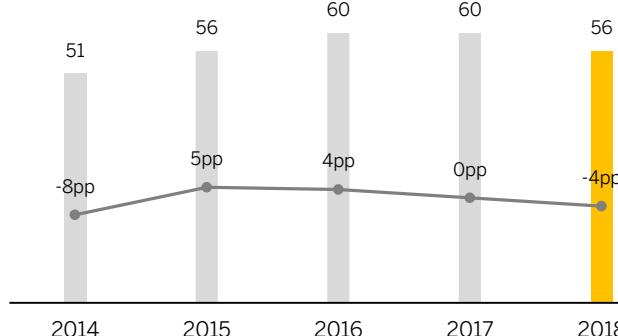
Current liabilities increased slightly by 3% to €10,481 million in 2018 (2017: €10,210 million).

Total non-current liabilities increased by 80% to €12,133 million in 2018 compared to the previous year's figure of €6,759 million. This was due to the issuance of Eurobonds to finance the acquisition of Callidus and Qualtrics. For more information about our financing activities in 2018, see the [Finances \(IFRS\)](#) section.

The equity ratio (that is, the ratio of shareholders' equity to total assets) decreased to 56% (prior year: 60%).

Equity Ratio

Percent | change since previous year

**Principal Investments and Divestitures
Currently in Progress**

In 2018, we continued various construction projects and started new construction activities in several locations. Except for one new office building in Walldorf, which is partially financed by a promotional loan, we plan to finance all of these projects from operating cash flow. Our most important projects are listed below.

Construction Projects

€ millions

Country	Location of Facility	Short Description	Estimated Total Cost	Costs Incurred as at 12/31/2018	Estimated Completion Date
Germany	Walldorf	New office building for approx. 450 employees	38	27	January 2019
Germany	St. Leon-Rot	New office building for approx. 450 employees	38	24	April 2019
Germany	Walldorf	New office building for approx. 700 employees	74	66	February 2019
Germany	Walldorf	New data center phase 2	52	34	July 2019
Brazil	Sao Leopoldo	New office building for approx. 700 employees	33	2	December 2020
Bulgaria	Sofia	New office building for approx. 1,200 employees	46	0	September 2021
Germany	Munich	New office building for approx. 850 employees	100	0	December 2021
India	Bangalore	New office building for approx. 4,000 employees	97	13	December 2022

For more information about planned investment expenditures, see the [Investment Goals](#) section. There were no material divestitures within the reporting period.

Competitive Intangibles

The resources that are the basis for our current as well as future success do not appear in the Consolidated Financial Statements. This is apparent from a comparison of the market capitalization of SAP SE (based on all issued shares), which was €106.8 billion at the end of 2018 (2017: €114.8 billion), with the book value of our equity in the Consolidated Financial Statements, which was €28.9 billion (2017: €25.5 billion). This means that the market capitalization of our equity is nearly four times higher than the book value. The difference is mainly due to certain internally generated intangible resources that the applicable accounting standards do not allow to be recorded (at all or at fair value) in the Consolidated Financial Statements. They include customer capital (our customer base and customer relations); employees and their knowledge and skills; our ecosystem of partners; internally developed software; our ability to innovate; the brands we have built up, in particular, the SAP brand itself; and our organization.

As at December 31, 2018, SAP was the most valuable company in Germany in terms of market capitalization based on all issued shares.

In 2018, SAP's brand value remained on a high level. According to the Interbrand "Best Global Brands" annual survey, SAP ranked as the 21st most valued brand in the world (2017: 21st). Against other German brands, the SAP brand ranks third behind Mercedes-Benz and BMW, and ninth globally against other brands in the technology sector. Interbrand determined our brand value to be US\$22.9 billion, an increase of 1% compared to the previous year (2017: US\$22.6 billion). BrandZ even recognized SAP as the world's 17th most valuable brand in the 2018 BrandZ Top 100 Most Valuable Global Brands ranking. The ranking estimates SAP's brand value at US\$55 billion, an increase of 23% in brand value for SAP year over year.

The results of our current and past investment in research and development are also a significant element in our competitive intangibles.

Our customer capital continued to grow in 2018. At the end of 2018, we had more than 413,000 customers (2017: 378,000) in various market segments. We serve customers in more than 180 countries. For more information about our customers, see the *Customers* section.

Employee-related activities increased the value of our employee base and our own software. For more information, see the *Employees and Social Investment* section and the *Products, Research & Development, and Services* section.

Report on the Economic Position of SAP SE

SAP SE is headquartered in Walldorf, Germany, and is the parent company of the SAP Group, which comprises 265 companies. SAP SE is the Group holding company and employs most of the Group's Germany-based development and service and support personnel.

As the owner of the intellectual property in most SAP software, SAP SE derives its revenue mainly from software license fees and bears the group-wide research and development expenses for the most part.

The SAP SE annual financial statements are prepared in accordance with the reporting standards in the German

Commercial Code in the version of the Accounting Directive Implementation Act BilRUG and the German Stock Corporation Act. The full SAP SE annual financial report and unqualified audit report are submitted to the operator of the *Elektronischer Bundesanzeiger* (Online German Federal Gazette) for publication and inclusion in the *Unternehmensregister* (German Business Register). It is available from SAP SE on request.

Income

SAP SE's income statement is classified following the nature of expense method and presents amounts in millions of euros.

SAP SE Income Statement – German Commercial Code (Short Version)

€ millions	2018	2017
Total revenue	14,244	13,634
Other operating income	1,073	1,074
Cost of services and materials	-8,384	-8,079
Personnel expenses	-2,097	-2,035
Depreciation and amortization	-603	-295
Other operating expenses	-2,246	-2,053
Operating profit	1,987	2,246
Finance income	745	1,745
Income before taxes	2,732	3,991
Income taxes	-788	-1,124
Income after taxes	1,943	2,867
Other taxes	-13	-11
Net income	1,929	2,856

The total revenue of SAP SE in 2018 was €14,244 million (2017: €13,634 million), an increase of 4%. Product revenue increased 8% to €11,768 million (2017: €10,928 million). As in previous years, product revenue was primarily generated from license fees paid by subsidiaries of SAP SE.

Service revenue increased 1% to €534 million in 2018 (2017: €529 million), other revenue decreased by 11% to €1,941 million (2017: €2,176 million).

SAP SE operating profit decreased 12% to €1,987 million (2017: €2,246 million). Other operating income decreased €1 million to €1,073 million (2017: €1,074 million).

SAP SE cost of services and materials increased 4 % to €8,384 million (2017: €8,079 million). Services received increased €509 million to €6,427 million (2017: €5,918 million), mainly due to increased services received in the context of intra-group cost allocations. The main contributors to that increase were continued group-wide investments in research and development activities as well as greater revenue-related and investment-related cloud subscriptions and support costs. This was partly offset by a decrease in costs for licenses and provisions by 10% to €1,929 million (2017: €2,135 million).

SAP SE personnel expenses, mainly the labor cost of software developers, service and support employees, and administration staff employed by SAP SE, increased 3% to €2,097 million (2017: €2,035 million). The 104% increase in depreciation and

amortization to €603 million (2017: €295 million) was mainly due to depreciation of intangible assets acquired at the end of 2017 in the course of the hybris business transfer. Other operating expenses increased by €193 million to €2,246 million (2017: €2,053 million). This increase is mainly attributable to a €66 million increase in write-downs on receivables and a €67 million increase in rental costs.

Finance income was €745 million (2017: €1,745 million), a year-over-year decrease of €1,000 million. This decrease is primarily due to a €736 million lower income from investments in associates, €245 million higher write-downs on financial assets, a decrease of €79 million in net interest income, and a decrease of €9 million in income from other securities and from loans held as financial assets. The decrease in finance income was partly offset by a €69 million increase in results from profit and loss transfer agreements.

SAP SE income before taxes decreased €1,259 million to €2,732 million (2017: €3,991 million). Income taxes decreased by €336 million to €788 million (2017: €1,124 million). After deducting taxes, the resulting net income was €1,929 million (2017: €2,856 million), a decrease of €927 million year over year.

Assets and Financial Position

In 2018, SAP SE total assets closed at €41,324 million (2017: €34,770 million).

SAP SE Balance Sheet as at December 31– German Commercial Code (Short Version)

€ millions	2018	2017
Assets		
Intangible assets	1,999	2,146
Property, plant, and equipment	1,495	1,282
Financial assets	27,363	25,939
Fixed assets	30,857	29,367
Inventories	1	1
Accounts receivable and other assets	5,016	4,215
Marketable securities and liquid assets	4,909	731
Short-term assets	9,926	4,947
Prepaid expenses and deferred charges	273	226
Deferred taxes	266	227
Surplus arising from offsetting	2	3
Total assets	41,324	34,770
Equity and liabilities		
Shareholders' equity	16,452	16,171
Provisions	1,711	1,671
Liabilities	23,150	16,917
Deferred income	11	12
Total shareholders' equity and liabilities	41,324	34,770

The increases in property, plant, and equipment of €213 million to €1,495 million (2017: €1,282 million) relate primarily to the replacement and purchase of IT infrastructure and the construction of new buildings. Financial assets increased €1,424 million year over year to €27,363 million (2017: €25,939 million), mainly due to €1,692 million in capital contributions to subsidiaries, thereof €1,137 million to SAP America Inc. for the Callidus acquisition. The increase was partly offset by €245 million in write-downs on investments in affiliated companies.

The increase of €801 million in accounts receivable and other assets was primarily the result of €734 million higher receivables from affiliated companies.

Marketable securities and liquid assets increased by €4,178 million to €4,909 million (2017: €731 million). The increase was mainly due to proceeds from borrowings for the Qualtrics acquisition.

SAP SE shareholders' equity rose 2% to €16,452 million (2017: €16,171 million). Against outflows of €1,671 million associated with the payment of the 2017 dividend, there was a €1,929 million increase due to net income for 2018 and an inflow of €22 million from the issuance of shares to service the share-based payments of employees. The equity ratio (that is, the ratio of shareholders' equity to total assets) is 40% (2017: 47%).

Provisions increased €40 million to €1,711 million (2017: €1,671 million).

Other provisions increased €78 million to €1,128 million (2017: €1,050 million), primarily as a result of higher provisions for outstanding invoices on goods and services.

In contrast, provisions for tax decreased €40 million to €575 million (2017: €615 million).

Liabilities increased €6,233 million to €23,150 million (2017: €16,917 million). This increase mainly resulted from a €1,266 million increase in liabilities to affiliated companies, primarily due to higher cash contributions by subsidiaries through SAP SE's centralized management of finance and liquidity, and the issuance of Eurobonds for a total of €6,000 million to finance the acquisition of Callidus and Qualtrics. The increase in liabilities was partly offset by repayments of bonds in the total amount of €1,150 million.

Opportunities and Risks

SAP SE is subject to essentially the same opportunities and risks as the SAP Group. For more information, see the *Risk Management and Risks* section as well as the *Expected Developments and Opportunities* section.

Corporate Governance Fundamentals

Corporate Governance Statement

The German Commercial Code, section 315d in connection with section 289f, requires that, as a listed company, SAP SE publishes a corporate governance statement either as part of our management report or on our Web site. The Executive Board of SAP SE filed the corporate governance statement on February 19, 2019, and published it on our public Web site at www.sap.com/corporate-en/investors/governance.

For more information about the corporate governance of SAP, see the *Corporate Governance Report* section.

Changes in Management

In April 2018, the Supervisory Board extended the Executive Board contract of Stefan Ries, Chief Human Resources Officer and Labor Relations Director, until March 31, 2024.

In October 2018, Jürgen Müller was appointed to the Executive Board effective January 1, 2019. He leads the board area Technology & Innovation. Further, it was decided to expand Christian Klein's previous board area Global Business Operations to include additional areas of responsibility, and to rename it as Intelligent Enterprise Group. Michael Kleinemeier and Bernd Leukert jointly lead the board area SAP Digital Business Services and will continue to do so until Michael Kleinemeier's Executive Board contract expires on December 31, 2019. All the aforementioned changes were effective January 1, 2019.

Information Concerning Takeovers

Information required under the German Commercial Code, sections 289a (1) and 315a (1), with an explanatory report:

Composition of share capital: For information about the composition of SAP SE share capital as at December 31, 2018, see the Notes to the Consolidated Financial Statements, *Note (E.2)*. Each share entitles the bearer to one vote. American depositary receipts (ADRs) representing our shares are listed on the New York Stock Exchange (NYSE) in the United States. ADRs are certificates representing non-U.S. shares and are traded on U.S. stock exchanges instead of the underlying shares. One SAP ADR corresponds to one SAP share.

Restrictions applying to share voting rights or transfers: SAP shares are not subject to transfer restrictions. SAP held 34,854,354 treasury shares as at December 31, 2018, see the Notes to the Consolidated Financial Statements, *Note (E.2)*. Treasury shares do not carry voting rights or dividend rights or other rights. We are not aware of any other restrictions applying to share voting rights or to share transfers.

Shareholdings that exceed 10% of the voting rights: We are not aware of any direct or indirect SAP SE shareholdings that exceed 10% of the voting rights.

Shares with special rights conferring powers of control: No SAP shareholder has special rights conferring powers of control.

Type of control over voting rights applying to employee shareholders who do not directly exercise their control rights: As

with other shareholders, employee holders of SAP shares exercise their control rights in accordance with the law and the Articles of Incorporation. In votes on the formal approval of their acts at the Annual General Meeting of Shareholders, employee representatives on the Supervisory Board, as all other members of the Supervisory Board, are prohibited from exercising the voting rights associated with their shares.

Requirements concerning appointments and dismissals of members of the Executive Board and amendments to the Articles of Incorporation: Conditions for the appointment and dismissal of members of the Executive Board and amendment to the Articles of Incorporation reflect the relevant provisions of applicable European and German law, including Council Regulation (EC) No. 2157/2001 on the Statute for a European Company ("SE Regulation") and the German Stock Corporation Act. Under the Articles of Incorporation, the Executive Board consists of at least two members, who are appointed for a period of not more than five years by the Supervisory Board in accordance with the SE Regulation, articles 39 and 46. The number of members of the Executive Board is decided by the Supervisory Board. Executive Board members may be reappointed for, or their term of office extended by, a maximum of five years. A simple majority of the Supervisory Board membership is required for Executive Board appointments. In the event of a tie, the chairperson of the Supervisory Board has the deciding vote. The Supervisory Board can appoint a chairperson of the Executive Board and one or more deputy chairpersons from among the members of the Executive Board. The Supervisory Board can revoke appointments to the Executive Board in accordance with the SE Regulation, article 9, and the German Stock Corporation Act, section 84, if compelling reasons exist, such as gross negligence on the part of the Executive Board member. If the Executive Board is short of a required member, one may be appointed in urgent cases by a court in accordance with the SE Regulation, article 9, and the German Stock Corporation Act, section 85. In accordance with the SE Regulation, article 59, and the German Stock Corporation Act, section 179, an amendment of the Articles of Incorporation requires a resolution of the General Meeting of Shareholders with a majority of at least three-quarters of the valid votes cast. For any amendments of the Articles of Incorporation that require a simple majority for stock corporations established under German law, however, the simple majority of the valid votes cast is sufficient if at least half of the subscribed capital is represented or, in the absence of such quorum, the majority prescribed by law (that is, two-thirds of the votes cast, pursuant to article 59 of the SE Regulation) is sufficient. Section 11 (2) of the Articles of Incorporation authorizes the Supervisory Board to amend the Articles of Incorporation where such amendments only concern the wording.

Power to issue and repurchase shares: The Annual General Meeting of Shareholders on May 12, 2016, granted powers to the Executive Board, subject to the consent of the Supervisory Board, to issue convertible and/or warrant-linked bonds, profit-sharing rights and/or income bonds (or combinations of these

instruments), and to grant conversion or option rights in respect of SAP SE shares representing a total attributable portion of the share capital of not more than €100 million secured by a corresponding amount of contingent capital. These powers will expire on May 11, 2021. The Executive Board is also authorized until May 19, 2020, to increase the share capital by not more than €250 million by issuing new shares against contributions in cash and to increase the share capital by not more than €250 million by issuing new shares against contributions in cash or in kind. For more information about the different tranches of authorized capital and the aforementioned contingent capital, see the Articles of Incorporation, section 4.

The Annual General Meeting of Shareholders on May 17, 2018, granted a power to the Executive Board in accordance with the German Stock Corporation Act, section 71 (1)(8), to buy back from treasury on or before May 16, 2023, SAP SE shares attributable in total to not more than €120 million of the share capital. The power is subject to the proviso that the shares repurchased, together with any shares that were previously acquired and are still held by SAP in treasury and any other shares controlled by SAP, must not in total exceed 10% of SAP's share capital. Executive Board powers, such as those described to issue and repurchase stock and to grant rights of conversion and subscription to shares of SAP, are widely-followed common practice among German companies such as SAP. These powers give the Executive Board the flexibility it needs, in particular, the option to use SAP shares as consideration in equity investments, raise funds on the financial markets at short notice on favorable terms, or return value to shareholders during the course of the year.

Material agreements with change of control provisions:

SAP SE has concluded the following material agreements with provisions that take effect in the event of a change of control, whether following a takeover bid or otherwise:

The terms of SAP's syndicated €2.5 billion revolving credit facility include a change-of-control clause. For more information about this syndicated credit facility, see the Notes to the Consolidated Financial Statements, [Note \(F.1\)](#). This clause obliges SAP SE to notify the banks in case of a change of control. If, on receiving the notification, banks that represent at least two-thirds of the credit volume so require, the banks have the right to cancel the credit facility and demand complete repayment of the outstanding debt. If no continuation agreement is reached, the credit facility would end and the obligation to repay would become effective at an ascertainable time.

To finance the acquisition of Qualtrics International Inc., SAP concluded a credit agreement under which it can, as of December 31, 2018, take out a loan of up to €2.5 billion at the closing of the acquisition (see the Notes to the Consolidated Financial Statements, [Note \(G.9\)](#)). The agreement contains a change-of-control clause which obliges SAP SE to notify the banks in case of a change of control. If, on receiving the notification, banks that represent at least two-thirds of the credit volume so require, the banks have the right to terminate the loan and demand complete repayment of the outstanding debt. If no continuation agreement is reached, the termination of the loan and the obligation to repay would become effective at an ascertainable time.

SAP had bonds totaling €10 billion and US\$0.3 billion outstanding as at December 31, 2018. For more information about SAP's bonds, see the Notes to the Consolidated Financial Statements, [Note \(E.3\)](#). Under the terms agreed with the buyers, we are required to notify the buyers, without delay, of any change of control. If there is a change of control and SAP is consequently assigned a lower credit rating within a defined period, buyers are entitled to demand repayment.

Under the terms of our U.S. private placements totaling approximately US\$1.16 billion as at December 31, 2018, we are required to offer lenders repayment of outstanding debt if there is a change of control and SAP is consequently assigned a lower credit rating within a defined period. For more information about these private placements, see the Notes to the Consolidated Financial Statements, [Note \(E.3\)](#). Lenders would have at least 30 days to accept the offer.

We have entered into relationships with other companies to jointly develop and market new software products. These relationships are governed by development and marketing agreements with the respective companies. Some of the agreements include provisions that, in the event of a change of control over one of the parties, give the other party a right to consent to the assignment of the agreement or to terminate it.

Change of control provisions in Executive Board

compensation agreements: Agreements have been concluded with the members of the Executive Board concerning compensation in the event of a change of control. These agreements, which are customary in Germany and elsewhere, are described in the compensation report, which is an integral part of this management report. We have no analogous compensation agreements with our other employees.

Business Conduct

Championing Excellence in Business Conduct

In an increasingly complex business environment, making the right decisions and abiding by ethical choices has never been more challenging.

At SAP, we understand that our customers expect our business practices to not only meet international rules and legal requirements, but also to adhere to high standards of compliance and integrity.

SAP's reputation for doing business the right way is one of our most important assets. It is synonymous with quality, innovation, and excellence.

That is why, in 2018, our efforts to raise the awareness of compliance and to ensure the practice of compliant and ethical behavior throughout the organization were greater than ever and accompanied by an increase in our Legal Compliance and Integrity Office (LCIO) staff from 30 to 80 employees. Further significant investments are also planned for 2019.

Nurturing an Environment in Which Integrity and Ethics Dominate

SAP expects compliance to permeate the entire company. Compliant behavior is expected to be an intrinsic part of our culture and an instinctive part of our daily decision-making at every level of the business. To help nurture this environment in which integrity and ethics dominate, we continually address compliance issues and strive to improve policies, guidelines, instruments, and measures related to their implementation.

Our internal compliance management system, for example, is part of the internal audit plan of Corporate Audit and encompasses all aspects of compliance management – from the analysis of compliance risks and the definition of objectives to the running of compliance programs as well as ongoing monitoring of business activities and adherence to policies.

Our Code of Business Conduct (CoBC) is communicated to employees globally and contains a fundamental set of rules that define how we conduct our business and require high levels of integrity and ethics. While we acknowledge that it is not possible to eliminate the potential for non-compliant behavior entirely, the CoBC remains one of our most important compliance documents and sets the standard for our dealings with customers, partners, competitors, and vendors, and each of our employees is bound by it. The CoBC is adapted locally and translated into local languages.

The key areas covered by the CoBC include:

- Prohibition of bribery and corruption in all its forms, including facilitation or "grease payments"
- Gifts and business entertainment limits
- Full, fair, and accurate accounting
- Conflicts of interest
- Confidentiality
- Anti-competitive practices
- Data protection and privacy rights

SAP has also established policies to maintain high standards within the following areas:

- Regulation of the appointment and remuneration of sales agents
- Charitable and political donations
- Intellectual property
- Accounting and financial reporting
- Export control and sanctions laws
- Data protection and privacy
- Sustainability

We also expect our partners and suppliers to commit to meeting our high standards of integrity and sustainability. For this reason, we have the SAP Partner Code of Conduct and the SAP Supplier Code of Conduct in place so that partners and suppliers understand what is expected of them.

Providing Comprehensive Training

We endeavor to provide our employees with training to ensure they are able to meet the standards we expect. Our training programs cover, for example, guidelines on anti-corruption, competition law, and governance for customer commitments, intellectual property, and information security.

Mandatory online certification on the Code of Business Conduct for employees worldwide continued in 2018. We recorded that more than 69,000 employees received this certification during the certification cycle. This number includes 26,264 employees in the Americas, 23,992 employees in Asia Pacific Japan (APJ) and 19,070 employees in Europe, the Middle East and Africa (EMEA).

LCIO holds classroom training sessions for employees across the organization – from customer-facing staff to individuals in supporting roles, such as corporate affairs and marketing. Furthermore, information about our compliance policies is included in onboarding sessions.

Communicating Our Standards

Quarterly newsletters provide employees with information on a range of compliance-related topics. We include a business ethics and compliance-related question in our annual People Survey and in company-wide polls throughout the year. Employees can use our corporate portal at any time for quick and easy access to all global policies, guidelines, and additional information. Our Executive Compliance Ambassador Program includes over 80 executives, from all board areas, who have taken on the role of championing compliance messaging and raising awareness of compliance throughout the company and the business. Members of the Executive Ambassador Program can access a specific intranet site set up specifically for the program and tailored to the Executive Compliance Ambassador role. In addition, a compliance-specific intranet site encourages the exchange of information and networking and keeps the compliance community alive.

Analyzing Compliance Risk

At SAP, we have mechanisms in place designed to prevent issues as well as a means to address issues, should they arise. We review SAP business units for potential bribery or corruption risks on an ongoing basis. For example, in 2018, we analyzed quantitative data regarding SAP business activities. The data we analyze includes revenue information, number of employees, percentage of public sector business, number of fraud allegations or incidents, changes or updates to relevant laws, and other quantitative information.

Based on this information and local management input, we determine a risk ranking for each country and a general risk profile for subsidiary locations. For more information, see the *Risk Report* section.

Enforcing Policies

SAP is committed to ensuring that compliance policies are strictly enforced, and that any infringements are quickly flagged and put right. To achieve this, we have a wide global network of compliance officers who act as business conduct stewards.

The LCIO oversees the development and implementation of our CoBC, as well as other related policies and our anti-corruption compliance program. Our compliance officers are based not only at SAP Headquarters but also around the world, in high and low risk jurisdictions, and especially in markets where there are local language needs.

In addition to making regular reports to the CFO, the Group Chief Compliance Officer reports to the Audit Committee of the Supervisory Board each quarter and to the Executive Board annually. Matters of significance are brought to the attention of the Executive Board and the Audit Committee of the Supervisory Board immediately.

Facilitating Reporting and Remediation Without Retaliation

Employees at all levels of the organization must disclose conflicts of interest. Disclosures are followed up with guidance or mitigation if necessary.

If employees are concerned that our CoBC has been breached, or if they need advice on a compliance issue, they can access support in several ways. It sometimes takes courage to speak up when something is not right, and employees may feel uncomfortable or concerned when they do so. However, we guarantee a non-retaliation policy if employees reach out and raise their concerns.

SAP employees have different options if they become aware of potential misconduct within the company. For example, they can:

- Call our governance helpline at +49 6227 7-40022
 - E-mail the legal compliance and integrity office at global-compliance-office@sap.com
 - Contact local compliance officers by e-mail or telephone
 - Use the anonymous online Whistleblower reporting tool
- Reporting channels are published in SAP Corporate Portal, on SAP.com, and in our Codes of Conduct for Partners and Suppliers.

Investigating Misconduct

SAP received communications alleging conduct that may violate anti-bribery laws. Furthermore, we are investigating allegations regarding conduct that certain independent SAP partners violated SAP contractual terms and sold SAP products and services in embargoed countries. We are also investigating allegations regarding direct sales between SAP and certain customers who may have engaged in unauthorized activities in embargoed countries. For more information about the allegations and our reaction to them, see *Note (G.4)*.

Risk Management and Risks

Our Risk Management

Internal Control and Risk Management System

As a global company, SAP is exposed to a broad range of risks across our business operations. Consequently, our Executive Board has established comprehensive internal control and risk management structures that enable us to identify and analyze risks early and take appropriate action. Our risk management and internal control system is designed to identify potential events that could negatively impact the Company and to provide reasonable assurance regarding the operating effectiveness of our internal controls over our financial reporting while ensuring the achievement of the Company objectives, specifically our ability to achieve our financial, operational, or strategic goals as planned.

This system comprises numerous control mechanisms and is an important element of our corporate decision-making process; it is therefore implemented as an integral part of SAP's business processes across the entire Group. We have adopted an integrated risk management and internal control approach to help maintain effective global risk management while also enabling us to aggregate risks and report on them transparently.

Due to our public listings in both Germany and the United States, we are subject to both German and U.S. regulatory requirements that relate to risk management and internal controls over financial reporting, such as provisions in the German Stock Corporation Act, section 91 (2), and the U.S. Sarbanes-Oxley Act (SOX) of 2002, specifically sections 302 and 404. Hence, our Executive Board has established an early warning system (risk management system) to ensure compliance with applicable regulations and an effective management of risks.

Our risk management system is based on the framework published by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) entitled "Enterprise Risk Management – Integrating with Strategy and Performance." Updated in 2017, this framework is built on four pillars, which include a dedicated risk management policy, a standardized risk management methodology, a global risk management governance framework, and a global risk management organization. Our internal control system consists of the internal control and risk management system for financial reporting (ICRMSFR), which also covers the broader business environment. In 2018, we adjusted existing control designs to adequately address the evolving risk environment, and we continued to automate our internal control landscape, leveraging continuous control monitoring and continuous auditing activities in selected business areas. Using the current COSO Internal Control – Integrated Framework of 2013, we have defined and implemented internal controls along the value chain on a process and subprocess level to ensure that sound business objectives are set in line with the organization's strategic, operational, financial, and compliance goals. In addition, we have a governance model in place across risk management and the internal control system to ensure both systems are effective, as

well as a central software solution to store, maintain, and report all risk-relevant information.

Risk Management Policy and Framework

The risk management policy issued by our Executive Board governs how we handle risk in line with the Company's risk appetite and defines a methodology that is applied uniformly across all parts of the Group. The policy, updated and communicated in 2018, stipulates who is responsible for conducting risk management activities and defines reporting and monitoring structures. Along with the policy, we maintain a system-based Risk Management Policy Cockpit that describes all business process specifics associated with the risk management lifecycle. Our global corporate audit function conducts periodical audits to assess the effectiveness of our risk management system. Every year, SAP's external auditor assesses whether the SAP SE early risk identification system is adequate to identify risks that might endanger our ability to continue as a going concern. SAP's enterprise risk management covers risks in the areas of strategy, operations, finance, and compliance. Currently, the risk management system analyzes risks and only assesses or analyzes opportunities where it is deemed appropriate.

Risk Management Methodology and Reporting



The graphic above describes the key elements of the risk management process under SAP's risk management policy. Risk planning and risk identification for both internal and external risks are conducted jointly by risk managers and the business units or subsidiaries across the Group. We use various techniques to identify risks. For example, we have identified risk indicators and developed a comprehensive risk catalog that includes risk mitigation strategies. Risk identification takes place at various levels of our organization to ensure that common risk trends are identified and end-to-end risk management across organizational borders is enabled. We apply both qualitative and quantitative risk analysis and other risk analysis methods such as sensitivity analyses and simulation techniques.

To determine which risks pose the greatest threat to the viability of the SAP Group, we classify them as "high," "medium," or "low" based on the likelihood that a risk will occur within the assessment horizon and the impact the risk would have on SAP's business objectives if it were to occur. The scales for measuring these two indicators are given in the following tables.

Probability/Likelihood of Occurrence	Description
1% to 19%	Remote
20% to 39%	Unlikely
40% to 59%	Likely
60% to 79%	Highly Likely
80% to 99%	Near Certainty

In this framework, we define a remote risk as one that will occur only under exceptional circumstances, and a near certain risk as one that can be expected to occur within the specified time horizon. The period for analyzing our risks correlates with the respective associated business activities, considering a relevant forecast horizon of up to one year, and up to 2023 where applicable. The period for analyzing the risks that could be possible threats to the Group's ability to continue as a going concern is eight rolling quarters.

Impact Level	Impact Definition
Insignificant	Negligible negative impact on business, financial position, profit, and cash flows
Minor	Limited negative impact on business, financial position, profit, and cash flows
Moderate	Some potential negative impact on business, financial position, profit, and cash flows
Major	Considerable negative impact on business, financial position, profit, and cash flows
Business-Critical	Detrimental negative impact on business, financial position, profit, and cash flows

The combination of the likelihood that a risk will occur and its impact on SAP's reputation, business, financial position, profit, and cash flow leads to a subsequent classification of the risk as either "high," "medium," or "low."

	Insig-nificant	Minor	Moderate	Major	Business-Critical
Probability					
80% to 99%	L	M	H	H	H
60% to 79%	L	M	M	H	H
40% to 59%	L	L	M	M	H
20% to 39%	L	L	L	M	M
1% to 19%	L	L	L	L	M

Impact		
L = Low Risk	M = Medium Risk	H = High Risk

Risk analysis is followed by risk response and risk monitoring. The risk exposure and the risk description, as well as the appropriateness of agreed responses, are validated by the accountable management. Our risk managers work in close cooperation with the business owners, ensuring that effective strategies are implemented to address risks. Business owners are responsible for continuously monitoring the risks and the effectiveness of mitigation strategies, with support from the respective risk managers. Risks might be reduced by taking active steps based on risk approval. To provide greater risk transparency and enable appropriate decision-making for business owners, we have established a risk delegation of authority (RDOA) for relevant parts of the organization as deemed appropriate. RDOA is a risk management decision-making hierarchy that helps business owners gain timely insight into business transactions that have the greatest risk, so that they are better able to review the relevant information, understand the risk profile and associated mitigation strategies, and determine whether their approval is warranted. Depending on the exposure, approval is required at different levels of the Company, up to and including the Executive Board.

All identified and relevant risks are reported at the local, regional, and global levels in accordance with our risk management policy. At local, regional, and global levels, we have established executive risk councils that regularly discuss risks and countermeasures and that monitor the success of risk mitigation. In addition, the Executive Board is informed regularly and quarterly about individual risks based on clearly defined qualitative reporting criteria. Newly identified or existing significant risks that are above a defined threshold, meet a qualitative criterion, or have a potential significant impact are also reported to the chairperson of the

Supervisory Board and to the Audit Committee of the Supervisory Board on a quarterly basis. This includes risks along our strategic portfolio for services and solutions as well as any risks to our ability to continue as a going concern, the latter supported by a process that analyzes those risks with respect to potential effects on liquidity, excessive indebtedness, and insolvency.

Risk Management Organization

Our global risk management organization (Global GRC) oversees the Group-wide systematic identification, assessment, management, and monitoring of operational, financial, compliance, and strategic risks as well as opportunities where it is deemed appropriate. In addition, the Global GRC function is responsible for standardized internal risk reporting to risk committees at different levels within the Company in line with the internal GRC Risk Reporting Standard, including the Executive Board, the chairperson of the Supervisory Board, and the Audit Committee of the Supervisory Board, as well as for the external risk reporting. Furthermore, Global GRC is responsible for the regular maintenance and implementation of our risk management policy.

Operational, financial, and strategic risk management is uniformly implemented at SAP. Independent GRC risk managers, reporting to Global GRC, are assigned to each of SAP's key business units and business activities and to selected strategic initiatives. All GRC risk managers, working with assigned risk contacts in the business units, continuously identify and assess risks associated with material business operations using a uniform approach, and monitor the implementation and effectiveness of the measures chosen to mitigate risks. Further financial risk management activities are performed by our Global Treasury and our Global Taxdepartments. Security risk management is jointly conducted by the Global Security department and Global GRC. Risk management of compliance risks such as corruption, conflict of interest, and fraud is performed jointly by our Legal Compliance & Integrity Office (LCIO) and Global GRC, and general legal risks by Global Legal. Sanction and embargo-related risks are managed by the Export Control team, harassment and other HR-related issues by our Global Labor & Employee Relations Office, and IP risks by our Global IP Office.

During the merger and acquisition and post-merger integration phase, newly acquired companies are subject to risk management performed by our Corporate Development M&A function. Furthermore, for as long as the newly acquired companies are not integrated, existing risk management structures are maintained or enhanced within the acquired companies for the purposes of compliance with legal requirements.

Risk managers are responsible for supporting and monitoring the implementation of risk management across the Group that is both effective and compliant with regulatory requirements and SAP's global risk management policy. In accordance with our risk management policy, all relevant risks and risk-related matters must be reported to the Global GRC organization.

The head of Global GRC, who reports to the Group Chief Financial Officer (CFO), is responsible for SAP's internal control and risk management program and provides regular updates to the Audit Committee of the Supervisory Board. The overall risk profile of the Group is consolidated by the head of Global GRC.

Internal Control and Risk Management System for Financial Reporting

The purpose of our system of internal control over financial reporting is to provide reasonable assurance that our financial reporting is reliable and compliant with generally accepted accounting principles. Because of the inherent limitations of internal control over financial reporting, it might not prevent or bring to light all potential misstatements in our financial statements.

SAP's internal control and risk management system for financial reporting (ICRMSFR) is based on our Group-wide risk management methodology. The ICRMSFR includes organizational, control, and monitoring structures designed to ensure that data and information concerning our business is collected, compiled, and analyzed in accordance with applicable laws and properly reflected in the IFRS Consolidated Financial Statements.

Our ICRMSFR also includes policies, procedures, and measures designed to ensure compliance of SAP's financial reports with applicable laws and standards. We analyze new statutes, standards, and other pronouncements concerning IFRS accounting and its impact on our financial statements and ICRMSFR. Failure to adhere to these new statutes, standards, and other pronouncements would present a substantial risk to the compliance of our financial reporting. Finally, the ICRMSFR has both preventive and detective controls, including, for example, automated and non-automated reconciliations, segregated duties with two-person responsibility, authorization concepts in our software systems, and corresponding monitoring measures.

Our Corporate Financial Reporting (CFR) department codifies all accounting policies in our group accounting and global revenue recognition guidelines. These policies and the corporate closing schedule, together with our process handbooks, define the closing process. Under this closing process, we prepare, predominately through centralized or external services, the financial statements of all SAP legal entities for consolidation by CFR. CFR and other corporate departments are responsible for ensuring compliance with Group accounting policies and monitor the accounting work. CFR also conducts reviews of our accounting processes and books. The employees who work on SAP's financial reporting receive training in the respective policies and processes.

We have outsourced some work, such as valuing projected benefit obligations and share-based payouts, quarterly tax calculations for most entities, and purchase price allocations in the context of asset acquisitions and business combinations. We have also outsourced the preparation of the local statutory financial statements for a number of our subsidiaries.

Based on an analysis of the design and operating effectiveness of our respective internal controls over financial reporting, a committee presents the results of the assessment on the ICRMSFR effectiveness with respect to our IFRS consolidated financial statements as at December 31 each year to the Group CFO. The committee meets regularly to set the annual scope for the test of effectiveness, to assess and evaluate any possible weaknesses in the controls, and to determine measures to address them adequately. During its own meetings, the Audit Committee of the Supervisory Board regularly scrutinizes the resulting assessments of the effectiveness of the internal controls over financial reporting with respect to the IFRS consolidated financial statements.

The assessment of the effectiveness of the ICRMSFR related to our IFRS consolidated financial statements concludes that, on December 31, 2018, the Group had an effective internal control system over financial reporting in place.

Additionally, and in compliance with German commercial law requirements, SAP maintains an internal control system beyond financial reporting. This is supported through automated controls (continuous control monitoring) as part of our business processes.

Risk Management and Internal Control Governance

Our Executive Board is responsible for ensuring the effectiveness of the risk management and internal control system. The effectiveness of both systems and their implementation in the different Executive Board areas is monitored by each board member. We regularly provide a status update on the risk management and the internal control system to the Audit Committee of the Supervisory Board. Key risks are reported quarterly to the chairperson of the Supervisory Board and to the Audit Committee of the Supervisory Board. The Audit Committee of the Supervisory Board regularly monitors the effectiveness of SAP's risk management and internal control system. At the direction of our Audit Committee, the Corporate Audit department periodically audits various aspects of the risk management system and its effectiveness. Additional reassurance is obtained through the external audit of the effectiveness of our internal control system over financial reporting and the early warning system.

Software Solution Deployed

We use our own risk management software, SAP solutions for GRC powered by SAP HANA, to support the governance process.

Risk managers record and address identified risks using our risk management software online and in real time to help create transparency across all known risks that exist in the Group, as well as to facilitate risk management and the associated risk reporting. The GRC solution also supports the risk-based approach of the ICRMSFR. Our continuous controls monitoring activities are performed utilizing our GRC software as well. This information is available to managers through direct access to our SAP Fiori application for enterprise risk reporting, and in regularly issued reports, and is consolidated and aggregated for the quarterly risk report and to the Executive Board. We also utilize the SAP Digital Boardroom to share relevant risk information with the Executive Board and the Audit Committee of the Supervisory Board.

Risk Factors

The following sections outline our risk categories and risk factors that we have identified and continuously track. In 2018, we have combined the two risk factors Accounting Pronouncement and Management Use of Estimates into one risk factor named Use of Accounting Policies and Judgment, reflecting the pertinent interdependencies to further streamline our risk reporting. Compared to our internal risk reporting, we externally present our risk factors on an aggregated level.

An overview of the risk categories and the corresponding risk factors is outlined in the table below, where the risk factors are categorized according to our framework detailed in the *Risk Management Methodology and Reporting* section.

Overview of Risk Factors (Aggregated Statement for 2018)

	Probability	Impact	Risk Level	Trend¹⁾
Economic, Political, Social, and Regulatory Risks				
Global Economic and Political Environment	<i>likely</i>	<i>business-critical</i>	<i>high</i>	→
International Laws and Regulations	<i>likely</i>	<i>business-critical</i>	<i>high</i>	→
Legal and IP	<i>likely</i>	<i>business-critical</i>	<i>high</i>	→
Data Protection and Privacy	<i>likely</i>	<i>business-critical</i>	<i>high</i>	↗
Corporate Governance and Compliance Risks				
Unauthorized Disclosure of Information	<i>remote</i>	<i>business-critical</i>	<i>medium</i>	→
Ethical Behavior	<i>likely</i>	<i>business-critical</i>	<i>high</i>	→
Environment and Sustainability	<i>unlikely</i>	<i>moderate</i>	<i>low</i>	→
Financial Risks				
Sales and Revenue Conditions	<i>unlikely</i>	<i>moderate</i>	<i>low</i>	→
Liquidity	<i>remote</i>	<i>major</i>	<i>low</i>	→
Use of Accounting Policies and Judgment	<i>unlikely</i>	<i>moderate</i>	<i>low</i>	→
Currency, Interest Rate, and Share Price Fluctuations	<i>remote</i>	<i>major</i>	<i>low</i>	→
Insurance	<i>remote</i>	<i>business-critical</i>	<i>medium</i>	→
Venture Capital	<i>remote</i>	<i>minor</i>	<i>low</i>	→
Human Capital Risks				
Human Workforce	<i>unlikely</i>	<i>major</i>	<i>medium</i>	→
Operational Business Risks				
Sales and Services	<i>unlikely</i>	<i>major</i>	<i>medium</i>	→
Partner Ecosystem	<i>unlikely</i>	<i>major</i>	<i>medium</i>	→
Cloud Operations	<i>unlikely</i>	<i>business-critical</i>	<i>medium</i>	→
Cybersecurity and Security	<i>likely</i>	<i>business-critical</i>	<i>high</i>	↗
Technology and Products	<i>unlikely</i>	<i>business-critical</i>	<i>medium</i>	→
Strategic Risks				
Market Share and Profit	<i>unlikely</i>	<i>business-critical</i>	<i>medium</i>	→
Mergers and Acquisitions	<i>unlikely</i>	<i>major</i>	<i>medium</i>	↗
Innovation	<i>remote</i>	<i>business-critical</i>	<i>medium</i>	→
	Icon:	decreased		↘
		unchanged		→
		increased		↗

¹⁾ Trend: Risk level compared with previous year.

All described risks are each applicable to a different extent to our reportable segments (Applications, Technology & Services, SAP Business Network, and Customer Experience) unless otherwise noted.

SAP SE is the parent company of the SAP Group. Consequently, the risks described below also apply, directly or indirectly, to SAP SE.

Economic, Political, Social, and Regulatory Risks

Global Economic and Political Environment: Uncertainty in the global economy, financial markets, social and political instability caused by state-based conflicts, terrorist attacks, civil unrest, war, or international hostilities could lead to disruptions of our business operations or have a negative impact on our business, financial position, profit, and cash flows.

As a global company, we are influenced by multiple external factors that are difficult to predict and beyond our influence and control. Any of these factors could have a significant adverse effect on the overall economy as well as on our business.

The following potential events, among others, could bring risks to SAP's business:

- General economic, political, social, environmental, market conditions, and unrest (for example, Turkey, Venezuela, UK/Brexit)
- Continued deterioration in global economic conditions (impact on accurate forecast) or budgetary constraints of national governments
- Tariff conflicts, as for example between the United States and China
- Financial market volatility episodes, global economic crises and chronic fiscal imbalances, slowing economic conditions, or disruptions in emerging markets
- Higher credit barriers for customers, reducing their ability to finance software purchases
- Increased number of bankruptcies among customers, business partners, and key suppliers
- Terrorist attacks or other acts of violence, civil unrest, natural disasters, or pandemic diseases impacting our business

Any of these events could limit our ability to reach our targets as they have a negative effect on our business operations, financial position, profit, and cash flows.

SAP has established measures to address and mitigate the described risks and adverse effects to the greatest extent possible such as:

- Further efforts to achieve our vision of a purpose-lead company by transforming our and our customers' business processes with intelligent technologies (SAP Leonardo) for the intelligent enterprise
- Ongoing shift to a higher share of cloud subscriptions and software support revenue streams, which will lead to more predictable revenue streams over time, providing increased stability against financial volatility
- Internal cost discipline and a conservative financial planning
- Reshaping of our organizational structure and processes to increase efficiency

We cannot exclude the possibility that if the risk were to occur, it could have a business-critical impact on our operations, financial position, profit, and cash flows. We estimate the probability of occurrence of this risk to be likely. This could exacerbate the other risks we describe in this report or cause a negative deviation from our revenue and operating profit target. We classify this risk as a high risk.

International Laws and Regulations: Laws, regulatory requirements and standards in Germany, the United States, and elsewhere continue to be very stringent. Our international business activities and processes expose us to numerous and often conflicting laws and regulations, policies, standards, or other requirements and sometimes even conflicting regulatory requirements, and to risks that could harm our business, financial position, profit, and cash flows.

We are a global company and currently market our products and services in more than 180 countries and territories in the Americas (Latin America and North America); Asia Pacific Japan (APJ); China, Hong Kong, Macau, and Taiwan (Greater China); Europe, Middle East, and Africa (EMEA); and Middle and Eastern Europe (MEE) regions. As a European company domiciled in Germany with securities listed in Germany and the United States, we are subject to European, German, U.S., and other governance-related regulatory requirements.

Our business in these countries is subject to numerous risks inherent to international business operations. Among others, these risks include:

- Possible tax constraints impeding business operations in certain countries
- Changes in accounting standards and tax laws including, but not limited to, conflict and overlap among tax regimes measures as well as the introduction of new tax concepts that harm digitized business models
- Discriminatory, protectionist, or conflicting fiscal policies and tax laws, such as certain protectionist measures included in the U.S. Tax Reform which was enacted at the end of 2017, and the lack of regulations at the time of the report to provide guidance on the interpretations thereon by the U.S. tax authorities, the Internal Revenue Services (IRS)
- Workforce restrictions resulting from changing laws and regulations, from political decisions (such as Brexit, government elections), or through required works council involvements, labor union approvals, and immigration laws in different countries
- Protectionist trade policies, import and export regulations, and trade sanctions (such as in Russia), counter or even conflicting sanctions (such as in the United States and Russia), and embargoes (such as in Iran) including, but not limited to, country-specific software certification requirements
- Violations of country-specific sanctions (such as the UN sanction against North Korea or the United States' sanction requirements against Iran and certain other countries)
- Compliance with and stringent enforcement of laws, as for example the EU General Data Protection Regulation (GDPR) or China's Cyber Security Law, and regulations (including interpretations), implications of government elections, lack of reforms, data protection and privacy rules, regulatory

- requirements and standards (such as the Payment Card Industry Data Security Standard (PCI DSS))
- Expenses associated with the localization of our products and compliance with local regulatory requirements
 - Difficulties enforcing intellectual property and contractual rights in certain jurisdictions

In 2017, an investigation was initiated and is ongoing with regards to potential sanctions violations. For more information relating to the potential sanctions violations noted above, see the Notes to the Consolidated Financial Statements, [Note \(G.4\)](#).

As we expand into new countries and markets and/or extend our business activities in these markets, including emerging and high-risk markets, these risks could intensify. The application of the respective local laws and regulations to our business is sometimes unclear, subject to change over time, and often conflicting among jurisdictions. Additionally, these laws and government approaches to enforcement are continuing to change and evolve, just as our products and services continually evolve. Compliance with these varying laws and regulations could involve significant costs or require changes in products or business practices. Non-compliance could result in the imposition of penalties or cessation of orders due to alleged non-compliant activity. Governmental authorities could use considerable discretion in applying these statutes and any imposition of sanctions against us could be material. One or more of these factors could have an adverse effect on our operations globally or in one or more countries or regions, which could have an adverse effect on our business, financial position, profit, and cash flows.

SAP has established measures to address and mitigate the described risks and adverse effects to the greatest extent possible. For example:

- We continuously monitor new and increased regulatory requirements, updated or new enforcement trends, and publicly available information on compliance issues in the computer software industry, in the emerging markets where we invest our resources, and in the business environment in general to cope with an increase in regulation enforcement efforts of certain countries or state-driven protectionism.
- We have taken actions to terminate access to SAP products and services for certain users and to block additional business activities with these users through SAP or SAP partners to address export restriction requirements.
- We receive guidance from external economics consultants, law firms, tax advisors, and authorities in the concerned countries, and take legal actions when necessary.
- We engage with authorities in public policy issues, including the creation of reasonable framework conditions for new technologies such as cloud computing, Big Data, IoT, or international trade.
- We have a strong legal and compliance office presence in various countries, with compliance safeguards supported and monitored by SAP legal teams and Legal Compliance & Integrity Office (LCIO), maintaining an effective data protection and privacy office and associated policy.
- We initiated efforts to strengthen the Export Control team and have started a cross-board project to overhaul SAP's export control and trade sanctions policies, operations, and controls, to safeguard compliance with applicable European Union (EU) and

U.S. laws in all delivery channels both on premise and in the cloud.

- We continuously update and refresh our compliance programs to improve our effectiveness and to ensure that our employees understand and comply with the SAP Code of Business Conduct. This process is coordinated by our LCIO, a team of dedicated resources who are tasked with managing our policy-related compliance measures.
- Our LCIO team coordinates and provides guidance on policy implementation, training, and enforcement efforts throughout SAP, including but not limited to a new Third Party Sales Commission Policy and accompanying training. These efforts are monitored and tracked to allow trending and risk analysis and to ensure consistent policy application throughout the SAP Group.

We cannot exclude the possibility that if the risk were to occur, it could have a business-critical impact on our operations, financial position, profit, and cash flows. We estimate the probability of occurrence of this risk to be likely. We classify this risk as a high risk.

Legal and IP: Claims and lawsuits against us, such as for IP infringements, or our inability to obtain or maintain adequate licenses for third-party technology, could have an adverse effect on our business, financial position, profit, cash flows, and reputation. Moreover, similar adverse effects could result if we are unable to adequately protect or enforce our own intellectual property.

We believe that we will continuously be subject to claims and lawsuits, including intellectual property infringement claims, as our solution portfolio grows; as we acquire companies with increased use of third-party code including open source code; as we expand into new industries with our offerings, resulting in greater overlap in the functional scope of offerings; and as non-practicing entities that do not design, manufacture, or distribute products assert intellectual property infringement claims. Moreover, protecting and defending our intellectual property is crucial to our success.

The outcome of litigation and other claims or lawsuits is intrinsically uncertain and could lead, for example, to the following risks:

- Claims and lawsuits might be brought against us, including claims and lawsuits involving businesses we have acquired.
- We might be dependent in the aggregate on third-party technology, including cloud and Web services, that we embed in our products or that we resell to our customers.
- Third parties have claimed, and might claim in the future, that we infringe their intellectual property rights or that we are overusing or misusing licenses to these technologies.
- We integrate certain open source software components from third parties into our software. Open source licenses might require that the software code in those components or the software into which they are integrated be freely accessible under open source terms.
- Despite our efforts, we might not be able to prevent third parties from obtaining, using, or selling without authorization what we regard as our proprietary technology and information. In addition, proprietary rights could be challenged, invalidated, held unenforceable, or otherwise affected. Moreover, the laws

and courts of certain countries might not offer effective means to enforce our legal or intellectual property rights. Finally, SAP may not be able to collect all judgments awarded to it in legal proceedings.

- Some intellectual property might be vulnerable to disclosure or misappropriation by employees, partners, or other third parties.

Third parties might reverse-engineer or otherwise obtain and use technology and information that we regard as proprietary. Accordingly, we might not be able to protect our proprietary rights against unauthorized third-party copying or utilization. Adverse outcomes to some or all of the claims and lawsuits pending against us might result in the award of significant damages or injunctive relief against us or brought against us in the future that could hinder our ability to conduct our business and could have an adverse effect on our reputation, business, financial position, profit, and cash flows. Third parties could require us to enter into royalty and licensing arrangements on terms that are not favorable to us, cause product shipment delays, subject our products to injunctions, require a complete or partial redesign of products, result in delays to our customers' investment decisions, and damage our reputation. Third-party claims might require us to make freely accessible under open source terms one of our products or third-party (non-SAP) software upon which we depend.

Any legal action we bring to enforce our proprietary rights could also involve enforcement against a partner or other third party, which might have an adverse effect on our ability, and our customers' ability, to use that partner's or other third parties' products.

The outcome of litigation and other claims or lawsuits is intrinsically uncertain. Management's view of the litigation might also change in the future. Actual outcomes of litigation and other claims or lawsuits could differ from the assessments made by management in prior periods, which are the basis for our accounting for these litigations and claims under IFRS.

SAP has established measures to address and mitigate the described risks and adverse effects to the greatest extent possible. For example:

- Our LCIO sets and manages internal policies related to our Code of Business Conduct. Our Global GRC organization works closely with the LCIO, Global Legal, and Corporate Audit, and is jointly responsible for the management and reporting of potential risks associated with third-party intellectual property.
- We have established various internal programs, such as internal policies, processes, and monitoring, to assess and manage the risks associated with open source, and third-party intellectual property.
- We endeavor to protect ourselves in the respective third-party software agreements by obtaining certain rights in case such agreements are terminated.
- We are party to certain patent cross-license agreements with third parties, which removes the risk of litigation with respect to the involved patents.
- We rely on a combination of the protections provided by applicable statutory and common law rights, including trade secret, copyright, patent, and trademark laws, license and non-disclosure agreements, and technical measures to establish and protect our proprietary rights in our products.

We cannot exclude the possibility that if the risk were to occur, it could have a business-critical impact on our operations, financial position, profit, and cash flows. We estimate the probability of occurrence of this risk to be likely. We classify this risk as a high risk.

We are named as a defendant in various legal proceedings for alleged intellectual property infringements. For more information and a more detailed report relating to certain of these legal proceedings, see the Notes to the Consolidated Financial Statements, *Notes (A.4), (C.5), and (G.4)*.

Data Protection and Privacy: Non-compliance with increasingly complex and stringent, sometimes even conflicting, applicable data protection and privacy laws or failure to adequately meet the contractual requirements of SAP's customers with respect to our products and services could lead to civil liabilities and fines, as well as loss of customers and damage to SAP's reputation.

As a global software and service provider, SAP is required to comply with local laws wherever SAP does business. With regard to data protection requirements, in May 2016, the EU enacted a "General Data Protection Regulation" (GDPR) with the aim of further harmonizing data protection laws across the EU. Since May 25, 2018, GDPR is applicable law in all EU and EEA member states. Within limits, member states can supplement the GDPR with additional national rules. Some member states have already enacted such laws.

Furthermore, evolving regulations and new laws (such as the EU's proposed e-Privacy Regulation) globally regarding data protection and privacy or other standards increasingly aimed at the use of personal information, such as for marketing purposes and the tracking of individuals' online activities, may impose additional burdens for SAP due to increasing compliance standards that could restrict the use and adoption of SAP's products and services (in particular cloud services) and make it more challenging and complex to meet customer expectations.

This could lead to increased risks for SAP, which could harm SAP's business and limit SAP's growth.

Non-compliance with applicable data protection and privacy laws, in particular the EU GDPR, by SAP and/or any of the subcontractors engaged by SAP within processing of personal data could lead, for example, to risks in the following areas:

- Mandatory disclosures of breaches to affected individuals, customers, and data protection supervisory authorities
- Investigations and administrative measures by data protection supervisory authorities, such as the instruction to alter or stop non-compliant data processing activities, including the instruction to stop using non-compliant subcontractors
- Fines of up to 4% of SAP's annual Group turnover
- Damage claims by customers
- Harm to SAP's reputation
- Increased complexity in times of digitalization with regards to legal requirements in the context of cross-border data transfer

In addition, the German Federal Office for the Protection of the Constitution and security industry experts have warned of risks related to a globally growing number of cybersecurity attacks aimed at obtaining or violating company data including personal

data. We anticipate cyberattack techniques to continue to evolve and increase in sophistication, which could make it difficult to anticipate and prevent attacks and intrusions, thus leading, for example, to risks in the following areas, among others:

- A globally increasing number of hacker attacks aimed at obtaining or violating company data including personal data as observed in recent prominent cases of cyberattacks where the use of ransomware was the preferred method of hackers

Any one or more of these events could have an adverse effect on our business, financial position, profit, and cash flows.

SAP has established measures to address and mitigate the described risks and adverse effects to the greatest extent possible. For example:

- We have implemented internal processes and measures to ensure that SAP is enabled to successfully and sufficiently comply with the new GDPR requirements.
- Data protection and privacy is reflected in the mandatory product standards of SAP's product development lifecycle.
- We continuously review SAP's existing standards and policies to include changes to applicable laws and regulations.
- We continuously enhance our data center operations worldwide, also taking into account local and sector-specific market and legal requirements. For this purpose, we are in the process of establishing a network of local and regional Data Protection and Privacy Coordinators.
- We have a data protection management system in place in the following areas, where data protection is critical: Product and Cloud Support, Enterprise Support and Premium Engagements, Global Consulting Delivery, and CoE, Cloud Operations, Maintenance Support and Software Development, Marketing, HR, and Global Customer Operations (MEE and EMEA regions). Furthermore, this data protection management system will be continuously enhanced and extended to apply to newly acquired companies within the SAP Group.
- We actively monitor legal developments and engage with political stakeholders and government authorities, directly or through industry associations, to clarify questions relevant to SAP and SAP's business.

We cannot exclude the possibility that if the risk were to occur, it could have a business-critical impact on our operations, financial position, profit, and cash flows. We estimate the probability of occurrence of this risk to be likely. We classify this increased risk as a high risk.

Corporate Governance and Compliance Risks

Unauthorized Disclosure of Information: Our controls and efforts to prevent the unauthorized disclosure of confidential information might not be effective.

Confidential information and internal information related to topics such as our strategy, new technologies, mergers and acquisitions, unpublished financial results, customer data, or personal data, could be disclosed prematurely or inadvertently and subsequently lead to market misperception and volatility.

Such disclosure could lead to risks in the following areas, among others:

- Disclosure of confidential information and intellectual property, defective products, production downtimes, supply shortages, and compromised data (including personal data) through, for example, inappropriate usage of social media by employees
- Requirement to notify multiple regulatory agencies and comply with applicable regulatory requirements and, where appropriate, the data owner

Any one or more of these events could have an adverse effect on our market position and lead to fines and penalties. In addition, this could have an adverse effect on our business, reputation, financial position, profit, and cash flows.

SAP has established measures to address and mitigate the described risks and adverse effects to a great extent, such as:

- Mandatory compliance baseline training for all employees (security awareness, data privacy and data protection, compliance, and communication)
- Social engineering tests
- Standards for safe internal and external communication
- Technical security features in our IT hardware and communication channels, such as mandatory encryption of sensitive data
- All security groups have been combined organizationally into one global security unit to strengthen the security capabilities
- Continuous adoption of internal security measures

We cannot exclude the possibility that if the risk were to occur, it could have a business-critical impact on our operations, financial position, profit, and cash flows. However, we estimate the probability of occurrence of this risk to be remote. We classify this risk as a medium risk.

Ethical Behavior: Unethical behavior and non-compliance with our integrity standards due to intentional and fraudulent employee behavior could seriously harm our business, financial position, profit, and reputation.

SAP's leadership position in the global market is founded on the long-term and sustainable trust of our stakeholders worldwide. Our overarching approach is one of corporate transparency, open communication with financial markets, and adherence to recognized standards of business integrity. The SAP Code of Business Conduct, adopted by the Executive Board on January 29, 2003, and updated as necessary since then, codified and supplemented the already existing guidelines and expectations for the business behavior practiced at SAP.

However, we might for instance encounter the following risks associated with:

- Non-compliance with our integrity standards and violation of compliance related rules, regulations, and legal requirements including, but not limited to, anticorruption and bribery legislation in Germany, the U.S. Foreign Corrupt Practices Act, the UK Bribery Act, and other local laws prohibiting corrupt payments by employees, vendors, distributors, or agents
- Unethical and fraudulent behavior of individual employees or partners leading to criminal charges, fines, and claims by injured parties
- Collusion with external third parties, for example providing assistance in securing contracts

- Fraud and corruption together with operational difficulties, especially in countries with a high Corruption Perceptions Index and particularly in emerging markets
- Increased scrutiny of public sector transactions in high-risk territories
- Impact on business activities in highly regulated industries such as public sector, healthcare, banking, or insurance

Any one or more of these events could have an adverse effect on our business, reputation, financial position, share price, profit, and cash flows.

In 2017 and 2018, SAP encountered situations that required clear messaging and strong action on non-compliance in the context of ethical behavior that has the potential to harm our business. In South Africa, SAP is continuing to investigate its dealings with the public sector. For more information relating to the alleged anti-bribery law violations noted above, see the Notes to the Consolidated Financial Statements, [Note \(G.4\)](#).

SAP has established measures to address and mitigate the described risks and adverse effects to the greatest extent possible, such as:

- Comprehensive compliance management system (CMS) based on the three pillars of prevention, detection, and reaction
- Expansion of our Legal Compliance and Integrity Office's bandwidth through additional staffing
- Root cause analysis of all deviations related to unethical or fraudulent behavior to improve associated business processes and prevent further violations
- Discontinued engagement of sales agents as well as the payment of sales commissions on public sector deals in high-risk countries
- Internal monitoring as well as regular external auditing of our CMS approach
- Several educational, counseling, control, and investigative instruments
- Mandatory SAP Code of Business Conduct training applicable to every SAP employee, providing legal compliance guidance on how to avoid unethical behavior and solve dilemma situations
- Annual reconfirmation of SAP Code of Business Conduct by SAP's workforce (except where disallowed by local legal regulations)
- Compliance policies and processes aimed at managing third parties and preventing misuse of third-party payments for illegal purposes, including the performance of compliance due diligence activities before engaging with third parties
- Guidance in our travel, entertainment, gift, and expense policies
- Promoting a commitment to business with integrity through our partner and vendor ecosystems
- Termination of partners who do not pass our partner compliance audit process
- In response to preliminary findings in the alleged anti-bribery law violations, we have implemented enhancements to our anti-corruption compliance program, including guidance and policy changes as well as additional internal controls, and intend to continue these enhancements further.

Despite our comprehensive compliance programs and established internal controls, intentional efforts of individuals to circumvent controls or engage in fraud, especially by way of

collusion between multiple involved parties, cannot always be prevented.

We cannot exclude the possibility that if the risk were to occur, it could have a business-critical impact on our operations, financial position, profit, and cash flows. We estimate the probability of occurrence of this risk to be likely. We classify this risk as a high risk.

Environment and Sustainability: Failure to meet customer, partner, or other stakeholder expectations or generally accepted standards on climate change, energy constraints, and our social investment strategy could negatively impact SAP's business, results of operations, and reputation.

Energy and emissions management are an integral component of our holistic management of social, environmental, and economic risks and opportunities.

We have identified risks in this context, including, but not limited to, the following:

- Failure to meet customer, partner, or other stakeholder expectations or generally accepted standards on climate change, energy constraints, and our social investment strategy
- Failure to achieve communicated targets for greenhouse gas emissions
- Failure to maintain our rating in sustainable investment indexes

If we do not meet stakeholder expectations in the areas identified, our rating in sustainable investment indexes might decrease, which could have an adverse effect on our reputation, profit, and share price.

SAP has established measures to address and mitigate the described risks and adverse effects to the greatest extent possible, such as:

- Proactive identification and addressing of social and environmental issues
- Recognition for our sustainability efforts is shared with the market
- Ongoing efforts and activities to maintain our listing in the most prominent and recognized sustainability indexes, such as the expansion of ISO 14001 audits, strengthening our human rights commitment, and increasing transparency regarding SAP's governance
- Thus, we continue to receive excellent scores and rankings such as the Dow Jones Sustainability Indices, ISS-oekom Corporate Sustainability Review, and the CDP Climate Performance and Disclosure Leadership Indices
- We surpassed our greenhouse gas emissions target of 333 kilotons by 23 kilotons

We cannot exclude the possibility that if the risk were to occur, it could have a moderate impact on our operations, financial position, profit, and cash flows. However, we estimate the probability of occurrence of this risk to be unlikely. We classify this risk as a low risk.

Financial Risks

Sales and Revenue Conditions: Our sales and revenue conditions are subject to market fluctuations and our forecasts might not be accurate.

Our revenue and operating results can vary and have varied in the past, sometimes substantially, from quarter to quarter. Our revenue in general, and our software revenue in particular, is difficult to forecast for a number of reasons, and could lead to risks related to the following, among others:

- Challenges in pipeline development and realization
- Long sales cycles for many of our products
- Timing issues with respect to the introduction of new products and services or product and service enhancements by SAP or our competitors
- Large size, complexity, and extended settlement of individual customer transactions
- Introduction/adaptation of licensing and deployment models such as cloud subscription models
- Adoption of, and conversion to, new business models, leading from upfront payment models to an increase in pay-per-use or subscription-based payment models, thus the respective service period typically ranges from one to three years, and goes up to five years
- Changes in customer budgets or seasonality of technology purchases by customers
- Decreased software sales that could have an adverse effect on related maintenance and services revenue growth
- Shortfall in anticipated revenue or delay in revenue recognition or deployment models that require revenue to be recognized over an extended period of time
- Inability of acquired companies to accurately predict their sales pipelines
- High operating expenses or insufficient revenue generation to offset the significant research and development costs

In recent years, the trend has been towards an increased number of sales transactions, with the average deal size remaining more or less constant. However, the loss or delay of one or a few large opportunities could have an adverse effect on our business, financial position, profit, and cash flows.

SAP has established measures to address and mitigate the described risks and adverse effects to the greatest extent possible, such as:

- Implementation of methodologies and metrics for continuous forecasting and trend analysis in our business
- Pipeline analyses based on our business planning, budgeting, and forecasting
- Ongoing analysis and monitoring of demand, supply, and our competitive environment
- Constant monitoring of our revenues, costs, and operational KPIs utilizing system-based, real-time reporting to continuously improve our business performance
- Increased predictability of revenue due to ongoing transformation to the cloud

We cannot exclude the possibility that if the risk were to occur, it could have a moderate impact on our operations, financial position, profit, and cash flows. However, we estimate the probability of

occurrence of this risk to be unlikely. We classify this risk as a low risk.

Liquidity: External factors could impact our liquidity and increase the default risk associated with, and the valuation of, our financial assets.

Macroeconomic factors such as an economic downturn could have an adverse effect on our future liquidity. We use a globally centralized financial management approach to control financial risk, such as liquidity, exchange rate, interest rate, counterparty, and equity price risks. The primary aim is to maintain liquidity in the SAP Group at a level that is adequate to meet our obligations at any time.

However, adverse macroeconomic factors could increase the default risk associated with the investment of our total Group liquidity, and could lead to the following risks, among others:

- Group liquidity shortages
- Inability to repay financial debt
- Increased default risk of financial investments, which might lead to significant impairment charges in the future
- Limitation of operating and/or strategic financial flexibility

Any one or more of these events could have an impact on the value of our financial assets, which could have an adverse effect on our business, financial position, profit, and cash flows.

SAP has established measures to address and mitigate the described risks and adverse effects to the greatest extent possible, such as:

- We have policies and measures in place to support strong operating cash flow.
- SAP's investment policy with regards to total Group liquidity is described in our internal treasury guideline, which is a collection of uniform rules that apply globally to all companies in the SAP Group. Among other things, it requires that investments, with limited exceptions, are only executed in assets and funds rated BBB flat or better.
- The weighted average rating of the investments of our total Group liquidity is in the range of A–.
- We pursue a policy of cautious investment characterized by wide portfolio diversification with a variety of counterparties, predominantly short-term investments, and standard investment instruments.

We cannot exclude the possibility that if the risk were to occur, it could have a major impact on our operations, financial position, profit, and cash flows. However, we estimate the probability of occurrence of this risk to be remote. We classify this risk as a low risk.

Use of Accounting Policies and Judgment: In our accounting, management uses policies and applies estimates. This could negatively affect our business, financial position, profit, and cash flows.

To comply with IFRS, management is required to establish and apply accounting policies as well as to apply judgment, including but not limited to making and using estimates and assumptions. The policies and judgment affect our reported financial figures.

This use of policies and judgment could lead to risks in the following areas, among others:

- New pronouncements by standard setters and regulators as well as changes in common practice or common interpretations of existing standards might force us to change existing policies. Where such changes trigger significant changes to our processes, we might struggle to implement the changes in a timely manner.
- The facts and circumstances, as well as the assumptions on which our management bases its judgment might change over time, requiring us to change the judgment previously applied.

Both of the above risks could result in significant changes to our reported financials, and could have an adverse effect on our business, financial position, profit, and cash flows.

SAP has established measures to address and mitigate the described risks and adverse effects to the greatest extent possible, such as:

- Regular monitoring of possible future changes to financial reporting standards or interpretations thereof in order to identify or anticipate changes at an early stage
- Control procedures to make sure that our estimates and judgments are adequate, such as two-person verification to significant estimating

We cannot exclude the possibility that if the risk were to occur, it could have a moderate impact on our operations, financial position, profit, and cash flows. However, we estimate the probability of occurrence of this risk to be unlikely. We classify this risk as a low risk.

Currency, Interest Rate, and Share Price Fluctuation: As a globally operating company, SAP is subject to various financial risks related to currencies, interest rates, and share price fluctuations, which could negatively impact our business, financial position, profit, and cash flows.

Because we operate throughout the world, a significant portion of our business is conducted in foreign currencies. In 2018, approximately 72.1% of our revenue was attributable to operations in foreign currencies. This foreign currency business therefore gets translated into our reporting currency, the euro.

This could lead to the following risks, among others:

- Period-over-period fluctuations
- Exchange rate risks with currency appreciation or depreciation, or risks related to currency devaluation (legal and/or administrative changes to currency regimes)
- Interest rate fluctuation
- Share price fluctuation impacting cash outflows for share-based compensation payments

Any one or more of these events could have an adverse effect on our business, financial position, profit, and cash flows.

SAP has established measures to address and mitigate the described risks and adverse effects to the greatest extent possible, such as:

- Continuous monitoring of our exposure to all these financial risks
- Group-wide foreign exchange risk management strategy to hedge balance sheet items and expected cash flows in foreign currencies by using derivative financial instruments as appropriate

- Balanced maturity profile and mixture of fixed and floating interest rate arrangements to hedge against interest rate risk
- Use of derivative instruments to reduce some of the impact of our share-based compensation plans on our income statement and cash flow

We cannot exclude the possibility that if the risk were to occur, it could have a major impact on our operations, financial position, profit, and cash flows. However, we estimate the probability of occurrence of this risk to be remote. We classify this risk as a low risk.

For more information about risks arising from financial instruments, including our currency and interest rate risks and our related hedging activity, see the Notes to the Consolidated Financial Statements section, [Notes \(A.2\), \(E.3\), and \(F.1\)](#).

Insurance: Our insurance coverage might not be sufficient and uninsured losses may occur.

We maintain insurance coverage to protect us against a broad range of risks, at levels we believe are appropriate and consistent with current industry practice. Our objective is to exclude or minimize risk of financial loss at reasonable cost.

Nevertheless, we could still be subject to risks in the following areas, among others:

- Losses that might be beyond the limits, or outside the scope, of coverage of our insurance and that may limit or prevent indemnification under our insurance policies
- Inability to maintain adequate insurance coverage on commercially reasonable terms in the future
- Certain categories of risks are currently not insurable at reasonable cost
- No assurance of the financial ability of the insurance companies to meet their claim payment obligations

Any one or more of these events could have an adverse effect on our business, financial position, profit, and cash flows.

SAP has established measures to address and mitigate the described risks and adverse effects to the greatest extent possible, such as:

- Maintaining a scope of insurance coverage that is as broad as possible
- Selection of financially stable and reputable insurers
- Constant review of our insurance programs in relation to our risk profile and breadth of insurance coverage

We cannot exclude the possibility that if the risk were to occur, it could have a business-critical impact on our operations, financial position, profit, and cash flows. However, we estimate the probability of occurrence of this risk to be remote. We classify this risk as a medium risk.

Venture Capital: We could incur significant losses in connection with venture capital investments.

Through Sapphire Ventures, our consolidated venture investment funds, we plan to continue investing in new and promising technology businesses.

This could lead to risks in the following areas, among others:

- Investments could generate net losses and/or require additional expenditures from their investors.

- Changes to planned business operations might affect the performance of companies in which Sapphire Ventures holds investments.
- Tax deductibility of capital losses and impairment in connection with equity securities are often restricted, and could therefore have an adverse effect on our effective tax rate.

Any one or more of these events could have an adverse effect on our business, financial position, profit, and cash flows.

Sapphire Ventures has established measures to address and mitigate the described risks and adverse effects, such as:

- Diversify the portfolio and actively manage our investments
- Balance the volume and scope of our venture capital activities

We cannot exclude the possibility that if the risk were to occur, it could have a minor impact on our operations, financial position, profit, and cash flows. However, we estimate the probability of occurrence of this risk to be remote. We classify this risk as a low risk.

Human Capital Risks

Human Workforce: If we are unable to attract, develop, retain, and effectively manage our geographically dispersed workforce, we might not be able to run our business and operations efficiently and successfully, or develop successful new solutions and services.

Our success is dependent on appropriate alignment of our planning processes for our highly skilled and specialized workforce and leaders, both male and female, adequate resource allocation, and our location strategy with our general strategy. In certain regions and specific technology and solution areas, we continue to set very high growth targets, depending on short-term and long-term skill requirements, taking infrastructure needs as well as local legal or tax regulations in consideration. Successful maintenance and expansion of our highly skilled and specialized workforce in the area of cloud is a key success factor for our transition to be the leading cloud company. The availability of such personnel as well as business experts is limited and, as a result, competition in our industry is intense.

We could face risks in the following areas, among others:

- Failure to apply workforce planning processes, adequate resource allocation, and location strategy in alignment with our general strategy
- Failure to identify, attract, develop, motivate, adequately compensate, and retain well-qualified and engaged personnel to scale to targeted markets
- Failure to successfully maintain, upskill, and expand our highly skilled and specialized workforce
- Poor succession management or failure to find adequate replacements
- Loss of key personnel of acquired business
- Failure to meet short-term and long-term workforce and skill requirements including achievements of internal gender diversity objectives
- Lack of appropriate or inadequately executed benefit and compensation programs
- Lack of availability and scalability of business experts and consultants

- Mismatch of expenses and revenue due to changes in headcount and infrastructure needs, as well as local legal or tax regulations
- Challenges with effectively managing a large distribution network of third-party companies

Any one or more of these events could reduce our ability to attract, develop, retain, and effectively manage our geographically dispersed workforce, which in turn could have an adverse effect on our business, financial position, profit, and cash flows.

SAP has established measures to address and mitigate the described risks and adverse effects to the greatest extent possible, such as:

- Workforce planning (aiming to achieve diversity and the right mix of talent while considering demographic changes) and legally compliant mobility planning, utilizing the integration of our Concur travel solutions to support the challenges of a global workforce
- Career management (including, but not limited to, opportunity offerings for short-term assignments as well as skill, competencies, and qualification advancements)
- Building employee and leadership strengths through a range of targeted professional development, learning, mentoring, coaching, together with a gender diversity program to take the changes in a global workforce into consideration
- Strong focus on succession planning for leadership and key positions to ensure sustainable leadership and safeguard the business from impacts through staff turnover
- Strong focus on expanding our talent landscape and reach through our diversity and inclusion efforts, including but not limited to neuro-diverse talent which provides a vibrant channel of talent with relevant skill sets required to compete successfully
- Extended benefit and long-term incentive programs, which will enable us to hire and retain talents internationally
- Utilization of outsourcing or external short-term staffing

We cannot exclude the possibility that if the risk were to occur, it could have a major impact on our operations, financial position, profit, and cash flows. However, we estimate the probability of occurrence of this risk to be unlikely. We classify this risk as a medium risk.

Operational Business Risks

Sales and Services: Sales and implementation of SAP software and services, including cloud, is subject to a number of significant risks sometimes beyond our direct control.

A core element of our business is the successful implementation of software and service solutions to enable our customers to master complexity and help our customers' businesses run at their best. The implementation of SAP software and cloud-based service deliveries is led by SAP, by partners, by customers, or by a combination thereof.

However, we might encounter risks in the following areas, among others:

- Implementation risks, if, for example, implementations take longer than planned, or fail to generate the profit originally expected, scope deviations, solution complexity, individual

integration and migration needs or functional requirement changes, or insufficient milestone management and tracking leading to delays in timeline, maybe even exceeding maintenance cycles of solutions in scope

- Insufficient customer expectation management, including scope, integration capabilities and aspects as well as lack in purposeful selection, implementation, and utilization of SAP solutions
- Lack of customer commitments and respective engagements, including lack of commitment of resources leading to delays or deviations from recommended best practices
- Challenges to effectively implement acquired technologies
- Protracted installation or significant third-party consulting costs
- Improper calculations or estimates leading to costs exceeding the fees agreed in fixed-price contracts
- Unrenderable services committed during the sales stage
- Delayed customer payments due to differing perception on project outcome/results
- Inadequate contracting and consumption models based on subscription models for services, support, and application management
- Deviations from standard terms and conditions, which may lead to an increased risk exposure
- Statements on solution developments might be misperceived by customers as commitments on future software functionalities

Any one or more of these events could have an adverse effect on our business, financial position, profit, and cash flows.

SAP has established measures to address and mitigate the described risks and adverse effects to the greatest extent possible, such as:

- Projects include risk management processes as part of SAP's project management methods intended to safeguard implementations with coordinated risk and quality management programs
- Recommended project approaches for customers to optimize their IT solutions in a non-disruptive manner
- Adequate financial planning provisions for the remaining individual risks
- Continuous project monitoring and controlling activities
- Established escalation management process
- Ongoing development of new commercial models to address customer flexibility needs
- General simplification, alignment, and enforcement of contractual standard terms and conditions while conducting legal and operational assessments in case deviations are required
- A policy that clearly outlines communication rules on future functionalities as well as legal requirements for commitments to customers

We cannot exclude the possibility that if the risk were to occur, it could have a major impact on our operations, financial position, profit, and cash flows. However, we estimate the probability of occurrence of this risk to be unlikely. We classify this risk as a medium risk.

Partner Ecosystem: If we are unable to scale, maintain, and enhance an effective partner ecosystem, revenue might not increase as expected.

An open and vibrant partner ecosystem is a fundamental pillar of our success and growth strategy. We have entered into partnership agreements that drive co-innovation on our platforms, profitably expand all our routes to market to optimize market coverage, optimize cloud delivery, and provide high-quality services capacity in all market segments. Partners play a key role in driving market adoption of our entire solutions portfolio, by co-innovating on our platforms, embedding our technology, and reselling and/or implementing our software.

These partnerships could lead to risks in the following areas, among others:

- Failure to establish and enable a network of qualified partners supporting our scalability needs
- Failure to get the full commitment of our partners, which might reduce speed and impact in market reach
- Products or services model being less strategic and/or attractive compared to our competition
- Partners might not renew agreements with us, or not enter into new agreements on terms acceptable to us or at all, or start competing with SAP.
- Failure to enable and train sufficient partner resources to promote, sell, and support to scale to targeted markets
- Partners might not develop a sufficient number of new solutions and content on our platforms or might not provide high-quality products and services to meet customer expectations.
- Partners might not embed our solutions sufficiently enough to profitably drive product adoption, especially with innovations such as SAP S/4HANA, SAP C/4HANA, and SAP Cloud Platform.
- Partners might not adhere to applicable legal and compliance regulations.
- Partners and their products might not meet quality requirements expected by our customers or SAP.
- Partners might not transform their business model in accordance with the transformation of SAP's business model in a timely manner.
- Partners might not be able or might not have capacity to meet customer expectations in terms of service provisioning.
- Partners might fail to abide to contract terms in embargoed or high-risk countries.

If one or more of these risks materialize, this might have an adverse effect on the demand for our products and services as well as the partner's loyalty and ability to deliver. As a result, we might not be able to scale our business to compete successfully with other vendors, which could have an adverse effect on our reputation, business, financial position, profit, and cash flows.

SAP has established measures to address and mitigate the described risks and adverse effects to the greatest extent possible, such as:

- Invest in long-term, mutually-beneficial relationships and agreements with partners
- Continue to develop and enhance a wide range of partner programs to retain existing and attract new partners of all types
- Enable and encourage partners to leverage SAP technology, by providing guidance about business opportunities, architecture,

and technology for example, through demo solutions, to enable partners to lead business value discussions on cloud and on-premise solutions with customers

- Offer training opportunities on a wide range of resources for our partners
- Maintain certification process for third-party solutions to ensure consistent high-quality and seamless integration
- Provide customer guidance and support as required during partner dissolutions

We cannot exclude the possibility that if the risk were to occur, it could have a major impact on our operations, financial position, profit, and cash flows. However, we estimate the probability of occurrence of this risk to be unlikely. We classify this risk as a medium risk.

Cloud Operations: We may not be able to properly protect and safeguard our critical information and assets, business operations, cloud offerings, and related infrastructure against disruption or poor performance.

SAP is highly dependent on the availability of our infrastructure, and the software used in our cloud portfolio is inherently complex.

This could lead to risks in the following areas, among others:

- Capacity shortage and SAP's inability to deliver and operate cloud services in a timely and efficient manner as expected by or committed to our customers
- Customer concerns about the ability to scale operations for large enterprise customers
- Defects or disruption to data center operations or system stability and availability
- Interruptions in the availability of SAP's cloud applications portfolio could potentially impact customer service level agreements
- System outages or downtimes, failure of the SAP network due to human or other errors, security breaches, or variability in user traffic for cloud applications
- Hardware failures or system errors resulting in data loss, corruption, or incompleteness of the collected information
- Incomplete cloud portfolio or certification representation could lead to customer misperception
- Loss of the right to use hardware purchased or leased from third parties could result in delays in our ability to provide our cloud applications
- Scalability demands on infrastructure and operation could lead to cost increase and margin impacts
- Non-adherence to our quality standards in the context of partner co-location of data centers
- Increased Total Cost of Ownership (TCO) for SAP
- Customers' cloud service demands might not match our data center capacity investments
- Non-compliance with applicable certification requirements, such as Payment Card Industry Data Security Standard (PCI DSS)

Any one or more of these events could have an adverse effect on our business, financial position, profit, and cash flows.

SAP has established measures to address and mitigate the described risks and adverse effects to the extent possible, such as:

- Consolidation and harmonization of our data centers and our data protection measures, including implementation of security information and event management solutions as well as network access control enforcement
- Significant investment in infrastructure and processes in an effort to ensure secure operations of our cloud solutions
- Continuous enhancement of infrastructure landscape capabilities
- Increased transparency through our continuously enhanced and expanded Cloud Trust Center, ensuring appropriate level of information, for example with regards to planned patching activities and associated downtimes
- Monitoring and investment to continuously enhance our disaster recovery and business continuity capabilities
- Continuous aim for a homogeneous landscape that supports the complex infrastructure application and security requirements so that we can deliver the required service level for cloud services
- Physical access control systems at facilities, multilevel access controls, closed-circuit television surveillance, security personnel in all critical areas, and recurring social engineering tests for SAP premises and data centers
- Access to information and information systems is controlled using authorization concepts. Managers and employees are regularly sensitized to the issues and given mandatory security and compliance training
- Adaption of our cloud service delivery to local and/or specific market requirements (such as local or regional data centers) and compliance with all local legal regulations regarding data protection and privacy as well as data security
- Contracts that require third-party data centers to have appropriate security and data protection and privacy terms in place. We establish contracts and service level agreements with our public cloud partners to ensure that data security and privacy measures meet local regulatory and compliance standards and SAP's own standards for data security and privacy
- Strict internal policies and controls concerning utilization of partner's cloud infrastructure, including people, process and technology standards required to ensure compliance
- Close monitoring of data center utilization, capacity, and pipeline for subsequent investment planning
- Regular risks reviews, disclosure requests, and audits to ensure public cloud providers meet SAP's data privacy and security standards
- PCI validated compliance by successful PCI DSS audits

We cannot exclude the possibility that if the risk were to occur, it could have a business-critical impact on our operations, financial position, profit, and cash flows. However, we estimate the probability of occurrence of this risk to be unlikely. We classify this risk as a medium risk.

Cybersecurity and Security: A cybersecurity attack or breach, or undetected security vulnerabilities in our products, infrastructure, or services, or economic espionage could result in significant legal and financial exposure and have a material adverse effect on our customers, our partners, our financial position, our operations, our reputation, and our business in general.

As we continue to grow organically and through acquisitions, deliver a full portfolio of solutions via the cloud, host or manage elements of our customers' businesses in the cloud, process large amounts of data and offer more mobile solutions to users, we face a progressively more complex security environment. The complexity of this security environment is amplified due to the increasingly malicious global cybersecurity threat landscape in which we operate, including third-party data, products, and services that we incorporate into SAP products, and the continually evolving and increasingly advanced techniques employed by threat actors targeting IT products and businesses. Such threat actors include, but are not limited to, highly sophisticated parties such as nation-states and organized criminal syndicates. As a leading cloud company and service provider to some of the largest and best-known customers in the world, we are naturally a prominent target and experience cybersecurity attacks of varying types and degrees on a regular basis. As a result, we are subject to risks and associated consequences in the following areas, among others:

- Undetected security defects and vulnerabilities
- Exposure of our business operations and service delivery due to virtual attack, disruption, damage, and/or unauthorized access, theft, destruction, industrial and/or economic espionage, serious and organized crime, and other illegal activities, as well as violent extremism and terrorism
- Abuse of data, social engineering, misuse or trespassers in our facilities, or systems could be rendered unusable
- State-driven economic espionage or competitor-driven industrial espionage, and criminal activities including, but not limited to, cyberattacks and breaches against cloud services and hosted on-premise software
- Disruptions to back-up, disaster recovery, and business continuity management processes
- Failure to securely and successfully deliver cloud services by any cloud service provider could have a negative impact on customer trust in cloud solutions
- Increased response time for identified security issues due to complexity and interdependencies could lead to security threats for SAP and customers
- Customer systems or systems operated by SAP could be compromised by vulnerabilities due to hacker exploitation
- Breach of security measures due to, for example but not limited to, employee error or wrongdoing, system vulnerabilities, malfunctions, or attempts of third parties to fraudulently induce employees, users, partners, or customers to gain access to our systems, data, or customers' data
- Recovery costs as well as significant contractual and legal claims by customers, partners, authorities (including state, federal, and non-U.S.), and third-party service providers which could expose us to significant expense and liability or result in the issuance of orders or consent decrees that could require us to modify our business practices

- Significant costs to attempt to detect, prevent, and mitigate any successful attacks, including but not limited to the costs of third-party legal and security experts and consultants, insurance costs, additional personnel and technologies, organizational changes, and incentives to customers and partners to retain their business
- Increasing sophistication and frequency of cybersecurity attacks could mean that we might not discover a security breach or a loss of information for a significant amount of time after the breach, or at all, and might not be able to anticipate attacks or implement sufficient mitigating measures
- Our cybersecurity and security protocols might not be able to keep pace with the ever-evolving and emerging threats
- Customer concerns and loss of confidence in the current or future security and reliability of our products and services, including cloud solutions
- Significant damage to the SAP brand, our reputation, our competitive position, our stock price, and our long-term shareholder value

Any one or more of these events could have a material adverse effect on our business, financial position, profit, and cash flows.

In response to the globally increasing number of cybersecurity attacks and because we anticipate hacker techniques to continue to evolve in our complex and threatening cybersecurity landscape, SAP has expended significant resources to analyze, modify and enhance its cybersecurity protective measures, has increased the Board's governance of and involvement in cybersecurity matters, and continues to investigate and remediate vulnerabilities. In particular, SAP has established measures designed to address the described risks and adverse effects, such as:

- Software security development lifecycle as a mandatory, integral part of our software development process
- For the Applications, Technology & Services segment, we strive to align our software security development lifecycle to the recommendations of ISO/IEC 27034, applying methods to develop secure software.
- Customers are provided with security certifications (such as ISO/IEC 27001), security white papers, and reports from independent auditors and certification bodies.
- Specific security training curriculums for our developers
- Disaster recovery and business continuity plans to protect our key IT infrastructure (especially our data centers) include implementation of data redundancies and daily data backup strategies.
- Corporate headquarters, which houses certain critical business functions, is located in the German state of Baden-Württemberg, an area that is historically free of natural disasters.
- Certification of IT-related organizations to the internationally recognized Business Continuity Management standard with regards to the Applications, Technology & Services segment
- We have a responsible disclosure process in place to detect vulnerabilities and have implemented security patch days to rapidly respond to customer security needs and provide fixes
- Improved roll-out procedures for security-relevant notes, patches, and service packs to ensure easy and fast consumption on the customer side

- Continuous adaptation and modification of our security procedures, such as security risk identification, threat modeling, a comprehensive security testing strategy, mandatory security training for all developers, and security validation of our products, patches, and services before shipment
- Measures such as technical IT security measures, identity and access management, and mandatory security and compliance training
- Physical security measures such as access control systems and employee identification
- An internal security audit group within our Corporate Audit organization to appropriately address potential security threats
- Increased employee, contractor, third-party, and partner awareness through campaigns and security awareness training courses and projects
- Local and regional crisis management teams to respond and minimize possible losses in case of crisis situations
- Engagement of experts to advise on appropriate cybersecurity protocols and to further increase attention and awareness to cybersecurity protocols and protections

We cannot exclude the possibility that if the risk were to occur, it could have a business-critical impact on our customers, our partners, our operations, financial position, our reputation, and our business in general. We estimate the probability of occurrence of this risk to be likely. We classify this increased risk as a high risk.

Technology and Products: Our technology and/or products may experience undetected defects, coding or configuration errors, may not integrate as expected, or may not meet customer expectations.

Our product strategy and development investment, including new product launches and enhancements, are subject to risks in the following areas, among others:

- Software products and services might not fully meet market needs or customer expectations
- We might not be as fast as expected in integrating our platforms and solutions, enabling the complete product and cloud service portfolio, harmonizing our user interface design and technology, integrating acquired technologies and products, or bringing packages, services, or new solutions based on the SAP HANA platform as well as SAP Cloud Platform to the market.
- New products, services, and cloud offerings, including third-party technologies, might not comply with local standards and requirements or could contain undetected or detected defects or could not be mature enough from the customer's point of view for business-critical solutions after shipment despite all the due diligence SAP puts into quality.
- Inability to define and provide adequate solution packages and scope for all customer segments
- Inability to fulfil expectations of customers regarding time and quality in the defect resolution process
- Lack of customer references for new products and solutions

Any one or more of these events could have an adverse effect on our business, financial position, profit, and cash flows.

SAP has established measures to address and mitigate the described risks and adverse effects to the greatest extent possible, such as:

- A broad range of techniques, including project management, project monitoring, product standards and governance, and rigid and regular quality assurance measures certified to ISO 9001:2008, applicable to the Applications, Technology & Services segment
- Threat modelling at the beginning of every development project to identify potential risks including but not limited to using centrally provided tools
- A holistic end-to-end testing strategy to validate the state of quality and security for every product before market introduction
- Regular direct customer feedback is considered in the market release decision process
- Enable the high level of quality of our products, which is made transparent in the defined quality perception and support index and confirmed by our constantly high customer satisfaction ratings as measured by customer quality perception reporting
- Continue to drive the integration and convergence of our technology platform offerings SAP S/4HANA and SAP C/4HANA, as well as acquired technologies
- Enable our current product portfolio for SAP HANA, develop new solutions based on SAP HANA, and offer comprehensive cloud-based services, extendable with SAP Cloud Platform
- A comprehensive certification program designed to ensure that relevant third-party solutions are of consistently high quality

We cannot exclude the possibility that if the risk were to occur, it could have a business-critical impact on our operations, financial position, profit, and cash flows. However, we estimate the probability of occurrence of this risk to be unlikely. We classify this risk as a medium risk.

Strategic Risks

Market Share and Profit: Our market share and profit could decline due to increased competition, market consolidation, technological innovation, and new business models in the software industry.

The market for cloud computing is increasing and shows strong growth relative to the market for on-premise solutions. To maintain or improve our operating results in the cloud business, it is important that our customers renew their agreements with us when the initial contract term expires and purchase additional modules or additional capacity, as well as for us to attract new customers. Additionally, we need to bring new solutions based on the SAP HANA business data platform, new technologies, as well as SAP Cloud Platform to the market in line with demands and ahead of our competitors. In particular, innovative applications supporting the Intelligent Enterprise such as SAP S/4HANA, SAP C/4HANA, or newer technologies such as Internet of Things, machine learning, robotic process automation (RPA), which automates rule-based, repetitive tasks, digital assistants (including voice recognition and interaction), and blockchain.

Factoring in the aforementioned, this could lead to risks in the following areas, among others:

- Potential loss of existing on-premise customers due to competing cloud market trends
- Adverse revenue effects due to increasing cloud business and conversions from on-premise licenses to cloud subscriptions

from existing SAP customers, which could have an adverse effect on related maintenance and services revenue

- Insufficient solution and service adoption together with increased complexity, as well as failures during the execution of our intelligent enterprise strategy in the context of our portfolio for solution and services could lead to a loss of SAP's position as a leading cloud company and subsequently to reduced customer adoption.
- Customers and partners might be reluctant or unwilling to migrate and adapt to the cloud or consider competitive cloud offerings.
- Existing customers might cancel or not renew their contracts (such as maintenance or cloud subscriptions), or decide not to buy additional products and services.
- The market for cloud business might not develop further, or it might develop more slowly than anticipated.
- Strategic alliances among competitors and/or their growth-related efficiency gains in the cloud area could lead to significantly increased competition in the market with regards to pricing and ability to integrate solutions.
- Price pressure, cost increases, and loss of market share through traditional, new, and especially cooperating competitors

Any one or more of these events could have an adverse effect on our business, financial position, profit, and cash flows.

SAP has established measures to address and mitigate the described risks and adverse effects to the greatest extent possible.

For example, we:

- Share our overall long-term cloud strategy and our integration road map with our customers, and continuously implement improvements to enhance our cloud solutions through our intelligent enterprise strategy, also covering the integration of experiential and operational data
- Demonstrate the benefits of our solution and services portfolio through end-to-end integration scenarios, homogeneous and compelling user interfaces, intelligent technologies, customer references, and success stories
- Enable and support our customers in their transition path from on-premise to cloud, for example through the cloud extension policy and our SAP S/4HANA Movement program, a cross-departmental initiative to promote the migration of our existing ERP customers to the intelligent enterprise
- Balance the distribution of our strategic investments by evolving and protecting our core businesses and simultaneously developing new solutions, technologies, and business models for markets, such as those in analytics, applications, and database and technology
- We are engaging with our customers and offer a broader range of services to support and drive the digital transformation for our customers, for example with our premium service offering SAP MaxAttention.
- Place strong focus on providing our cloud services efficiently and to customer expectations, including service provisioning, quality, security, and data protection and privacy
- Drive the integration and convergence of our technology platform offerings SAP S/4HANA and SAP C/4HANA, and acquired technologies
- Enable our current product portfolio for SAP HANA, develop new solutions based on SAP HANA, and offer comprehensive

cloud-based services, extendable with SAP Cloud Platform and intelligent technologies

- Deliver standard software and product packages that are fast and easy to install, as well as financially attractive financing and subscription models
- Enable and encourage partners to leverage SAP technology, by providing guidance about business opportunities, architecture, and technology, as well as a comprehensive certification program designed to ensure that relevant third-party solutions are of consistently high quality

We cannot exclude the possibility that if the risk were to occur, it could have a business-critical impact on our operations, financial position, profit, and cash flows. However, we estimate the probability of occurrence of this risk to be unlikely. We classify this risk as a medium risk.

Mergers and Acquisitions: We might not acquire and integrate companies effectively or successfully.

To expand our business, we acquire businesses, products, and technologies, and we expect to continue to make acquisitions in the future. Over time, certain of these acquisitions have increased in size and in strategic importance for SAP. Management negotiation of potential acquisitions and the integration of acquired businesses, products, or technologies demands time, focus, and resources of both management and workforce, and exposes us to unpredictable operational difficulties.

Acquiring businesses, products, and technologies may present risks to SAP, including risks related to the following areas, among others:

- Incorrect information or assumptions during the due diligence process for the acquisition (including information or assumptions related to the business environment and/or business and licensing models)
- Failure to integrate acquired technologies or solutions successfully and profitably into SAP's solution portfolio and strategy
- Failure to successfully integrate acquired entities, operations, cultures, or languages, all within the constraints of applicable local laws
- Unfulfilled needs of the acquired company's customers or partners
- Material unidentified liabilities of acquired companies (legal, tax, IP)
- Failure in implementing, restoring, or maintaining internal controls, disclosure controls and procedures, and policies within acquired companies
- Incompatible practices or policies (compliance requirements)
- Insufficient integration of the acquired company's accounting, HR, and other administrative systems
- Failure to coordinate or successfully integrate the acquired company's research and development (R&D), sales, marketing activities, and security and cybersecurity protocols
- Debt incurrence or significant unexpected cash expenditures
- Non-compliance with existing SAP standards including applicable product standards such as our open source product standards
- Impairment of goodwill and other intangible assets acquired in business combinations

- Non-compliance of the acquired company with regulatory requirements, for example accounting standards, export control laws, and trade sanctions, for which SAP with and by the acquisition assumes responsibility and liability, including potential fines and the obligation to remedy the non-compliance

Any one or more of these events could have an adverse effect on our business, financial position, profit, and cash flows.

SAP has established measures to address and mitigate risks and adverse effects associated with acquisitions to the greatest extent possible, such as:

- Technical, operational, financial, and legal due diligence on the company or assets to be acquired
- A holistic evaluation of material transaction and integration risks
- Identification, implementation, and tracking of risk mitigation measures for material transactions or integration risks
- A standardized methodology for detailed integration planning which is carried out by a dedicated integration team
- Process, risk, and control analyses accompanied by subsequent integration into SAP's control framework and supported by mitigations as required by any specific circumstances

We cannot exclude the possibility that if the risk were to occur, it could have a major impact on our operations, financial position, profit, and cash flows. We estimate the probability of occurrence of this risk to be unlikely. We classify this increased risk as a medium risk.

Innovation: We might not be able to compete effectively if we strategize our solution portfolio ineffectively or if we are unable to keep up with rapid technological and product innovations, enhancements, new business models, and changing market expectations.

Our future success depends upon our ability to keep pace with technological and process innovations and new business models, as well as on our ability to develop new products and services, enhance and expand our existing products and services portfolio, and integrate products and services we obtain through acquisitions. To be successful, we are required to adapt our products and our go-to-market approach to a cloud-based delivery and consumption model to satisfy changing customer demand and to ensure an appropriate level of adoption, customer satisfaction, and retention.

Considering preceding dependencies, this could lead to risks in the following areas, among others:

- Not being able to bring new business models, solutions, solution enhancements, intelligent technologies, integrations and interfaces, and/or services to market before our competitors or at equally favorable conditions
- Not being able to anticipate and develop technological improvements or succeed in adapting SAP products, services, processes, and business models to technological change, changing regulatory requirements, emerging industry standards, and changing requirements of our customers and partners (especially with innovations such as SAP S/4HANA, SAP C/4HANA, and SAP Cloud Platform) supporting the intelligent enterprise strategy
- Uncertainties regarding new SAP solutions, technologies, and business models as well as delivery and consumption models

might lead customers to wait for proofs of concept or holistic integration scenarios through reference customers or more mature versions first.

- Lower level of adoption of our new solutions, technologies, business models, and flexible consumption models, or no adoption at all
- Our product and technology strategy might not be successful, or our customers and partners might not adopt our technology platforms, applications, or cloud services quickly enough or they might consider other competitive solutions in the market, or our strategy might not match customers' expectations, specifically in the context of expanding the product portfolio into additional markets
- Increasing competition from open source software initiatives, or comparable models in which competitors might provide software and intellectual property free and/or at terms and conditions unfavorable for SAP.
- Inability to drive growth of references through customer use cases and demo systems

Any one or more of these events could have an adverse effect on our business, financial position, profit, and cash flows.

SAP has established measures to address and mitigate the described risks and adverse effects to the greatest extent possible. For example, we:

- Align our organization, processes, products, delivery and consumption models, and services to changing markets and customer and partner demands
- Develop new technology and new solutions such as the next-generation suite SAP S/4HANA, SAP C/4HANA, or the next-generation SAP Analytics Cloud
- Explore future trends as well as the latest technologies, for example through our network of innovation centers as part of the Technology and Innovation board area, and adapt these to the market if there is a clear business opportunity for SAP and if they provide value to our customers
- Conduct wide-ranging market and technology analyses and research projects, often in close cooperation with our customers and partners to remain competitive
- Make strategic acquisitions with the potential to drive innovation and contribute to achieving our growth target

We cannot exclude the possibility that if the risk were to occur, it could have a business-critical impact on our operations, financial position, profit, and cash flows. However, we estimate the probability of occurrence of this risk to be remote. We classify this risk as a medium risk.

Consolidated Risk Profile

We consolidate and aggregate relevant risks identified by the different business units and functions following our risk management policy, monitored by a Group-wide risk management governance function.

Based on our aggregation approach, we recognized only minor changes in 2018 in the percentages of all reported risks categorized as "high" or "medium" in our risk level matrix. The number of risks categorized as "high" accounted for 27% (2017: 17%) of all reported risks, while the risks categorized as "medium" accounted

for 45% (2017: 52%) of all risks reported in the *Risk Factors* section.

In our view, considering their impact level and likelihood of occurrence, the risks described in our aggregated risk report do not individually or cumulatively threaten our ability to continue as a going concern. Management remains confident that the Group's earnings strength forms a solid basis for our future business

development and provides the necessary resource to pursue the opportunities available to the Group. Because of our strong position in the market, our technological leadership, our highly-motivated employees, and our structured processes for early risk identification, we are confident that we can continue to successfully counter the challenges arising from the risks in our risk profile in 2019.

Expected Developments and Opportunities

Future Trends in the Global Economy

The European Central Bank (ECB) expects global economic activity to decelerate in 2019 but remain steady through 2021, growing at rates below those before the 2007–2008 financial crisis. That is the essence of the ECB's December 2018 Economic Bulletin.¹⁾ Advanced economies could continue to benefit from accommodative monetary policies and supportive financial conditions, though waning, for several more years. Tightening financial conditions in emerging markets, however, might more negatively affect global activity than thus far. Nevertheless, the ECB expects those emerging economies affected by the 2018 financial market turbulences to recover in 2019.

Regarding the Europe, Middle East, and Africa (EMEA) region, the ECB has revised its previous outlooks for GDP growth in the euro area slightly downwards. Geopolitical factors, the threat of protectionism, and financial market volatility might weigh on economic activity there. However, the near-term outlook for the euro area will depend largely on the eventual modus operandi of Great Britain's withdrawal from the European Union. In central and eastern European countries, the ECB projects a robust GDP growth in the near term, supported by strong investment, solid consumer spending and improvements in the labor market, but decelerating activity over the medium term. In Russia, economic recovery might continue in 2019, supported by improving domestic demand but will strongly depend on how the oil price develops.

As for the Americas region, the ECB expects the United States to provide a sizeable fiscal stimulus in 2019, including lower taxes and increased expenditure, leading to a resilient economic activity that year, but slackening thereafter. In addition, intensifying trade tensions between the United States and China are likely to affect confidence and investment negatively. According to the ECB, economic activity in Brazil might accelerate in 2019 due to labor market improvements and continuing monetary accommodation.

In the Asia Pacific Japan (APJ) region, the ECB projects Japanese economic activity to rebound in the near term, benefitting from an accommodative monetary policy. However, the pace of economic expansion in Japan is likely to decelerate again thereafter, due to increasing capacity constraints. Regarding China, the ECB emphasizes the strong impact from trade tensions between China and the United States. Furthermore, the Chinese housing market might slow, so that over the medium term, the ECB expects the pace of expansion in China to moderate gradually, resulting in an orderly slowdown and rebalancing of the Chinese economy.

As for rates of growth, the International Monetary Fund (IMF) projects the following economic trends for the mid-term horizon until the end of 2019:

Economic Trends GDP Growth Year Over Year

%	2017	2018p	2019p
World	3.7	3.7	3.7
Advanced economies	2.3	2.4	2.1
Developing and emerging economies	4.7	4.7	4.7
Europe, Middle East, and Africa (EMEA)			
Euro area	2.4	2.0	1.9
Germany	2.5	1.9	1.9
Emerging and developing Europe	6.0	3.8	2.0
Middle East, North Africa, Afghanistan, and Pakistan	2.2	2.4	2.7
Sub-Saharan Africa	2.7	3.1	3.8
Americas			
United States	2.2	2.9	2.5
Canada	3.0	2.1	2.0
Latin America and the Caribbean	1.3	1.2	2.2
Asia-Pacific Japan (APJ)			
Japan	1.7	1.1	0.9
Emerging and developing Asia	6.5	6.5	6.3
China	6.9	6.6	6.2

p = projection

Source: International Monetary Fund (IMF), World Economic Outlook October 2018, Challenges to Steady Growth (<https://www.imf.org/~/media/Files/Publications/WEO/2018/October/English/main-report/Text.ashx?la=en>). p. 14

The IT Market: Outlook for 2019 and Beyond

The pace and volume of digital innovation will radically accelerate in the next three to five years, embracing all technologies as well as enterprises of all sizes. That is what the U.S.-based market research firm International Data Corporation (IDC) reports in its most recent publications.²⁾ According to IDC, by 2022 more than 60% of global GDP could be digitized, and IT-related spending from 2019–2022 might amount to as much as US\$7 trillion. Organizations will no longer digitize single aspects of their business, but create "digital native" IT environments.

IDC predicts that one of the major markets will be the worldwide Internet of Things (IoT) market, growing at an average of 13.6% per year and reaching US\$1.19 trillion in 2022, 48.2% of which in the APJ region³⁾. At the same time, the proportion spent on devices will shrink and give way to spending on the IoT platform, analytics and

application software, and ongoing services. By 2022, software will represent the largest proportion of spend at 25.1%, projects IDC.

Furthermore, blockchain will be another growing technology over the next years, says IDC.³⁾ It estimates that by 2021, nearly a third of all manufacturers and retailers globally will be using blockchain technology to build digital trust and establish prominent in-industry value chains, thus reducing transaction costs by 35%.

However, one of the most important growth markets over the coming years will be artificial intelligence (AI) technologies and solutions. According to IDC, corporate investment in AI solutions might grow at an average of 46.2% per year and reach more than US\$52 billion by 2021. By 2020, 80% of enterprises could already be making their data accessible to AI solutions from everywhere in the business ecosystem.

Extending AI solutions further to the “edge” will strengthen enterprises’ competitiveness and create new sources of revenue, says IDC. By 2022, over 40% of organizations’ cloud infrastructure could include edge locations centered on an “intelligent core.” AI could then reach 25% of endpoint devices and systems, such as handheld terminals, mobile phones, wearables, switches, drones, TVs, planes, surveillance cameras, self-driving vehicles, and smart buildings.²⁾

Sources:

¹⁾ European Central Bank, Economic Bulletin, Issue 8/2018, Publication Date: December 27, 2018 (<https://www.ecb.europa.eu/pub/pdf/ecbu/eb201808.en.pdf>)

²⁾ IDC FutureScape: Worldwide IT Industry 2019 Predictions, Doc #US44403818, October 2018

³⁾ IDC FutureScape: Worldwide Digital Transformation 2019 Predictions, Doc #US43647118, October 2018

⁴⁾ IDC FutureScape: Worldwide Intelligent ERP 2019 Predictions, Doc #US43262918, October 2018

⁵⁾ IDC Market Forecast: Worldwide Internet of Things Forecast, 2018–2022, September 2018

As to regional rates of growth, Gartner, another U.S.-based IT market research firm, projects the following accelerations in IT spending for the mid-term horizon until the end of 2019:

Trends in the IT Market Accelerated IT Spending Year Over Year

Growth in % at constant currencies	2017e	2018p	2019p
World			
Total IT	3.7	3.1	3.2
Software	9.7	8.5	8.5
Services	4.1	4.5	4.7
Europe, Middle East, and Africa (EMEA)			
Total IT	2.9	2.2	2.0
Software	9.0	7.9	7.8
Services	3.7	4.2	4.5
Americas			
Total IT	3.0	2.9	3.4
Software	10.1	8.4	8.4
Services	4.1	4.5	4.7
Asia-Pacific Japan (APJ)			
Total IT	5.6	4.5	4.1
Software	10.0	10.2	10.1
Services	4.8	5.0	5.2

e = estimate, p = projection

Table created by SAP based on: Gartner Market Databook, 4Q18 Update, #376398, Table 2-1 "Regional End-User Spending on IT Products and Services in Constant U.S. Dollars, 2016–2022 (Millions of Dollars)".

The Gartner Reports described herein, (the “Gartner Reports”) represent research opinion or viewpoints published, as part of a syndicated subscription service, by Gartner, Inc. (“Gartner”), and are not representations of fact. Each Gartner Report speaks as of its original publication date (and not as of the date of this annual report) and the opinions expressed in the Gartner Reports are subject to change without notice.

Impact on SAP

The 2018 results again showed SAP’s impressive resilience and the business momentum driven by our strategy of innovation and growth. Even with evolving economic and political uncertainties, the SAP business model will ensure sustained cash flows via our high share of more predictable revenue. Our growth ambition remains strong and we will further continue to invest in strategic growth areas like the cloud, IoT, AI, machine learning, and blockchain. Those are expected to become significant investment priorities of our customers in the upcoming years. In addition, our focus on combining “Experience Management” from Qualtrics with SAP’s “Operational Data Management” will significantly increase our total addressable market.

Financial Targets and Prospects

Revenue and Operating Profit Targets and Prospects (Non-IFRS)

Outlook 2019

The Company is providing the following 2019 outlook:

- Non-IFRS cloud subscriptions and support revenue is expected to be in a range of €6.7 billion to €7.0 billion at constant currencies (2018: €5.03 billion), up 33% to 39% at constant currencies.
- Non-IFRS cloud and software revenue is expected to be in a range of €22.4 billion to €22.7 billion at constant currencies (2018: €20.66 billion), up 8.5% to 10% at constant currencies.
- Non-IFRS operating profit is expected to be in a range of €7.7 billion to €8.0 billion at constant currencies (2018: €7.16 billion), up 7.5% to 11.5% at constant currencies.

In addition, SAP expects total revenues to increase strongly, at a rate slightly lower than operating profit. The cloud and software revenue guidance above assumes a mid-single-digit decline in software license revenue.

While SAP's full-year 2019 business outlook is at constant currencies, actual currency reported figures are expected to be impacted by currency exchange rate fluctuations as the Company progresses through the year. See the table below for the full-year 2019 expected currency impacts.

In percentage points	2019
Cloud subscriptions and support	+1pp to +3pp
Cloud and software	Opp to +3pp
Operating profit	+1pp to +3pp

We continuously strive for profit expansion in our reportable segments. We expect the segment profit to increase in all our reportable segments.

The following table shows the estimates of the items that represent the differences between our non-IFRS financial measures and our IFRS financial measures.

Non-IFRS Measures

€ millions	Estimated Amounts for 2019	Actual Amounts for 2018
Revenue adjustments	100–150	33
Share-based payment expenses	1,200–1,500	830
Acquisition-related charges	750–900	577
Restructuring	800–950	19

In 2019, SAP will further increase focus on its key strategic growth areas. For the first time since 2015, SAP will execute a company-wide restructuring program to further simplify company structures and processes and to ensure that its organizational setup, skillsets, and resource allocation all continue to meet evolving customer demand. Restructuring expenses are projected to be €800 million to €950 million, the vast majority of which will be recognized in the first quarter of 2019. Due to the restructuring program we expect a cash outflow of about €550 million to €750 million in 2019. For 2020, we predict a lower cash flow impact from restructuring. Excluding restructuring expenses, the program is expected to provide a minor cost benefit in 2019 and €750 million to €850 million in annual cost savings as of 2020 that will fuel investments in strategic growth areas. Although we expect roughly 4,400 employees to leave SAP under the restructuring program, we continue to invest in key strategic growth areas. In 2019, we expect our headcount to increase at a similar pace as in 2018 to reach more than 100,000 by the end of 2019. The expected cost savings and reinvestment are fully reflected in SAP's financial outlook and ambitions.

The Company expects a full-year 2019 effective tax rate (IFRS) of 26.5% to 27.5% (2018: 27.0%) and an effective tax rate (non-IFRS) of 26.0% to 27.0% (2018: 26.3%).

Impact of the New Accounting Standard IFRS 16 “Leases”

As of January 1, 2019, SAP adopted the new IFRS standard on lease accounting (IFRS 16 “Leases”). SAP's profit, assets, and liabilities, and cash flows in 2019 will be impacted by the new policies. The actual impact of IFRS 16 on our profits depends not only on the lease agreements in effect at the time of adoption but also on new lease agreements entered into or terminated in 2019. For more information about the adoption of IFRS 16 and an estimation of the impact on SAP's income statement, statement of financial position, and cash flow statement, see the Notes to the Consolidated Financial Statements, [Note \(IV.1\)](#).

Proposed Dividend

In 2019, we intend to pay a dividend totaling 40% or more of the prior year's profit after tax. This results in a dividend of €1.50 per share (subject to shareholder approval at the Annual General Shareholders meeting in May 2019). For more information, see the [Financial Performance: Review and Analysis](#) section.

Medium-Term Prospects

In this section, all numbers are based exclusively on non-IFRS measures.

SAP expects to grow our more predictable revenue while steadily increasing operating profit. Our strategic objectives are focused primarily on our main financial and non-financial objectives: growth, profitability, customer loyalty, and employee engagement.

Looking beyond 2019, SAP updated its 2020 ambition last provided in July 2018. This update reflects the Company's consistent fast growth in the cloud, strong cloud and software momentum, and operating profit expansion as well as the Qualtrics acquisition.

In 2020, SAP now expects:

- €8.6 billion to €9.1 billion in non-IFRS cloud subscriptions and support revenue (previously: €8.2 billion to €8.7 billion; 2018: €5.03 billion)
- €28.6 billion to €29.2 billion in non-IFRS total revenue (previously: €28.0 billion to €29.0 billion; 2018: €24.74 billion)
- €8.5 billion to €9.0 billion in non-IFRS operating profit (unchanged; 2018: €7.16 billion)

The midpoints of the 2020 total revenue and operating profit ranges now imply an operating margin of 30.3%. Beyond 2020, SAP currently expects further increases of our operating margin.

We expect the share of more predictable revenue (defined as the total of cloud subscriptions and support revenue and software support revenue) to reach 70% to 75% in 2020 (2018: 65%).

We expect that, by 2020, our public cloud offerings will contribute slightly more than half of cloud subscription and support revenue, followed by our business network offerings at slightly less than 40%. Both offerings are expected to each generate, in 2020, cloud subscriptions and support revenues that are significantly higher than the cloud subscriptions and support revenue generated from our private cloud offerings.

We expect our revenue growth trajectory through 2020 to be driven by continued strong growth in the cloud and continued growth in our software support revenue. We expect mid-single-digit declines in software revenue. This is all expected to result in high single-digit growth in cloud and software revenue through 2020.

We also strive to significantly improve, over the next few years, the profitability of our cloud business. In 2019, we expect to see the benefits from previous efficiency-based investments, and thus an increasing cloud gross margin. We expect these profitability improvements to accelerate in the following years.

We expect that the individual gross margins of our different cloud operating models will increase at different rates over the next years to reach the following mid-term targets.

We expect that, in 2020, the gross margin from our business network offerings will be higher than 80% (2018: 78%).

We expect that, in 2020, the gross margin from our public cloud offerings will reach approximately 70% (2018: 60%), and to expand to about 80% over the course of the two years thereafter.

Previously, we expected the gross margin from our private cloud offerings to reach about 40% by 2020 (2018: 13%). We now expect this gross margin to reach between 30% and 35%.

We continue to expect the cloud gross margin to be approximately 71% by 2020.

We expect the 2020 gross margin for our software licenses and support to remain at a similar level to 2018 (2018: 87%).

In addition, we expect our 2020 services gross margin to be slightly higher than in 2018 (2018: 23%).

As we look to increase our profitability through 2020, our cost ratios (cost as a percentage of total revenue) are expected to develop as follows through 2020: Research and development is expected to remain at the current level. Sales and marketing as well as general and administration are expected to decline slightly.

We also introduced a 2023 ambition. Over the next five years, we expect to:

- More than triple our non-IFRS cloud subscription and support revenue (2018: €5.03 billion)
- Grow our non-IFRS total revenue to more than €35 billion (2018: €24.74 billion)
- Grow our non-IFRS operating profit at a compound annual growth rate (CAGR) of 7.5% to 10% (2018: €7.16 billion)
- Approach a share of more predictable revenue of 80%.

Investment Goals

Our planned investment expenditures for 2019 and 2020, other than from business combinations, consist primarily of the construction activities described in the *Assets (IFRS)* section of this report. We expect investments from construction activities of approximately €359 million in 2019. The expansion of our data centers is an important aspect of our planned investments again for 2019. In addition, we aim to extend our office space to cover currently anticipated future growth. In 2020, we expect investments from construction activities of approximately €400 million. In 2019, we expect total capital expenditures of approximately €1.5 billion. In 2020, capital expenditures are expected to stay at a similar level as in 2019.

On January 23, 2019, the acquisition of Qualtrics closed following satisfaction of applicable regulatory and other approvals. We acquired 100% of the Qualtrics shares for approx. US\$35 per share, representing consideration transferred in cash of approximately US\$7.1 billion. In addition to the cash payments, SAP will also incur liabilities and post-closing expenses relating to assumed share-based payment awards amounting to approx. US\$0.9 billion. On January 23, 2019, we fully drew the Qualtrics-related €2.5 billion acquisition credit facility to partially finance the purchase price payment. The facility has a lifetime of three years and can be flexibly repaid with SAP's free cash flow or further refinancing transactions on the capital markets.

Qualtrics will be reflected in our Customer Experience segment, which we are renaming upon the Qualtrics acquisition to Customer and Experience Management.

Other than that, we do not expect major acquisitions in 2019 and 2020. Our priority is to pay down debts resulting from the Qualtrics acquisition first. Therefore, we will rather focus on organic growth, complemented by minor tuck-in acquisitions.

Goals for Liquidity and Finance

On December 31, 2018, we had a negative net liquidity. We believe that our liquid assets, combined with our undrawn credit facilities, are sufficient to meet our operating financing needs in 2019 as well, and, together with expected cash flows from operations, will support debt repayments and our currently planned capital expenditure requirements over the near and medium term.

In 2019, compared to 2018 we expect higher cash outflows for restructuring (approximately additional €550 million to €750

million), share based payments (approximately additional €300 million mainly due to Qualtrics), and tax-related cash outflows (approximately additional €300 million). In contrast, we expect operating cash flow to benefit from the cash flow reclassification due to IFRS 16 by an amount of €300 million to €400 million. Considering all these effects, we expect operating cash flow in 2019 to be broadly in line with 2018. Free cash flow (as redefined in response to IFRS 16) is expected to decrease moderately despite an unchanged level of capital expenditure. For 2020, we expect a significant year-over-year increase in both, operating cash flow and free cash flow, mainly due to decreased cash outflows for restructuring and a profitable growth of our operating business.

We intend to repay €750 million in Eurobonds in November 2019. In addition, we might repay portions of the Qualtrics related €2.5 billion acquisition term loan, and plan to repay the first tranches of a €50 million promotional loan with KfW.

Non-Financial Goals 2019 and Ambitions for 2020

In addition to our financial goals, we also focus on two non-financial targets: customer loyalty and employee engagement.

For 2019 to 2020, we aim to reach an Employee Engagement Index of between 84% and 86% (2018: 84%).

We measure customer loyalty using the Customer Net Promoter Score (NPS). In 2019, we aim for a Customer NPS of +1.0 (2018: -5) and expect a steady increase in 2020 and beyond.

Premises on Which Our Outlook and Prospects Are Based

In preparing our outlook and prospects, we have taken into account all events known to us at the time we prepared this report that could influence SAP's business going forward. The Qualtrics acquisition is reflected in our outlook and prospects.

Outlook for SAP SE

The primary source of revenue for SAP SE is the license fees it charges subsidiaries for the right to market and maintain SAP software solutions. Consequently, the performance of SAP SE in operating terms is closely tied to the cloud and the software revenue of the SAP Group.

Due to the rise at constant-currency in non-IFRS cloud and software revenue anticipated for the SAP Group in 2019, we expect product revenue for SAP SE to increase at constant currencies in a range of 6.5% to 8.0%.

Against the background of the announced company-wide restructuring program and projected restructuring expenses at SAP SE level, we expect SAP SE operating profit to decrease slightly, assuming that there are no special effects relating to acquisitions or other extraordinary occurrences.

The financial ambitions of the SAP Group for the years 2020 to 2023 provide for further growth of revenue and profit. We expect that such growth will also result in further revenue and profit growth for SAP SE to the same degree.

We expect that SAP SE will continue to receive investment income in the form of profit transfers and dividends from its subsidiaries. The growth we expect for the SAP Group should have a positive effect on this investment income.

The outlook for the SAP Group in respect to liquidity, finance, investment, and dividend are equally applicable to SAP SE.

Among the assumptions underlying this outlook are those presented above concerning the economy and our expectations for the performance of the SAP Group.

Opportunities

Our customers rely on SAP as the trusted partner in their digital business transformation, not only for providing in-memory technology, standardized on-premise and cloud solutions, and access to business networks, but also for helping them drive new business outcomes and enabling business model innovations. To meet these expectations, we must grow consistently and accelerate the pace of our own business transformation by exploiting new opportunities.

We have established a framework for opportunity management by evaluating and analyzing four key areas: current markets, competitive landscapes, external scenarios, and technological trends. Additionally, we have delved into customer and product segmentation, growth drivers, and industry-specific success factors. Based on these combined insights, our Executive Board defines our market strategies. Our shareholder value relies heavily upon a fine balance of risk mitigation and value-driven opportunities. Therefore, our strong governance model ensures that decisions are based on return, investment required, and risk mitigation. We rely on the talent and resources within SAP and our entire ecosystem.

As far as opportunities are likely to occur, we have incorporated them into our business plans, our outlook for 2019, and our medium-term prospects outlined in this report. Therefore, the following section focuses on future trends or events that might result in an uplift of our outlook and medium-term prospects, if they develop better than we have anticipated in our forecasts.

SAP SE is the parent company of the SAP Group and earns most of its revenue from subscription fees, software license fees, and dividends paid by affiliates. Consequently, the opportunities described below also apply – directly or indirectly – to SAP SE.

Opportunities from Economic Conditions

Economic conditions have a clear influence on our business, financial position, profit, and cash flows. Should the global economy experience a more sustained growth than is reflected in our plans today, our revenue and profit may exceed our current outlook and medium-term prospects.

Our medium-term planning is based on unchanged market conditions in emerging markets. Should their stability increase again, this would be an upside to our medium-term planning.

For more information about future trends in the global economy and the IT market outlook, as well as their potential influence on SAP, see the *Expected Developments and Opportunities* section.

Opportunities from Research and Development Traction

Our continued growth through innovation is based on our ability to leverage research and development (R&D) resources effectively. We continue to improve our development processes through design thinking and lean methodologies. We are accelerating innovation cycles, especially in the area of cloud solutions, and engaging more closely with our customers to ensure accuracy and

success. In addition, we have created a new structure that enables innovations in a startup-like environment and ecosystem.

While speed is a key strength, we also focus on ease of adoption and providing compelling returns. This allows our customers to easily consume technologies and software applications with immediate benefits for their businesses. If we make innovations available faster than currently anticipated, or if customers adopt the innovations faster than currently expected, for example, by shifting faster to managed clouds for enterprise resource planning, or by shifting faster to our SAP S/4HANA suite, whether cloud or on premise, this could positively impact our revenue, profit, and cash flows, and result in their exceeding our stated outlook and medium-term prospects.

For more information about future opportunities in research and development for SAP, see the *Products, Research & Development, and Services* section as well as the *Expected Developments and Opportunities* section.

Opportunities from Our Strategy for Profitable Growth

SAP strives to generate profitable growth across our portfolio of products, solutions, and services to keep or improve our market position. Our aim is to continue to expand our addressable market through the extension of our portfolio and our new technologies and innovations. Higher efficiency in our cloud delivery may moreover positively affect the profitability of our cloud business.

With the acquisition of Qualtrics, we see growth opportunities from creating a highly differentiated offering for businesses to deliver superior customer, employee, product, and brand experiences. With Qualtrics, SAP will accelerate the new experience management category by combining experience data and operational data to power the experience economy. For more information about the acquisition of Qualtrics, see the *Strategy and Business Model* section. Furthermore, we see opportunities in growing product and market areas, such as in-memory computing, cloud, mobile, business networks, social media, Big Data, the Internet of Things, machine learning, artificial intelligence, predictive analytics, and all business developments that are targeted at digital business transformation, which is key to our strategy.

Additional opportunities arise through new collaborations, such as the Open Data Initiative. SAP is joining forces with partnering companies to tackle one of the key challenges all enterprises face: siloed data. The Open Data Initiative allows data to be exchanged and enriched across systems, making data a renewable resource that flows into intelligent applications, enabling a single view of the customer, and delivering true end-to-end customer journeys.

Furthermore, SAP seeks to establish new business models and leverage our expanding ecosystem of partners to achieve scale and maximize opportunities.

Our strong assets in applications and analytics, as well as database and technology, continue to offer solid multiyear growth opportunities as we bring innovative technologies with simplified consumption to our installed base and continue to add net-new customers. Unexpected portfolio growth may positively impact our revenue, profit, and cash flows, and result in their exceeding our stated outlook and medium-term prospects. Specifically, SAP C/4HANA, the SAP HANA business data platform, cloud offerings, and SAP S/4HANA could create even more demand than

is reflected in our stated outlook and medium-term prospects. New opportunities are generated by SAP Leonardo in combination with our Intelligent Enterprise strategy.

Further upside potential is possible from higher-than-expected renewal rates of our cloud solutions. For more information about future opportunities for SAP, see the *Strategy and Business Model* section as well as the *Expected Developments and Opportunities* section.

Opportunities from Our Partner Ecosystem

SAP continues to grow and develop a global partner ecosystem. To increase market coverage, we want to enhance our portfolio and spur innovation with the specified objective of increasing the partner revenue contribution to SAP's overall revenue target. In addition to strengthening our core, we leverage our entire ecosystem to drive adoption of SAP HANA, cloud solutions, SAP S/4HANA, and SAP Cloud Platform. This includes strategic partnerships across all areas: third-party software vendors, systems integrators, service providers, and infrastructure providers. In 2018, SAP announced plans to offer SAP S/4HANA Cloud and SAP Cloud Platform on the Alibaba Cloud infrastructure as a service (IaaS) in China to help customers transition to the cloud and build intelligent enterprises.

As a result of our ecosystem engagement, we are creating an ever-stronger setup in which SAP, customers, and partners co-innovate and develop new innovative solutions on and with SAP HANA. Should the business of our partners develop better than currently expected, our indirect sales (partner revenue) could grow stronger than reflected in our outlook and medium-term prospects. This may positively impact our revenue, profit, and cash flows, and result in their exceeding our stated medium-term prospects.

Opportunities from Our Employees

Our employees drive our innovation, provide the value to our customers, and consistently promote our growth and profitability. In 2018, we continued to increase the number of employees (converted in full-time equivalents) in key strategic areas to support our growth ambitions. We anticipate improvements in employee productivity as a result of our continued endeavors in design-thinking principles. As described in the *Employees and Social Investments* section, we continuously invest in our talents to sustain their high level of engagement, collaboration, social innovation, and health.

Our outlook and medium-term prospects are based on certain assumptions regarding employee turnover and our Business Health Culture Index (as defined in the *Employees and Social Investments* section). Should these develop better than expected, there might be a gain in employee productivity and engagement. A stronger-than-expected increase in the employee engagement index can therefore be seen as an opportunity which could positively impact our revenue, profit, and cash flows, and result in their exceeding our stated medium-term prospects.

For more information about future opportunities from our employees, see the *Employees and Social Investments* section.

Opportunities from Our Customer Engagement

SAP goes to market by region, customer segments, line of business, and industry. We evolve and invest in our go-to-market

coverage model to effectively sell industry-specific solutions while increasing our engagement with customers. We focus on the dynamic and fast-changing landscape each industry faces as technology evolves.

We offer unique services that support a significant return on investment, and continue to actively look at new opportunities to increase the value we deliver to our customers.

In general, our outlook and medium-term prospects are based on certain assumptions regarding the success of our go-to-market approaches. If the actual go-to-market success exceeds these assumptions, this could positively impact our revenue, profit, and cash flows, and result in their exceeding our stated medium-term prospects.

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Consolidated Financial Statements IFRS

III Consolidated Income Statements of SAP Group for the Years Ended December 31

€ millions, unless otherwise stated	Notes	2018	2017	2016
Cloud subscriptions and support		4,993	3,769	2,993
Software licenses		4,647	4,872	4,859
Software support		10,981	10,908	10,571
Software licenses and support		15,628	15,780	15,431
Cloud and software		20,622	19,549	18,424
Services		4,086	3,912	3,639
Total revenue	(A.1), (C.2)	24,708	23,461	22,062
Cost of cloud subscriptions and support		-2,068	-1,660	-1,313
Cost of software licenses and support		-2,092	-2,234	-2,182
Cost of cloud and software		-4,160	-3,893	-3,495
Cost of services		-3,302	-3,158	-3,089
Total cost of revenue		-7,462	-7,051	-6,583
Gross profit		17,246	16,410	15,479
Research and development		-3,624	-3,352	-3,044
Sales and marketing		-6,781	-6,924	-6,265
General and administration		-1,098	-1,075	-1,005
Restructuring	(B.6)	-19	-182	-28
Other operating income/expense, net		-20	1	-3
Total operating expenses		-19,005	-18,584	-16,928
Operating profit		5,703	4,877	5,135
Other non-operating income/expense, net	(C.3)	-56	-36	-234
Finance income		371	476	230
Finance costs		-418	-288	-259
Financial income, net	(C.4)	-47	188	-29
Profit before tax	(C.2)	5,600	5,029	4,872
Income tax expense	(C.5)	-1,511	-983	-1,242
Profit after tax		4,088	4,046	3,629
Attributable to owners of parent		4,083	4,008	3,642
Attributable to non-controlling interests		6	38	-13
Earnings per share, basic (in €)	(C.6)	3.42	3.35	3.04
Earnings per share, diluted (in €)	(C.6)	3.42	3.35	3.04

The accompanying Notes are an integral part of these Consolidated Financial Statements.

Consolidated Statements of Comprehensive Income of SAP Group for the Years Ended December 31

€ millions	Notes	2018	2017	2016
■ Profit after tax		4,088	4,046	3,629
Items that will not be reclassified to profit or loss				
Remeasurements on defined benefit pension plans, before tax		12	29	-10
Income taxes relating to remeasurements on defined benefit pension plans		-1	-7	2
Remeasurements on defined benefit pension plans, net of tax		11	22	-8
Other comprehensive income for items that will not be reclassified to profit or loss, net of tax		11	22	-8
Items that will be reclassified subsequently to profit or loss				
Gains (losses) on exchange differences on translation, before tax		910	-2,730	865
Reclassification adjustments on exchange differences on translation, before tax		0	0	-1
Exchange differences, before tax		910	-2,730	864
Income taxes relating to exchange differences on translation		0	-2	-25
Exchange differences, net of tax	(E.2)	910	-2,732	839
Gains (losses) on remeasuring available-for-sale financial assets, before tax		0	114	-18
Reclassification adjustments on available-for-sale financial assets, before tax		0	-250	-26
Available-for-sale financial assets, before tax	(F.2), (F.3)	0	-136	-44
Income taxes relating to available-for-sale financial assets		0	1	1
Available-for-sale financial assets, net of tax	(E.2)	0	-135	-43
Gains (losses) on cash flow hedges/cost of hedging, before tax		-10	81	-24
Reclassification adjustments on cash flow hedges/cost of hedging, before tax		-22	-41	8
Cash flow hedges/cost of hedging, before tax	(F.1), (F.3)	-32	39	-15
Income taxes relating to cash flow hedges/cost of hedging		9	-10	4
Cash flow hedges/cost of hedging, net of tax	(E.2)	-23	29	-11
Other comprehensive income for items that will be reclassified to profit or loss, net of tax		887	-2,838	785
Other comprehensive income, net of tax		898	-2,816	777
Total comprehensive income		4,986	1,229	4,406
Attributable to owners of parent		4,980	1,191	4,418
Attributable to non-controlling interests		6	38	-13

The accompanying Notes are an integral part of these Consolidated Financial Statements.

Consolidated Statements of Financial Position of SAP Group as at December 31

€ millions	Notes	2018	2017
Cash and cash equivalents	(E.3)	8,627	4,011
Other financial assets	(D.5), (E.3)	448	990
Trade and other receivables	(A.2)	6,362	5,899
Other non-financial assets	(A.3), (G.1)	889	725
Tax assets		293	306
Total current assets		16,620	11,930
Goodwill	(D.2)	23,725	21,271
Intangible assets	(D.3)	3,227	2,967
Property, plant, and equipment	(D.4)	3,553	2,967
Other financial assets	(D.5), (E.3)	1,536	1,155
Trade and other receivables	(A.2)	118	118
Other non-financial assets	(A.3), (G.1)	1,301	687
Tax assets		397	352
Deferred tax assets	(C.5)	1,015	1,037
Total non-current assets		34,871	30,554
Total assets		51,491	42,484
Trade and other payables		1,486	1,151
Tax liabilities		611	597
Financial liabilities	(E.3)	1,125	1,561
Other non-financial liabilities	(B.5), (G.2)	4,120	3,982
Provisions	(A.4), (B.4), (B.5), (B.6)	110	149
Contract liabilities/deferred income	(A.1)	3,028	2,771
Total current liabilities		10,481	10,210
Trade and other payables		129	119
Tax liabilities		495	434
Financial liabilities	(E.3)	10,553	5,034
Other non-financial liabilities	(B.5), (G.2)	501	514
Provisions	(A.4), (B.4), (B.5), (B.6)	270	328
Deferred tax liabilities	(C.5)	97	251
Contract liabilities/deferred income	(A.1)	88	79
Total non-current liabilities		12,133	6,759
Total liabilities		22,614	16,969
Issued capital		1,229	1,229
Share premium		543	570
Retained earnings		27,407	24,769
Other components of equity		1,234	508
Treasury shares		-1,580	-1,591
Equity attributable to owners of parent		28,832	25,484
Non-controlling interests		45	31
Total equity	(E.2)	28,877	25,515
Total equity and liabilities		51,491	42,484

The accompanying Notes are an integral part of these Consolidated Financial Statements.

Consolidated Statements of Changes in Equity of SAP Group for the Years Ended December 31

€ millions	Equity Attributable to Owners of Parent						Non-Controlling Interests	Total Equity
	Issued Capital	Share Premium	Retained Earnings	Other Components of Equity	Treasury Shares	Total		
Notes	(E.2)	(E.2)	(E.2)	(E.2)	(E.2)	23,257	28	23,285
1/1/2016	1,229	558	20,033	2,561	-1,124	23,257	28	23,285
■ Profit after tax			3,642			3,642	-13	3,629
Other comprehensive income			-8	785		777		777
Comprehensive income			3,634	785		4,418	-13	4,406
Share-based payments		16				16		16
Dividends			-1,378			-1,378		-1,378
Reissuance of treasury shares under share-based payments		25			25	50		50
Other changes			-2			-2	6	4
12/31/2016	1,229	599	22,287	3,346	-1,099	26,361	21	26,383
■ Profit after tax			4,008			4,008	38	4,046
Other comprehensive income			22	-2,838		-2,816		-2,816
Comprehensive income			4,029	-2,838		1,191	38	1,229
Share-based payments		-43				-43		-43
Dividends			-1,499			-1,499	-66	-1,565
Purchase of treasury shares					-500	-500		-500
Reissuance of treasury shares under share-based payments		13			8	22		22
Hyperinflation			-17			-17		-17
Changes in non-controlling interests			-33			-33	35	2
Other changes			2			2	2	4
12/31/2017	1,229	570	24,769	508	-1,591	25,484	31	25,515
Adoption of IFRS 15			83			83		83
Adoption of IFRS 9			135	-160		-25		-25
1/1/2018	1,229	570	24,987	347	-1,591	25,542	31	25,573
■ Profit after tax			4,083			4,083	6	4,088
Other comprehensive income			11	887		898		898
Comprehensive income			4,093	887		4,980	6	4,986
Share-based payments		-40				-40		-40
Dividends			-1,671			-1,671	-13	-1,684
Reissuance of treasury shares under share-based payments		13			11	24		24
Shares to be issued			7			7		7
Hyperinflation			-8			-8		-8
Changes in non-controlling interests						0	19	19
Other changes			-2			-2	3	1
12/31/2018	1,229	543	27,407	1,234	-1,580	28,832	45	28,877

The accompanying Notes are an integral part of these Consolidated Financial Statements.

Consolidated Statements of Cash Flows of SAP Group for the Years Ended December 31

€ millions	Notes	2018	2017	2016
■ Profit after tax		4,088	4,046	3,629
Adjustments to reconcile profit after tax to net cash flow from operating activities:				
Depreciation and amortization	(D.2)–(D.4)	1,362	1,272	1,268
■ Income tax expense	(C.5)	1,511	983	1,242
■ Financial income, net	(C.4)	47	-188	29
Decrease/increase in sales and bad debt allowances on trade receivables		-67	-32	51
Other adjustments for non-cash items		-14	-34	39
Decrease/increase in trade and other receivables		136	-309	-675
Decrease/increase in other assets		-454	-355	-248
Decrease/increase in trade payables, provisions, and other liabilities		93	389	513
Decrease/increase in contract liabilities/deferred income		-561	718	368
Interest paid		-251	-200	-190
Interest received		99	88	79
Income taxes paid, net of refunds		-1,687	-1,332	-1,477
Net cash flows from operating activities		4,303	5,045	4,628
Business combinations, net of cash and cash equivalents acquired		-2,036	-291	-106
Cash flows from derivative financial instruments related to business combinations		-103	0	0
Total cash flows for business combinations, net of cash and cash equivalents acquired	(D.1)	-2,140	-291	-106
Purchase of intangible assets and property, plant, and equipment		-1,458	-1,275	-1,001
Proceeds from sales of intangible assets or property, plant, and equipment		57	97	63
Purchase of equity or debt instruments of other entities		-1,013	-2,914	-1,549
Proceeds from sales of equity or debt instruments of other entities		1,488	3,272	793
Net cash flows from investing activities		-3,066	-1,112	-1,799
Dividends paid	(E.2)	-1,671	-1,499	-1,378
Dividends paid on non-controlling interests		-7	-45	0
Purchase of treasury shares	(E.2)	0	-500	0
Proceeds from reissuance of treasury shares		0	0	27
Proceeds from borrowings	(E.3)	6,368	27	443
Repayments of borrowings	(E.3)	-1,407	-1,391	-1,800
Transactions with non-controlling interests		0	2	3
Net cash flows from financing activities		3,283	-3,406	-2,705
Effect of foreign currency rates on cash and cash equivalents		97	-218	167
Net decrease/increase in cash and cash equivalents		4,617	309	291
■ Cash and cash equivalents at the beginning of the period	(E.3)	4,011	3,702	3,411
■ Cash and cash equivalents at the end of the period	(E.3)	8,627	4,011	3,702

The accompanying Notes are an integral part of these Consolidated Financial Statements.

Notes

(IN.1) Basis for Preparation

General Information

The registered seat of SAP SE is in Walldorf, Germany (Commercial Register of the Lower Court of Mannheim HRB 719915). The Consolidated Financial Statements for 2018 of SAP SE and its subsidiaries (collectively, "we," "us," "our," "SAP," "Group," and "Company") have been prepared in accordance with International Financial Reporting Standards (IFRS).

We have applied all IFRS standards and interpretations that were effective on and endorsed by the European Union (EU) as at December 31, 2018. There were no standards or interpretations as at December 31, 2018, impacting our Consolidated Financial Statements for the years ended December 31, 2018, 2017, and 2016, that were effective but not yet endorsed. Therefore, our Consolidated Financial Statements comply with both, IFRS as issued by the International Accounting Standards Board (IASB) and IFRS as endorsed by the EU.

Our Executive Board approved the Consolidated Financial Statements on February 20, 2019, for submission to our Supervisory Board.

All amounts included in the Consolidated Financial Statements are reported in millions of euros (€ millions) except where otherwise stated. As figures are rounded, numbers presented throughout this document may not add up precisely to the totals we provide and percentages may not precisely reflect the absolute figures.

Amounts disclosed in the Notes that are taken directly from our **Consolidated Income Statements** or our **Consolidated Statements of Financial Position** are marked by the symbols **¶** and **¤**, respectively.

Accounting Policies, Management Judgments and Sources of Estimation Uncertainty

How We Present Our Accounting Policies, Judgments, and Estimates

To ease the understanding of our financial statements, we present the accounting policies, management judgments, and sources of estimation uncertainty (hereafter: accounting policies, judgments, and estimates) on a given subject together with other disclosures related to the same subject in the Note that deals with this subject. Accounting policies, judgments, and estimates that do not relate to a specific subject are presented in the following section.

For easier identification of our accounting policies, judgments, and estimates, disclosures are marked with the symbol **⌚** and framed by a light gray box. They focus on the accounting choices made within the framework of the prevailing IFRS and refrain from repeating the underlying promulgated IFRS guidance, unless we consider it particularly important to the understanding of a Note's content.

The following table provides an overview of where our accounting policies, management judgments, and estimates are disclosed:

Note	⌚ Accounting Policies, Judgments, and Estimates
(IN.1)	Basis for Preparation
(A.1)	Revenue
(A.2)	Trade and Other Receivables
(A.3)	Capitalized Cost from Contracts with Customers
(A.4)	Customer-Related Provisions
(B.3)	Share-Based Payments
(B.4)	Pension Plans and Similar Obligations
(B.5)	Other Employee-Related Obligations
(B.6)	Restructuring
(C.1)	Results of Segments
(C.5)	Income Taxes
(D.1)	Business Combinations
(D.2)	Goodwill
(D.3)	Intangible Assets
(D.4)	Property, Plant, and Equipment
(D.5)	Equity Securities
(E.3)	Liquidity
(F.1)	Financial Risk Factors and Risk Management
(F.2)	Fair Value Disclosures on Financial Instruments
(G.1)	Other Non-Financial Assets
(G.4)	Other Litigation, Claims, and Legal Contingencies
(G.6)	Executive and Supervisory Board Compensation

⌚ General Accounting Policies

⌚ Bases of Measurement

The Consolidated Financial Statements have been prepared on the historical cost basis except for the following:

- Derivative financial instruments and liabilities for cash-settled share-based payments are measured at fair value. In accordance with IFRS 9, financial assets with cash flows that are not solely payments of principal or interest are also measured at fair value.
- Post-employment benefits are measured at the present value of the defined benefit obligations less the fair value of the plan assets.
- Monetary assets and liabilities denominated in foreign currencies are translated at period-end exchange rates.

⌚ Foreign Currencies and Hyperinflation

Income and expenses and operating cash flows of our foreign subsidiaries that use a functional currency other than the euro are translated at average rates of foreign exchange (FX) computed on a monthly basis. Exchange differences resulting from foreign currency transactions are recognized in other non-operating income/expense, net.

We apply hyperinflation accounting for our subsidiaries in Argentina and Venezuela by restating the financial statements of these subsidiaries for the current period to account for changes in the general purchasing power of the local currency based on relevant price indexes at the reporting date. The restated financial statements of our subsidiaries in Venezuela and Argentina are

translated at closing rates. Most significantly impacted by this accounting are the following:

- Total revenue (decrease of €19 million in 2018)
- Operating profit (decrease of €12 million in 2018)
- Other non-operating income/expense (gain of €25 million in 2018)
- Equity (retained earnings and other comprehensive income) (decrease of €32 million as at December 31, 2018)
- Total liabilities (increase of €19 million as at December 31, 2018)

The exchange rates of key currencies affecting the Company were as follows:

⌚ Exchange Rates

Equivalent to €1		Middle Rate as at 12/31		Annual Average Exchange Rate		
		2018	2017	2018	2017	2016
U.S. dollar	USD	1.1450	1.1993	1.1815	1.1315	1.1045
Pound sterling	GBP	0.8945	0.8872	0.8847	0.8770	0.8206
Japanese yen	JPY	125.85	135.01	130.41	126.85	119.77
Swiss franc	CHF	1.1269	1.1702	1.1549	1.1159	1.0886
Indian rupee	INR	79.7298	76.6055	80.7277	73.9595	73.9685
Australian dollar	AUD	1.6220	1.5346	1.5799	1.4794	1.4850

⌚ Cost of Cloud and Software

Cost of cloud and software includes the costs incurred in producing the goods and providing the services that generate cloud and software revenue. Consequently, this line item primarily includes employee expenses relating to these services, amortization of acquired intangibles, fees for third-party licenses, shipping, ramp-up costs, and depreciation of our property, plant, and equipment (for example, of our data centers in which we host our cloud solutions).

⌚ Cost of Services

Cost of services includes the costs incurred in providing the services that generate service revenue, such as consulting and training activities, messaging, as well as certain application management services for our customers and our partners.

⌚ Research and Development

Research and development includes the costs incurred by activities related to the development of software solutions (new products, updates, and enhancements) including resource and hardware costs for the development systems. For more information about the recognition of internally generated intangible assets from development, see [Note \(D.3\)](#).

⌚ Sales and Marketing

Sales and marketing includes costs incurred for the selling and marketing activities related to our software and cloud solutions and our service portfolio.

⌚ General and Administration

General and administration includes costs related to finance and administrative functions, human resources, and general management as long as they are not directly attributable to one of the other operating expense line items.

⌚ Management Judgments and Sources of Estimation Uncertainty

The preparation of the Consolidated Financial Statements requires our management to make judgments, estimates, and assumptions that affect the application of accounting policies and the reported amounts of assets, liabilities, revenues, and expenses, as well as disclosure of contingent liabilities.

We base our judgments, estimates, and assumptions on historical and forecast information, and on regional and industry economic conditions in which we or our customers operate. Changes to these conditions could adversely affect our estimates. Although we believe we have made reasonable estimates about the ultimate resolution of the underlying uncertainties, no assurance can be given that the final outcome of these matters will be consistent with what is reflected in our recognized assets, liabilities, revenues, and expenses and disclosed contingent liabilities. Actual results could differ from original estimates.

The accounting policies that most frequently or significantly require us to make judgments, estimates, and assumptions, and therefore

are critical to understanding our results of operations, include the following:

Note	⌚ Significant Accounting Policies
(A.1)	Revenue recognition
(A.2)	Valuation of trade receivables
(B.3)	Accounting for share-based payments
(C.5)	Accounting for income taxes
(D.1)	Accounting for business combinations
(D.2)	Accounting for goodwill
(D.3)	Accounting for intangible assets (including recognition of internally generated intangible assets from development)
(G.4)	Accounting for legal contingencies

Our management periodically discusses these significant accounting policies with the Audit Committee of our Supervisory Board.

⌚ New Accounting Standards Not Yet Adopted

The standards and interpretations (relevant to the Group) that are issued, but not yet effective, up to the date of issuance of the Group's financial statements are discussed below. We intend to adopt these standards when they become effective:

On January 13, 2016, the IASB issued IFRS 16 'Leases.' This new standard is effective for us starting January 1, 2019. We have decided to apply the modified retrospective approach, which requires that the cumulative effect of initially applying the standard be recognized as an adjustment to the opening balance of retained earnings on the date of initial application. The new standard significantly impacts the lease accounting by lessees as, in general, all leases need to be recognized on the lessee's balance sheet. A lessee recognizes a right-of-use asset representing its right to use the underlying asset and a lease liability representing its obligation to make lease payments. The nature of expenses related to those leases will now change because we will recognize a depreciation expense for right-of-use assets and interest expense on lease liabilities. These changes apply to leases that had previously been classified as operating leases under IAS 17. We have decided to use practical expedients offered by the standard (such as non-

capitalization of short-term leases and low-value leases, and the use of hindsight when determining the lease term if the contract contains options to extend or terminate the lease). When measuring the right-of-use asset, there are two options in transition. We plan to apply the retrospective approach for our larger leases (primarily facility leases), while smaller leases will be measured at an amount equal to the lease liability and adjusted by the amount of any prepaid or accrued lease payments existing immediately prior to the date of initial application.

Prior to the adoption of IFRS 16, we established a project across SAP's finance and business functions. This project included the implementation of a new SAP-based lease accounting and reporting solution, and the development of IFRS 16 lease accounting policies and business processes to support those policies. In addition to this, we have provided training for the relevant stakeholders within the organization.

The vast majority of the impact comes from our leased facilities, data centers, and cars. These operating leases were previously off-balance-sheet items (lease payments were expensed directly to rent expense over the lease term) under IAS 17. We estimate the total assets and total liabilities will amount to approximately €1.9 billion and €2.0 billion, respectively, as at January 1, 2019 (the date of initially applying IFRS 16). The difference between these two amounts (less than €0.1 billion) is recorded as an adjustment to retained earnings as of the date of initial application. This difference is primarily due to interest accruing retrospectively at a higher rate in earlier years and decreasing over the lease term, while depreciation is recorded on a straight-line basis. The adoption of IFRS 16 is expected to have a favorable impact on operating profit in 2019, since a portion of the costs that were previously classified as rental expenses are classified as interest expense and thus recorded outside operating profit. Based on the Group's leases as of January 1, 2019, operating profit is expected to increase by substantially less than €0.1 billion. The actual impact on our profits depends not only on the lease agreements in effect at the time of adoption but also on new lease agreements entered into or terminated in 2019. IFRS 16 has also an impact on how lease payments are presented in the cash flow statement. This will result in an increase in cash flows from operating activities and a decline in cash flows from financing activities. Cash flows from operating activities is expected to increase by approximately €0.3 billion to €0.4 billion.

Section A – Customers

This section discusses disclosures related to contracts with our customers. These include but are not limited to explanations of how we recognize revenue, revenue breakdowns, and information about our trade receivables and customer-related obligations.

Furthermore, in this section we disclose the most significant differences to prior-year figures resulting from the application of IFRS 15 'Revenue from Contracts with Customers' (see *Note (A.5)*).

(A.1) Revenue

Classes of Revenue

We derive our revenue from fees charged to our customers for the use of our hosted cloud offerings, for licenses to our on-premise software products, and for standardized and premium support services, consulting, customer-specific software developments, training, and other services.

Cloud and software revenue, as presented in our Consolidated Income Statements, is the sum of our cloud subscriptions and support revenue, our software license revenue, and our software support revenue.

- Revenue from cloud subscriptions and support represents fees earned from providing customers with any of the following:
 - Software as a Service (SaaS), that is, a right to use software functionality (including standard functionalities and custom cloud applications and extensions) in a cloud-based infrastructure hosted by SAP or third parties engaged by SAP, where the customer does not have the right to terminate the hosting contract and take possession of the software to either run it on its own IT infrastructure or to engage a third-party provider unrelated to SAP to host and manage the software; SaaS also includes transaction and agent fees for transactions that customers of our network business execute on our cloud-based transaction platforms.
 - Platform as a Service (PaaS), that is, access to a cloud-based infrastructure to develop, run, and manage applications
 - Infrastructure as a Service (IaaS), that is, hosting and related application management services for software hosted by SAP or third parties engaged by SAP, where the customer has the right to take possession of the software
 - Premium cloud subscription support beyond the regular support that is embedded in the basic cloud subscription fees
- Software license revenue represents fees earned from the sale or license of software to customers for use on the customer's premises, in other words, where the customer has the right to take possession of the software for installation on the customer's premises or on hardware of third-party hosting providers unrelated to SAP (on-premise software). Software license revenue includes revenue from both the sale of our standard software products and customer-specific on-premise-software development agreements.

- Software support revenue represents fees earned from providing customers with standardized support services that comprise unspecified future software updates, upgrades, and enhancements as well as technical product support services for on-premise software products.

Services revenue primarily represents fees earned from professional consulting services, premium support services, training services, and messaging services.

⌚ Accounting Policies, Judgments, and Estimates

Identification of Contract

We frequently enter into multiple contracts with the same customer that we treat, for accounting purposes, as one contract if the contracts are entered into at or near the same time and are economically interrelated. We do not combine contracts with closing days more than three months apart because we do not consider them being entered into near the same time. Judgment is required in evaluating whether various contracts are interrelated, which includes considerations as to whether they were negotiated as a package with a single commercial objective, whether the amount of consideration on one contract is dependent on the performance of the other contract, or if some or all goods in the contracts are a single performance obligation.

New arrangements with existing customers can be either a new contract or the modification of prior contracts with the customer. Our respective judgment in making this determination considers whether there is a connection between the new arrangement and the pre-existing contracts, whether the goods and services under the new arrangement are highly interrelated with the goods and services sold under prior contracts, and how the goods and services under the new arrangement are priced. In determining whether a change in transaction price represents a contract modification or a change in variable consideration, we examine whether the change in price results from changing the contract or from applying unchanged existing contract provisions.

Identification of Performance Obligations

Our customer contracts often include various products and services. Typically, the products and services outlined in the *Classes of Revenue* section qualify as separate performance obligations and the portion of the contractual fee allocated to them is recognized separately. Judgment is required, however, in determining whether a good or service is considered a separate performance obligation. In particular for our professional services and implementation activities, judgment is required to evaluate whether such services significantly integrate, customize, or modify the on-premise software or cloud service to which they relate. In this context, we consider the nature of the services and their volume relative to the volume of the on-premise software or cloud service to which they relate. In general, the implementation services for our cloud services go beyond pure setup activities and qualify as separate

performance obligations. Similarly, our on-premise implementation services and our custom development services typically qualify as separate performance obligations. Non-distinct goods and services are combined into one distinct bundle of goods and services (combined performance obligation).

When selling goods or services, we frequently grant customers options to acquire additional goods or services (for example, renewals of renewable offerings, or additional volumes of purchased software). We apply judgment in determining whether such options provide a material right to the customer that the customer would not receive without entering into that contract (material right options). In this judgment, we consider whether the options entitle the customer to a discount that exceeds the discount granted for the respective goods or services sold together with the option.

Determination of Transaction Price

We apply judgment in determining the amount to which we expect to be entitled in exchange for transferring promised goods or services to a customer. This includes estimates as to whether and to what extent subsequent concessions or payments may be granted to customers and whether the customer is expected to pay the contractual fees. In this judgment, we consider our history both with the respective customer and more broadly.

Our typical cloud services do not provide the customer with a software license because the customer does not have the right to terminate the hosting contract and take possession of the software. Consequently, cloud fees that are based on transaction volumes are considered in the transaction price based on estimates rather than being accounted for as sales-based license royalties.

Only very rarely do our contracts include significant financing components. We do not account for financing components if the period between when SAP transfers the promised goods or services to the customer and when the customer pays for those goods or services is one year or less.

Allocation of Transaction Price

We have established a hierarchy to identify the standalone selling prices (SSPs) that we use to allocate the transaction price of a customer contract to the performance obligations in the contract.

- Where standalone selling prices for an offering are observable and reasonably consistent across customers (that is, not highly variable), our SSP estimates are derived from our respective pricing history. Typically, our standardized support offerings and our professional service offerings follow this approach.
- Where sales prices for an offering are not directly observable or highly variable across customers, we use estimation techniques. For renewable offerings with highly variable pricing, these techniques consider the individual contract's expected renewal price as far as this price is substantive. Typically, our cloud subscription offerings follow this approach. For non-renewable offerings, these estimations follow a cost-plus-margin approach.
- For offerings that lack renewals, have highly variable pricing, and lack substantial direct costs to estimate based on a cost-plus-margin approach, we allocate the transaction price by applying a residual approach. We use this technique in particular for our standard on-premise software offerings.

Judgment is required when estimating SSPs. To judge whether the historical pricing of our goods and services is highly variable, we have established thresholds of pricing variability. For judging whether contractual renewal prices are substantive, we have established floor prices that we use as SSPs whenever the contractual renewal prices are below these floor prices. In judging whether contracts are expected to renew at their contractual renewal prices, we rely on our respective renewal history. The SSPs of material right options depend on the probability of option exercise. In estimating these probabilities, we apply judgment considering historical exercise patterns.

We review the stand-alone selling prices periodically or whenever facts and circumstances change to ensure the most objective input parameters available are used.

Recognition of Revenue

Cloud subscription and support revenue is recognized over time as the services are performed. Where our performance obligation is the grant of a right to continuously access and use a cloud offering for a certain term, revenue is recognized based on time elapsed and thus ratably over this term.

Software revenue is recognized at a point in time or over time depending on whether we deliver standard software or customer-specific software:

- Licenses for our standard on-premise software products are typically delivered by providing the customer with access to download the software. The license period starts when such access is granted. We recognize revenue for these on-premise licenses at the point in time when the customer has access to and thus control over the software. In judging whether our on-premise software offerings grant customers a right to use, rather than a right to access, our intellectual property, we have considered the usefulness of our software without subsequent updates to it.
- Typically, our customer-specific on-premise-software development agreements:
 - Are for software developed for specific needs of individual customers and therefore it does not have any alternative use for us
 - Provide us with an enforceable right to payment for performance completed to date

For such development agreements, we recognize revenue over time as the software development progresses. Judgment is required in identifying an appropriate method to measure the progress toward complete satisfaction of such performance obligations. We typically measure progress of our development agreements based on the direct costs incurred to date in developing the software as a percentage of the total reasonably estimated direct costs to fully complete the development work (percentage-of-completion method). This method of measuring progress faithfully depicts the transfer of the development services to the customer, as substantially all of these costs are cost of the staff or third parties performing the development work. In estimating the total cost to fully complete the development work, we consider our history with similar projects.

Support revenue is typically recognized based on time elapsed and thus ratably over the term of the support arrangement. Under our standardized support services, our performance obligation is to stand ready to provide technical product support and unspecified updates, upgrades, and enhancements on a when-and-if-available basis. Our customers simultaneously receive and consume the benefits of these support services as we perform.

Service revenue is typically recognized over time. Where we stand ready to provide the service (such as access to learning content), we recognize revenue based on time elapsed and thus ratably over the service period. Consumption-based services (such as separately identifiable consulting services and premium support services, messaging services, and classroom training services) are recognized over time as the services are utilized, typically following the percentage-of-completion method or ratably. When using the percentage-of-completion method, we typically measure the progress toward complete satisfaction of the performance obligation in the same way and with the same reasoning and judgment as we do for customer-specific on-premise software development agreements. We apply judgment in determining whether a service qualifies as a stand-ready service or as a consumption-based service.

Revenue for combined performance obligations is recognized over the longest period of all promises in the combined performance obligation.

Judgment is also required to determine whether revenue is to be recognized at a point in time or over time. For performance obligations satisfied over time, we need to measure progress using the method that best reflects SAP's performance. When using cost incurred as a measure of progress for recognizing revenue over time, we apply judgment in estimating the total cost to satisfy the performance obligation.

All of the judgments and estimates mentioned above can significantly impact the timing and amount of revenue to be recognized.

Contract Balances

We recognize trade receivables for performance obligations satisfied over time gradually as the performance obligation is satisfied and in full once the invoice is due. Judgment is required in determining whether a right to consideration is unconditional and thus qualifies as a receivable.

Contract liabilities primarily reflect invoices due or payments received in advance of revenue recognition.

Typically, we invoice fees for on-premise standard software on contract closure and software delivery. Periodic fixed fees for cloud subscription services, software support services, and other multi-period agreements are typically invoiced yearly or quarterly in advance. Such fee prepayments account for the majority of our contract liability balance. Fees based on actual transaction volumes for cloud subscriptions and fees charged for non-periodical services are invoiced as the services are delivered. While payment terms and conditions vary by contract type and region, our terms typically require payment within 30 to 60 days.

Geographic Information

The amounts for revenue by region in the following tables are based on the location of customers. The regions in the following table are EMEA (Europe, Middle East, and Africa), Americas (North America and Latin America), and APJ (Asia Pacific Japan).

Total Revenue by Region

€ millions	2018	2017	2016
Germany	3,658	3,352	3,034
Rest of EMEA	7,446	7,063	6,721
EMEA	11,104	10,415	9,755
United States	7,880	7,436	7,167
Rest of Americas	1,832	1,911	1,763
Americas	9,713	9,347	8,931
Japan	963	885	825
Rest of APJ	2,928	2,814	2,552
APJ	3,891	3,699	3,377
SAP Group	24,708	23,461	22,062

Major Revenue Classes by Region

€ millions	Cloud Subscriptions and Support Revenue			Cloud and Software Revenue		
	2018	2017	2016	2018	2017	2016
EMEA	1,441	1,029	703	9,339	8,759	8,192
Americas	2,941	2,321	2,000	7,973	7,666	7,366
APJ	611	419	290	3,310	3,124	2,865
SAP Group	4,993	3,769	2,993	20,622	19,549	18,424

For information about the breakdown of revenue by segment and segment revenue by region, see [Note \(C.1\)](#).

Remaining Performance Obligations

Amounts of a customer contract's transaction price that are allocated to the remaining performance obligations represent contracted revenue that has not yet been recognized. They include amounts recognized as contract liabilities and amounts that are contracted but not yet due.

The transaction price allocated to performance obligations that are unsatisfied or partially unsatisfied as at December 31, 2018, is €31.3 billion. This amount mostly comprises obligations to provide software support or cloud subscriptions and support, as the respective contracts typically have durations of one or multiple years.

The majority of this amount is expected to be recognized as revenue over the next 12 months following the respective balance sheet date. This estimation is judgmental, as it needs to consider estimates of possible future contract modifications. The amount of transaction price allocated to the remaining performance obligations, and changes in this amount over time, are impacted by, among others:

- Currency fluctuations
- The contract period of our cloud and support contracts remaining at the balance sheet date and thus by the timing of contract renewals

Performance Obligations Satisfied in Previous Years

Revenue recognized in the reporting period for performance obligations satisfied in earlier periods was €132 million, mainly resulting from changes in estimates related to percentage-of-completion-based contracts and changes in estimates of variable considerations.

Contract Balances

Contract liabilities as at December 31, 2018, were €3.1 billion (January 1, 2018: €3.5 billion).

Increases in contract liabilities mainly result from billing and invoices becoming due (€7.0 billion). Decreases in contract liabilities mainly result from satisfying performance obligations (€7.5 billion). The Callidus acquisition contributed to the increase in the contract liabilities balance (for more information, see [Note \(D.1\)](#)).

The amount of revenue recognized in the reporting period that was included in the contract liability balance as at January 1, 2018, was €3.2 billion.

(A.2) Trade and Other Receivables

Accounting Policies, Management Judgments, and Sources of Estimation Uncertainty

We measure trade receivables and contract assets from contracts with customers at amortized cost less expected credit losses. We

account for expected credit losses by recording an allowance on a portfolio basis. We apply the simplified impairment approach in that, on initial measurement of the receivables, we consider all credit losses that are expected to occur during the lifetime of the receivables. We use a provision matrix to estimate these losses.

Additionally, we recognize allowances for individual receivables if there is objective evidence of credit impairment.

Account balances are written off either partially or in full if we judge that the likelihood of recovery is remote.

For information about how the default risk for trade receivables is analyzed and managed, how the loss rates for the provision matrix are determined, how credit impairment is determined and what our criteria for write offs are, see the section on credit risk in [Note \(F.1\)](#).

In our Consolidated Income Statements, net gains/losses include income/expenses from expected credit loss allowances from applying the provision matrix, from credit-impaired customer balances, and from write offs and related reversals which are included in other operating income/expense, net. Gains/losses from foreign currency exchange rate fluctuations are included in Other non-operating income/expense, net.

Determining our expected credit loss allowance involves significant judgment. In this judgment, we primarily consider our historical experience with credit losses in the respective provision matrix risk class and current data on overdue receivables. We expect that our historical default rates represent a reasonable approximation for future expected customer defaults. Besides historical data, our judgment used in developing the provision matrix considers reasonable and supportable forward-looking information (for example, changes in country risk ratings, and fluctuations in credit default swaps of the countries in which our customers are located).

The assessment of whether a receivable is collectible involves the use of judgment and requires us to make assumptions about customer defaults that could change significantly.

In applying this judgment, we evaluate available information about a particular customer's financial situation to determine whether it is probable that a credit loss had occurred and, if so, whether the amount of the loss is reasonably estimable. If it is, an allowance for that specific account is then necessary. Basing the expected credit loss allowance for the remaining receivables primarily on our historical loss experience likewise requires judgment, as history may not be indicative of future development. Also, including reasonable and supportable forward-looking information in the loss rates of the expected credit loss allowance requires judgment, as they may not provide a reliable prognosis for future development. Changes in our estimates about the loss allowance could materially impact reported assets and expenses, and our profit could be adversely affected if actual credit losses exceed our estimates.

Trade and Other Receivables

€ millions	2018			2017		
	Current	Non-Current	Total	Current	Non-Current	Total
Trade receivables, net	6,182	6	6,188	5,809	1	5,810
Other receivables	180	112	293	90	116	207
▪ Total	6,362	118	6,480	5,899	118	6,017

Contract assets as at December 31, 2018, were €116 million (January 1, 2018: €14 million).

For more information about financial risk, how we manage credit risk, and details of our trade receivables and contract assets allowances, see [Note \(F.1\)](#). For information about the transition to IFRS 9, see [Note \(F.3\)](#).

(A.3) Capitalized Cost from Contracts with Customers

Accounting Policies, Judgments, and Estimates

Incremental Costs of Obtaining Customer Contracts

Capitalized costs from customer contracts are classified as non-financial assets in our statement of financial position.

The capitalized assets for the incremental costs of obtaining a customer contract primarily consist of sales commissions earned by our sales force. Judgment is required in determining the amounts to be capitalized, particularly where the commissions are based on cumulative targets and where commissions relate to multiple performance obligations in one customer contract. We capitalize such cumulative target commissions for all customer contracts that count towards the cumulative target but only if nothing other than obtaining customer contracts can contribute to achieving the cumulative target. Commissions for contracts with multiple performance obligations or probable renewals thereof are allocated to these performance obligations and probable renewals relative to the standalone selling price.

Typically, we either do not pay sales commissions for customer contract renewals or such commissions are not commensurate with the commissions paid for new contracts. Thus, the commissions paid for renewable new contracts also relate to expected renewals of these contracts. Consequently, we amortize sales commissions paid for new customer contracts on a straight-line basis over the expected contract life including probable contract renewals.

Judgment is required in estimating these contract lives. In exercising this judgment, we consider our respective renewal history adjusted for indications that the renewal history is not fully indicative of future renewals. The amortization periods range from 18 months to eight years depending on the type of offering. Amortization of the capitalized costs of obtaining customer contracts is classified as sales and marketing expense.

We expense incremental costs of obtaining a customer contract as incurred if we expect an amortization period of one year or less.

Costs to Fulfill Customer Contracts

Capitalized costs incurred to fulfill customer contracts mainly consist of direct costs for custom cloud development contracts as far as these costs are not in scope of other standards than IFRS 15. These costs are amortized after completion of the development on a straight-line basis over the expected life of the cloud subscription contract and including expected renewals. Judgment is required in evaluating whether costs are direct or indirect and in estimating contract lives. Derived from our respective history, the amortization period is typically six years.

Amortization of capitalized costs to fulfill contracts for custom cloud applications and extensions is included in the cost of cloud subscriptions and support.

Capitalized Cost from Contracts with Customers

€ millions	2018		
	Current	Non- Current	Total
Capitalized cost of obtaining customer contracts	326	1,006	1,332
Capitalized cost to fulfill customer contracts	35	66	101
Capitalized contract cost	361	1,072	1,433
¶ Other non-financial assets	889	1,301	2,191
Capitalized contract cost as % of ¶ other non-financial assets	41	82	65

As at December 31, 2017, before application of IFRS 15, capitalized contract costs were €696 million, of which €199 million were current and €497 million were non-current.

Amortization expenses in 2018 for the costs of obtaining customer contracts and for the costs of fulfilling customer contracts were €231 million and €50 million respectively.

(A.4) Customer-Related Provisions

Accounting Policies, Judgments, and Estimates

Customer-related provisions mainly include expected contract losses. We adjust these provisions as further information becomes available and as circumstances change. Non-current provisions are measured at the present value of their expected settlement amounts as at the reporting date.

Furthermore, these provisions also include obligations resulting from customer-related litigation and claims. We are currently confronted with various claims and legal proceedings, including claims that relate to customers demanding indemnification for proceedings initiated against them based on their use of SAP software, and occasionally claims that relate to customers being dissatisfied with the products and services that we have delivered to them. The obligations arising from customer-related litigation and claims comprise cases in which we indemnify our customers against liabilities arising from a claim that our products infringe a third party's patent, copyright, trade secret, or other proprietary rights.

Due to uncertainties relating to these matters, provisions are based on the best information available. Significant judgment is required in the determination of whether a provision is to be recorded and what the appropriate amount for such provision should be. Notably, judgment is required in the following:

- Determining whether an obligation exists
- Determining the probability of outflow of economic benefits
- Determining whether the amount of an obligation is reliably estimable

- Estimating the amount of the expenditure required to settle the present obligation

At the end of each reporting period, we reassess the potential obligations related to our pending claims and litigation and adjust our respective provisions to reflect the current best estimate. In addition, we monitor and evaluate new information that we receive after the end of the respective reporting period but before the Consolidated Financial Statements are authorized for issue to determine whether this provides additional information regarding conditions that existed at the end of the reporting period. Changes to the estimates and assumptions underlying our accounting for legal contingencies, and outcomes that differ from these estimates and assumptions, could require material adjustments to the carrying amounts of the respective provisions recorded and additional provisions. The expected timing or amounts of any outflows of economic benefits resulting from these lawsuits and claims is uncertain and not estimable, as they generally depend on the duration of the legal proceedings and settlement negotiations required to resolve the litigation and claims and the unpredictability of the outcomes of legal disputes in several jurisdictions.

Contingent liabilities exist in respect of customer-related litigation and claims for which no provision has been recognized. It is not practicable to estimate the financial impact of these contingent liabilities due to the uncertainties around these lawsuits and claims as outlined above.

(A.5) Adoption of IFRS 15

Effective January 1, 2018, we started to apply IFRS 15 'Revenue from Contracts with Customers' retrospectively, using the cumulative catch-up approach and the practical expedient to apply the new standard only to contracts that were not completed as of January 1, 2018. This practical expedient affected both the transition adjustment amount recognized in retained earnings and our revenues and expenses.

On adopting IFRS 15, SAP changed several of its accounting policies. Under the cumulative catch-up approach, prior years (including the prior-period numbers presented in the primary

financial statements) are not restated to conform to the new policies.

The impacts of the policy change in 2018 were as follows:

- Software license and support revenues experienced a benefit of €170 million, with most of the difference resulting from:
 - Exercise of customer software purchase options granted in prior years, which result in software revenue
 - Revised recognition patterns for on-premise software subscription contracts, which combine the delivery of software and support service and the obligation to deliver, in the future, unspecified software products
 - Revised recognition patterns for contracts that combine customer-specific on-premise software development agreements and the sale of standard on-premise software
- Together with other offsetting effects, this resulted in a benefit of €158 million on total revenue.
- Operating expenses benefitted, in cost of sales and marketing, in the amount of €239 million from higher capitalization of sales commissions net of higher amortization of amounts capitalized.
- The abovementioned revenue and expense effects, together with other insignificant effects, resulted in a net positive impact on operating profit of approximately €399 million.

As at December 31, 2018, balance sheet items are affected by the application of IFRS 15 as compared to our pre-IFRS 15 accounting policies as follows:

- Non-current and current other non-financial assets were higher by €336 million and €64 million respectively (January 1, 2018: higher by €132 million and €26 million respectively) due to the higher capitalization of sales commissions.
- Trade and other receivables and contract liabilities were lower by €132 million and €188 million respectively (January 1, 2018: higher by €560 million and €650 million respectively), resulting from changes in the timing of and amounts recognized as contract balances.
- Provisions were lower by €4 million (January 1, 2018: lower by €25 million), reflecting lower provisions for onerous customer contracts.
- Intangible assets were higher by €37 million (January 1, 2018: higher by €14 million), due to the capitalization of costs for certain custom on-premise software development arrangements.

Section B – Employees

This section provides financial insights into our employee benefit arrangements. It should be read in conjunction with the compensation disclosures for key management personnel in *Note (G.6)* as well as SAP's *Compensation Report*.

(B.1) Employee Headcount

The following table provides an overview of employee headcount, broken down by function and by the regions EMEA (Europe, Middle East, and Africa), Americas (North America and Latin America), and APJ (Asia Pacific Japan).

Employee Headcount by Region and Function

Full-time equivalents	12/31/2018				12/31/2017				12/31/2016			
	EMEA	Americas	APJ	Total	EMEA	Americas	APJ	Total	EMEA	Americas	APJ	Total
Cloud and software	6,341	4,268	5,374	15,983	5,869	3,895	4,719	14,482	6,406	4,184	5,412	16,002
Services	8,120	5,736	5,620	19,476	7,536	4,878	4,965	17,379	6,535	4,119	3,967	14,621
Research and development	12,478	5,651	8,930	27,060	11,349	5,250	8,273	24,872	10,525	4,860	7,977	23,363
Sales and marketing	9,843	9,452	4,918	24,213	9,196	9,169	4,854	23,219	8,542	8,999	4,435	21,977
General and administration	2,906	1,970	1,147	6,024	2,676	1,781	1,047	5,504	2,629	1,746	1,018	5,393
Infrastructure	2,160	951	631	3,742	1,732	855	501	3,087	1,584	788	454	2,827
SAP Group (12/31)	41,848	28,029	26,620	96,498	38,357	25,827	24,359	88,543	36,222	24,696	23,265	84,183
Thereof acquisitions	657	952	434	2,043	149	133	7	289	37	172	0	209
SAP Group (months' end average)	40,496	27,454	25,759	93,709	37,512	25,459	24,029	86,999	34,932	23,532	22,145	80,609

(B.2) Employee Benefits Expenses

Components of Employee Benefits Expenses

€ millions	2018	2017	2016
Salaries	9,025	8,693	7,969
Social security expense	1,339	1,281	1,135
Share-based payment expense	830	1,120	785
Pension expense	330	312	270
Employee-related restructuring expense	19	180	33
Termination benefits outside of restructuring plans	52	57	37
Employee benefits expense	11,595	11,643	10,229

recognized as employee benefits and classified in our Consolidated Income Statements according to the activities that the employees perform.

Most of these awards are described in detail below. SAP has other share-based payment plans not described below, which are, individually and in aggregate, immaterial to our Consolidated Financial Statements.

Where we economically hedge our exposure to cash-settled awards, changes in the fair value of the respective hedging instruments are also recognized as employee benefits expenses in profit or loss. The fair values of hedging instruments are based on market data reflecting current market expectations.

We use certain assumptions in estimating the fair values for our share-based payments, including expected share price volatility and expected award life (which represents our estimate of the average remaining life until the awards are exercised or expire unexercised). In addition, the final payout for plans also depends on the achievement of performance indicators and on our share price on the respective exercise dates. Changes to these assumptions and outcomes that differ from these assumptions could require material adjustments to the carrying amount of the liabilities we have recognized for these share-based payments. The fair value of the share units granted under the LTI 2016 Plan are dependent on our

(B.3) Share-Based Payments

⌚ Accounting Policy, Management Judgment, and Sources of Estimation Uncertainty

Share-based payments cover cash-settled and equity-settled awards issued to our employees. The respective expenses are

performance against a group of peer companies (Peer Group Index), the volatility, and the expected correlation between the price of the index and our share price.

We believe that the expected volatility is the most sensitive assumption we use in estimating the fair values of our share options. Regarding future payout under our cash-settled plans, the SAP share price is the most relevant factor. With respect to our LTI 2016 Plan, we believe that future payout will be significantly impacted not only by our share price but also by the relative performance against the Peer Group Index. Changes in these factors could significantly affect the estimated fair values as calculated by the valuation model, and the future payout.

Under certain programs, we grant our employees discounts on purchases of SAP shares. Since those discounts are not dependent on future services to be provided by our employees, the discount is recognized as an expense when the discounts are granted.

The operating expense line items in our income statement include the following share-based payment expenses:

Share-Based Payment Expenses by Function

€ millions	2018	2017	2016
Cost of cloud and software	78	115	89
Cost of services	142	158	101
Research and development	210	269	190
Sales and marketing	312	442	292
General and administration	88	135	113
Share-based payments	830	1,120	785
Thereof cash-settled share-based payments	674	963	678
Thereof equity-settled share-based payments	156	157	107

a) Cash-Settled Share-Based Payments

Long-Term Incentive 2016 Plan (LTI 2016 Plan)

The purpose of the LTI 2016 Plan is to reward our Executive Board Members for the annual achievement of SAP's operating profit (non-IFRS, at constant currency) targets, to ensure long-term retention of our Executive Board members, and to reward them for the long-term SAP share price performance as compared to its main peer group (Peer Group).

The virtual share program came into effect on January 1, 2016. A LTI tranche is granted annually and has a term of four years (2016–2018 tranches). Each grant starts with determining a grant amount in euros. The grant amount is based on the Executive Board members' contractual LTI target amount and the operating profit target achievement for the previous year. The Supervisory Board sets the grant amount at a level between 80% and 120% of the contractual LTI target amount, taking into account the operating profit target achievement. This grant amount is converted into virtual shares, referred to as share units, by dividing the grant amount by the grant price. The grant price is the arithmetic mean of the XETRA closing prices of the SAP share on the 20 trading days following the publication of SAP's fourth-quarter results.

All share units granted in this way, comprising 60% Performance Share Units (PSUs) and 40% Retention Share Units (RSUs), have a vesting period of approximately four years. At the end of the vesting period, the corresponding share units are non-forfeitable. The payout price used for the settlement is the arithmetic mean of the XETRA closing prices of the SAP share on the 20 trading days following the publication of SAP's fourth-quarter results subsequent to the end of the vesting period. The payout price is capped at 300% of the grant price. The LTI tranche is cash-settled and paid in euros after the Annual General Shareholders' Meeting of the corresponding year.

The number of PSUs ultimately paid out depends on the performance of the SAP share – absolute and relative to the Peer Group Index. In contrast, the final number of RSUs is fixed. SAP's absolute share price performance is measured by comparing the grant price against the payout price. If the SAP share price performance equals the Peer Group Index performance over the same period, the performance factor is set at 100%. If the SAP share price performs better than the Peer Group Index (measured as difference between SAP share price performance and Peer Group Index performance), the performance factor is increased by the percentage point of the outperformance of the SAP share price. The percentage point is doubled if, additionally, the payout price is higher than the grant price. The performance factor is capped at 150%. If the Peer Group Index performs better than the SAP share price, the performance factor is decreased by the percentage point of the outperformance of the Peer Group Index. All PSUs lapse if the performance factor is below 50%.

If an Executive Board member's service contract is terminated before the end of the third year following the year in which the share units were granted, both the RSUs and PSUs are forfeited in whole or in part, depending on the circumstances of the relevant resignation from office or termination of the service contract.

Long-Term Incentive 2015 Plan (LTI 2015 Plan)

Under the LTI 2015 Plan, we granted members of our former Global Managing Board virtual shares, referred to as share units, between 2012 and 2015 (2012–2015 tranches).

Each share unit vested at the end of the year in which it was granted. The share units are subject to a three-year holding period before payout. The payout depends on the number of vested share units and the SAP share price, which is set directly after the publication of SAP's fourth-quarter results for the last financial year of the respective three-year holding period.

SAP Stock Option Plan 2010 (SOP 2010)

Under the SOP 2010, we granted virtual stock options to members of the Senior Leadership Team, Global Executives, employees with an exceptional rating, and high potentials between 2010 and 2015, and only in 2010 and 2011 to members of the Executive Board.

The grant base value was based on the average closing price of the SAP share over the five trading days prior to the Executive Board resolution date.

The options granted under the SOP 2010 give the employees the right to receive a certain amount of cash by exercising the options. After a three-year vesting period (four years for members of the Executive Board), the plan provides for 11 predetermined exercise dates every calendar year (one date per month except for April) until the rights lapse six years after the grant date (seven years for

members of the Executive Board). Employees can exercise their options only if they are employed by SAP; if they leave the Company, the options forfeit. Executive Board members' options are non-forfeitable once granted – if the service agreement ends in the grant year, the number of options is reduced pro rata temporis. Any options not exercised up to the end of their term expire.

The exercise price is 110% of the grant base value, which is €59.85 for the 2013 tranche, €60.96 for the 2014 tranche, and €72.18 for the 2015 tranche. The weighted average exercise price of exercised options in 2018 was €67.59 (2017: €68.16) and of outstanding options at year end 2018 was €67.62 (2017: €67.55).

Monetary benefits will be capped at 100% of the exercise.

Restricted Stock Unit Plan Including Move SAP Plan (RSU Plan)

To retain and motivate executives and certain employees, we grant since 2014 virtual shares representing a contingent right to

receive a cash payment determined by the SAP share price and the number of share units that ultimately vest.

Granted share units will vest in different tranches, either:

- Over a one-to-three-year service period only, or
- Over a three-year service period and upon achieving certain key performance indicators (KPIs)

The number of performance-based share units (PSUs) that will vest under the different tranches were contingent upon achievement of the operating profit (non-IFRS, at constant currency) KPI target in the year of grant. Depending on performance, the number of PSUs vesting ranges between 0% and 200% of the number initially granted. Performance against the KPI target was 106.7% (2017: 78.2%; 2016: 85.1%). All share units are paid out in cash upon vesting.

The valuation of our outstanding cash-settled plans was based on the following parameters and assumptions:

Fair Value and Parameters Used at Year End 2018 for Cash-Settled Plans

€, unless otherwise stated	LTI 2016 Plan (2016–2018 Tranches)	LTI 2015 Plan (2014–2015 Tranches)	SOP 2010 (2013–2015 Tranches)	RSU Plan (2015–2018 Tranches)
Weighted average fair value as at 12/31/2018	65.89	86.93	20.67	85.24
Information how fair value was measured at measurement date				
Option pricing model used	Monte Carlo	Other ¹⁾	Monte Carlo	Other ¹⁾
Share price	86.93	86.93	86.93	86.93
Risk-free interest rate, depending on maturity (in %)	-0.70 to -0.55	NA	-0.67 to -0.25	-0.69 to -0.31
Expected volatility (in %)	17.9 to 21.4	NA	22.8 to 38.5	NA
Expected dividend yield (in %)	1.63	NA	1.63	1.63
Weighted average remaining life of awards outstanding as at 12/31/2018 (in years)	2.4	0.1	1.2	1.0

¹⁾ For these awards, the fair value is calculated by subtracting the net present value of expected future dividend payments, if any, until maturity of the respective award from the prevailing share price as of the valuation date.

Fair Value and Parameters Used at Year End 2017 for Cash-Settled Plans

€, unless otherwise stated	LTI 2016 Plan (2016–2017 Tranches)	LTI 2015 Plan (2013–2015 Tranches)	SOP 2010 (2011–2015 Tranches)	RSU Plan (2014–2017 Tranches)
Weighted average fair value as at 12/31/2017	84.16	92.40	26.45	92.08
Information how fair value was measured at measurement date				
Option pricing model used	Monte Carlo	Other ¹⁾	Monte Carlo	Other ¹⁾
Share price	93.45	93.45	93.45	93.45
Risk-free interest rate, depending on maturity (in %)	-0.63 to -0.48	-0.81	-0.62 to -0.41	-0.70 to -0.32
Expected volatility (in %)	17.5 to 19.6	NA	21.1 to 34.5	NA
Expected dividend yield (in %)	1.38	1.38	1.38	1.38
Weighted average remaining life of awards outstanding as at 12/31/2017 (in years)	2.9	0.8	1.6	1.1

¹⁾ For these awards, the fair value is calculated by subtracting the net present value of expected future dividend payments, if any, until maturity of the respective award from the prevailing share price as of the valuation date.

For the SOP 2010, expected volatility of the SAP share price is based on a blend of implied volatility from traded options with corresponding remaining lives and exercise prices as well as historical volatility with the same expected life as the options granted.

For the LTI 2016 Plan valuation, the Peer Group Index price on December 31, 2018, was US\$277.92 (2017: US\$247.24); the expected dividend yield of the index of 1.30% (2017: 1.16%), the expected volatility of the index of 19% to 24% (2017: 16% to 17%),

and the expected correlation of the SAP share price and the index price of 36% to 42% (2017: 41% to 48%) are based on historical data for the SAP share price and index price.

The expected remaining life of the options reflects both the contractual term and the expected, or historical, exercise behavior. The risk-free interest rate is derived from German government bonds with a similar duration. The SAP dividend yield is based on expected future dividends.

Changes in Outstanding Awards Under Our Cash-Settled Plans

Thousands, unless otherwise stated	LTI 2016 Plan (2016–2018 Tranches)	LTI 2015 Plan (2013–2015 Tranches)	SOP 2010 (2011–2015 Tranches)	RSU Plan (2014–2018 Tranches)
12/31/2016	377	684	23,375	10,901
Granted	295	0	0	7,835
Adjustment based upon KPI target achievement	NA	0	NA	-124
Exercised	0	-152	-7,769	-4,388
Forfeited	-41	0	-1,134	-704
12/31/2017	631	531	14,472	13,520
Granted	295	0	0	8,512
Adjustment based upon KPI target achievement	NA	0	NA	49
Exercised	0	-146	-6,913	-5,840
Forfeited	0	0	-473	-977
12/31/2018	926	385	7,086	15,264
Outstanding awards exercisable as at				
12/31/2017	0	0	4,948	0
12/31/2018	0	0	7,086	0
Total carrying amount (in € millions) of liabilities as at				
12/31/2017	22	51	354	708
12/31/2018	30	35	146	774
Total intrinsic value of vested awards (in € millions) as at				
12/31/2017	5	49	172	0
12/31/2018	3	34	137	0
Weighted average share price (in €) for awards exercised in				
2017	NA	84.94	91.13	90.91
2018	NA	88.27	100.61	88.67
Total expense (in € millions) recognized in				
2016	7	7	183	458
2017	14	9	221	712
2018	8	-3	43	611

Share-Based Payment Balances

€ millions	2018			2017		
	Current	Non-Current	Total	Current	Non-Current	Total
Share-based payment liabilities	714	316	1,030	815	340	1,154
¶ Other non-financial liabilities	4,120	501	4,621	3,982	514	4,496
Share-based payment liabilities as % of ¶ other non-financial liabilities	17	63	22	20	66	26
Derivatives - Call options for share-based payments	68	0	68	90	0	90
¶ Other financial assets	448	1,536	1,984	990	1,155	2,145
Derivatives - Call options for share-based payments as % of ¶ other financial assets	15	0	3	9	0	4

For more information about the derivatives, see [Note \(F.1\)](#).

b) Equity-Settled Share-Based Payments

Own SAP Plan (Own)

Under Own implemented in 2016, employees have the opportunity to purchase SAP shares without any holding period on a monthly basis. The investment per each eligible employee is limited to a percentage of the respective employee's monthly base salary. SAP matches the employee investment by 40% and adds a subsidy of €20 per month for non-executives. This plan is not open to members of the Executive Board.

Number of Shares Purchased

Millions	2018	2017	2016
Own	5.3	5.0	1.4

As a result of our equity-settled share-based payments transactions, we have commitments to grant SAP shares to employees. We intend to meet these commitments by reissuing treasury shares or to fulfill these obligations through an agent who administers the equity-settled programs and therefore purchases shares on the open market. Since 2016, we have fulfilled the obligations of Own through an agent.

Recognized Expense for Equity-Settled Plans

€ millions	2018	2017	2016
Own	149	140	77

(B.4) Pension Plans and Similar Obligations

⌚ Accounting Policy

Pension expense includes the amounts recorded for our defined benefit and defined contribution plans. Expenses for local state pension plans are included in social security expense. The discount rates used in measuring our post-employment benefit assets and liabilities are derived from rates available on high-quality corporate bonds and government bonds for which the timing and amounts of payments match the timing and the amounts of our projected pension payments. Net interest expense and other expenses related to defined benefit plans are recognized as employee benefits expenses and classified in our Consolidated Income Statements according to the activities that the employees owning the awards perform. Since our domestic defined benefit pension plans primarily consist of an employee-financed post-retirement plan that is fully financed with qualifying insurance policies, current service cost may become a credit as a result of adjusting the defined benefit liability's carrying amount to the fair value of the qualifying plan assets. Such adjustments are recorded in service cost. Total expenses on defined benefit pension plans comprise related current and past service costs as well as interest income and expense.

Defined Benefit Plans

Present Value of the Defined Benefit Obligations (DBO) and the Fair Value of the Plan Assets

€ millions	Domestic Plans			Foreign Plans			Other Post-Employment Plans		Total	
	2018		2017	2018		2017	2018			
	2018	2017		2018	2017		2018	2017		
Present value of the DBO	886	857		418	382		132	118	1,357	
Fair value of the plan assets	878	848		355	319		59	56	1,223	
Net defined benefit liability (asset)	8	9		63	63		73	62	134	
Portion of net defined benefit liability (asset) recognized in the Consolidated Statement of Financial Position - % of:										
Non-current other financial assets	0	0		0	0		0	0	0	
Non-current provisions	3	3		24	20		27	19	54	
									41	

€824 million (2017: €794 million) of the present value of the DBO of our domestic plans relate to plans that provide for lump-sum payments not based on final salary, and €356 million (2017: €329 million) of the present value of the defined benefit obligations of our foreign plans relate to plans that provide for annuity payments not based on final salary.

The following significant weighted average assumptions were used for the actuarial valuation of our domestic and foreign pension liabilities as well as other post-employment benefit obligations as at the respective measurement date:

Significant Actuarial Assumptions

Percent	Domestic Plans			Foreign Plans			Other Post-Employment Plans		
	2018	2017	2016	2018	2017	2016	2018	2017	2016
Discount rate	2.3	2.3	2.1	1.0	0.8	0.6	4.2	3.9	4.0

The sensitivity analysis table below shows how the present value of all defined benefit obligations would have been influenced by reasonably possible changes to significant actuarial assumptions.

The sensitivity analysis considers change in discount rate assumptions, holding all other actuarial assumptions constant.

Sensitivity Analysis

€ millions	Domestic Plans			Foreign Plans			Other Post-Employment Plans			Total		
	2018	2017	2016	2018	2017	2016	2018	2017	2016	2018	2017	2016
Present value of defined benefit obligations if:												
Discount rate was 50 basis points higher	836	806	800	391	357	344	126	114	93	1,353	1,277	1,237
Discount rate was 50 basis points lower	940	912	913	450	411	398	141	123	101	1,531	1,446	1,412

Investments in Plan Assets

Our investment strategy on domestic benefit plans is to invest all contributions in stable insurance policies.

Our investment strategies for foreign benefit plans vary according to the conditions in the country in which the respective benefit plans are situated. We have adopted a long-term investment

horizon for all major foreign benefit plans. Although our policy is to invest in a risk-diversified portfolio consisting of a mix of assets, both the defined benefit obligation and plan assets can fluctuate over time, which exposes the Group to actuarial and market (investment) risks. Depending on the statutory requirements in each country, it might be necessary to reduce any underfunding by addition of liquid assets.

Plan Asset Allocation

€ millions	2018			
	Quoted in an Active Market	Not Quoted in an Active Market	Quoted in an Active Market	Not Quoted in an Active Market
Total plan assets	387	905	350	873
Thereof: Asset category				
Equity investments	116	0	105	0
Corporate bonds	142	0	122	0
Insurance policies	5	905	5	873

Our expected contribution in 2019 to our domestic and foreign defined benefit pension plans is immaterial. The weighted duration of our defined benefit plans amounted to 12 years as at December 31, 2018, and 13 years as at December 31, 2017.

Total future benefit payments from our defined benefit plans as at December 31, 2018, are expected to be €1,783 million (2017: €1,670 million). Of this amount, 80% has maturities of over five years, and 66% relates to domestic plans.

Defined Contribution Plans/State Plans

We also maintain domestic and foreign defined contribution plans. Amounts contributed by us under such plans are based on a percentage of the employees' salaries or on the amount of contributions made by employees. Furthermore, in Germany and some other countries, we make contributions to public pension plans that are operated by national or local government or similar institutions.

Total Expense of Defined Contribution Plans and State Plans

€ millions	2018	2017	2016
Defined contribution plans	280	260	234
State plans	630	603	529
Total expense	910	863	763

(B.5) Other Employee-Related Obligations

⌚ Accounting Policy

As far as the provision for long-term employee benefits is secured by pledged reinsurance coverage, it is offset with the relating plan asset.

Other Employee-Related Liabilities

€ millions	2018			2017		
	Current	Non-Current	Total	Current	Non-Current	Total
Other employee-related liabilities	2,866	185	3,051	2,599	175	2,774
⌚ Other non-financial liabilities	4,120	501	4,621	3,982	514	4,496
Other employee-related liabilities as % of ⌚ other non-financial liabilities	70	37	66	65	34	62

Other employee-related liabilities mainly relate to bonus and sales commission obligations, vacation obligations, and employee-related social security obligations.

Other Employee-Related Provisions

€ millions	2018		
	Current	Non-Current	Total
Other employee-related provisions as at 1/1/2018	24	117	141
Addition	53	44	97
Utilization	-48	-107	-155
Release	-3	-2	-5
Currency impact	-1	0	-1
Other employee-related provisions as at 12/31/2018	25	52	77
⌚ Provisions	110	270	380
Other employee-related provisions as % of ⌚ provisions	23	19	20

Employee-related provisions primarily comprise obligations for time credits, severance payments, and jubilee expenses. While most of these employee-related provisions could be claimed within the next 12 months, we do not expect the related cash outflows within this time period.

(B.6) Restructuring

Accounting Policy

We only recognize provisions for restructuring if and when the following occurs:

- SAP has designed a program that materially changes the scope of one our businesses or the manner in which the business is conducted, and
- A detailed and documented restructuring plan has been approved by our Executive Board, a member thereof, or a direct report of an Executive Board member, and
- The program established is planned to start shortly after the program plan is approved and is expected to be capable of being completed within 12 months, and
- The program has been announced to the parties affected or has commenced.

We consider whether a change in business is material based on the business affected rather than for SAP as a whole. In judging whether a unit qualifies for restructuring, we consider if the unit has its own management team, has access to all inputs and processes necessary to provide outputs, and generates or could generate revenues. Materiality in this context refers to the scope of business and the manner in which the business is conducted. Consequently, the term "materially" cannot necessarily be associated with a certain quantitative threshold. Either the size or the nature of the restructuring, or a combination of both, have to be the determining factor.

Restructuring Expenses

€ millions	2018	2017	2016
Employee-related restructuring expenses	-19	-180	-33
Onerous contract-related restructuring expenses	0	-2	5
■ Restructuring expenses	-19	-182	-28

Restructuring provisions primarily include employee benefits that result from severance payments for employee terminations and onerous contract costs. The cash outflows associated with employee-related restructuring costs are substantially short-term in nature. Utilization of the portion of the facility-related restructuring provisions depends on the remaining term of the associated lease.

In 2018, no significant new restructuring activities occurred, except for follow-up costs resulting from restructuring programs of previous years and activities limited to individual business units to enhance our profitability and organizational efficiency. In 2017, restructuring provisions related primarily to a restructuring program executed in the Digital Business Services (DBS) board area which went hand-in-hand with the DBS transformation. The transformation was prompted by changing service requirements, as an increasing amount of software deployments are moving to the cloud.

If not presented separately in our income statement, restructuring expenses would have been allocated to the different expense items in our income statement as follows:

Restructuring Expenses by Functional Area

€ millions	2018	2017	2016
Cost of cloud and software	-3	-55	-3
Cost of services	-3	-118	-7
Research and development	-3	-9	-7
Sales and marketing	-11	-2	-10
General and administration	0	2	-1
■ Restructuring expenses	-19	-182	-28

Section C – Financial Results

This section provides insight into the financial results of SAP's reportable segments and of SAP overall as far as not already covered by previous sections. This includes but is not limited to segment results, income taxes, and earnings per share.

(C.1) Results of Segments

General Information

At year end 2018, SAP had four operating segments that are regularly reviewed by the Executive Board, which is responsible for assessing the performance of the Company and for making resource allocation decisions as the chief operating decision maker (CODM). The operating segments are largely organized and managed separately according to their product and service offerings, notably whether the products and services relate to our business network activities, customer experience solutions, or messaging services, or cover other areas of our business.

The Applications, Technology & Services segment derives its revenues primarily from the sale of software licenses and cloud subscriptions (as far as not included in one of the other segments), and from the sale of related services (mainly support services, various professional services, premium support services, implementation services for our software products, and education services on the use of our products). Service revenues also comprise almost all services related to our customer experience solutions (as far as not included in the Customer Experience segment).

The SAP Business Network segment derives its revenues mainly from transaction fees charged for the use of SAP's cloud-based collaborative business networks and from services relating to the SAP Business Network (including cloud applications, professional services, and education services). Within the SAP Business Network segment, we mainly market and sell the cloud offerings developed by SAP Ariba, SAP Concur, and SAP Fieldglass.

On April 5, 2018, we acquired Callidus Software Inc. and changed the structure of the Applications, Technology & Services segment. The Callidus business was combined with our existing customer experience activities to form a new end-to-end business unit. This new unit, which qualifies as an operating segment (called Customer Experience), comprises on-premise and cloud-based products that run front office functions across the customer experience. Support revenues related to our on-premise customer experience solutions continue to be reported in the Applications, Technology & Services segment, as we are unable to split the total software support revenues into support services provided for different solutions. Additionally, for one offering, revenues are currently included in the Customer Experience segment, whereas related development costs (2018: €16 million, 2017: €21 million, 2016: €19 million) are allocated to the Applications, Technology & Services segment.

Further, the manner in which our messaging services are reported to our CODM has changed such that our business unit

Digital Interconnect now qualifies as an operating segment. Due to its size, however, Digital Interconnect is not a reportable segment.

The segment information for prior periods has been restated to conform to the current year's presentation.

⌚ Accounting Policies, Judgments, and Sources for Management Reporting

Our management reporting system reports our intersegment services as cost reductions and does not track them as internal revenue. Intersegment services mainly represent utilization of human resources of one segment by another segment on a project basis. Intersegment services are charged based on internal cost rates including certain indirect overhead costs but excluding a profit margin.

Most of our depreciation and amortization expense affecting segment profits is allocated to the segments as part of broader infrastructure allocations and is thus not tracked separately on the operating segment level. Depreciation and amortization expense that is directly allocated to the operating segments is immaterial in all segments presented.

Our management reporting system produces a variety of reports that differ by the currency exchange rates used in the accounting for foreign-currency transactions and operations, where both actual and constant currency numbers are reported to and used by our CODM. Reports based on actual currencies use the same currency rates as are used in our financial statements. Reports based on constant currencies report revenues and expenses using the average exchange rates from the previous year's corresponding period.

We use an operating profit indicator to measure the performance of our operating segments. However, the accounting policies applied in the measurement of operating segment revenue and profit differ as follows from the IFRS accounting principles used to determine the operating profit measure in our income statement:

- The measurements of segment revenue and results include the recurring revenues that would have been recorded by acquired entities had they remained stand-alone entities but which are not recorded as revenue under IFRS due to fair value accounting for customer contracts in effect at the time of an acquisition.
- The expense measures exclude:
 - Acquisition-related charges such as amortization expense and impairment charges for intangibles acquired in business combinations and certain stand-alone acquisitions of intellectual property (including purchased in-process research and development), settlements of pre-existing business relationships in connection with a business combination, and acquisition-related third-party expenses
 - Share-based payment expenses
 - Restructuring expenses

- Certain activities are exclusively managed on corporate level, including finance, accounting, legal, human resources, business operations, and marketing. They are not included in the results of our reportable segments.

Revenues and expenses of our operating but non-reportable segment, and the certain activities managed on corporate level, as

outlined above, are disclosed under the Other revenue and Other expenses items in the reconciliation in [Note \(C.2\)](#).

Information about assets and liabilities and additions to non-current assets by segment are not regularly provided to our Executive Board. Goodwill by segment is disclosed in [Note \(D.2\)](#).

Applications, Technology & Services

€ millions	2018		2017		2016
	Actual Currency	Constant Currency ³⁾	Actual Currency	Constant Currency ³⁾	Actual Currency
Cloud subscriptions and support – SaaS/PaaS ¹⁾	1,829	1,894	1,403	1,423	1,074
Cloud subscriptions and support – IaaS ²⁾	488	506	328	334	206
Cloud subscriptions and support	2,317	2,400	1,732	1,758	1,280
Software licenses	4,233	4,456	4,434	4,538	4,350
Software support	10,968	11,477	10,890	10,987	10,544
Software licenses and support	15,201	15,933	15,325	15,524	14,894
Cloud and software	17,518	18,333	17,056	17,282	16,174
Services	3,288	3,559	3,162	3,183	3,037
Total segment revenue	20,806	21,892	20,218	20,465	19,211
Cost of cloud subscriptions and support – SaaS/PaaS ¹⁾	-777	-818	-572	-581	-404
Cost of cloud subscriptions and support – IaaS ²⁾	-424	-436	-305	-307	-225
Cost of cloud subscriptions and support	-1,201	-1,254	-877	-888	-630
Cost of software licenses and support	-1,899	-2,031	-1,948	-1,958	-1,896
Cost of cloud and software	-3,101	-3,285	-2,825	-2,846	-2,525
Cost of services	-2,524	-2,695	-2,437	-2,453	-2,401
Total cost of revenue	-5,625	-5,980	-5,262	-5,300	-4,926
Segment gross profit	15,181	15,912	14,957	15,165	14,284
Other segment expenses	-6,435	-6,729	-6,478	-6,549	-5,949
Segment profit	8,746	9,183	8,478	8,616	8,335

¹⁾ Software as a service/platform as a service

²⁾ Infrastructure as a service

³⁾ Constant currency numbers are calculated by translating numbers of the current period using the average exchange rates from the previous year's corresponding period instead of the current period. 2018 constant currency numbers are thus only comparable to 2017 actual currency numbers; 2017 constant currency numbers are only comparable to 2016 actual currency numbers.

SAP Business Network

€ millions	2018		2017		2016
	Actual Currency	Constant Currency ³⁾	Actual Currency	Constant Currency ³⁾	Actual Currency
Cloud subscriptions and support – SaaS/PaaS ¹⁾	2,178	2,265	1,840	1,870	1,595
Cloud subscriptions and support – IaaS ²⁾	0	0	0	0	0
Cloud subscriptions and support	2,178	2,265	1,840	1,870	1,595
Software licenses	0	0	-1	-1	0
Software support	16	16	18	18	28
Software licenses and support	16	17	17	18	27
Cloud and software	2,193	2,282	1,857	1,887	1,622
Services	436	451	404	413	303
Total segment revenue	2,629	2,733	2,261	2,300	1,925
Cost of cloud subscriptions and support – SaaS/PaaS ¹⁾	-483	-503	-428	-435	-384
Cost of cloud subscriptions and support – IaaS ²⁾	0	0	0	0	0
Cost of cloud subscriptions and support	-483	-503	-428	-435	-384
Cost of software licenses and support	-6	-7	-5	-5	-1
Cost of cloud and software	-489	-510	-433	-440	-385
Cost of services	-324	-337	-292	-297	-247
Total cost of revenue	-813	-847	-725	-737	-632
Segment gross profit	1,816	1,886	1,536	1,563	1,293
Other segment expenses	-1,285	-1,341	-1,148	-1,166	-953
Segment profit	531	545	388	397	340

¹⁾ Software as a service/platform as a service²⁾ Infrastructure as a service³⁾ Constant currency numbers are calculated by translating numbers of the current period using the average exchange rates from the previous year's corresponding period instead of the current period. 2018 constant currency numbers are thus only comparable to 2017 actual currency numbers; 2017 constant currency numbers are only comparable to 2016 actual currency numbers.

Customer Experience

€ millions	2018		2017		2016
	Actual Currency	Constant Currency ³⁾	Actual Currency	Constant Currency ³⁾	Actual Currency
Cloud subscriptions and support – SaaS/PaaS ¹⁾	528	539	200	203	119
Cloud subscriptions and support – IaaS ²⁾	0	0	0	0	0
Cloud subscriptions and support	528	539	200	203	119
Software licenses	413	421	438	445	513
Software support	1	1	0	0	0
Software licenses and support	414	422	437	445	514
Cloud and software	942	961	637	648	633
Services	9	9	6	6	4
Total segment revenue	951	970	643	654	637
Cost of cloud subscriptions and support – SaaS/PaaS ¹⁾	-176	-178	-81	-82	-30
Cost of cloud subscriptions and support – IaaS ²⁾	0	0	0	0	0
Cost of cloud subscriptions and support	-176	-178	-81	-82	-30
Cost of software licenses and support	-20	-20	-45	-45	-54
Cost of cloud and software	-196	-198	-126	-127	-84
Cost of services	-3	-3	-1	-1	-1
Total cost of revenue	-199	-202	-127	-127	-85
Segment gross profit	751	768	516	527	552
Other segment expenses	-613	-630	-431	-437	-388
Segment profit	138	139	85	90	164

¹⁾ Software as a service/platform as a service²⁾ Infrastructure as a service³⁾ Constant currency numbers are calculated by translating numbers of the current period using the average exchange rates from the previous year's corresponding period instead of the current period. 2018 constant currency numbers are thus only comparable to 2017 actual currency numbers; 2017 constant currency numbers are only comparable to 2016 actual currency numbers.**Segment Revenue by Region**

€ millions	2018			
	Actual Currency			
	Applications, Technology & Services	SAP Business Network	Customer Experience	Total Reportable Segments
EMEA	10,178	443	416	11,037
Americas	7,197	1,915	421	9,532
APJ	3,431	271	114	3,817
Total segment revenue	20,806	2,629	951	24,386

For a breakdown of revenue by region for the SAP Group, see [Note \(A.1\)](#).

(C.2) Reconciliation of Segment Measures to Income Statement

€ millions	2018		2017		2016
	Actual Currency	Constant Currency ¹⁾	Actual Currency	Constant Currency ¹⁾	Actual Currency
Applications, Technology & Services	20,806	21,892	20,218	20,465	19,211
SAP Business Network	2,629	2,733	2,261	2,300	1,925
Customer Experience	951	970	643	654	637
Total segment revenue for reportable segments	24,386	25,596	23,122	23,419	21,773
Other revenue	356	365	341	346	294
Adjustment for currency impact	0	-1,219	0	-301	0
Adjustment of revenue under fair value accounting	-33	-33	-3	-3	-5
■ Total revenue	24,708	24,708	23,461	23,461	22,062
Applications, Technology & Services	8,746	9,183	8,478	8,616	8,335
SAP Business Network	531	545	388	397	340
Customer Experience	138	139	85	90	164
Total segment profit for reportable segments	9,415	9,867	8,951	9,103	8,840
Other revenue	356	365	341	346	294
Other expenses	-2,608	-2,751	-2,523	-2,529	-2,501
Adjustment for currency impact	0	-317	0	-151	0
Adjustment for					
Revenue under fair value accounting	-33	-33	-3	-3	-5
Acquisition-related charges	-577	-577	-587	-587	-680
Share-based payment expenses	-830	-830	-1,120	-1,120	-785
■ Restructuring	-19	-19	-182	-182	-28
■ Operating profit	5,703	5,703	4,877	4,877	5,135
■ Other non-operating income/expense, net	-56	-56	-36	-36	-234
■ Financial income, net	-47	-47	188	188	-29
■ Profit before tax	5,600	5,600	5,029	5,029	4,872

¹⁾ Constant currency numbers are calculated by translating numbers of the current period using the average exchange rates from the previous year's corresponding period instead of the current period. 2018 constant currency numbers are thus only comparable to 2017 actual currency numbers; 2017 constant currency numbers are only comparable to 2016 actual currency numbers.

(C.3) Other Non-Operating Income/Expense, Net

€ millions	2018	2017	2016
Foreign currency exchange gain/loss, net	-31	-12	-210
Thereof from financial assets at fair value through profit or loss	444	615	531
Thereof from financial assets at amortized cost (2017, 2016: loans and receivables)	148	96	26
Thereof from financial liabilities at fair value through profit or loss	-415	-435	-569
Thereof from financial liabilities at amortized cost	-202	-317	-174
Miscellaneous income/expense, net	-25	-24	-23
■■■ Other non-operating income/expense, net	-56	-36	-234

(C.4) Financial Income, Net

€ millions	2018	2017	2016
Finance income	371	476	230
Thereof gains from financial assets at fair value through profit and loss (2017, 2016: from available-for-sale financial assets)	227	382	164
Finance costs	-418	-288	-259
Thereof interest expense from financial liabilities at amortized cost	-106	-89	-108
Thereof interest expense from financial liabilities at fair value through profit and loss (2017, 2016: from available-for-sale financial liabilities)	-206	-116	-114
■■■ Financial income, net	-47	188	-29

(C.5) Income Taxes

⌚ Accounting Policies, Judgments, and Estimates

In 2018, we adopted the IFRS Interpretations Committee's agenda decision on the accounting for interest and penalties related to income taxes. As a result, interest and penalties which are related to income taxes but do not, themselves, meet the definition of income taxes are now presented.

- in our statement of financial position, under other non-financial assets or other non-financial liabilities/provisions, and
- in our income statement, depending on the nature of the items either in financial income or other non-operating income/expense.

Previously, these items were classified as income taxes. Prior-period numbers were adjusted to conform to the new classification. The following table summarizes the impact on our Consolidated Statements of Financial Position.

€ millions	Adjustments as at 12/31/2017	Adjustments as at 12/31/2016
Other non-financial assets	66	65
Tax assets	-91	-80
Total non-current assets	-25	-15
Total assets	-25	-15
Tax liabilities	-36	-32
Provisions	36	32
Total non-current liabilities	0	0
Total liabilities	0	0
Retained earnings	-25	-15
Equity attributable to owners of parent	-25	-15
Total equity	-25	-15
Total equity and liabilities	-25	-15

Judgment is required in evaluating whether interest or penalties related to income taxes meet the definition of income taxes, and, if not, whether it is of financial nature. In this judgment, we particularly consider applicable local tax laws and interpretations on IFRS by national standard setters in the area of group financial reporting. We are subject to changing tax laws in multiple jurisdictions within the countries in which we operate. Our ordinary business activities also include transactions where the ultimate tax outcome is uncertain due to different interpretations of tax laws, such as those involving revenue sharing and cost reimbursement arrangements between SAP Group entities. In addition, the amount of income taxes we pay is generally subject to ongoing audits by domestic and foreign tax authorities. As a result, judgment is necessary in determining our worldwide income tax provisions. We make our estimates about the ultimate resolution of our tax uncertainties based on current tax laws and our interpretation thereof. Changes to the assumptions underlying these estimates and outcomes that differ from these assumptions could require material adjustments to the carrying amount of our income tax provisions.

The assessment whether a deferred tax asset is impaired requires judgment, as we need to estimate future taxable profits to determine whether the utilization of the deferred tax asset is probable. In evaluating our ability to utilize our deferred tax assets, we consider all available positive and negative evidence, including the level of historical taxable income and projections for future taxable income over the periods in which the deferred tax assets are recoverable. Our judgment regarding future taxable income is based on assumptions about future market conditions and future profits of SAP. Changes to these assumptions and outcomes that differ from these assumptions could require material adjustments to the carrying amount of our deferred tax assets.

Tax Expense by Geographic Location

€ millions	2018	2017	2016
Current tax expense			
Germany	733	935	866
Foreign	1,019	716	537
Total current tax expense	1,752	1,651	1,403
Deferred tax expense/income			
Germany	57	-584	-38
Foreign	-298	-84	-123
Total deferred tax income	-241	-668	-161
.nl Total income tax expense	1,511	983	1,242

Major Components of Tax Expense

€ millions	2018	2017	2016
Current tax expense/income			
Tax expense for current year	1,665	1,623	1,412
Taxes for prior years	87	28	-9
Total current tax expense	1,752	1,651	1,403
Deferred tax expense/income			
Origination and reversal of temporary differences	-501	-891	-403
Unused tax losses, research and development tax credits, and foreign tax credits	260	223	242
Total deferred tax income	-241	-668	-161
.nl Total income tax expense	1,511	983	1,242

Profit Before Tax by Geographic Location

€ millions	2018	2017	2016
Germany	3,106	2,788	3,118
Foreign	2,494	2,241	1,754
.nl Total	5,600	5,029	4,872

The following table reconciles the expected income tax expense, computed by applying our combined German tax rate of 26.4% (2017: 26.4%; 2016: 26.4%), to the actual income tax expense. Our 2018 combined German tax rate includes a corporate income tax rate of 15.0% (2017: 15.0%; 2016: 15.0%), plus a solidarity surcharge of 5.5% (2017: 5.5%; 2016: 5.5%) thereon, and trade taxes of 10.6% (2017: 10.6%; 2016: 10.6%).

Relationship Between Tax Expense and Profit Before Tax

€ millions, unless otherwise stated	2018	2017	2016
.nl Profit before tax	5,600	5,029	4,872
Tax expense at applicable tax rate of 26.4% (2017: 26.4%; 2016: 26.4%)	1,478	1,327	1,286
Tax effect of:			
Foreign tax rates	-147	-403	-107
Changes in tax laws and tax rates	0	-212	3
Non-deductible expenses	106	82	78
Tax-exempt income	-38	-95	-106
Withholding taxes	91	131	112
Research and development and foreign tax credits	-33	-26	-36
Prior-year taxes	-17	-26	-30
Reassessment of deferred tax assets, research and development tax credits, and foreign tax credits	58	185	43
Other	13	20	-1
.nl Total income tax expense	1,511	983	1,242
Effective tax rate (in %)	27.0	19.5	25.5

Components of Recognized Deferred Tax Assets and Liabilities

€ millions	2018	2017
Deferred tax assets		
Intangible assets	668	563
Property, plant, and equipment	28	10
Other financial assets	11	12
Trade and other receivables	55	57
Pension provisions	116	112
Share-based payments	140	164
Other provisions and obligations	424	408
Contract liabilities/deferred income	229	77
Carryforwards of unused tax losses	150	202
Research and development and foreign tax credits	21	166
Other	181	75
Total deferred tax assets	2,023	1,846
Deferred tax liabilities		
Intangible assets	628	617
Property, plant, and equipment	95	92
Other financial assets	133	115
Trade and other receivables	153	125
Pension provisions	12	9
Share-based payments	0	1
Other provisions and obligations	18	29
Contract liabilities/deferred income	23	22
Other	43	50
Total deferred tax liabilities	1,105	1,060
Total deferred tax assets, net	918	786

Items Not Resulting in a Deferred Tax Asset

€ millions	2018	2017	2016
Unused tax losses			
Not expiring	575	375	338
Expiring in the following year	7	9	32
Expiring after the following year	476	535	649
Total unused tax losses	1,058	919	1,019
Deductible temporary differences			
Not expiring	509	524	33
Expiring in the following year	0	2	1
Expiring after the following year	18	34	30
Total unused tax credits	72	74	64

Of the unused tax losses, €213 million (2017: €263 million; 2016: €309 million) relate to U.S. state tax loss carryforwards.

In 2018, subsidiaries that suffered a tax loss in either the current or the preceding period recognized deferred tax assets in excess of deferred tax liabilities amounting to €47 million (2017: €79 million; 2016: €189 million), because it is probable that sufficient future taxable profit will be available to allow the benefit of the deferred tax assets to be utilized.

We have not recognized a deferred tax liability on approximately €14.04 billion (2017: €13.21 billion) for undistributed profits of our subsidiaries, because we are in a position to control the timing of the reversal of the temporary difference and it is probable that such differences will not reverse in the foreseeable future.

Income Tax-Related Litigation

We are subject to ongoing tax audits by domestic and foreign tax authorities. Currently, we are in dispute mainly with the German and only a few foreign tax authorities. The German dispute is in respect of intercompany financing matters and certain secured capital investments, while the few foreign disputes are in respect of the deductibility of intercompany royalty payments and intercompany services. In all cases, we expect that a favorable outcome can only be achieved through litigation. For all of these matters, we have not recorded a provision as we believe that the tax authorities' claims have no merit and that no adjustment is warranted. If, contrary to our view, the tax authorities were to prevail in their arguments before the court, we would expect to have an additional expense of approximately €1,746 million (2017: €1,884 million) in total (including related interest expenses and penalties of €842 million (2017: €869 million)).

(C.6) Earnings per Share

€ millions, unless otherwise stated	2018	2017	2016
Profit attributable to equity holders of SAP SE	4,083	4,008	3,642
Issued ordinary shares ¹⁾	1,229	1,229	1,229
Effect of treasury shares ¹⁾	-35	-31	-30
Weighted average shares outstanding, basic ¹⁾	1,194	1,197	1,198
Dilutive effect of share-based payments ¹⁾	0	1	1
Weighted average shares outstanding, diluted ¹⁾	1,194	1,198	1,199
Earnings per share, basic, attributable to equity holders of SAP SE (in €)	3.42	3.35	3.04
Earnings per share, diluted, attributable to equity holders of SAP SE (in €)	3.42	3.35	3.04

¹⁾ Number of shares in millions

Section D – Invested Capital

This section highlights the non-current assets including investments that form the basis of our operating activities. Additions in invested capital include separate asset acquisitions or business combinations. Further, we disclose information about purchase obligations and capital contributions.

(D.1) Business Combinations

Accounting Policies, Judgments, and Estimates

We decide for each business combination whether to measure the non-controlling interest in the acquiree at fair value or at the proportionate share of the acquiree's identifiable net assets. We classify costs related to executing business combinations as general and administration expense.

In our accounting for business combinations, judgment is required in determining whether an intangible asset is identifiable, and should be recorded separately from goodwill. Additionally, estimating the acquisition-date fair values of the identifiable assets acquired and liabilities assumed involves considerable judgment. The necessary measurements are based on information available on the acquisition date and are based on expectations and assumptions that have been deemed reasonable by management. These judgments, estimates, and assumptions can materially affect our financial position and profit for several reasons, including the following:

- Fair values assigned to assets subject to depreciation and amortization affect the amounts of depreciation and amortization to be recorded in operating profit in the periods following the acquisition.
- Subsequent negative changes in the estimated fair values of assets may result in additional expense from impairment charges.
- Subsequent changes in the estimated fair values of liabilities and provisions may result in additional expense (if increasing the estimated fair value) or additional income (if decreasing the estimated fair value).

We acquire businesses in specific areas of strategic interest to us, particularly to broaden our product and service portfolio.

In 2018, we concluded several business combinations, with the Callidus Software Inc. ("Callidus") acquisition being the only material transaction.

Prior-year acquisitions are described in the Notes to the 2017 Consolidated Financial Statements, Note (4).

Acquisition of Callidus

On April 5, 2018, following satisfaction of applicable regulatory and other approvals, we acquired 100% of the shares of Callidus (NDSQ: CALD), a leading provider of customer relationship management (CRM) solutions. SAP paid US\$36 per share,

representing consideration transferred in cash of approximately US\$2.4 billion. The acquisition aims to accelerate and strengthen SAP's position and solution offerings in the Sales Performance Management (SPM) and configure-price-quote (CPQ) spaces.

Callidus Acquisition: Consideration Transferred

€ millions	
Cash paid	1,957
Liabilities incurred	47
Total consideration transferred	2,004

The liabilities incurred relate to the earned portion of unvested share-based payment awards. These liabilities were incurred by replacing, upon acquisition, equity-settled share-based payment awards held by employees of Callidus with cash-settled share-based payment awards, which are subject to forfeiture. The respective liabilities represent the portion of the replacement awards that relates to pre-acquisition services provided by the acquiree's employees and were measured at the fair value determined under IFRS 2.

The initial accounting for the Callidus business combination is incomplete because we are still obtaining some information necessary to identify and measure tax-related assets and liabilities. Accordingly, the amounts recognized in our financial statements for these items are provisional as at December 31, 2018.

Measurement period adjustments recorded in 2018 (which were not material) mostly relate to intangible assets (finalization of the fair value calculation) and tax-related assets and liabilities (deferred taxes from investments in subsidiaries and unused tax losses, and so on).

The following table summarizes the preliminary values of identifiable assets acquired and liabilities assumed in connection with the acquisition of Callidus, as at the acquisition date:

Callidus Acquisition: Recognized Assets and Liabilities

€ millions	
Cash and cash equivalents	63
Other financial assets	64
Trade and other receivables	32
Other non-financial assets	11
Property, plant, and equipment	26
Intangible assets	515
Thereof acquired technology	121
Thereof customer relationship and other intangibles	390
Thereof software and database licenses	4
Total identifiable assets	711
Trade and other payables	55
Current and deferred tax liabilities	65
Provisions and other non-financial liabilities	15
Contract liabilities/deferred income	55
Total identifiable liabilities	190
Total identifiable net assets	521
Goodwill	1,483
Total consideration transferred	2,004

The goodwill arising from our acquisitions consists largely of synergies and the know-how and technical skills of the acquired businesses' workforces.

For the Callidus acquisition, we expect synergies particularly in the following areas:

- Cross-selling opportunities of Callidus products to existing SAP customers across all regions, using SAP's sales organization
- Integrating Callidus products into SAP C/4 HANA to strengthen SAP's customer experience suite of solutions
- Improved profitability in Callidus sales and operations

We have allocated the Callidus goodwill and intangibles to the newly established Customer Experience segment. For more information about our segments and about the changes in our segment structure, see [Note \(C.1\)](#).

Impact of the Business Combination on Our Financial Statements

The amounts of revenue and profit or loss of the Callidus business acquired in 2018 since the acquisition date are included in the consolidated income statements for the reporting period as follows:

Callidus Acquisition: Impact on SAP's Financials

€ millions	2018 as Reported	Contribution of Callidus
Revenue	24,708	180
Profit after tax	4,088	-60

Had Callidus been consolidated as at January 1, 2018, our estimated pro forma revenue for the reporting period would have been €24,766 million, and pro forma profit after tax would have been €4,071 million.

These amounts were calculated after applying SAP's accounting policies and after adjusting the results for Callidus to reflect significant effects from, for example:

- Additional depreciation and amortization that would have been charged assuming the fair value adjustment to property, plant, and equipment, and to intangible assets had been applied from January 1, 2018
- The impact of fair value adjustments on contract liabilities/deferred income on a cumulative basis
- The borrowing costs on the funding levels and debt/equity position of SAP after the business combination
- Employee benefits, such as share-based compensation
- Transaction expenses incurred as part of the acquisition
- Related income taxes

These pro forma numbers have been prepared for comparative purposes only. The pro forma revenue and profit numbers are not necessarily indicative either of the results of operations that would have actually occurred had the acquisition been in effect at the beginning of the respective period, or of future results.

(D.2) Goodwill

⌚ Accounting Policies, Judgments, and Estimates

The annual goodwill impairment test is performed at the level of our operating segments since there are no lower levels in SAP at which goodwill is monitored for internal management purposes. The test is performed at the same time (at the beginning of the fourth quarter) for all operating segments.

In making impairment assessments for our goodwill and intangible assets, the outcome of these tests is highly dependent on management's assumptions regarding future cash flow projections and economic risks, which require significant judgment and assumptions about future developments. They can be affected by a variety of factors, including:

- Changes in business strategy
- Internal forecasts
- Estimation of weighted-average cost of capital

Changes to the assumptions underlying our goodwill and intangible assets impairment assessments could require material adjustments to the carrying amount of our recognized goodwill and intangible assets as well as the amounts of impairment charges recognized in profit or loss.

The outcome of goodwill impairment tests may also depend on the allocation of goodwill to our operating segments. This allocation involves judgment as it is based on our estimates regarding which operating segments are expected to benefit from the synergies of business combinations.

Goodwill

€ millions	
Historical cost	
1/1/2017	23,415
Foreign currency exchange differences	-2,249
Additions from business combinations	205
12/31/2017	21,371
Foreign currency exchange differences	847
Additions from business combinations	1,609
12/31/2018	23,827
Accumulated amortization	
1/1/2017	104
Foreign currency exchange differences	-4
12/31/2017	100
Foreign currency exchange differences	2
12/31/2018	102
Carrying amount	
12/31/2017	21,271
12/31/2018	23,725

Goodwill by Operating Segment

€ millions	Applications, Technology & Services	SAP Business Network	Customer Experience	Other	Total
12/31/2017	14,654	6,617	0	0	21,271
12/31/2018	13,498	6,925	3,293	9	23,725

At the end of 2018, the goodwill allocated to the Customer Experience segment includes goodwill of €1,656 million reallocated from the Applications, Technology & Services segment due to the changes in segment composition in 2018.

For more information about our segments and the changes in 2018, see [Note \(C.1\)](#).

For impairment testing purposes, the carrying amount of goodwill has been allocated to the operating segments expected to benefit from goodwill as follows:

The key assumptions on which management based its cash flow projections for the period covered by the underlying business plans are as follows:

Key Assumption	Basis for Determining Values Assigned to Key Assumption
Budgeted revenue growth	Revenue growth rate achieved in the current fiscal year, adjusted for an expected increase in SAP's addressable cloud and database markets; expected growth in the established software applications and analytics markets. Values assigned reflect our past experience and our expectations regarding an increase in the addressable markets.
Budgeted operating margin	Operating margin budgeted for a given budget period equals the operating margin achieved in the current fiscal year, increased by expected efficiency gains. Values assigned reflect past experience, except for efficiency gains.
Discount rates	Our estimated cash flow projections are discounted to present value using discount rates (after-tax rates for the SAP Business Network segment and pre-tax rates for all other segments). Pre-tax discount rates are based on the weighted average cost of capital (WACC) approach.
Terminal growth rate	Our estimated cash flow projections for periods beyond the business plan were extrapolated using segment-specific terminal growth rates. These growth rates do not exceed the long-term average growth rates for the markets in which our segments operate.

Key Assumptions and Detailed Planning Period

Percent, unless otherwise stated	Applications, Technology & Services		SAP Business Network		Customer Experience	
	2018	2017	2018	2017	2018	2017
Budgeted revenue growth (average of the budgeted period)	4.8	4.8	13.8	14.9	32.9	NA
Pre-tax discount rate	11.0	10.6	11.5	11.9	11.7	NA
After-tax discount rate	8.6	8.2	9.0	9.3	9.4	NA
Terminal growth rate	3.0	2.9	3.0	3.0	3.0	NA
Detailed planning period (in years)	5	3	9	9	5	NA

Applications, Technology & Services

The recoverable amount of the segment has been determined based on a value-in-use calculation. The calculation uses cash flow projections based on actual operating results and a group-wide business plan approved by management.

We believe that no reasonably possible change in any of the above key assumptions would cause the carrying amount of our Applications, Technology & Services segment to exceed the recoverable amount.

SAP Business Network

The recoverable amount of the segment has been determined based on fair value less costs of disposal calculation. The fair value measurement was categorized as a level 3 fair value based on the inputs used in the valuation technique. The cash flow projections are based on actual operating results and specific estimates covering a detailed planning period and the terminal growth rate thereafter. The projected results were determined based on management's estimates and are consistent with the assumptions a market participant would make. The segment operates in a relatively immature area with significant growth rates projected for the near future. We therefore have a longer and more detailed planning period than one would apply in a more mature segment.

We are using a target operating margin of 33% (2017: 33%) for the segment at the end of the budgeted period as a key assumption, which is within the range of expectations of market participants (for example, industry analysts).

The recoverable amount exceeds the carrying amount by €13,580 million (2017: €8,143 million).

The following table shows the amounts by which the key assumptions would need to change individually for the recoverable amount to be equal to the carrying amount:

Sensitivity to Change in Assumptions

	SAP Business Network	
	2018	2017
Budgeted revenue growth (change in pp)	-11.8	-8.6
After-tax discount rate (change in pp)	6.6	4.3
Target operating margin at the end of the budgeted period (change in pp)	-22	-17

Customer Experience

The recoverable amount of the segment has been determined based on a value-in-use calculation. The calculation uses cash flow projections based on actual operating results and a group-wide business plan approved by management. The recoverable amount exceeds the carrying amount by €8,476 million.

The following table shows the amounts by which the key assumptions would need to change individually for the recoverable amount to be equal to the carrying amount:

Sensitivity to Change in Assumptions

	Customer Experience	
	2018	2017
Budgeted revenue growth (change in pp)	-8.3	NA
Pre-tax discount rate (change in pp)	10.2	NA
Target operating margin at the end of the budgeted period (change in pp)	-28	NA

(D.3) Intangible Assets

⌚ Accounting Policies, Judgments, and Estimates

We classify intangible assets according to their nature and use in our operations. Software and database licenses consist primarily of technology for internal use, whereas acquired technology consists primarily of purchased software to be incorporated into our product offerings and in-process research and development (IPRD).

Customer relationship and other intangibles consist primarily of customer relationships and acquired trademark licenses.

All our purchased intangible assets other than goodwill have finite useful lives. They are initially measured at acquisition cost and subsequently amortized based on the expected consumption of economic benefits over their estimated useful lives ranging from two to 20 years.

Acquired in-process research and development project assets are typically amortized over five to seven years (starting upon completion / marketing of the respective projects).

Whereas in general, expenses for internally generated intangibles are expensed as incurred, development expenses incurred on standard-related customer development projects (for which the IAS 38 criteria are met cumulatively) are capitalized on a limited

scale with those amounts being amortized over the estimated useful life of eight years.

Amortization expenses of intangible assets are classified as cost of cloud and software, cost of services, research and development, sales and marketing, and general and administration, depending on the use of the respective intangible assets.

Judgment is required in determining the following:

- The useful life of an intangible asset, as this is based on our estimates regarding the period over which the intangible asset is expected to produce economic benefits to us
- The amortization method, as IFRS requires the straight-line method to be used unless we can reliably determine the pattern in which the asset's future economic benefits are expected to be consumed by us

Both the amortization period and the amortization method have an impact on the amortization expense that is recorded in each period.

Determining whether internally generated intangible assets from development qualify for recognition requires significant judgment, particularly in the following areas:

- Determining whether activities should be considered research activities or development activities
- Determining whether the conditions for recognizing an intangible asset are met requires assumptions about future market conditions, customer demand, and other developments.
- The term "technical feasibility" is not defined in IFRS, and therefore determining whether the completion of an asset is technically feasible requires judgment and a company-specific approach.
- Determining the future ability to use or sell the intangible asset arising from the development and the determination of the probability of future benefits from sale or use
- Determining whether a cost is directly or indirectly attributable to an intangible asset and whether a cost is necessary for completing a development

These judgments impact the total amount of intangible assets that we present in our balance sheet as well as the timing of recognizing development expenses in profit or loss.

Intangible Assets

€ millions	Software and Database Licenses	Acquired Technology/IPRD	Customer Relationship and Other Intangibles	Total
Historical cost				
1/1/2017	791	2,907	5,119	8,817
Foreign currency exchange differences	-22	-278	-523	-823
Additions from business combinations	0	51	73	124
Other additions	93	0	10	103
Retirements/disposals	-53	-688	-62	-803
12/31/2017	809	1,992	4,617	7,418
Adoption of IFRS 15	0	0	14	14
1/1/2018	809	1,992	4,631	7,432
Foreign currency exchange differences	8	100	204	312
Additions from business combinations	4	148	410	562
Other additions	193	0	36	229
Retirements/disposals	-43	-62	-41	-146
Transfers	25	0	-28	-3
12/31/2018	996	2,178	5,212	8,386
Accumulated amortization				
1/1/2017	589	2,186	2,256	5,031
Foreign currency exchange differences	-16	-208	-219	-443
Additions amortization	79	254	327	660
Retirements/disposals	-51	-688	-58	-797
12/31/2017	601	1,544	2,306	4,451
Foreign currency exchange differences	6	77	87	170
Additions amortization	95	216	337	648
Retirements/disposals	-23	-62	-25	-110
12/31/2018	679	1,775	2,705	5,159
Carrying amount				
12/31/2017	208	448	2,311	2,967
12/31/2018	317	403	2,507	3,227

Significant Intangible Assets

€ millions, unless otherwise stated	Carrying Amount	Remaining Useful Life (in years)	
	2018	2017	
Sybase – Customer relationships	179	226	3 to 5
SuccessFactors – Customer relationships	225	261	7
Ariba – Customer relationships	323	366	7 to 9
Concur – Acquired technologies	114	180	3
Concur – Customer relationships	1,033	1,073	12 to 16
Callidus – Acquired technologies	103	0	4 to 6
Callidus – Customer relationships	384	0	10 to 14
Total significant intangible assets	2,361	2,106	

(D.4) Property, Plant, and Equipment

⌚ Accounting Policies, Judgments, and Estimates

Property, plant, and equipment are typically depreciated using the straight-line method. Judgment is required in estimating the useful life of the assets. In this assessment we consider, among others, our history with similar assets and current and future changes in technology.

Useful Lives of Property, Plant, and Equipment

Buildings	Predominantly 25 to 50 years
Leasehold improvements	Based on the term of the lease contract
Information technology equipment	2 to 6 years
Office furniture	4 to 20 years
Automobiles	4 to 5 years

Property, Plant, and Equipment

€ millions	Land and Buildings	Other Property, Plant, and Equipment	Advance Payments and Construction in Progress	Total
12/31/2017	1,162	1,592	213	2,967
12/31/2018	1,344	1,985	224	3,553
Additions (other than those from business combinations)				
2017	96	933	167	1,196
2018	199	1,026	77	1,302

The additions (other than from business combinations) relate primarily to the replacement and purchase of IT infrastructure (data centers, and so on) and the construction of new buildings. For more information about the expected effect of the initial application of IFRS 16, see [Note \(IN.1\)](#).

profit or loss (FVTPL), depending on the contractual cash flows of and our business model for holding the respective asset.

For equity securities, as the cash flow characteristics are typically other than solely principal and interest, we take an investment-by-investment decision whether to classify as FVTPL or FVOCI. Judgment is required particularly in estimating the fair values of equity securities that are not listed publicly.

Gains / losses on equity securities at FVTPL include gains / losses from fair value fluctuations, from disposals as well as dividends while gains / losses on equity securities at FVOCI only include dividends, all of which are shown in Financial Income, net. Regular way purchases and sales are recorded as at the trade date.

(D.5) Equity Investments

⌚ Accounting Policies, Judgments, and Estimates

As we do not designate financial assets as "at fair value through profit or loss," we generally classify financial assets into the following categories: at amortized cost (AC), at fair value through other comprehensive income (FVOCI), and at fair value through

Equity Investments

€ millions	2018			2017		
	Current	Non-Current	Total	Current	Non-Current	Total
Equity securities	0	1,248	1,248	0	827	827
Investments in associates	0	26	26	0	32	32
Total	0	1,274	1,274	0	859	859
⌚ Other financial assets	448	1,536	1,984	990	1,155	2,145
% of other financial assets	0	83	64	0	74	40

For a list of the names of other equity investments, see [Note \(G.10\)](#).

Financial Commitments in Venture Capital Funds

€ millions	2018	2017
Investments in venture capital funds	187	182

SAP invests and holds interests in unrelated parties that manage investments in venture capital. On December 31, 2018, total commitments to make such investments amounted to €418 million (2017: €342 million), of which €232 million had been drawn (2017: €161 million). By investing in such venture capital funds, we are exposed to the risks inherent in the business areas in which the entities operate. Our maximum exposure to loss is the amount invested plus unavoidable future capital contributions.

Maturities

€ millions	12/31/2018
	Investments in Venture Capital Funds
Due 2019	187
Due 2020 to 2023	0
Due thereafter	0
Total	187

(D.6) Non-Current Assets by Region

The table below shows non-current assets excluding financial instruments, deferred tax assets, post-employment benefit assets, and rights arising under insurance contracts.

Non-Current Assets by Region

€ millions	2018	2017
Germany	4,184	3,714
Rest of EMEA	4,742	4,338
EMEA	8,926	8,052
United States	22,123	19,300
Rest of Americas	258	201
Americas	22,380	19,500
APJ	922	723
SAP Group	32,228	28,276

For a breakdown of our employee headcount by region, see [Note \(B.1\)](#), and for a breakdown of revenue by region, see [Note \(A.1\)](#).

(D.7) Purchase Obligations

€ millions	2018	2017
Contractual obligations for acquisition of property, plant, and equipment and intangible assets	123	207
Other purchase obligations	2,010	934
Purchase obligations	2,133	1,141

The contractual obligations for acquisition of property, plant, and equipment and intangible assets relate primarily to the construction of new and existing facilities and to the purchase of hardware, software, patents, office equipment, and vehicles. The remaining obligations relate mainly to marketing, consulting, maintenance, license agreements, cloud services, and other third-party agreements. The increase is mainly due to new purchase obligations related to cloud services. Historically, the majority of such purchase obligations have been realized.

Maturities

€ millions	12/31/2018
	Purchase Obligations
Due 2019	827
Due 2020 to 2023	1,290
Due thereafter	17
Total	2,133

Section E – Capital Structure, Financing, and Liquidity

This section describes how SAP manages its capital structure. Our capital management is based on a high equity ratio, modest financial leverage, a well-balanced maturity profile, and deep debt capacity.

(E.1) Capital Structure Management

The primary objective of our capital structure management is to maintain a strong financial profile for investor, creditor, and

customer confidence, and to support the growth of our business. We seek to maintain a capital structure that will allow us to cover our funding requirements through the capital markets on reasonable terms and, in so doing, ensure a high level of independence, confidence, and financial flexibility.

SAP SE's long-term credit rating is "A2" by Moody's with stable outlook, and "A" by Standard & Poor's. Standard & Poor's revised the outlook from positive to stable in 2018.

	12/31/2018		12/31/2017		Δ in %
	€ millions	% of Total Equity and Liabilities	€ millions	% of Total Equity and Liabilities	
Equity	28,877	56	25,515	60	13
Current liabilities	10,481	20	10,210	24	3
Non-current liabilities	12,133	24	6,759	16	80
Liabilities	22,614	44	16,969	40	33
Thereof financial debt	11,331	22	6,264	15	81
Total equity and liabilities	51,491	100	42,484	100	21

In 2018, we repaid €1,150 million in Eurobonds and US\$150 million in U.S. private placements at maturity. The repayment was partly refinanced through the issuance of a US\$300 million USD bond. We took out a three-tranche Eurobond of €1,500 million in total and a five-tranche Eurobond of €4,500 million in total with maturities of two to 12 years to finance the acquisitions of Callidus and Qualtrics. Thus, the ratio of total nominal volume of financial debt to total equity and liabilities increased by 7pp

(E.2) Total Equity

Issued Capital

SAP SE has issued no-par value bearer shares with a calculated nominal value of €1 per share. All of the shares issued are fully paid.

Number of Shares

millions	Issued Capital	Treasury Shares
1/1/2016	1,228.5	-30.6
Reissuance of treasury shares under share-based payments	0	0.7
12/31/2016	1,228.5	-29.9
Purchase of treasury shares	0	-5.4
Reissuance of treasury shares under share-based payments	0	0.2
12/31/2017	1,228.5	-35.1
Reissuance of treasury shares under share-based payments	0	0.2
12/31/2018	1,228.5	-34.9

Authorized Shares

The Articles of Incorporation authorize the Executive Board to increase the issued capital as follows:

- By up to a total amount of €250 million by issuing new no-par value bearer shares against contributions in cash until May 19, 2020 (Authorized Capital I). The issuance is subject to the statutory subscription rights of existing shareholders.
- By up to a total amount of €250 million by issuing new no-par value bearer shares against contributions in cash or in kind until May 19, 2020 (Authorized Capital II). Subject to the consent of the Supervisory Board, the Executive Board is authorized to exclude the shareholders' statutory subscription rights in certain cases.

Contingent Shares

SAP SE's share capital is subject to a contingent capital increase, which may be effected only to the extent that the holders or creditors of convertible bonds or stock options issued or guaranteed by SAP SE or any of its directly or indirectly controlled subsidiaries under certain share-based payments exercise their conversion or subscription rights, and no other methods for servicing these rights are used. As at December 31, 2018, €100 million, representing 100 million shares, was still available for issuance (2017: €100 million).

Other Components of Equity

€ millions	Exchange Differences	Available-for- Sale Financial Assets	Cash Flow Hedges/Cost of Hedging	Total
1/1/2016	2,222	336	3	2,561
Other comprehensive income for items that will be reclassified to profit or loss, net of tax	839	-43	-11	785
12/31/2016	3,062	292	-8	3,345
Other comprehensive income for items that will be reclassified to profit or loss, net of tax	-2,732	-135	29	-2,838
12/31/2017	330	157	21	508
Adoption of IFRS 9	0	-158	-3	-160
1/1/2018	330	0	18	347
Other comprehensive income for items that will be reclassified to profit or loss, net of tax	910	0	-23	887
12/31/2018	1,239	0	-5	1,234

Treasury Shares

By resolution of SAP SE's General Meeting of Shareholders held on May 17, 2018, the authorization granted by the General Meeting of Shareholders on June 4, 2013, regarding the acquisition of treasury shares was revoked to the extent it had not been exercised at that time, and replaced by a new authorization of the Executive Board of SAP SE to acquire, on or before May 16, 2023, shares of SAP SE representing a pro rata amount of capital stock of up to €120 million in aggregate, provided that the shares purchased under the authorization, together with any other shares in the Company previously acquired and held by, or attributable to, SAP SE do not account for more than 10% of SAP SE's issued share capital. Although treasury shares are legally considered outstanding, there are no dividend or voting rights associated with them. We may redeem or resell shares held in treasury, or we may use treasury shares for the purpose of servicing option or conversion rights under the Company's share-based payment plans. Also, we may use shares held in treasury as consideration in connection with mergers with, or acquisitions of, other companies.

Distribution Policy and Dividends

Our general intention is to remain in a position to return liquidity to our shareholders by distributing annual dividends totaling 40% or more of our profit after tax and by potentially repurchasing treasury shares in future.

In 2018, we distributed €1,671 million (€1.40 per share) in dividends for 2017 compared to €1,499 million (€1.25 per share) paid in 2017 for 2016 and €1,378 million (€1.15 per share) paid in 2016 for 2015. Aside from the distributed dividend, in 2017, we also returned €500 million to our shareholders by repurchasing treasury shares.

The total dividend available for distribution to SAP SE shareholders is based on the profits of SAP SE as reported in its statutory financial statements prepared under the accounting rules in the German Commercial Code (Handelsgesetzbuch). For the year ended December 31, 2018, the Executive Board intends to propose that a dividend of €1.50 per share (that is, an estimated total dividend of €1,790 million), be paid from the profits of SAP SE.

(E.3) Liquidity

⌚ Accounting Policies

Non-Derivative Financial Debt Investments

Our non-derivative financial debt investments comprise cash at banks and cash equivalents (highly liquid investments with original maturities of three months or less, such as time deposits and money-market funds), loans and other financial receivables, and acquired debt securities.

As we do not designate financial assets as "at fair value through profit or loss," we generally classify financial assets as: at amortized cost (AC), at fair value through other comprehensive income (FVOCI), or at fair value through profit or loss (FVTPL), depending on the contractual cash flows of, and our business model for, holding the respective asset. Financial assets having cash flow characteristics other than solely principal and interest such as money market and similar funds are generally classified as FVTPL. Generally, all other financial assets with cash flows consisting solely of principal and interest are classified as AC because we follow a conservative investment approach, safeguarding our liquidity by ensuring the safety of principal investment amounts.

Gains / losses on non-derivative financial debt investments at FVTPL are reported in Financial income, net and show interest income / expenses separately from other gains / losses which include gains / losses from fair value fluctuations and disposals. Gains / losses on non-derivative financial debt investments at AC are reported in Financial income, net and show interest income / expenses separately from other gains / losses which include gains / losses disposals and changes in expected and incurred credit losses. Gains / losses from foreign currency exchange rate fluctuations are included in Other non-operating income/expense, net. Regular way purchases and sales are recorded as at the trade date.

For these financial assets, we apply considerable judgment by employing the general impairment approach as follows:

- For cash at banks, time deposits, and debt securities such as acquired bonds and commercial paper, we apply the low credit

risk exception, as it is our policy to invest only in high-quality assets of issuers with a minimum rating of at least investment grade to minimize the risk of credit losses. Thus, these assets are always allocated to stage 1 of the three-stage credit loss model, and we record a loss allowance at an amount equal to 12-month expected credit losses. This loss allowance is calculated based on our exposure at the respective reporting date, the loss given default for this exposure, and the credit default swap spread as a measure for the probability of default. Even though we invest only in assets of at least investment-grade, we also closely observe the development of credit default swap spreads as a measure of market participants' assessments of the creditworthiness of a debtor to evaluate probable significant increases in credit risk to timely react to changes should these manifest. Among others, we consider cash at banks, time deposits, and debt securities to be in default when the counterparty is unlikely to pay its obligations in full, when there is information about a counterparty's financial difficulties or if there is a drastic increase in a counterparty's credit default swap spread for a prolonged time period while the overall market environment remains generally stable. Such financial assets are written off either partially or in full if the likelihood of recovery is considered remote, which might be evidenced, for example, by the bankruptcy of a counterparty of such financial assets.

- Loans and other financial receivables are monitored based on borrower-specific internal and external information to determine whether there has been a significant increase in credit risk since initial recognition. We consider such assets to be in default if they are significantly beyond their due date or if the borrower is unlikely to pay its obligation. A write-off occurs when the likelihood of recovery is considered remote, for example when bankruptcy proceedings have been finalized or when all enforcement efforts have been exhausted.

Non-Derivative Financial Liabilities

Non-derivative financial liabilities include bank loans, issued bonds, private placements, and other financial liabilities. Included in other financial liabilities are customer funding liabilities which are funds

we draw from and make payments on behalf of our customers for customers' employee expense reimbursements, related credit card payments, and vendor payments. We present these funds in cash and cash equivalents and record our obligation to make these expense reimbursements and payments on behalf of our customers as customer funding liabilities.

As we do not designate financial liabilities as FVTPL, we generally classify non-derivative financial liabilities as AC.

Expenses and gains or losses on financial liabilities at AC mainly consist of interest expense which is shown in Financial income, net. Gains / losses from foreign currency exchange rate fluctuations are included in Other non-operating income/expense, net.

Group Liquidity

€ millions	2018	2017	Δ
▪ Cash and cash equivalents	8,627	4,011	4,617
Current time deposits and debt securities	211	774	-563
Group liquidity	8,838	4,785	4,053
Current financial debt	-759	-1,299	540
Non-current financial debt	-10,572	-4,965	-5,607
Financial debt	-11,331	-6,264	-5,067
Net liquidity	-2,493	-1,479	-1,013

While we continuously monitor the ratios presented in the capital structure table, we actively manage our liquidity and structure of our financial indebtedness based on the ratios group liquidity and net liquidity.

Group liquidity consists of cash at banks, money market and other funds, time deposits, and debt securities (both with remaining maturities of less than one year). Financial debt is defined as the nominal volume of bank loans, private placements, and bonds. Net liquidity is group liquidity less financial debt.

Cash and Cash Equivalents

€ millions	2018			2017		
	Current	Non-Current	Total	Current	Non-Current	Total
Cash at banks	2,918	0	2,918	2,558	0	2,558
Time deposits	4,117	0	4,117	314	0	314
Money market and other funds	1,195	0	1,195	1,139	0	1,139
Debt securities	400	0	400	0	0	0
Expected credit loss allowance	-3	0	-3	0	0	0
▪ Cash and cash equivalents	8,627	0	8,627	4,011	0	4,011

Non-Derivative Financial Debt Investments

€ millions	2018			2017		
	Current	Non-Current	Total	Current	Non-Current	Total
Time deposits	137	0	137	736	0	736
Debt securities	77	0	77	39	0	39
Financial instruments related to employee benefit plans	0	165	165	0	155	155
Loans and other financial receivables	57	91	147	58	105	163
Expected credit loss allowance	-3	0	-3	0	0	0
Non-derivative financial debt investments	268	256	524	832	260	1,092
Other financial assets	448	1,536	1,984	990	1,155	2,145
Non-derivative financial debt investments as % of other financial assets	60	17	26	84	23	51

Time deposits and debt securities with original maturity of three months or less are presented as cash and cash equivalents, and those with original maturities of greater than three months (investments considered in group liquidity) are presented as other financial assets. Debt securities consist of commercial papers and

acquired bonds of mainly financial and non-financial corporations and municipalities.

For more information about financial risk and the nature of risk, see [Note \(F.1\)](#).

Financial Debt

€ millions	2018						2017			
	Nominal Volume		Carrying Amount			Nominal Volume		Carrying Amount		
	Current	Non-Current	Current	Non-Current	Total	Current	Non-Current	Current	Non-Current	Total
Bonds	750	9,512	759	9,445	10,204	1,150	4,000	1,149	3,997	5,147
Private placement transactions	0	1,011	0	1,041	1,041	125	965	125	1,005	1,130
Bank loans	9	49	9	49	58	24	0	24	0	24
Financial debt	759	10,572	768	10,536	11,303	1,299	4,965	1,298	5,002	6,301
Financial liabilities			1,125	10,553	11,678			1,561	5,034	6,595
Financial debt as % of financial liabilities			68	100	97			83	99	96

Financial liabilities are unsecured, except for the retention of title and similar rights customary in our industry. Effective interest rates on our financial debt (including the effects from interest rate swaps) were 1.33% in 2018, 1.29% in 2017, and 1.25% in 2016.

For information about the risk associated with our financial liabilities, see [Note \(F.1\)](#). For information about fair values, see [Note \(F.2\)](#).

Bonds

						2018	2017
	Maturity	Issue Price	Coupon Rate	Effective Interest Rate	Nominal Volume (in respective currency in millions)	Carrying Amount (in € millions)	Carrying Amount (in € millions)
Eurobond 6 – 2012	2019	99.307%	2.125% (fix)	2.29%	€750	759	768
Eurobond 7 – 2014	2018	100.000%	0.000% (var.)	0.00%	€750	0	750
Eurobond 8 – 2014	2023	99.478%	1.125% (fix)	1.24%	€1,000	996	995
Eurobond 9 – 2014	2027	99.284%	1.750% (fix)	1.87%	€1,000	992	991
Eurobond 11 – 2015	2020	100.000%	0.000% (var.)	0.07%	€650	649	649
Eurobond 12 – 2015	2025	99.264%	1.000% (fix)	1.13%	€600	595	594
Eurobond 13 – 2016	2018	100.000%	0.000% (var.)	0.00%	€400	0	400
Eurobond 14 – 2018	2021	100.519%	0.000% (var.)	-0.15%	€500	502	0
Eurobond 15 – 2018	2026	99.576%	1.000% (fix)	1.06%	€500	498	0
Eurobond 16 – 2018	2030	98.687%	1.375% (fix)	1.50%	€500	494	0
Eurobond 17 – 2018	2020	100.024%	0.000% (var.)	-0.01%	€500	500	0
Eurobond 18 – 2018	2022	99.654%	0.250% (fix)	0.36%	€900	897	0
Eurobond 19 – 2018	2024	99.227%	0.750% (fix)	0.89%	€850	843	0
Eurobond 20 – 2018	2028	98.871%	1.250% (fix)	1.38%	€1,000	988	0
Eurobond 21 – 2018	2031	98.382%	1.625% (fix)	1.78%	€1,250	1,229	0
Eurobonds						9,942	5,147
USD bond – 2018	2025	100.000%	3.306% (var.)	3.35%	US\$300	262	0
Bonds						10,204	5,147

All of our Eurobonds are listed for trading on the Luxembourg Stock Exchange.

Private Placements

						2018	2017
	Maturity	Coupon Rate	Effective Interest Rate	Nominal Volume (in respective currency in millions)		Carrying Amount (in € millions)	Carrying Amount (in € millions)
U.S. private placements							
Tranche 4 – 2011	2018	3.43% (fix)	3.50%	US\$150	0	125	
Tranche 6 – 2012	2020	2.82% (fix)	2.86%	US\$290	251	241	
Tranche 7 – 2012	2022	3.18% (fix)	3.22%	US\$444.5	395	382	
Tranche 8 – 2012	2024	3.33% (fix)	3.37%	US\$323	299	289	
Tranche 9 – 2012	2027	3.53% (fix)	3.57%	US\$100	96	93	
Private placements						1,041	1,130

The U.S. private placement notes were issued by one of our subsidiaries that has the U.S. dollar as its functional currency.

Reconciliation of Liabilities Arising from Financing Activities

The changes in our financial debts are reconciled to the cash flows from borrowings included in the cash flow from financing activities.

€ millions	12/31/2017	Cash Flows	Business Combinations	Foreign Currency	Fair Value Changes	Other	12/31/2018
Current financial debt	1,299	-1,300	7	3	0	750	759
Non-current financial debt	4,965	6,308	0	49	0	-750	10,572
Financial debt (nominal volume)	6,264	5,008	7	51	0	0	11,331
Basis adjustment	62	0	0	-1	-19	0	42
Transaction costs	-26	-48	0	0	0	3	-70
Financial debt (carrying amount)	6,301	4,961	7	50	-19	3	11,303
Accrued interest	34	0	0	-1	0	14	47
Interest rate swaps	-24	0	0	-1	17	0	-7
Total liabilities from financing activities	6,311	4,961	7	48	-1	18	11,343

€ millions	12/31/2016	Cash Flows	Business Combinations	Foreign Currency	Fair Value Changes	Other	12/31/2017
Current financial debt	1,435	-1,372	-1	-54	0	1,290	1,299
Non-current financial debt	6,390	8	0	-144	0	-1,289	4,965
Financial debt (nominal volume)	7,826	-1,364	-1	-197	0	1	6,264
Basis adjustment	86	0	0	7	-31	0	62
Transaction costs	-32	0	0	0	0	7	-26
Financial debt (carrying amount)	7,880	-1,364	-1	-191	-31	7	6,301
Accrued interest	45	0	0	-2	0	-9	34
Interest rate swaps	-47	0	0	-1	24	0	-24
Total liabilities from financing activities	7,878	-1,364	-1	-194	-7	-2	6,311

Section F – Management of Financial Risk Factors

This section discusses financial risk factors and risk management regarding foreign currency exchange rate risk, interest rate risk, equity price risk, credit risk, and liquidity risk. Further, it contains information about financial instruments, including the adoption of IFRS 9 'Financial Instruments.'

(F.1) Financial Risk Factors and Risk Management

⌚ Accounting policies

We use derivatives to hedge foreign currency risk or interest rate risk and designate them as cash flow or fair value hedges if they qualify for hedge accounting under IFRS 9, which involves judgment.

Derivatives Not Designated as Hedging Instruments

Many transactions constitute economic hedges, and therefore contribute effectively to the securing of financial risks but do not qualify for hedge accounting under IFRS 9. To hedge currency risks inherent in foreign-currency denominated and recognized monetary assets and liabilities, we do not designate our held-for-trading derivative financial instruments as accounting hedges, because the profits and losses from the underlying transactions are recognized in profit or loss in the same periods as the profits or losses from the derivatives.

In addition, we occasionally have contracts that contain foreign currency embedded derivatives that are required to be accounted for separately.

Fair value fluctuations in the spot component of such derivatives at FVTPL are included in Other non-operating income/expense, net while the forward element is shown in Financial income, net.

Derivatives Designated as Hedging Instruments

a) Cash Flow Hedge

In general, we apply cash flow hedge accounting to the foreign currency risk of highly probable forecasted transactions. With regard to foreign currency risk, hedge accounting relates to the spot price and the intrinsic values of the derivatives designated and qualifying as cash flow hedges. Accordingly, the effective portion of these components determined on a present value basis is recorded in other comprehensive income. The forward element and time element as well as foreign currency basis spreads excluded from the hedging relationship are recorded as cost of hedging in a separate position in other comprehensive income. As the amounts are not material, they are presented together with the effective portion of the cash flow hedges in our consolidated statements of comprehensive income and consolidated statements of changes in equity. All other components including counterparty credit risk adjustments of the derivative and the ineffective portion are

immediately recognized in Financial Income, net in profit and loss. Amounts accumulated in other comprehensive income are reclassified to profit and loss to Other non-operating income/expense, net and Financial income, net in the same period when the hedged item affects profit and loss.

b) Fair Value Hedge

We apply fair value hedge accounting for certain of our fixed-rate financial liabilities and show the fair value fluctuations in Financial income, net.

c) Valuation and Testing of Effectiveness

At inception of a designated hedging relationship, we document our risk management strategy and the economic relationship between hedged item and hedging instrument. The existence of an economic relationship is demonstrated as well as the effectiveness of the hedging relationship tested prospectively by applying the critical terms match for our foreign currency hedges, since currencies, maturities, and the amounts are closely aligned for the forecasted transactions and for the spot element of the forward exchange rate contract or intrinsic value of the currency options, respectively. For interest rate swaps, effectiveness is tested prospectively using statistical methods in the form of a regression analysis, by which the validity and extent of the relationship between the change in value of the hedged items as the independent variable and the fair value change of the derivatives as the dependent variable is determined. The main sources of ineffectiveness are:

- The effect of the counterparty and our own credit risk on the fair value of the forward exchange contracts and interest rate swaps, which is not reflected in the respective hedged item, and
- Differences in the timing of hedged item and hedged transaction in our cash flow hedges.

We are exposed to various financial risks, such as market risks (that is, foreign currency exchange rate risk, interest rate risk, and equity price risk), credit risk, and liquidity risk.

We manage market risks, credit risk, and liquidity risk on a Group-wide basis through our global treasury department, global risk management, and global credit management. Risk management policies are established to identify risks, to set appropriate risk limits, and to monitor risks. Risk management policies and hedging strategies are laid out in our internal guidelines (for example, treasury guideline and other internal guidelines), and are subject to continuous internal review and analysis to reflect changes in market conditions and our business.

We only purchase derivative financial instruments to reduce risks and not for speculation, which is defined as entering into derivative instruments without a corresponding underlying transaction.

Foreign Currency Exchange Rate Risk

Foreign Currency Exchange Rate Risk Factors

As we are active worldwide, our ordinary operations are subject to risks associated with fluctuations in foreign currencies. Since the Group's entities mainly conduct their operating business in their own functional currencies, our risk of exchange rate fluctuations from ongoing ordinary operations is not considered significant. However, we occasionally generate foreign-currency-denominated receivables, payables, and other monetary items by transacting in a currency other than the functional currency. To mitigate the extent of the associated foreign currency exchange rate risk, the majority of these transactions are hedged as described below.

In rare circumstances, transacting in a currency other than the functional currency also leads to embedded foreign currency derivatives being separated and measured at fair value through profit or loss.

In addition, the intellectual property (IP) holders in the SAP Group are exposed to risks associated with forecasted intercompany cash flows in foreign currencies. These cash flows arise out of royalty payments from subsidiaries to the respective IP holder. The royalties are linked to the subsidiaries' external revenue. This arrangement leads to a concentration of the foreign currency exchange rate risk with the IP holders, as the royalties are mostly denominated in the subsidiaries' local currencies, while the functional currency of the IP holders with the highest royalty volume is the euro. The highest foreign currency exchange rate exposure of this kind relates to the currencies of subsidiaries with significant operations, for example the U.S. dollar, the pound sterling, the Japanese yen, the Swiss franc, and the Australian dollar.

Generally, we are not exposed to any significant foreign currency exchange rate risk with regard to our investing and financing activities, as such activities are normally conducted in the functional currency of the investing or borrowing entity.

Foreign Currency Exchange Rate Risk Management

We continuously monitor our exposure to currency fluctuation risks based on monetary items and forecasted transactions and pursue a Group-wide strategy to manage foreign currency exchange rate risk, using derivative financial instruments, primarily foreign exchange forward contracts, as appropriate, with the primary aim of reducing profit or loss volatility. Most of the hedging instruments are not designated as being in a hedge accounting relationship.

Currency Hedges Designated as Hedging Instruments (Cash Flow Hedges)

We enter into derivative financial instruments, primarily foreign exchange forward contracts, to hedge significant forecasted cash flows (royalties) from foreign subsidiaries denominated in foreign currencies with a hedge ratio of 1:1 and a hedge horizon of up to 12 months, which is also the maximum maturity of the foreign exchange derivatives we use.

For all years presented, no previously highly-probable transaction designated as a hedged item in a foreign currency cash flow hedge relationship ceased to be probable. Therefore, we did not discontinue any of our cash flow hedge relationships. Also, ineffectiveness was either not material or non-existent in all years reported. Generally, the cash flows of the hedged forecasted

transactions are expected to occur and to be recognized in profit or loss monthly within a time frame of 12 months from the date of the statement of financial position.

The amounts as at December 31, 2018, relating to items designated as hedged items were as follows:

Designated Hedged Items in Foreign Currency Exchange Rate Hedges

Forecasted License Payments	
€ millions	2018
Change in value used for calculating hedge ineffectiveness	-4
Cash flow hedge	-4
Cost of hedging	-2
Balances remaining in cash flow hedge reserve for which hedge accounting is no longer applied	0

The amounts as at December 31, 2018, designated as hedging instruments were as follows:

Designated Hedging Instruments in Foreign Currency Exchange Rate Hedges

Forecasted License Payments	
€ millions	2018
Nominal amount	533
Carrying amount	
Other financial assets	2
Other financial liabilities	-9
Change in value recognized in OCI	4
Hedge ineffectiveness recognized in Finance income, net	0
Cost of hedging recognized in OCI	2
Amount reclassified from cash flow hedge in OCI to Other non-operating income, net	22
Amount reclassified from cost of hedging in OCI to Finance income, net	-5

On December 31, 2018, we held the following instruments to hedge exposures to changes in foreign currency:

Details on Hedging Instruments in Foreign Currency Exchange Rate Hedges

Maturity		
2018		
	1 to 6 months	6 to 12 months
Forward exchange contracts		
Net exposure in € millions	337	195
Average EUR:GBP forward rate	89.42	90.21
Average EUR:JPY forward rate	130.91	130.06
Average EUR:CHF forward rate	1.15	1.14
Average EUR:AUD forward rate	1.61	1.62

Foreign Currency Exchange Rate Exposure

Our risk exposure is based on the following assumptions:

- The SAP Group's entities generally operate in their functional currencies. In exceptional cases and limited economic environments, operating transactions are denominated in currencies other than the functional currency, leading to a foreign currency exchange rate risk for the related monetary instruments. Where material, this foreign currency exchange rate risk is hedged. Therefore, fluctuations in foreign currency exchange rates have a significant impact neither on profit nor on other comprehensive income with regard to our non-derivative monetary financial instruments and related income or expenses.
- Our free-standing derivatives designed for hedging foreign currency exchange rate risks almost completely balance the changes in the fair values of the hedged item attributable to exchange rate movements in the Consolidated Income Statements in the same period. As a consequence, the hedged items and the hedging instruments are not exposed to foreign currency exchange rate risks, and thereby have no effect on profit.

Consequently, we are only exposed to significant foreign currency exchange rate fluctuations with regard to the following:

- The spot component of derivatives held within a designated cash flow hedge relationship affecting other comprehensive income
- Foreign currency embedded derivatives affecting other non-operating expense, net
- The foreign currency option held in connection with the planned acquisition of Qualtrics affecting other non-operating expense, net

Thus, our foreign currency exposure (and our average/high/low exposure) as at December 31 was as follows:

Foreign Currency Exposure

€ billions	2018	2017
Year-end exposure toward all our major currencies	6.3	0.9
Average exposure	2.1	0.9
Highest exposure	6.3	1.0
Lowest exposure	0.7	0.9

Foreign Currency Exchange Rate Sensitivity

We calculate our sensitivity on an upward/downward shift of +/– 10% of the foreign currency exchange rate between the euro and all major currencies (2017: +/– 10% of the foreign currency exchange rate between the euro and all other major currencies; 2016: upward/downward shift of +/– 25% of the foreign currency exchange rate between the euro and Brazilian real; +/– 10% of the foreign currency exchange rate between the euro and all other major currencies). If, on December 31, 2018, 2017, and 2016, the foreign currency exchange rates had been higher/lower as described above, this would have the following effects on other non-operating expense, net and other comprehensive income:

Foreign Currency Sensitivity

€ millions	Effects on Other Non-Operating Expense, Net			Effects on Other Comprehensive Income		
	2018	2017	2016	2018	2017	2016
Derivatives held within a designated cash flow hedge relationship						
All major currencies -10% (2017: all major currencies -10%; 2016: Brazil real: -25%; all other major currencies –10%)				62	71	79
All major currencies +10% (2017: all major currencies +10%; 2016: Brazil real: +25%; all other major currencies +10%)				-62	-71	-79
Embedded derivatives						
All currencies -10%	11	15	23			
All currencies +10%	-11	-15	-23			
FX option held in connection with the acquisition of Qualtrics						
USD -10%	-29	0	0			
USD +10%	559	0	0			

Interest Rate Risk

Interest Rate Risk Factors

We are exposed to interest rate risk as a result of our investing and financing activities mainly in euros and U.S. dollars, since a large part of our investments are based on variable rates and/or short maturities (2018: 48%; 2017: 79%) and most of our financing transactions are based on fixed rates and long maturities (2018: 83%; 2017: 71%).

Interest Rate Risk Management

The aim of our interest rate risk management is to reduce profit or loss volatility and optimize our interest result by creating a balanced structure of fixed and variable cash flows. We therefore manage interest rate risks by adding interest-rate-related derivative instruments to a given portfolio of investments and debt financing. The desired fixed-floating mix of our net debt is set by the Treasury Committee.

Derivatives Designated as Hedging Instruments (Fair Value Hedges)

To match the interest rate risk from our financing transactions to our investments, we use receiver interest rate swaps to convert certain fixed-rate financial liabilities to floating, and by this means secure the fair value of the swapped financing transactions in a 1:1 ratio. Including interest rate swaps, 71% (2017: 49%) of our total interest-bearing financial liabilities outstanding as at December 31, 2018, had a fixed interest rate.

The amounts as at December 31, 2018, relating to items designated as hedged items were as follows:

Designated Hedged Items in Interest Rate Hedges

2018		
€ millions	Fixed-Rate Borrowing in EUR	Fixed-Rate Borrowing in USD
Notional amount	750	535
Carrying amount	749	534
Accumulated fair value adjustments in Other financial liabilities	10	-32
Change in fair value used for measuring ineffectiveness	10	1
Accumulated amount of fair value hedge adjustments for hedged items ceased to be adjusted for hedging gains / losses	0	-33

The amounts as at December 31, 2018, designated as hedging instruments were as follows:

Designated Hedging Instruments in Interest Rate Hedges

2018		
€ millions	Interest Rate Swaps for EUR Borrowing	Interest Rate Swaps for USD Borrowing
Notional amount	750	535
Carrying amount		
Other financial assets	10	1
Other financial liabilities	0	-3
Change in fair value used for measuring ineffectiveness	10	-2

As at December 31, 2018, we held the following instruments to hedge exposures to changes in interest rates:

Details on Hedging Instruments in Interest Rate Hedges

2018				
Maturity				
€ millions	2019	2020	2022	2024
EUR interest rate swaps				
Nominal amounts	750			
Average variable interest rate	0.613%			
USD interest rate swaps				
Nominal amounts	253	194		88
Average variable interest rate	3.366%	3.341%		3.220%

None of the fair value adjustment from the receiver swaps, the basis adjustment on the underlying hedged items held in fair value hedge relationships, and the difference between the two recognized in financial income, net, is material in any of the years presented.

Interest Rate Exposure

Our interest rate exposure (and our average/high/low exposure) as at December 31 was as follows:

Interest Rate Risk Exposure

€ billions	2018				2017			
	Year-End	Average	High	Low	Year-End	Average	High	Low
Fair value interest rate risk								
From investments	0.08	0.09	0.10	0.08	0.04	0.12	0.31	0.03
Cash flow interest rate risk								
From investments (including cash)	4.24	4.16	5.65	3.50	3.80	3.78	4.10	3.52
From financing	1.96	2.08	2.32	1.45	1.81	1.94	2.31	1.80
From interest rate swaps	1.28	1.31	1.36	1.27	1.35	1.75	2.22	1.35

Interest Rate Sensitivity

A sensitivity analysis is provided to show the impact of our interest rate risk exposure on profit or loss and equity in accordance with IFRS 7, considering the following:

- Changes in interest rates only affect the accounting for non-derivative fixed-rate financial instruments if they are recognized at fair value. Therefore, such interest rate changes do not change the carrying amounts of our non-derivative fixed-rate financial liabilities, as we account for them at amortized cost. Investments in fixed-rate financial assets classified as available-for-sale were not material at each year end reported. Thus, we do not consider any fixed-rate instruments in the equity-related sensitivity calculation.
- Income or expenses recorded in connection with non-derivative financial instruments with variable interest rates are subject to interest rate risk if they are not hedged items in an effective hedge relationship. Thus, we take into consideration interest rate changes relating to our variable-rate financing and our investments in money market instruments in the profit-related sensitivity calculation.
- The designation of interest rate receiver swaps in a fair value hedge relationship leads to interest rate changes affecting financial income, net. The fair value movements related to the

interest rate swaps are not reflected in the sensitivity calculation, as they offset the fixed interest rate payments for the bonds and private placements as hedged items. However, changes in market interest rates affect the amount of interest payments from the interest rate swap. As a consequence, we include those effects of market interest rates on interest payments in the profit-related sensitivity calculation.

Due to the different interest rate expectations for the U.S. dollar and the euro area, we base our sensitivity analyses on a yield curve upward shift of +100/+30 basis points (bps) for the U.S. dollar/euro area (2017: +100/+25bps for the U.S. dollar/euro area; 2016: +100/+50bps for the U.S. dollar/euro area), and a yield curve downward shift of -25/-10bps for the U.S. dollar/euro area (2017: -25bps; 2016: -50bps).

If, on December 31, 2018, 2017, and 2016, interest rates had been higher/lower as described above, this would not have had a material effect on financial income, net, for our variable interest rate investments and would have had the following effects on financial income, net.

Interest Rate Sensitivity

€ millions	Effects on Financial Income, Net		
	2018	2017	2016
Derivatives held within a designated fair value hedge relationship			
Interest rates +100 bps for U.S. dollar area/+30 bps for euro area (2017: +100/+25 bps for U.S. dollar/euro area; 2016: +100/+50 bps for U.S. dollar/euro area)	-20	-26	-46
Interest rates -25 bps for U.S. dollar/-10 bps for euro area (2017: -25 bps for U.S. dollar/euro area; 2016: -50 bps for U.S. dollar/euro area)	5	9	29
Variable-rate financing			
Interest rates +100 bps for U.S. dollar area/+25 bps for euro area (2017: +25 bps for euro area; 2016: +50 bps for euro area)	-24	-5	-21
Interest rates -25 bps for U.S. dollar/-10 bps for euro area (2017: -25 bps for euro area; 2016: -50 bps for euro area)	4	0	0

Equity Price Risk

Equity Price Risk Factors

We are exposed to equity price risk with regard to our investments in equity securities and our share-based payments plans.

Equity Price Risk Management

Our listed equity investments are monitored based on the current market value that is affected by the fluctuations in the volatile stock markets worldwide. Unlisted equity investments are monitored based on detailed financial information provided by the

investees. The fair value of our listed equity investments depends on the equity prices, while the fair value of the unlisted equity investments is influenced by various unobservable input factors.

We also monitor the exposure with regard to our share-based payment plans. To reduce resulting profit or loss volatility, we hedge certain cash flow exposures associated with these plans by purchasing derivative instruments, but we do not establish a designated hedge relationship.

Equity Price Exposure

Our exposure from our investments in equity securities was €1,248 million (2017: €827 million; 2016: €952 million).

For information about the exposure from our share-based payments plans, see *Note (B.3)*.

Equity Price Sensitivity

In our sensitivity analysis for our share-based payments plans, we include the hedging instruments and the underlying share-based payments even though the latter are scoped out of IFRS 7, as we believe that taking only the derivative instrument into account would not properly reflect our equity price risk exposure.

Our sensitivity towards a fluctuation in equity prices is as follows:

Equity Price Sensitivity

€ millions	2018	2017	2016
Investments in equity securities			
Increase in equity prices and respective unobservable inputs of 10% - increase of Financial income, net by	65	56	84
Decrease in equity prices and respective unobservable inputs of 10% - decrease of Financial income, net by	-65	-56	-81
Share-based payments			
Increase in equity prices of 20%			
- Increase of share-based payment expenses by	-279	-371	-333
- Increase of offsetting gains from hedging instruments by	57	65	52
Decrease in equity prices of 20%			
- Decrease of share-based payment expenses by	262	337	296
- Decrease of offsetting gains from hedging instruments by	-44	-46	-44

Credit Risk

Credit Risk Factors

To reduce the credit risk in investments, we arrange to receive rights to collateral for certain investing activities in the full amount of the investment volume, which we would be allowed to make use of only in the case of default of the counterparty to the investment. In the absence of other significant agreements to reduce our credit

risk exposure, the total amounts recognized as cash and cash equivalents, current investments, loans, and other financial receivables, trade receivables, and derivative financial assets represent our maximum exposure to credit risks, except for the agreements mentioned above.

Credit Risk Management

Cash at Banks, Time Deposits, and Debt Securities

To mitigate the credit risk from our investing activities and derivative financial assets, we conduct all our activities only with approved major financial institutions and issuers that carry high external ratings, as required by our internal treasury guideline. Among its stipulations, the guideline requires that we invest only in assets from issuers with a minimum rating of at least "BBB flat." We only invest in issuers with a lower rating in exceptional cases. Such investments were not material in 2018 and 2017. The weighted average rating of our financial assets is in the range A to A-. We pursue a policy of cautious investments characterized by predominantly current investments, standard investment instruments, as well as a wide portfolio diversification by doing business with a variety of counterparties.

To further reduce our credit risk, we require collateral for certain investments in the full amount of the investment volume, which we would be allowed to make use of in the case of default of the counterparty to the investment. As such collateral, we only accept bonds with at least investment-grade rating level.

In addition, the concentration of credit risk that exists when counterparties are involved in similar activities by instrument, sector, or geographic area is further mitigated by diversification of counterparties throughout the world and adherence to an internal limit system for each counterparty. This internal limit system stipulates that the business volume with individual counterparties is restricted to a defined limit that depends on the lowest official long-term credit rating available by at least one of the major rating agencies, the Tier 1 capital of the respective financial institution, or participation in the German Depositors' Guarantee Fund or similar protection schemes. We continuously monitor strict compliance with these counterparty limits. As the premium for credit default swaps mainly depends on market participants' assessments of the creditworthiness of a debtor, we also closely observe the development of credit default swap spreads in the market to evaluate probable risk developments and react in a timely manner to changes should these manifest.

For cash at banks, time deposits, and debt securities such as acquired bonds or commercial paper, we apply the general impairment approach. As it is our policy to only invest in high-quality assets of issuers with a minimum rating of at least investment grade so as to minimize the risk of credit losses, we use the low credit risk exception. Thus, these assets are always allocated to stage 1 of the three-stage credit loss model and we record a loss allowance for an amount equal to 12-month expected credit losses. This loss allowance is calculated based on our exposure as at the respective reporting date, the loss given default for this exposure, and the credit default swap spread as a measure for the probability of default. To ensure that during their lifetime our investments always fulfill the requirement of being investment-grade, we monitor changes in credit risk by tracking published external credit ratings. Among other things, we consider cash at banks, time deposits, and

debt securities to be in default when the counterparty is unlikely to pay its obligations in full, when there is information about a counterparty's financial difficulties, or in case of a drastic increase in the credit default swap spread of a counterparty for a prolonged time period while the overall market environment remains rather stable. Such financial assets are written off either partially or in full if the likelihood of recovery is considered remote, which might be evidenced, for example, by the bankruptcy of a counterparty of such financial assets.

Trade Receivables

The default risk of our trade receivables is managed separately, mainly based on assessing the creditworthiness of customers through external ratings and on our past experience with the customers concerned. Based on this assessment, individual credit limits are established for each customer and deviations from such credit limits need to be approved by management.

We apply the simplified impairment approach using a provision matrix for all trade receivables and contract assets to take into account any lifetime expected credit losses already at initial recognition. For the purpose of the provision matrix, customers are clustered into different risk classes, mainly based on market information such as the country risk assessment of their country of origin. Loss rates used to reflect lifetime expected credit losses are determined using a roll-rate method based on the probability of a receivable progressing through different stages of being overdue and on our actual credit loss experience over the past years. These loss rates are enhanced by forward-looking information to reflect differences between economic conditions during the period over which the historical data has been collected, current conditions, and

the expected changes in the economic conditions over the expected life of the receivables. Forward-looking information is based on changes in country risk ratings, or fluctuations in credit default swaps of countries of the customers we do business with. We continuously monitor outstanding receivables locally to assess whether there is objective evidence that our trade receivables and contract assets are credit-impaired. Evidence that trade receivables and contract assets are credit-impaired include, among the trade receivables being past due, information about significant financial difficulty of the customer or non-adherence to a payment plan. We consider receivables to be in default when the counterparty is unlikely to pay its obligations in full. However, a delay of payments (for example, more than 90 days past due) in the normal course of business alone does not necessarily indicate a customer default. We write off account balances either partially or in full if we judge that the likelihood of recovery is remote, which might be evidenced, for example, when bankruptcy proceedings for a customer are finalized or when all enforcement efforts have been exhausted.

The impact of default on our trade receivables from individual customers is mitigated by our large customer base and its distribution across many different industries, company sizes, and countries worldwide. For more information about our trade receivables, see [Note \(A.2\)](#).

Credit Risk Exposure

Cash, Time Deposits, and Debt Securities

As at December 31, 2018, our exposure to credit risk from cash, time deposits and debt securities was as follows:

Credit Risk Exposure from Cash, Time Deposits, and Debt Securities

	Equivalent to External Rating	Weighted Average Loss Rate	Gross Carrying Amount Not Credit-Impaired	Gross Carrying Amount Credit-Impaired	ECL Allowance
Risk class 1 - low risk	AAA to BBB-	-0.1%	7,406	0	-5
Risk class 2 - high risk	BB to D	0.0%	34	0	0
Risk class 3 - unrated	NA	-3.3%	30	0	-1
Total		-0.1%	7,470	0	-6

As at December 31, 2017, the major part of our time deposits, other loans, and other financial receivables was concentrated in Germany. There were no time deposits, loans, or other financial receivables past due but not impaired and we had no indications of impairments of such assets that were not past due and not impaired as at that date.

Trade Receivables and Contract Assets

As at December 31, 2018, our exposure to credit risk from trade receivables was as follows:

Credit Risk Exposure from Trade Receivables and Contract Assets

	Weighted Average Loss Rate	Gross Carrying Amount Not Credit-Impaired	Gross Carrying Amount Credit-Impaired	ECL Allowance
AR not due and due	-0.3%	4,288	0	-13
AR overdue 1 to 30 days	-0.3%	749	15	-2
AR overdue 30 to 90 days	-0.5%	551	8	-3
AR overdue more than 90 days	-13.0%	558	125	-89
Total	-1.7%	6,146	148	-107

For 2018, the movement in the ECL allowance (2017: movement in bad debt allowance according IAS 39) for trade receivables and contract assets is as follows:

Movement in ECL Allowance for Trade Receivables and Contract Assets

	2018	2017
	ECL Allowance	Bad Debt Allowance
Balance as at 01/01 under IAS 39	-74	-89
Adoption of IFRS 9	-25	0
Balance as at 01/01 under IFRS 9	-99	-89
Net credit losses recognized	-18	4
Amounts written off	10	11
Balance as at 12/31	-107	-74

An analysis of trade receivables that were neither past due nor impaired and their aging as at December 31, 2017, was as follows:

Aging of Trade Receivables

€ millions	2017
Not past due and not individually impaired	4,185
Past due but not individually impaired	
Past due 1 to 30 days	695
Past due 31 to 120 days	459
Past due 121 to 365 days	266
Past due over 365 days	95
Total past due but not individually impaired	1,515
Individually impaired, net of allowances	110
Carrying amount of trade receivables, net	5,810

Liquidity Risk

Liquidity Risk Factors

We are exposed to liquidity risk from our obligations towards suppliers, employees, and financial institutions.

Liquidity Risk Management

Our liquidity is managed by our global treasury department with the primary aim of maintaining liquidity at a level that is adequate to meet our financial obligations.

Generally, our primary source of liquidity is funds generated from our business operations. Our global treasury department manages liquidity centrally for all subsidiaries. Where possible, we pool their cash surplus so that we can use liquidity centrally for our business operations, for subsidiaries' funding requirements, or to invest any net surplus in the market. With this strategy, we seek to optimize yields, while ensuring liquidity, by investing only with counterparties and issuers of high credit quality, as explained before. Hence, high levels of liquid assets and marketable securities provide a strategic reserve, helping keep SAP flexible, sound, and independent.

Apart from effective working capital and cash management, we have reduced the liquidity risk inherent in managing our day-to-day operations and meeting our financing responsibilities by arranging an adequate volume of available credit facilities with various financial institutions on which we can draw if necessary.

In order to retain high financial flexibility, on November 20, 2017, SAP SE entered into a €2.5 billion syndicated credit facility agreement with an initial term of five years plus two one-year extension options. In 2018, the initial term of this facility was extended for an additional period of one year until November 2023. The use of the facility is not restricted by any financial covenants. Borrowings under the facility bear interest of EURIBOR or LIBOR for the respective currency plus a margin of 17bps. We are also required to pay a commitment fee of 5.95bps per annum on the unused available credit. We have not drawn on the facility.

In financing the planned acquisition of Qualtrics, we arranged for a €2.5 billion acquisition facility to partially finance the purchase price payment. The facility has a lifetime of three years and can be flexibly repaid with SAP's free cash flow or further refinancing transactions on the capital markets. For more information about drawings under the facility, see [Note \(G.9.\)](#).

Additionally, as at December 31, 2018, and 2017, we had available lines of credit totaling €445 million and €510 million, respectively. There were immaterial borrowings outstanding under these lines of credit in all years presented.

Liquidity Risk Exposure

The table below is an analysis of the remaining contractual maturities of all our financial liabilities held as at December 31, 2018. Financial liabilities for which repayment can be requested by the contract partner at any time are assigned to the earliest possible

period. Variable interest payments were calculated using the latest relevant interest rate fixed as at December 31, 2018. As we generally settle our derivative contracts gross, we show the pay and receive legs separately for all our currency and interest rate derivatives.

whether or not the fair value of the derivative is negative. The cash outflows for the currency derivatives are translated using the applicable spot rate.

Contractual Maturities of Non-Derivative Financial Liabilities

€ millions	Carrying Amount	Contractual Cash Flows					
		12/31/2018	2019	2020	2021	2022	2023
Non-derivative financial liabilities							
Trade payables	-1,265	-1,265	0	0	0	0	0
Financial liabilities	-11,602	-1,149	-1,585	-622	-1,410	-1,097	-6,689
Total of non-derivative financial liabilities	-12,866	-2,414	-1,585	-622	-1,410	-1,097	-6,689

€ millions	Carrying Amount	Contractual Cash Flows					
		12/31/2017	2018	2019	2020	2021	2022
Non-derivative financial liabilities							
Trade payables	-952	-952	0	0	0	0	0
Financial liabilities	-6,508	-1,554	-834	-957	-58	-429	-3,102
Total of non-derivative financial liabilities	-7,460	-2,506	-834	-957	-58	-429	-3,102

Contractual Maturities of Derivative Financial Liabilities and Financial Assets

€ millions	Carrying Amount	Contractual Cash Flows			Carrying Amount	Contractual Cash Flows			
		12/31/2018	2019	Thereafter		12/31/2017	2018		
Derivative financial liabilities and assets									
Derivative financial liabilities									
Currency derivatives not designated as hedging instruments	-64				-84				
Cash outflows		-2,111	-11			-3,909	-309		
Cash inflows		2,062	0			3,857	292		
Currency derivatives designated as hedging instruments	-9				-1				
Cash outflows		-340	0			-75	0		
Cash inflows		330	0			74	0		
Interest rate derivatives without designated hedge relationship	0				0				
Cash outflows									
Cash inflows									
Interest rate derivatives designated as hedging instruments	-3				-1				
Cash outflows		-15	-27			-8	-15		
Cash inflows		13	26			8	14		
Total of derivative financial liabilities	-76	-61	-12	-86	-53	-18			
Derivative financial assets									
Currency derivatives not designated as hedging instruments	100				41				
Cash outflows		-4,025	0			-2,799	0		
Cash inflows		4,076	0			2,831	0		
Currency derivatives designated as hedging instruments	2				29				
Cash outflows		-203	0			-634	0		
Cash inflows		202	0			654	0		
Interest rate derivatives designated as hedging instruments	11				24				
Cash outflows		-8	-14			-12	-43		
Cash inflows		19	15			25	56		
Total of derivative financial assets	113	61	1	93	65	13			
Total of derivative financial liabilities and assets	37	0	-11	8	12	-5			

(F.2) Fair Value Disclosures on Financial Instruments**⌚ Accounting Policies**

It is our policy that transfers between the different levels of the fair value hierarchy are deemed to have occurred at the beginning of the period of the event or change in circumstances that caused the transfer.

Fair Value of Financial Instruments

We use various types of financial instruments in the ordinary course of business, which are classified as either amortized cost (AC) or fair value through profit or loss (FVTPL) (2017: loans and receivables (L&R), available-for-sale (AFS), held-for-trading (HFT), or amortized cost (AC)). For those financial instruments measured at fair value or for which fair value must be disclosed, we have categorized the financial instruments into a three-level fair value hierarchy depending on the inputs used to determine fair value and their significance for the valuation techniques.

Fair Values of Financial Instruments and Classification Within the Fair Value Hierarchy

€ millions	Category	Carrying Amount	Measurement Categories				Fair Value	
			At Amortized Cost	At Fair Value	Level 1	Level 2	Level 3	Total
Assets								
Cash and cash equivalents		8,627						
Cash at banks ¹⁾	AC	2,918	2,918					
Time deposits ¹⁾	AC	4,514	4,514					
Money market and similar funds	FVTPL	1,195		1,195	1,195			
Trade and other receivables		6,480						
Trade receivables ¹⁾	AC	6,188	6,188					
Other receivables ²⁾	—	293						
Other financial assets		1,984						
Debt securities	AC	77	77	77	77			77
Equity securities	FVTPL	1,248		1,248	52	0	1,196	1,248
Investments in associates ²⁾	—	26						
Time deposits	AC	134	134				134	
Financial instruments related to employee benefit plans ²⁾	—	165						
Loans and other financial receivables	AC	147	147				147	147
Derivative assets								
Designated as hedging instrument								
FX forward contracts	—	2		2			2	2
Interest rate swaps	—	11		11			11	11
Not designated as hedging instrument								
FX forward contracts	FVTPL	100		100			100	100
Call options for share-based payments	FVTPL	68		68			68	68
Call option on equity shares	FVTPL	5		5			5	5
Liabilities								
Trade and other payables		-1,614						
Trade payables ¹⁾	AC	-1,265	-1,265					
Other payables ²⁾	—	-350						
Financial liabilities		-11,678						
Non-derivative financial liabilities								
Loans	AC	-58	-58				-58	-58
Bonds	AC	-10,204	-10,204		-10,365			-10,365
Private placements	AC	-1,041	-1,041			-1,035		-1,035
Other non-derivative financial liabilities	AC	-298	-298			-298		-298
Derivatives								
Designated as hedging instrument								
FX forward contracts	—	-9		-9			-9	-9
Interest rate swaps	—	-3		-3			-3	-3
Not designated as hedging instrument								
FX forward contracts	FVTPL	-65		-65			-65	-65
Total financial instruments, net		3,798	1,112	2,553	-9,041	-1,006	1,201	-10,175

Fair Values of Financial Instruments and Classification Within the Fair Value Hierarchy

€ millions	Category	Carrying Amount	Measurement Categories			Fair Value			12/31/2017
			At Amortized Cost	At Fair Value	Level 1	Level 2	Level 3	Total	
Assets									
Cash and cash equivalents ¹⁾	L&R	4,011		4,011					
Trade and other receivables		6,017							
Trade receivables ¹⁾	L&R	5,810		5,810					
Other receivables ²⁾	—	207							
Other financial assets		2,145							
Available-for-sale financial assets									
Debt investments	AFS	39			39	39			39
Equity investments	AFS	827			827	87	8	732	827
Investments in associates ²⁾	—	32							
Loans and other financial receivables									
Financial instruments related to employee benefit plans ²⁾	—	155							
Loans and other financial receivables	L&R	899		899			899		899
Derivative assets									
Designated as hedging instrument									
FX forward contracts	—	29			29	29			29
Interest rate swaps	—	24			24	24			24
Not designated as hedging instrument									
FX forward contracts	HFT	41			41	41			41
Call options for share-based payments	HFT	90			90	90			90
Call option on equity shares	HFT	11			11		11		11
Liabilities									
Trade and other payables		-1,270							
Trade payables ¹⁾	AC	-952		-952					
Other payables ²⁾	—	-318							
Financial liabilities		-6,595							
Non-derivative financial liabilities									
Loans	AC	-24		-24			-24		-24
Bonds	AC	-5,147		-5,147		-5,335			-5,335
Private placements	AC	-1,130		-1,130			-1,136		-1,136
Other non-derivative financial liabilities	AC	-208		-208			-208		-208
Derivatives									
Designated as hedging instrument									
FX forward contracts	—	-1			-1	-1			-1
Interest rate swaps	—	-1			-1	-1			-1
Not designated as hedging instrument									
FX forward contracts	HFT	-84			-84	-84			-84
Total financial instruments, net		4,308		3,259	974	-5,209	-364	742	-4,830

¹⁾ We do not separately disclose the fair value for cash and cash equivalents, trade receivables, and accounts payable as their carrying amounts are a reasonable approximation of their fair values.

²⁾ Since the line items trade receivables, trade payables, and other financial assets contain both financial and non-financial assets or liabilities (such as other taxes or advance payments), the carrying amounts of non-financial assets or liabilities are shown to allow a reconciliation to the corresponding line items in the Consolidated Statements of Financial Position.

Fair Values of Financial Instruments by Instrument Classification

€ millions	Category	12/31/2018		
		Carrying Amount	At Amortized Cost	At Fair Value
Financial assets				
At fair value through profit or loss	FVTPL	2,617		2,617
At amortized cost	AC	13,978	13,978	
Financial liabilities				
At fair value through profit or loss	FVTPL	-65		-65
At amortized cost	AC	-12,866	-12,866	

Fair Values of Financial Instruments by Instrument Classification

€ millions	Category	12/31/2017		
		Carrying Amount	At Amortized Cost	At Fair Value
Financial assets				
At fair value through profit or loss	HFT	141		141
Available-for-sale	AFS	865		865
At amortized cost	L&R	10,719	10,719	
Financial liabilities				
At fair value through profit or loss	HFT	-84		-84
At amortized cost	AC	-7,460	-7,460	

Determination of Fair Values

A description of the valuation techniques and the inputs used in the fair value measurement is given below:

Financial Instruments Measured at Fair Value on a Recurring Basis

Type	Fair Value Hierarchy	Determination of Fair Value/Valuation Technique	Significant Unobservable Inputs	Interrelationship Between Significant Unobservable Inputs and Fair Value Measurement
Other financial assets				
Money-market and similar funds	Level 1	Quoted prices in an active market	NA	NA
Debt securities	Level 1	Quoted prices in an active market	NA	NA
Listed equity securities	Level 1	Quoted prices in an active market	NA	NA
	Level 2	Quoted prices in an active market deducting a discount for the disposal restriction derived from the premium for a respective put option.	NA	NA
Unlisted equity securities	Level 3	Market approach. Comparable company valuation using revenue multiples derived from companies comparable to the investee.	Peer companies used (revenue multiples range from 8.6 to 9.0) Revenues of investees Discounts for lack of marketability (10% to 20%)	The estimated fair value would increase (decrease) if: - The revenue multiples were higher (lower) - The investees' revenues were higher (lower) - The liquidity discounts were lower (higher).
		Market approach. Venture capital method evaluating a variety of quantitative and qualitative factors such as actual and forecasted results, cash position, recent or planned transactions, and market comparable companies.	NA	NA
		Last financing round valuations	NA	NA
		Liquidation preferences	NA	NA
		Net asset value/fair market value as reported by the respective funds	NA	NA
Call options for share-based payment plans	Level 2	Monte Carlo model. Calculated considering risk-free interest rates, the remaining term of the derivatives, the dividend yields, the share price, and the volatility of our share.	NA	NA
Call option on equity shares	Level 3	Market approach. Company valuation using revenue multiples (2017: EBITDA multiples) based on actual results derived from the investee.	Revenue multiples (2017: EBITDA multiples) used Revenue (2017: EBITDA) of the investee	The estimated fair value would increase (decrease) if: - The revenue multiples (2017: EBITDA multiples) were higher (lower) - The investees' revenue (2017: EBITDA) were higher (lower)
Other financial assets/ Financial liabilities				
FX forward contracts	Level 2	Discounted cash flow using par-method. Expected future cash flows based on forward exchange rates are discounted over the respective remaining term of the contracts using the respective deposit interest rates and spot rates.	NA	NA
Interest rate swaps	Level 2	Discounted cash flow. Expected future cash flows are estimated based on forward interest rates from observable yield curves and contract interest rates, discounted at a rate that reflects the credit risk of the counterparty.	NA	NA

Financial Instruments Not Measured at Fair Value

Type	Fair Value Hierarchy	Determination of Fair Value/Valuation Technique
Financial liabilities		
Fixed-rate bonds (financial liabilities)	Level 1	Quoted prices in an active market
Fixed-rate private placements/ loans (financial liabilities)	Level 2	Discounted cash flows. Future cash outflows for fixed interest and principal are discounted over the term of the respective contracts using the market interest rates as of the reporting date.

For other non-derivative financial assets/liabilities and variable rate financial debt, it is assumed that their carrying value reasonably approximates their fair values.

Transfers Between Levels 1 and 2

Transfers of equity securities from Level 2 to Level 1, which occurred because disposal restrictions lapsed and deducting a discount for such restriction was no longer necessary, were

€46 million in 2018 (2017: €360 million), while transfers from Level 1 to Level 2 did not occur at all.

Level 3 Fair Value Disclosures

The following table shows the reconciliation of fair values from the opening to the closing balances for our unlisted equity securities and call options on equity shares classified as Level 3 fair values:

Reconciliation of Level 3 Fair Values

€ millions	2018	2017
01/01	742	722
Transfers		
Into Level 3	0	0
Out of Level 3	-12	-100
Purchases	409	257
Sales	-143	-102
Gains/losses		
Included in financial income, net in profit and loss	168	26
Included in available-for-sale financial assets in other comprehensive income	0	28
Included in exchange differences in other comprehensive income	38	-89
12/31	1,202	742
Change in unrealized gains/losses in profit and loss for equity investments held at the end of the reporting period	0	0

Transfers out of Level 3 are due to initial public offerings of the respective investee. Changing the unobservable inputs to reflect reasonably possible alternative assumptions would not have a material impact on the fair values of our unlisted equity securities held as FVTPL (2017: available-for-sale) as of the reporting date.

impact from a different classification of financial assets, the new impairment rules, and the different treatment of cost of hedging are recognized in retained earnings of the opening balance sheet on January 1, 2018. Comparative figures have not been restated but reflect the requirements of IAS 39.

Our new accounting policies are described in the specific notes covering financial instruments, see *Notes (A.2), (D.4), (E.3), and (F.1)*.

The adoption of IFRS 9 resulted in an increase of opening retained earnings of €135 million (net of tax) as of January 1, 2018, which is mainly due to the following:

- Implementation of the expected credit loss model for trade receivables and contract assets as well as investments into

(F.3) Adoption of IFRS 9

Effective January 1, 2018, we started to apply IFRS 9 'Financial Instruments' using the exception from full retrospective application. IFRS 9 replaces the provisions of IAS 39 relating to the classification and measurement of financial instruments, the impairment of financial assets, and hedge accounting. The

time deposits and debt investment, leading to a decrease of opening retained earnings by €31 million

- Reclassification of amounts attributable to available-for-sale financial assets accumulated in other comprehensive income to opening retained earnings, leading to an increase of opening retained earnings by €157 million

The adoption of IFRS 9 resulted in a decrease of opening other comprehensive income of €160 million (net of tax) as of January 1, 2018, which is mainly due to the following:

- Reclassification of amounts attributable to available-for-sale financial assets accumulated in other comprehensive income to opening retained earnings, leading to a decrease of opening other comprehensive income by €157 million

The following table reconciles the carrying amounts and measurement categories of financial assets and liabilities under IAS 39 to the carrying amounts and measurement categories under IFRS 9 for each class of our financial assets and liabilities upon transition to IFRS 9 on January 1, 2018:

Reconciliation of Carrying Amounts and Measurement Categories Upon Transition to IFRS 9

	€ millions		Carrying Amount IAS 39 12/31/2017		Transition to IFRS 9		Carrying Amount IFRS 9 01/01/2018			
	L&R	AFS	HFT	AC	No Measure- ment Category IAS 39	Reclassifi- cation	Re- measure- ment	AC	FVTPL	No Measure- ment Category IFRS 9
Assets										
Cash and cash equivalents										
Cash at banks	2,558							2,558		
Time deposits	314						-3	311		
Money market and similar funds	1,139					0			1,139	
Trade receivables	5,810				207		-25	5,785		207
Other financial assets										
Debt securities	39					0		39		
Equity securities		827				0			827	
Time deposits	736						-3	733		
Loans and other financial receivables	163								163	
Derivative assets										
Designated as hedging instrument										
FX forward contracts					29					29
Interest rate swaps					24					24
Not designated as hedging instrument										
FX forward contracts			41						41	
Call options for share-based payments			90						90	
Call option on equity shares			11						11	
Liabilities										
Trade payables				-952	-318			-952		-318
Financial liabilities										
Non-derivative financial liabilities										
Loans				-24				-24		
Bonds				-5,147				-5,147		
Private placements				-1,130				-1,130		
Other non-derivative financial liabilities				-208				-208		
Derivatives										
Designated as hedging instrument										
FX forward contracts					-1				-1	
Interest rate swaps					-1				-1	
Not designated as hedging instrument										
FX forward contracts			-84						-84	

The reclassification adjustments result from the following:

- Reclassification from available-for-sale to FVTPL
 - Equity securities in listed and unlisted entities classified as available-for-sale financial assets were classified as FVTPL on January 1, 2018. There is no difference between their carrying amounts based on IAS 39 compared to IFRS 9. However, as a result of the change in classification, we have reclassified amounts accumulated in Other components of equity attributable to these equity securities to our opening retained earnings for 2018.
- Reclassification from available-for-sale to AC
 - Debt securities consisting of bonds of mainly financial and non-financial corporations and municipalities were reclassified from available-for-sale financial assets to amortized cost on January 1, 2018, as the cash flows from these assets consist solely of payment of principal and interest and our business model is to hold to collect the contractual cash flows. As there was no material difference between the fair value and the amortized cost of these debt securities, there was no material impact on our opening retained earnings for 2018.
 - There was no material difference between the fair value of the debt securities at December 31, 2018 and their amortized cost. Thus, the fair value loss we would have recognized in Other components of equity in 2018, had the debt securities not been reclassified to amortized cost, would not have been material.
- Reclassification from AC to FVTPL

- Investments in money-market and similar funds were reclassified from amortized cost to FVTPL, as their contractual cash flows do not solely represent payments of principal and interest. As such funds have a stable net asset value, there was no difference between amortized cost and fair value and accordingly, no impact on our opening retained earnings for 2018.

The remeasurement adjustments result from the following:

- Implementation of the expected credit loss model for trade receivables and contract assets
 - The application of the simplified approach recording lifetime expected credit losses on our trade receivables and contract assets led to an increase of the loss allowance by €25 million with a corresponding impact on our opening retained earnings for 2018.
- Implementation of the expected credit loss model for cash at banks, time deposits, and debt securities
 - The application of the general impairment approach on cash at banks, time deposits, and debt securities led to an increase of our expected credit loss allowance by €6 million with a corresponding impact on our opening retained earnings for 2018.
 - The following table reconciles the ending impairment allowance under IAS 39 to the opening expected credit loss allowance under IFRS 9:

Reconciliation of the Impairment to the Expected Credit Loss Allowance Upon Transition to IFRS 9

€ millions	Loss Allowance as at 12/31/2017 under IAS 39	Remeasurement	Loss Allowance as at 01/01/2018 under IFRS 9
Financial assets at amortized cost			
Trade receivables and contract assets	74	25	99
Cash at banks, time deposits, debt securities and loans and other receivables	1	6	7

Section G – Other Disclosures

This section provides additional disclosures on miscellaneous topics, including information pertaining to the Executive Board, Supervisory Board, related party transactions, and other corporate governance topics.

(G.1) Other Non-Financial Assets

Accounting Policy

Prepaid expenses are recorded at historical cost in the amount of unexpired or unconsumed costs. They are charged to expense over the applicable period.

Prepaid Expenses and Other Tax Assets

€ millions	2018			2017		
	Current	Non-Current	Total	Current	Non-Current	Total
Prepaid expenses	305	131	436	264	123	387
Other tax assets	170	98	268	209	66	275
Total	475	229	704	472	189	662
Other non-financial assets	889	1,301	2,191	725	687	1,411
Prepaid expenses and other tax assets as % of other non-financial assets	53	18	32	65	28	47

Prepaid expenses primarily consist of prepayments for operating leases, support services, and software royalties. Other tax assets primarily consist of VAT.

(G.2) Other Tax Liabilities

€ millions	2018			2017		
	Current	Non-Current	Total	Current	Non-Current	Total
Other tax liabilities	540	0	540	568	0	568
Other non-financial liabilities	4,120	501	4,621	3,982	514	4,496
Other tax liabilities as % of other non-financial liabilities	13	0	12	14	0	13

(G.3) Financial Commitments – Operating Leases

€ millions	2018	2017
Operating leases	1,442	1,459

Our operating leases relate primarily to the lease of office space, hardware, and vehicles, with remaining non-cancelable lease terms between less than one year and 50 years. On a limited scale, the operating lease contracts include escalation clauses (based, for example, on the consumer price index) and renewal options.

Our rental and operating lease expenses were €708 million, €532 million, and €458 million for the years 2018, 2017, and 2016, respectively.

Maturities

€ millions	12/31/2018
Due 2019	351
Due 2020 to 2023	755
Due thereafter	336
Total	1,442

(G.4) Other Litigation, Claims, and Legal Contingencies

This Note discloses information about intellectual property-related litigation and claims, tax-related litigation other than income tax-related litigation (see [Note \(C.5\)](#)), and anti-bribery and export control matters.

⌚ Accounting Policies, Judgments, and Estimates

The policies outlined in [Note \(A.4\)](#) for customer-related provisions, which include provisions for customer-related litigation cases and claims, equally apply to our other litigation, claims, and legal contingencies disclosed in this Note.

The outcome of litigation and claims is intrinsically subject to considerable uncertainty. Management's view of these matters may also change in the future. Actual outcomes of litigation and claims may differ from the assessments made by management in prior periods, which could result in a material impact on our business, financial position, profit, cash flows, or reputation. Most of the lawsuits and claims are of a very individual nature and claims are either not quantified by the claimants or the claim amounts quantified are, based on historical evidence, not expected to be a good proxy for the expenditure that would be required to resolve the case concerned. The specifics of the jurisdictions where most of the claims are located further impair the predictability of the outcome of the cases. Therefore, it is not practicable to reliably estimate the financial effect that these lawsuits and claims would have if SAP were to incur expenditure for these cases.

Further, the expected timing of any resulting outflows of economic benefits from these lawsuits and claims is uncertain and not estimable, as it depends generally on the duration of the legal proceedings and settlement negotiations required to resolve them.

We are subject to a variety of claims and lawsuits that arise from time to time in the ordinary course of our business, including proceedings and claims that relate to companies we have acquired. We will continue to vigorously defend against all claims and lawsuits against us. The provisions recorded for these claims and lawsuits as at December 31, 2018, are neither individually nor in the aggregate material to SAP.

Among the claims and lawsuits disclosed in this Note are the following classes:

Intellectual Property-Related Litigation and Claims

Intellectual property-related litigation and claims are cases in which third parties have threatened or initiated litigation claiming that SAP violates one or more intellectual property rights that they possess. Such intellectual property rights may include patents, copyrights, and other similar rights.

Contingent liabilities exist from intellectual property-related litigation and claims for which no provision has been recognized. Generally, it is not practicable to estimate the financial impact of these contingent liabilities due to the uncertainties around the litigation and claims, as outlined above. The total amounts claimed by plaintiffs in those intellectual property-related lawsuits or claims in which a claim has been quantified were not material to us as at December 31, 2018 and 2017. Based on our past experience, most

of the intellectual property-related litigation and claims tend to be either dismissed in court or settled out of court for amounts significantly below the originally claimed amounts. We currently believe that resolving the intellectual property-related claims and lawsuits pending as at December 31, 2018, will neither individually nor in the aggregate have a material adverse effect on our business, financial position, profit, or cash flows.

Individual cases of intellectual property-related litigation and claims include the following:

In June 2018, Teradata Corporation, Teradata US, Inc. and Teradata Operations, Inc. (collectively "Teradata") filed a civil lawsuit against SAP SE, SAP America, Inc. and SAP Labs, LLC in U.S. federal court in California. Teradata alleges that SAP misappropriated trade secrets of Teradata, infringed Teradata's copyrights, and violated U.S. antitrust laws. Teradata seeks unspecified monetary damages and injunctive relief. Trial is not yet scheduled.

In February 2010, United States-based TecSec, Inc. (TecSec) instituted legal proceedings in the United States against SAP (including its subsidiary Sybase) and many other defendants. TecSec alleged that SAP's and Sybase's products infringe one or more of the claims in five patents held by TecSec. In its complaint, TecSec seeks unspecified monetary damages and permanent injunctive relief. The lawsuit is proceeding but only with respect to one defendant. The trial for SAP (including its subsidiary Sybase) has not yet been scheduled – the lawsuit for SAP (including its subsidiary Sybase) remains stayed.

Tax-Related Litigation

We are subject to ongoing audits by domestic and foreign tax authorities. In respect of non-income taxes, we, like many other companies operating in Brazil, are involved in various proceedings with Brazilian tax authorities regarding assessments and litigation matters on intercompany royalty payments and intercompany services. The total potential amount in dispute related to these matters for all applicable years is approximately €95 million (2017: €102 million). We have not recorded a provision for these matters, as we believe that we will prevail.

For information about income tax-related litigation, see [Note \(C.5\)](#).

Anti-Bribery and Export Control Matters

SAP has received communications and whistleblower information alleging conduct that may violate anti-bribery laws in South Africa, the United States (including the U.S. Foreign Corrupt Practices Act (FCPA)), and other countries. The Legal Compliance and Integrity Office of SAP is conducting investigations with the assistance of an external law firm and voluntarily advised local authorities in South Africa as well as the U.S. Securities and Exchange Commission (U.S. SEC) and the U.S. Department of Justice (U.S. DOJ). The investigations and dialogue with the local authorities and the U.S. SEC and U.S. DOJ are ongoing. SAP is cooperating with both the external law firm engaged for the investigations and the authorities.

The alleged conduct may result in monetary penalties or other sanctions under the FCPA and/or other anti-bribery laws. In addition, SAP's ability to conduct business in certain jurisdictions could be negatively impacted. The comprehensive and exhaustive investigations and the corresponding remediation activities are still

ongoing, and considering the complexity of individual factors and the large number of open questions, it is impossible at this point in time to assess the risks or financial impact.

SAP has implemented substantial enhancements to its anti-corruption compliance program, including additional policy changes and more robust internal controls. SAP has appointed new management in some business units and has increased its compliance staff. Moreover, SAP has banned the use of commissioned business development partners as well as certain sales commission agents in high-risk markets and has undertaken a systematic review of all relationships with state-owned entities and institutions in Africa. We remain fully committed to compliance with all U.S., German, EU, and South African laws, as well as the laws and regulations in every jurisdiction in which SAP operates.

Furthermore, we continue to investigate separate allegations regarding conduct that certain independent SAP partners violated SAP contractual terms and sold SAP products and services in embargoed countries. These SAP partners presumably did not adhere to SAP's strict procedures for indirect business activities. To the extent any company independent from SAP chooses not to follow SAP's licensing procedures, SAP is ultimately limited in its ability to stop their activities. SAP devotes considerable resources to prevent and mitigate such activities should they occur. We are also investigating allegations regarding direct sales from SAP to certain customers, who may have engaged in unauthorized activities in embargoed countries. The investigations are being conducted by SAP's Legal Compliance and Integrity Office and SAP's Export Controls Team, with the assistance of an external law firm and forensic advisors.

In this context, SAP voluntarily self-disclosed potential export controls and economic sanctions violations to the U.S. DOJ and the U.S. Department of Treasury's Office of Foreign Assets Control (OFAC) in September 2017. At the same time, SAP provided notification to the U.S. SEC and responded to an SEC comment letter on export restriction matters in October 2017. SAP has also provided disclosure to the U.S. Department of Commerce's Bureau of Industry and Security (BIS) based on the same alleged facts. Finally, pursuant to Section 219 of the U.S. Iran Threat Reduction and Syria Human Rights Act of 2012 and Section 13(r) of the U.S. Securities Exchange Act of 1934, SAP has filed the required Iran Notice with the U.S. SEC. The alleged conduct may result in monetary penalties or other sanctions under U.S. sanctions and export control laws.

SAP has taken remedial actions to terminate access to SAP products and services for certain end users and block additional business activities with these end users through SAP or SAP partners. We have implemented further enhancements to our export control compliance program, including new internal controls, and have increased the capacity of the Export Control Compliance team with a particular focus on high-risk countries. SAP has also required additional due diligence, conducted by independent third-parties, for certain SAP partners based in high-risk regions. We are fully committed to compliance with all U.S., EU, and German laws regarding economic sanctions and export controls, including laws restricting the sale, export, and usage of SAP software and services in Iran and in other embargoed countries.

The comprehensive and exhaustive investigations and the corresponding remediation activities are ongoing, and considering

the complexity of individual factors and the large number of open questions, it is impossible at this point in time to assess the risks.

For the reasons outlined above, it is impossible at this point in time to determine whether the potential anti-bribery law violations and the potential export restriction violations represent present obligations of SAP and, if so, to reliably estimate the amount of these obligations. As a consequence, no provisions have been recognized for these potential violations in our consolidated financial statements 2018. It is also not practicable to estimate the financial effect of any contingent liabilities that may result from these potential violations.

(G.5) Board of Directors

Executive Board

Memberships on supervisory boards and other comparable governing bodies of enterprises, other than subsidiaries of SAP on December 31, 2018

Bill McDermott

Chief Executive Officer
Strategy, Governance, Digital Government, Business Development, Corporate Development, Global Corporate Affairs, Corporate Audit and Global Marketing

Board of Directors, ANSYS, Inc., Canonsburg, PA, United States

Board of Directors, Under Armour, Inc., Baltimore, MD, United States

Board of Directors, Dell Secure Works, Atlanta, GA, United States

Robert Enslin

Cloud Business Group
SAP Business Network Segment (including SAP Concur, SAP Ariba, and SAP Fieldglass), Customer and Experience Management Segment (including Customer Experience and Qualtrics), Development and Delivery of SAP SuccessFactors (as part of the Applications, Technology & Services Segment)

Board of Directors, Discovery Limited, Johannesburg, South Africa
Board of Directors, Docker, Inc., San Francisco, CA, United States

Adaire Fox-Martin

Global Customer Operations (EMEA, MEE, and Greater China)
Global Sales, Regional Field Organizations, Line of Business Solutions Sales

Christian Klein (from January 1, 2018)

Chief Operating Officer
Intelligent Enterprise Group
Global Development and Delivery of SAP's Core Applications, Global Business Operations, IT Services, Cloud Infrastructure

Michael Kleinemeier

SAP Digital Business Services (Co-Lead with Bernd Leukert)
Global Services Delivery, Regional Field Services

Supervisory Board, innogy SE, Essen, Germany
Board of Partners, E. Merck KG, Darmstadt, Germany (from
January 27, 2019)

Bernd Leukert

SAP Digital Business Services (Co-Lead with Michael Kleinemeier)
Global Support Delivery, Global Innovation Services, Global
Customer Success Group, Global User Groups, Digital Interconnect,
SAP HANA Enterprise Cloud, Application Innovation Services, SAP
Innovative Business Solutions, SAP Secrecy

Supervisory Board, DFKI (Deutsches Forschungszentrum für
Künstliche Intelligenz GmbH), Kaiserslautern, Germany
Supervisory Board, Bertelsmann SE & Co. KGaA, Gütersloh,
Germany
Supervisory Board TomTom N.V., Amsterdam, the Netherlands

Jennifer Morgan

Global Customer Operations (Americas and APJ)
Global Sales, Regional Field Organizations, Line of Business
Solutions Sales

Board of Directors, Bank of New York Mellon, New York, NY, United
States

Luka Mucic

Chief Financial Officer
Global Finance and Administration including Investor Relations and
Data Protection & Privacy, Global Security

Jürgen Müller (from January 1, 2019)

Chief Innovation Officer
Technology & Innovation
Technology and Innovation Strategy, SAP HANA, SAP Cloud
Platform, SAP Leonardo, SAP Analytics

Stefan Ries

Chief Human Resources Officer, Labor Relations Director
HR Strategy, Business Transformation, Leadership Development,
Talent Development

Supervisory Board, Rhein-Neckar Loewen GmbH, Kronau, Germany

Supervisory Board

Memberships on supervisory boards and other comparable
governing bodies of enterprises, other than subsidiaries of SAP on
December 31, 2018

Prof. Dr. h.c. mult. Hasso Plattner ^{2), 4), 6), 7), 8)}

Chairman

Margret Klein-Magar ^{1), 2), 4)}

Deputy Chairperson
Vice President, Head of SAP Alumni Relations
Chairperson of the Spokespersons' Committee of Senior Managers
of SAP SE

Pekka Ala-Pietilä ^{2), 4), 5), 6), 7)}

Chairman of the Board of Directors, Huhtamäki Oyj,
Espoo, Finland

Chairman of the Board of Directors, Sanoma Corporation, Helsinki,
Finland
Chairman of the Board of Directors, Netcompany A/S, Copenhagen,
Denmark

Panagiotis Bissiritsas ^{1), 3), 4), 5)}

Support Expert
Member of Works Council SAP SE

Martin Duffek ^{1), 3), 4), 8)}

Product Manager

Aicha Evans ^{2), 4), 8)}

Senior Vice President and Chief Strategy Officer, Intel Corporation,
Santa Clara, CA, United States

Diane Greene (from May 17, 2018) ⁴⁾

Chief Executive Officer, Google Cloud, Google LLC, Mountain View,
CA, United States (until January 28, 2019)

Board of Directors, Alphabet, Inc., Mountain View, CA, United States
Board of Directors, Stripe Inc., San Francisco, CA, United States
(from January 31, 2019)

Andreas Hahn ^{1), 2), 4)}

Product Expert, IoT Standards,
Member of Works Council SAP SE

Prof. Dr. Gesche Joost ^{4), 8)}

Professor for Design Research and Head of the Design Research
Lab, University of Arts Berlin

Supervisory Board, Ottobock SE & Co. KGaA, Duderstadt, Germany
Supervisory Board, ING-DiBa AG, Frankfurt, Germany

Lars Lamadé^{1), 2), 7), 8)}

Head of Sponsorships Europe and Asia

Supervisory Board, Rhein-Neckar Loewen GmbH, Kronau, Germany

Bernard Liautaud^{2), 4), 6)}

Managing Partner Balderton Capital, London, United Kingdom

Board of Directors, nlyte Software Ltd., London, United Kingdom
Board of Directors, Wonga Group Ltd., London, United Kingdom
(until September 6, 2018)

Board of Directors, SCYTL Secure Electronic Voting SA, Barcelona, Spain (until November 7, 2018)

Board of Directors, Vestiaire Collective SA, Levallois-Perret, France
Board of Directors, Dashlane, Inc., New York, NY, United States
Board of Directors, Recorded Future, Inc., Cambridge, MA, United States

Board of Directors, eWise Group, Inc., Redwood City, CA, United States

Board of Directors, Qubit Digital Ltd., London, United Kingdom
Board of Directors, Stanford University, Stanford, CA, United States (until March 31, 2018)

Board of Directors, Aircall.io, New York City, NY, United States

Board of Directors, Virtuo Technologies, Paris, France

Board of Directors, The Hut Group, Manchester, United Kingdom

Board of Directors, Peakon Aps, Copenhagen, Denmark (from February 5, 2018)

Board of Directors, Tim Talent SAS, Paris, France (from February 6, 2018)

Board of Directors, Citymapper Ltd., London, United Kingdom

Gerhard Oswald (from January 1, 2019),

Managing Director of Oswald Consulting GmbH, Walldorf, Germany

Advisory Board, TSG 1899 Hoffenheim Fußball-Spielbetriebs GmbH, Sinsheim, Germany

Christine Regitz^{1), 4), 8)}Vice President User Experience
Chief Product Expert**Dr. Friederike Rotsch (from May 17, 2018)^{3), 5), 7)}**Group General Counsel and Head of Group Legal & Compliance,
Merck KGaA, Darmstadt, Germany**Dr. Erhard Schipporeit^{3), 5), 7)}**

Independent Management Consultant

Supervisory Board, Talanx AG, Hanover, Germany
Supervisory Board, Deutsche Börse AG, Frankfurt am Main, Germany (until May 16, 2018)
Supervisory Board, HDI V.a.G., Hanover, Germany
Supervisory Board, Hannover Rückversicherung SE, Hanover, Germany
Supervisory Board, Fuchs Petrolub SE, Mannheim, Germany
Supervisory Board, BDO AG, Hamburg, Germany

Supervisory Board, RWE AG, Essen, Germany

Chairman of the Supervisory Board, innogy SE, Essen, Germany

Robert Schuschnig-Fowler^{1), 5), 8)}Account Manager, Senior Support Consultant
Deputy Chairman of SAP SE Works Council Europe (until November 19, 2018)
Member of Works Council SAP SE**Dr. Sebastian Sick^{1), 2), 5), 7)}**

Head of Company Law Unit, Hans Böckler Foundation, Duesseldorf, Germany

Pierre Thiollet^{1), 4)}Webmaster (P&I)
Member of the SAP France Works Council
Secretary of CHSCT (Hygiene, Security and Work Conditions Committee)**Supervisory Board Members Who Left During 2018****Prof. Anja Feldmann (until December 31, 2018)****Prof. Dr. Wilhelm Haarmann (until May 17, 2018)****Prof. Dr.-Ing. Dr.-Ing. E. h. Klaus Wucherer (until May 17, 2018)**

Information as at December 31, 2018

¹⁾ Elected by the employees²⁾ Member of the Company's General and Compensation Committee³⁾ Member of the Company's Audit Committee⁴⁾ Member of the Company's Technology and Strategy Committee⁵⁾ Member of the Company's Finance and Investment Committee⁶⁾ Member of the Company's Nomination Committee⁷⁾ Member of the Company's Special Committee⁸⁾ Member of the Company's People and Organization Committee**(G.6) Executive and Supervisory Board Compensation****⌚ Accounting Policy**

The share-based payment amounts disclosed below in the table "Executive Board Compensation" are based on the grant date fair value of the restricted share units (RSUs) and performance share units (PSUs), respectively, issued to Executive Board members during the year under the LTI 2016 Plan, effective January 1, 2016.

In the table "Share-Based Payment for Executive Board Members", the share-based payment expense is the amount recorded in profit or loss under IFRS 2 (Share-Based Payment) in the respective period.

The total compensation of the Executive Board members for the years 2018, 2017, and 2016 was as follows:

Executive Board Compensation

€ thousands	2018	2017	2016
Short-term employee benefits	18,652	16,634	19,206
Share-based payment ¹⁾	23,646	25,723	23,942
Subtotal¹⁾	42,298	42,357	43,148
Post-employment benefits	1,106	1,312	2,398
Thereof defined-benefit	250	423	1,792
Thereof defined-contribution	856	889	606
Total¹⁾	43,404	43,669	45,546

¹⁾ Portion of total executive compensation allocated to the respective year

Share-Based Payment for Executive Board Members

	2018	2017	2016
Number of RSUs granted	118,072	117,929	147,041
Number of PSUs granted	177,106	176,886	220,561
Total expense in € thousands	8,054	19,068	14,233

The defined benefit obligation (DBO) for pensions to Executive Board members and the annual pension entitlement of the members of the Executive Board on reaching age 62 based on entitlements from performance-based and salary-linked plans were as follows:

Retirement Pension Plan for Executive Board Members

€ thousands	2018	2017	2016
DBO 12/31	3,441	3,191	10,739
Annual pension entitlement	192	148	470

The total annual compensation of the Supervisory Board members is as follows:

Supervisory Board Compensation

€ thousands	2018	2017	2016
Total compensation	3,702	3,663	3,652
Thereof fixed compensation	3,162	3,135	3,135
Thereof committee remuneration	540	528	517

The Supervisory Board members do not receive any share-based payment for their services. As far as members who are employee representatives on the Supervisory Board receive share-based payment, such compensation is for their services as employees only and is unrelated to their status as members of the Supervisory Board.

Payments to/DBO for Former Executive Board Members

€ thousands	2018	2017	2016
Payments	2,054	1,997	1,667
DBO 12/31	38,374	39,993	33,935

SAP did not grant any compensation advance or credit to, or enter into any commitment for the benefit of, any member of the Executive Board or Supervisory Board in 2018, 2017, or 2016.

Detailed information about the different elements of the compensation are disclosed in the Compensation Report, which is part of our Management Report and of our Annual Report on Form 20-F, both of which are available on SAP's Web site.

(G.7) Related Party Transactions Other Than Board Compensation

Certain Supervisory Board members of SAP SE currently hold, or held within the last year, positions of significant responsibility with other entities. We have relationships with certain of these entities in the ordinary course of business, whereby we buy and sell products, assets, and services at prices believed to be consistent with those negotiated at arm's length between unrelated parties.

Companies controlled by Hasso Plattner, chairman of our Supervisory Board and Chief Software Advisor of SAP, engaged in the following transactions with SAP: providing consulting services to SAP, receiving sport sponsoring from SAP, making purchases of SAP products and services, and selling a piece of land to SAP.

Wilhelm Haarmann, member of the Supervisory Board until May 17, 2018, practices as a partner in the law firm Linklaters LLP in Frankfurt am Main, Germany. SAP occasionally purchased and purchases legal and similar services from Linklaters.

Occasionally, members of the Executive Board of SAP SE obtain services from SAP for which they pay a consideration consistent with those negotiated at arm's length between unrelated parties.

All amounts related to the abovementioned transactions were immaterial to SAP in all periods presented.

In total, we sold products and services to companies controlled by members of the Supervisory Board in the amount of €37 million (2017: €2 million), we bought products and services from such companies in the amount of €3 million (2017: €5 million), and we provided sponsoring and other financial support to such companies in the amount of €4 million (2017: €4 million). Outstanding balances at year end from transactions with such companies were €3 million (2017: €0 million) for amounts owed to such companies and €28 million (2017: €0 million) for amounts owed by such companies. All of these balances are unsecured and interest-free and settlement is expected to occur in cash. Commitments (the longest of which is for five years) made by us to purchase further goods or services from these companies and to provide further sponsoring and other financial support amount to €191 million as at December 31, 2018 (2017: €21 million).

In total, we sold services to members of the Executive Board and the Supervisory Board in the amount of €0 million (2017: €0 million), and we received services from members of the Supervisory Board (including services from employee representatives on the Supervisory Board in their capacity as

employees of SAP) in the amount of €1 million (2017: €1 million). Amounts owed, but not yet paid, to Supervisory Board members from these transactions were €0 million as at December 31, 2018 (2017: €0 million). All of these balances are unsecured and interest-free and settlement is expected to occur in cash.

For information about the compensation of our Executive Board and Supervisory Board members, see [Note \(G.6\)](#).

(G.8) Principal Accountant Fees and Services

At the Annual General Meeting of Shareholders held on May 17, 2018, our shareholders elected KPMG AG Wirtschaftsprüfungsgesellschaft as SAP's independent auditor for 2018. KPMG AG Wirtschaftsprüfungsgesellschaft has been the company's principal auditor since the fiscal year 2002. Mr. Rackwitz signs as auditor responsible for audit of the financial reporting and the group reporting of SAP SE since the fiscal year 2018. KPMG AG Wirtschaftsprüfungsgesellschaft and other firms in the global KPMG network charged the following fees to SAP for audit and other professional services related to 2018 and the previous years:

	2018			2017			2016		
	KPMG AG (Germany)	Foreign KPMG Firms	Total	KPMG AG (Germany)	Foreign KPMG Firms	Total	KPMG AG (Germany)	Foreign KPMG Firms	Total
Audit fees	3	6	9	3	7	10	3	6	9
Audit-related fees	0	0	0	0	0	0	0	1	1
Tax fees	0	0	0	0	0	0	0	0	0
All other fees	0	0	0	0	0	0	0	0	0
Total	3	6	9	3	7	10	3	7	10

Audit fees are the aggregate fees charged by KPMG for auditing our consolidated financial statements and the statutory financial statements of SAP SE and its subsidiaries. Audit-related fees are fees charged by KPMG for assurance and related services that are reasonably related to the performance of the audit or review of our financial statements and are not reported under audit fees.

(G.9) Events After the Reporting Period

Business Combinations – Acquisition of Qualtrics

On January 23, 2019, we concluded the acquisition of Qualtrics, following satisfaction of applicable regulatory and other approvals.

Qualtrics is a leading provider of customer relationship management (CRM) solutions. By combining Qualtrics products and SAP products, we aim to deliver an end-to-end experience and operational management system to our customers.

We acquired 100% of the Qualtrics shares for approx. US\$35 per share, representing consideration transferred in cash of approximately US\$7.1 billion. In addition to the cash payments, SAP will also incur liabilities and post-closing expenses relating to assumed share-based payment awards amounting to approximately US\$0.9 billion.

The financial effects of this transaction have not been recognized in the consolidated financial statements as at December 31, 2018. The operating results and assets and liabilities of Qualtrics will be reflected in our consolidated financial statements from January 23, 2019, onward.

Qualtrics Acquisition: Consideration Transferred (Provisional Amounts)

€ billions	
Cash paid	6.2
Liabilities incurred	0.3
Total consideration transferred	6.5

The liabilities incurred (the amounts above are provisional as forfeiture rates and so on have not been finally determined) relate to the earned portion of unvested share-based payment awards. These liabilities were incurred by replacing, upon acquisition, equity-settled share-based payment awards held by employees of Qualtrics with cash-settled share-based payment awards, which are subject to forfeiture. The liabilities represent the portion of the replacement awards that relates to pre-acquisition services provided by the acquiree's employees, and were measured at the fair value determined under IFRS 2.

The following table summarizes the provisional values of identifiable assets acquired and liabilities assumed in connection with the acquisition of Qualtrics, as at the acquisition date.

Qualtrics Acquisition: Provisional Amounts of Assets and Liabilities

€ billions	
Cash and cash equivalents	0.1
Trade and other receivables	0.1
Property, plant, and equipment	0.1
Intangible assets	2.0
Thereof acquired technology	0.5
Thereof customer relationship and other intangibles	1.5
Total identifiable assets	2.3
Trade and other payables	0.1
Current and deferred tax liabilities	0.3
Contract liabilities/deferred income	0.1
Other liabilities	0.1
Total identifiable liabilities	0.6
Total identifiable net assets	1.7
Goodwill	4.8
Total consideration transferred	6.5

We have not yet completed the accounting for the Qualtrics acquisition. In particular, the fair values of the intangible assets and contract liabilities disclosed above have only been determined provisionally (with the provisional values of the intangibles being based on benchmarks), as the valuations have only just started. The tax related assets and liabilities presented above might also vary significantly, as deferred taxes from investments in subsidiaries, unused tax losses, and so on, could not be finally determined. It is also not yet possible to provide detailed information about each class of acquired receivables or contingent liabilities.

In general, the goodwill arising from the acquisitions consists largely of the synergies and the know-how and technical skills of the acquired businesses' workforces.

Qualtrics goodwill is attributed to expected synergies from the acquisition, particularly in the following areas:

- Cross-selling opportunities to existing SAP customers across all regions, using SAP's sales organization

- Combining Qualtrics products and SAP products to deliver an end-to-end experience and operational management system to the customers
- Improved profitability in Qualtrics sales and operations

The allocation of the goodwill resulting from the Qualtrics acquisition to our operating segments depends on how our operating segments actually benefit from the synergies of the Qualtrics business combination. We have not yet completed the identification of those benefits.

Restructuring

As we intensify our focus on our key strategic growth areas, we will execute a company-wide restructuring program in 2019 to further simplify company structures and processes and to ensure that our organizational setup, skills set, and resource allocation continue to meet evolving customer demand. The main features of the restructuring plan were announced on January 29, 2019. Restructuring expenses are projected to be €800 million to €950 million.

(G.10) Scope of Consolidation, Subsidiaries and Other Equity Investments

Entities Consolidated in the Financial Statements

	Total
12/31/2016	245
Additions	10
Disposals	-28
12/31/2017	227
Additions	59
Disposals	-21
12/31/2018	265

The additions relate to legal entities added in connection with acquisitions and foundations. The disposals are mainly due to mergers and liquidations of legal entities.

Subsidiaries

Major Subsidiaries

Name and Location of Company	Ownership %	Total Revenue in 2018 ¹⁾ € thousands	Profit/Loss (-) After Tax for 2018 ¹⁾ € thousands	Total Equity as at 12/31/2018 ¹⁾ € thousands	Number of Employees as at 12/31/2018 ²⁾	Foot- note
						12/31/2018 ²⁾
		€ thousands	€ thousands	€ thousands		
Ariba, Inc., Palo Alto, CA, United States	100.0	1,168,287	212,728	3,972,022	1,872	
Callidus Software Inc., Dublin, CA, United States	100.0	175,789	-52,016	2,053,873	810	⁴⁾
Concur Technologies, Inc., Bellevue, WA, United States	100.0	1,545,720	1,787	7,340,513	3,569	
LLC SAP CIS, Moscow, Russia	100.0	472,531	23,133	62,725	837	
SAP (Schweiz) AG, Biel, Switzerland	100.0	822,547	68,029	84,935	767	
SAP (UK) Limited, Feltham, United Kingdom	100.0	1,227,572	10,385	-47,515	1,794	^{10), 17)}
SAP America, Inc., Newtown Square, PA, United States	100.0	5,363,074	-514,481	14,320,071	8,184	
SAP Argentina S.A., Buenos Aires, Argentina	100.0	142,718	-25,540	-15,237	825	¹⁷⁾
SAP Asia Pte Ltd, Singapore, Singapore	100.0	458,919	-28,224	21,625	1,262	¹⁷⁾
SAP Australia Pty Ltd, Sydney, Australia	100.0	733,060	-18,774	42,366	1,322	
SAP Brasil Ltda, São Paulo, Brazil	100.0	519,124	-33,903	-26,346	1,913	
SAP Canada, Inc., Toronto, Canada	100.0	865,582	53,734	465,034	2,999	
SAP China Co., Ltd., Shanghai, China	100.0	949,367	-67,883	-184,135	5,272	¹⁷⁾
SAP Deutschland SE & Co. KG, Walldorf, Germany	100.0	4,199,201	754,022	1,567,774	4,707	^{7), 9)}
SAP España – Sistemas, Aplicaciones y Productos en la Informática, S.A., Madrid, Spain	100.0	491,270	24,691	336,419	652	
SAP France, Levallois Perret, France	100.0	1,051,242	156,005	1,606,922	1,564	
SAP Hungary Rendszerek, Alkalmazások és Termékek az Adatfeldolgozásban Informatikai Kft., Budapest, Hungary	100.0	112,448	1,775	21,073	956	
SAP India Private Limited, Bangalore, India	100.0	621,942	72,674	344,218	2,028	
SAP Industries, Inc., Newtown Square, PA, United States	100.0	638,394	118,321	691,709	338	
SAP Italia Sistemi Applicazioni Prodotti in Data Processing S.p.A., Vimercate, Italy	100.0	563,346	39,332	427,184	710	
SAP Japan Co., Ltd., Tokyo, Japan	100.0	980,832	82,902	192,939	1,210	
SAP Labs India Private Limited, Bangalore, India	100.0	477,630	40,051	132,888	8,282	
SAP Labs, LLC, Palo Alto, CA, United States	100.0	604,460	124,246	484,511	2,189	
SAP México S.A. de C.V., Mexico City, Mexico	100.0	386,079	10,984	20,172	869	¹⁷⁾
SAP National Security Services, Inc., Newtown Square, PA, United States	100.0	552,326	130,945	426,052	448	
SAP Nederland B.V., 's-Hertogenbosch, the Netherlands	100.0	613,282	52,886	145,553	611	¹¹⁾
SAP Service and Support Centre (Ireland) Limited, Dublin, Ireland	100.0	180,364	15,930	65,128	1,628	
SuccessFactors, Inc., South San Francisco, CA, United States	100.0	867,910	203,903	3,609,046	999	

Other Subsidiaries³⁾

Name and Location of Company	Owner- ship	Foot- note
	%	
"SAP Kazakhstan" LLP, Almaty, Kazakhstan	100.0	
110405, Inc., Newtown Square, PA, United States	100.0	
Abakus Europe Limited, London, United Kingdom	100.0	¹⁰⁾
Abakus Ukraine Limited Liability Company, Kiev, Ukraine	100.0	
Ambin Properties Proprietary Limited, Johannesburg, South Africa	100.0	
Apex Expert Solutions LLC, Arlington, VA, United States	100.0	⁴⁾
Ariba Czech s.r.o., Prague, Czech Republic	100.0	
Ariba India Private Limited, Gurgaon, India	100.0	
Ariba International Holdings, Inc., Wilmington, DE, United States	100.0	
Ariba International Singapore Pte Ltd, Singapore, Singapore	100.0	
Ariba International, Inc., Wilmington, DE, United States	100.0	
Ariba Slovak Republic, s.r.o., Košice, Slovakia	100.0	
Ariba Software Technology Services (Shanghai) Co., Ltd., Shanghai, China	100.0	
Ariba Technologies India Private Limited, Bangalore, India	100.0	
Ariba Technologies Netherlands B.V., 's-Hertogenbosch, the Netherlands	100.0	¹¹⁾
Beijing Zhang Zhong Hu Dong Information Technology Co., Ltd., Beijing, China	0	⁵⁾
b-process, Paris, France	100.0	¹⁴⁾
Business Objects Holding B.V., 's-Hertogenbosch, the Netherlands	100.0	¹¹⁾
Business Objects Option LLC, Wilmington, DE, United States	100.0	
Business Objects Software Limited, Dublin, Ireland	100.0	
Callidus Software (Canada) Inc., Toronto, Canada	100.0	⁴⁾
Callidus Software (Singapore) Pte. Ltd., Singapore, Singapore	100.0	⁴⁾
Callidus Software GmbH, Munich, Germany	100.0	^{4), 8), 9)}
Callidus Software Hong Kong Ltd., Hong Kong, China	100.0	⁴⁾
Callidus Software Ltd., London, United Kingdom	100.0	^{4), 10)}
Callidus Software Pty. Ltd., Sydney, Australia	100.0	⁴⁾
CallidusCloud (India) Pvt. Ltd., Hyderabad, India	100.0	⁴⁾
CallidusCloud (Malaysia) Sdn. Bhd., Kuala Lumpur, Malaysia	100.0	⁴⁾

Name and Location of Company	Owner- ship	Foot- note
	%	
CallidusCloud Holdings Pty. Ltd., Sydney, Australia	100.0	⁴⁾
CallidusCloud K.K., Tokyo, Japan	100.0	⁴⁾
CallidusCloud Mexico, S. de R.L. de C.V., Mexico City, Mexico	100.0	⁴⁾
CallidusCloud Netherlands B.V., Rotterdam, the Netherlands	100.0	^{4), 11)}
CallidusCloud New Zealand Corp., Auckland, New Zealand	100.0	⁴⁾
CallidusCloud Pty. Ltd., Sydney, Australia	100.0	⁴⁾
Christie Partners Holding C.V., 's-Hertogenbosch, the Netherlands	100.0	¹¹⁾
C-Learning Pty. Ltd., Sydney, Australia	100.0	⁴⁾
ClearTrip Inc. (Mauritius), Ebene, Mauritius	57.0	
ClearTrip Inc., George Town, Cayman Islands	57.0	
Cleartrip MEA FZ LLC, Dubai, United Arab Emirates	57.0	
Cleartrip Packages and Tours Private Limited, Mumbai, India	57.0	⁴⁾
ClearTrip Private Limited, Mumbai, India	57.0	
Clicktools Limited, Dorset, United Kingdom	100.0	^{4), 10)}
CNQR Operations Mexico S. de R.L. de C.V., San Pedro Garza Garcia, Mexico	100.0	
Concur (Austria) GmbH, Vienna, Austria	100.0	
Concur (Canada), Inc., Toronto, Canada	100.0	
Concur (France) SAS, Paris, France	100.0	
Concur (Germany) GmbH, Frankfurt am Main, Germany	100.0	^{8), 9)}
Concur (Japan) Ltd., Tokyo, Japan	73.8	
Concur (New Zealand) Limited, Wellington, New Zealand	100.0	¹⁵⁾
Concur (Philippines) Inc., Makati City, Philippines	100.0	
Concur (Switzerland) GmbH, Zurich, Switzerland	100.0	¹³⁾
Concur Czech (s.r.o.), Prague, Czech Republic	100.0	
Concur Holdings (France) SAS, Paris, France	100.0	
Concur Holdings (Netherlands) B.V., Amsterdam, the Netherlands	100.0	¹¹⁾
Concur Technologies (Australia) Pty. Limited, Sydney, Australia	100.0	
Concur Technologies (Hong Kong) Limited, Hong Kong, China	100.0	
Concur Technologies (India) Private Limited, Bangalore, India	100.0	
Concur Technologies (Singapore) Pte Ltd, Singapore,	100.0	¹⁷⁾
Concur Technologies (UK) Limited, London, United Kingdom	100.0	¹⁰⁾
Contextor SAS, Orsay, France	100.0	⁴⁾
ConTgo Consulting Limited, London, United Kingdom	100.0	¹⁰⁾

Name and Location of Company	Owner- ship	Foot- note
	%	
ConTgo Limited, London, United Kingdom	100.0	10)
ConTgo Pty. Ltd., Sydney, Australia	100.0	
Crystal Decisions (Ireland) Limited, Dublin, Ireland	100.0	12)
Crystal Decisions Holdings Limited, Dublin, Ireland	100.0	12)
Crystal Decisions UK Limited, London, United Kingdom	100.0	10)
Datahug Limited, Dublin, Ireland	100.0	4)
Dorset Acquisition Corp., Dublin, CA, United States	100.0	4)
Ebreez Egypt LLC, Cairo, Egypt	57.0	4)
EssCubed Procurement Pty. Ltd., Johannesburg, South Africa	100.0	
Extended Systems, Inc., San Ramon, CA, United States	100.0	
Fieldglass Europe Limited, London, United Kingdom	100.0	10)
Financial Fusion, Inc., San Ramon, CA, United States	100.0	
Flyin Holding Limited, Dubai, United Arab Emirates	57.0	4)
Flyin Travel and Tourism Private Limited, Hyderabad, India	57.0	4)
Flyin Travel Limited, Limassol, Cyprus	57.0	4)
Flyin Travel S.A.E, Cairo, Egypt	57.0	4)
FreeMarkets Ltda., São Paulo, Brazil	100.0	
Gigya Australia Pty Ltd, Syndey, Australia	100.0	
Gigya UK Ltd, London, United Kingdom	100.0	10)
GlobalExpense Limited, London, United Kingdom	100.0	10)
Hipmunk, Inc., San Francisco, CA, United States	100.0	
hybris (US) Corp., Wilmington, DE, United States	100.0	
hybris GmbH, Munich, Germany	100.0	8), 9)
Inxight Federal Systems Group, Inc., Wilmington, DE, United States	100.0	
LeadFormix, Inc., Dublin, CA, United States	100.0	4)
Learning Heroes Ltd., Cheshire, United Kingdom	100.0	4), 10)
Learning Seat Borrowings Pty. Ltd., Sydney, Australia	100.0	4)
Learning Seat Group Pty. Ltd., Sydney, Australia	100.0	4)
Learning Seat Holdings Pty. Ltd., Sydney, Australia	100.0	4)
Learning Seat Pty. Ltd., Sydney, Australia	100.0	4)
LLC "SAP Labs", Moscow, Russia	100.0	
LLC "SAP Ukraine", Kiev, Ukraine	100.0	17)
Merlin Systems Oy, Espoo, Finland	100.0	
Nihon Ariba K.K., Tokyo, Japan	100.0	
Noteshark, LLC, Chantilly, VA, United States	51.0	4)
OrientDB Limited, London, United Kingdom	100.0	4), 10)
Outerjoin, Inc., Dublin, CA, United States	100.0	4)
OutlookSoft Deutschland GmbH, Walldorf, Germany	100.0	

Name and Location of Company	Owner- ship	Foot- note
	%	
Plat.One Inc., Palo Alto, CA, United States	100.0	
Plat.One Lab Srl, Bogliasco, Italy	100.0	
Plateau Systems LLC, South San Francisco, CA, United States	100.0	
PT SAP Indonesia, Jakarta, Indonesia	99.0	
Quadrem Africa Pty. Ltd., Johannesburg, South Africa	100.0	
Quadrem Brazil Ltda., Rio de Janeiro, Brazil	100.0	
Quadrem Chile Ltda., Santiago de Chile, Chile	100.0	
Quadrem International Ltd., Hamilton, Bermuda	100.0	
Quadrem Netherlands B.V., Amsterdam, the Netherlands	100.0	11)
Quadrem Overseas Cooperatief U.A., Amsterdam, the Netherlands	100.0	11)
Quadrem Peru S.A.C., Lima, Peru	100.0	
RevSym Inc., Dublin, CA, United States	100.0	4)
RevSym Software India Private Limited, Bangalore, India	100.0	4)
Ruan Lian Technologies (Beijing) Co., Ltd., Beijing, China	100.0	
SAP (Beijing) Software System Co., Ltd., Beijing, China	100.0	
SAP Andina y de Caribe VE, Caracas, Venezuela	100.0	17)
SAP AZ LLC, Baku, Azerbaijan	100.0	
SAP Belgium NV/SA, Brussels, Belgium	100.0	
SAP Beteiligungs GmbH, Walldorf, Germany	100.0	
SAP Bulgaria EOOD, Sofia, Bulgaria	100.0	
SAP Business Compliance Services GmbH, Siegen, Germany	100.0	
SAP Business Services Center Nederland B.V., 's-Hertogenbosch, the Netherlands	100.0	11)
SAP Chile Limitada, Santiago, Chile	100.0	17)
SAP China Holding Co., Ltd., Beijing, China	100.0	
SAP Colombia S.A.S., Bogotá, Colombia	100.0	17)
SAP Commercial Services Ltd., Valletta, Malta	100.0	17)
SAP Costa Rica, S.A., San José, Costa Rica	100.0	17)
SAP ČR, spol. s r.o., Prague, Czech Republic	100.0	
SAP Cyprus Limited, Nicosia, Cyprus	100.0	
SAP d.o.o., Zagreb, Croatia	100.0	
SAP Danmark A/S, Copenhagen, Denmark	100.0	
SAP Dritte Beteiligungs- und Vermögensverwaltungs GmbH, Walldorf, Germany	100.0	
SAP East Africa Limited, Nairobi, Kenya	100.0	17)
SAP Egypt LLC, Cairo, Egypt	100.0	17)
SAP EMEA Inside Sales S.L., Madrid, Spain	100.0	
SAP Erste Beteiligungs- und Vermögensverwaltungs GmbH, Walldorf, Germany	100.0	8), 9)
SAP Estonia OÜ, Tallinn, Estonia	100.0	

Name and Location of Company	Owner- ship	Foot- note	Name and Location of Company	Owner- ship	Foot- note
	%			%	
SAP Financial, Inc., Toronto, Canada	100.0		SAP Portugal – Sistemas, Aplicações e Produtos Informáticos, Sociedade Unipessoal, Lda., Porto Salvo, Portugal	100.0	
SAP Finland Oy, Espoo, Finland	100.0		SAP Projektverwaltungs- und Beteiligungs GmbH, Walldorf, Germany	100.0	
SAP Foreign Holdings GmbH, Walldorf, Germany	100.0		SAP Public Services, Inc., Washington, DC, United States	100.0	
SAP France Holding, Levallois Perret, France	100.0		SAP Puerto Rico GmbH, Walldorf, Germany	100.0	^{8), 9), 17)}
SAP Global Marketing, Inc., New York, NY, United States	100.0		SAP Retail Solutions Beteiligungsgesellschaft mbH, Walldorf, Germany	100.0	
SAP Hellas S.A., Athens, Greece	100.0		SAP Romania SRL, Bucharest, Romania	100.0	
SAP Hong Kong Co., Ltd., Hong Kong, China	100.0	¹⁷⁾	SAP Saudi Arabia Software Services Ltd, Riyadh, Kingdom of Saudi Arabia	100.0	
SAP Hosting Beteiligungs GmbH, St. Leon-Rot, Germany	100.0	^{8), 9)}	SAP Saudi Arabia Software Trading Ltd, Riyadh, Kingdom of Saudi Arabia	75.0	¹⁷⁾
SAP India (Holding) Pte Ltd, Singapore, Singapore	100.0		SAP Sechste Beteiligungs- und Vermögensverwaltungs GmbH, Walldorf, Germany	100.0	^{8), 9)}
SAP International Panama, S.A., Panama City, Panama	100.0		SAP Services s.r.o., Prague, Czech Republic	100.0	
SAP International, Inc., Miami, FL, United States	100.0		SAP Siebte Beteiligungs- und Vermögensverwaltungs GmbH, Walldorf, Germany	100.0	^{8), 9)}
SAP Investments, Inc., Wilmington, DE, United States	100.0		SAP sistemi, aplikacije in produkti za obdelavo podatkov d.o.o., Ljubljana, Slovenia	100.0	
SAP Ireland Limited, Dublin, Ireland	100.0	¹²⁾	SAP Slovensko s.r.o., Bratislava, Slovakia	100.0	
SAP Ireland US - Financial Services Designated Activity Company, Dublin, Ireland	100.0		SAP Software and Services LLC, Doha, Qatar	49.0	^{5), 17)}
SAP Israel Ltd., Ra'anana, Israel	100.0	¹⁷⁾	SAP Svenska Aktiebolag, Stockholm, Sweden	100.0	¹⁷⁾
SAP Korea Ltd., Seoul, South Korea	100.0		SAP System Application and Products Asia Myanmar Limited, Yangon, Myanmar	100.0	
SAP Labs Bulgaria EOOD, Sofia, Bulgaria	100.0		SAP Systems, Applications and Products in Data Processing (Thailand) Ltd., Bangkok, Thailand	100.0	
SAP Labs Finland Oy, Espoo, Finland	100.0		SAP Taiwan Co., Ltd., Taipei, Taiwan	100.0	¹⁷⁾
SAP Labs France SAS, Mougins, France	100.0		SAP Technologies Inc., Palo Alto, CA, United States	100.0	
SAP Labs Israel Ltd., Ra'anana, Israel	100.0		SAP Training and Development Institute FZCO, Dubai, United Arab Emirates	100.0	
SAP Labs Korea, Inc., Seoul, South Korea	100.0		SAP Türkiye Yazılım Üretim ve Ticaret A.Ş., Istanbul, Turkey	100.0	
SAP Latvia SIA, Riga, Latvia	100.0		SAP UAB, Vilnius, Lithuania	100.0	
SAP Malaysia Sdn. Bhd., Kuala Lumpur, Malaysia	100.0		SAP Ventures Investment GmbH, Walldorf, Germany	100.0	^{8), 9)}
SAP Malta Investments Ltd., Valletta, Malta	100.0	¹⁷⁾	SAP Vierte Beteiligungs- und Vermögensverwaltungs GmbH, Walldorf, Germany	100.0	
SAP MENA FZ L.L.C., Dubai, United Arab Emirates	100.0		SAP Vietnam Company Limited, Ho Chi Minh City, Vietnam	100.0	
SAP Middle East and North Africa L.L.C., Dubai, United Arab Emirates	49.0	^{5), 17)}	SAP West Balkans d.o.o., Belgrade, Serbia	100.0	
SAP Nederland Holding B.V., 's-Hertogenbosch, the Netherlands	100.0	¹¹⁾	SAP Zweite Beteiligungs- und Vermögensverwaltungs GmbH, Walldorf, Germany	100.0	^{8), 9)}
SAP New Zealand Limited, Auckland, New Zealand	100.0		SAP.io Fund, L.P., San Francisco, CA, United States	0	⁶⁾
SAP Norge AS, Lysaker, Norway	100.0		Sapphire Fund Investments II, L.P., Palo Alto, CA, United States	0	^{4), 6)}
SAP North West Africa Ltd, Casablanca, Morocco	100.0		Sapphire Fund Investments III, L.P., Palo Alto, CA, United States	0	^{4), 6)}
SAP Österreich GmbH, Vienna, Austria	100.0		Sapphire SAP HANA Fund of Funds, L.P., Palo Alto, CA, United States	0	⁶⁾
SAP Perú S.A.C., Lima, Peru	100.0	¹⁷⁾	Sapphire Ventures Fund I, L.P., Palo Alto, CA, United States	0	⁶⁾
SAP Philippines, Inc., Makati, Philippines	100.0				
SAP Polska Sp. z o.o., Warsaw, Poland	100.0				
SAP Portals Europe GmbH, Walldorf, Germany	100.0				
SAP Portals Holding Beteiligungs GmbH, Walldorf, Germany	100.0				
SAP Portals Israel Ltd., Ra'anana, Israel	100.0				

Name and Location of Company	Owner- ship	Foot- note
	%	
Sapphire Ventures Fund II, L.P., Palo Alto, CA, United States	0	6)
Sapphire Ventures Fund III, L.P., Palo Alto, CA, United States	0	6)
Sapphire Ventures Fund IV, L.P., Palo Alto, CA, United States	0	4), 6)
SAPV (Mauritius), Ebene, Mauritius	0	6)
Saudi Ebreez Company for Electronic Services LLC , Riyadh, Kingdom of Saudi Arabia	57.0	4)
SFI II Blocker, LLC, Palo Alto, CA, United States	0	4), 6)
SuccessFactors (Philippines), Inc., Pasig City, Philippines	100.0	
SuccessFactors Asia Pacific Limited, Hong Kong, China	100.0	
SuccessFactors Cayman, Ltd., Grand Cayman, Cayman Islands	100.0	
Sybase 365 Ltd., Tortola, British Virgin Islands	100.0	
Sybase 365, LLC, San Ramon, CA, United States	100.0	
Sybase Angola, LDA, Luanda, Angola	100.0	16)
Sybase Iberia S.L., Madrid, Spain	100.0	
Sybase India Ltd., Mumbai, India	100.0	
Sybase International Holdings Corporation, LLC, San Ramon, CA, United States	100.0	
Sybase Philippines, Inc., Makati City, Philippines	100.0	
Sybase Software (India) Private Ltd., Mumbai, India	100.0	
Sybase, Inc., San Ramon, CA, United States	100.0	
Systems Applications Products (Africa Region) Proprietary Limited, Johannesburg, South Africa	100.0	
Systems Applications Products (Africa) Proprietary Limited, Johannesburg, South Africa	100.0	
Systems Applications Products (South Africa) Proprietary Limited, Johannesburg, South Africa	70.0	17)
Systems Applications Products Nigeria Limited, Victoria Island, Nigeria	100.0	17)
Technology Management Associates Inc., Herndon, VA, United States	100.0	4)
TomorrowNow, Inc., Bryan, TX, United States	100.0	
TRX Europe Limited, London, United Kingdom	100.0	10)
TRX Luxembourg, S.a.r.l., Luxembourg City, Luxembourg	100.0	
TRX Technologies India Private Limited, Raman Nagar, India	100.0	
TRX UK Limited, London, United Kingdom	100.0	10)
TRX, Inc., Bellevue, WA, United States	100.0	
Volume Integration, Inc., VA, United States	100.0	
Webcom d.o.o., Belgrade, Serbia	100.0	4)
Webcom, Inc., Dublin, CA, United States	100.0	4)

¹⁾ These figures are based on our local IFRS financial statements prior to eliminations resulting from consolidation and therefore do not reflect the contribution of these companies included in the Consolidated Financial Statements. The translation of the equity into Group currency is based on period-end closing exchange rates, and on average exchange rates for revenue and net income/loss.

²⁾ As at December 31, 2018, including managing directors, in FTE.

³⁾ Figures for profit/loss after tax and total equity pursuant to HGB, section 285 and section 313 are not disclosed if they are of minor significance for a fair presentation of the profitability, liquidity, capital resources and financial position of SAP SE, pursuant to HGB, section 313 (2) sentence 3 no. 4 and section 286 (3) sentence 1 no. 1.

⁴⁾ Consolidated for the first time in 2018.

⁵⁾ Agreements with the other shareholders provide that SAP SE fully controls the entity.

⁶⁾ SAP SE has the following structured entities: SAP.io Fund, L.P., Sapphire Fund Investments II, L.P., Sapphire Fund Investments III, L.P., Sapphire SAP HANA Fund of Funds, L.P., Sapphire Ventures Fund I, L.P., Sapphire Ventures Fund II, L.P., Sapphire Ventures Fund III, L.P., Sapphire Ventures Fund IV, L.P., SAPV (Mauritius), and SFI II Blocker, LLC. The results of operations of these entities are included in SAP's consolidated financial statements in accordance with IFRS 10 (Consolidated Financial Statements).

⁷⁾ Entity whose personally liable partner is SAP SE.

⁸⁾ Entity with (profit and) loss transfer agreement.

⁹⁾ Pursuant to HGB, section 264 (3) or section 264b, the subsidiary is exempt from applying certain legal requirements to their statutory stand-alone financial statements including the requirement to prepare notes to the financial statements and a review of operations, the requirement of independent audit, and the requirement of public disclosure.

¹⁰⁾ Pursuant to sections 479A to 479C of the UK Companies Act 2006, the entity is exempt from having its financial statements audited on the basis that SAP SE has provided a guarantee of the entity's liabilities in respect of its financial year ended December 31, 2018, or in respect of its financial year ended September 30, 2018, respectively.

¹¹⁾ Pursuant to article 2:403 of the Dutch Civil Code, the entity is exempt from applying certain legal requirements to their statutory stand-alone financial statements including the requirement to prepare the financial statements, the requirement of independent audit, and the requirement of public disclosure, on the basis that SAP SE has provided a guarantee of the entity's liabilities in respect of its financial year ended December 31, 2018, or in respect of its financial year ended September 30, 2018, respectively.

¹²⁾ Pursuant to Irish Companies Act 2014, chapter 16 of Part 6, section 365, the entity is exempt from having its financial statements audited on the grounds that the entity is entitled to the benefits from a dormant entity exemption in respect of its financial year ended December 31, 2018.

¹³⁾ Pursuant to article 727a, paragraph 2 of the Swiss Code of Obligations, the entity is exempt from having its financial statements audited in respect of its financial year ended December 31, 2018, or in respect of its financial year ended September 30, 2018, respectively.

¹⁴⁾ The entity is exempt of preparation and audit of its financial statements on the grounds of article L-123-12 of the French commercial code as the entity changed its financial year closing date to June 30, 2019 instead of December 31, 2018. The obligation to prepare and audit the financial statements is due only at the closing date of the financial year which is usually 12 months, but can be shorter or longer when the entity changes its closing date.

¹⁵⁾ Pursuant to section 211 (3) of the New Zealand Companies Act 1993 and section 45 (2) of the Financial Reporting Act 2013, the entity had approved exclusions and is not required to lodge audited financial statements in respect of its financial year ended September 30, 2018.

¹⁶⁾ Pursuant to Angola Tax Law and Presidential Decree no. 147/13 of October 1, 2013, the entity does not qualify as being a Large Taxpayer and therefore is exempt from having its financial statements audited in respect of its financial year ended December 31, 2018.

¹⁷⁾ Entity with support letter issued by SAP SE.

Other Equity Investments

Name and Location of Company	Ownership %	Name and Location of Company
Joint Arrangements and Investments in Associates		
China DataCom Corporation Limited, Guangzhou, China	28.30	Greater Pacific Capital (Cayman) L.P., Grand Cayman, Cayman Islands
Convergent, Inc., Denver, CO, United States	37.32	IDG Ventures USA III, L.P., San Francisco, CA, United States
Procurement Negócios Eletrônicos S/A, Rio de Janeiro, Brazil	17.00	IEX Group, Inc., New York, NY, United States
Visage Mobile, Inc., Milwaukee, WI, United States	4.50	InfluxData, Inc., San Francisco, CA, United States
Yapta, Inc., Seattle, WA, United States	45.71	InnovationLab GmbH, Heidelberg, Germany
Equity Investments with Ownership of at Least 5%		
83North IV, L.P., Herzlia, Israel		innoWerft Technologie- und Gründerzentrum Walldorf Stiftung GmbH, Walldorf, Germany
Alation, Inc., Redwood City, CA, United States		JFrog, Ltd., Netanya, Israel
Alchemist Accelerator Fund I LLC, San Francisco, CA, United States		Jibe, Inc., New York, NY, United States
All Tax Platform - Solucoes Tributarias S.A., São Paulo, Brazil		Kaltura, Inc., New York, NY, United States
Amplify Partners II L.P., Menlo Park, CA, United States		Kavacha TopCo LLC, New York, NY, United States
Amplify Partners III, L.P., Menlo Park, CA, United States		Landlog Limited, Tokyo, Japan
Amplify Partners, L.P., Menlo Park, CA, United States		LeanData, Inc., Sunnyvale, CA, United States
AP Opportunity Fund, LLC, Menlo Park, CA, United States		Livongo Health, Inc., Mountain View, CA, United States
Auth0, Inc., Bellevue, WA, United States		Local Globe VII, L.P., St. Peter Port, Guernsey, Channel Islands
Blue Yard Capital I GmbH & Co. KG, Berlin, Germany		Local Globe VIII, L.P., St. Peter Port, Guernsey, Channel Islands
Catchpoint Systems, Inc., New York, NY, United States		Looker Data Sciences, Inc., Santa Cruz, CA, United States
Char Software, Inc., Boston, MA, United States		Matillion Ltd., Altrincham, United Kingdom
Contentful GmbH, Berlin, Germany		Mosaic Ventures I, L.P., London, United Kingdom
Costanoa Venture Capital II L.P., Palo Alto, CA, United States		MVP Strategic Partnership Fund GmbH & Co. KG, Munich, Germany
Costanoa Venture Capital III L.P., Palo Alto, CA, United States		Narrative Science, Inc., Chicago, IL, United States
Costanoa Venture Capital QZ, LLC, Palo Alto, CA, United States		Nor1, Inc., Santa Clara, CA, United States
Culture Amp, Inc., San Francisco, CA, United States		Notation Capital II, L.P., Brooklyn, NY, United States
Data Collective II L.P., San Francisco, CA, United States		Notation Capital, L.P., Brooklyn, NY, United States
Data Collective III L.P., San Francisco, CA, United States		On Deck Capital, Inc., New York, NY, United States
Data Collective IV, L.P., San Francisco, CA, United States		OpenX Software Limited, Pasadena, CA, United States
DataRobot, Inc., Boston, MA, United States		OpsRamp, Inc., San Jose, CA, United States
Dharma Platform, Inc., Washington DC, United States		Pendo.io, Inc., Raleigh, NC, United States
Digital Hub Rhein-Neckar GmbH, Ludwigshafen, Germany		Phenix Labs Canada, ULC, Burnaby, BC, Canada
EIT ICT Labs Germany GmbH, Berlin, Germany		Point Nine Annex GmbH & Co. KG, Berlin, Germany
FeedZai S.A., Lisbon, Portugal		Point Nine Capital Fund II GmbH & Co. KG, Berlin, Germany
Felix Ventures II, L.P., London, United Kingdom		Point Nine Capital Fund III GmbH & Co. KG, Berlin, Germany
Follow Analytics, Inc., San Francisco, CA, United States		Point Nine Capital Fund IV GmbH & Co. KG, Berlin, Germany
GK Software AG, Schöneck, Germany		Portworx Inc., Los Altos, CA, United States
		Post for Systems, Cairo, Egypt
		Project 44, Inc., Chicago, IL, United States
		PubNub, Inc., San Francisco, CA, United States

Name and Location of Company

Punchh, Inc., San Mateo, CA, United States

Realize Corporation, Tokyo, Japan

Reltio, Inc., Redwood Shores, CA, United States

Return Path, Inc., New York, NY, United States

Ridge Ventures IV, L.P., San Francisco, CA, United States

Rome2rio Pty. Ltd., Richmond, Australia

Scryer, Inc., New York, NY, United States

Scytl, S.A., Barcelona, Spain

Smart City Planning, Inc., Tokyo, Japan

SportsTech Fund, L.P., Palo Alto, CA, United States

SportsTech Parallel Fund, L.P., Palo Alto, CA, United States

Spring Mobile Solutions, Inc., Salt Lake City, UT, United States

Storm Ventures V, L.P., Menlo Park, CA, United States

SumoLogic, Inc., Redwood City, CA, United States

SV Angel IV, L.P., San Francisco, CA, United States

T3C Inc., Mountain View, CA, United States

The Currency Cloud Group Limited, London, United Kingdom

The SaaStr Fund, L.P., Palo Alto, CA, United States

Upfront V, L.P., Santa Monica, CA, United States

Wandera, Inc., San Francisco, CA, United States

(G.11) German Code of Corporate Governance

The German federal government published the German Code of Corporate Governance in February 2002 and introduced a commission that amends the Code from time to time. The Code contains statutory requirements and a number of recommendations and suggestions. Only the legal requirements are binding for German companies. With regard to the recommendations, the German Stock Corporation Act, section 161, requires that every year, listed companies publicly state the extent to which they have implemented them. Companies can deviate from the suggestions without having to make any public statements.

In 2018 and 2017, our Executive Board and Supervisory Board issued the required declarations of implementation. The declaration for 2017 was amended in February 2018. The declaration for 2018 was issued at the end of October 2018. These statements are available on our Web site:

www.sap.com/corporate-en/investors/governance.

Walldorf, February 20, 2019
SAP SE

Walldorf, Baden
The Executive Board

Bill McDermott

Robert Enslin

Adaire Fox-Martin

Christian Klein

Michael Kleinemeier

Bernd Leukert

Jennifer Morgan

Luka Mucic

Jürgen Müller

Stefan Ries

Management's Annual Report on Internal Control over Financial Reporting in the Consolidated Financial Statements

U.S. law requires that management submit a report on the effectiveness of internal control over financial reporting in the consolidated financial statements. For 2018, that report is as follows:

The management of SAP is responsible for establishing and maintaining adequate internal control over financial reporting as such term is defined in Rules 13a-15(f) and 15d-15(f) under the U.S. Securities Exchange Act of 1934. SAP's internal control over financial reporting is a process designed under the supervision of SAP's CEO and CFO to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external reporting purposes in accordance with International Financial Reporting Standards as issued by the International Accounting Standards Board.

SAP's management assessed the effectiveness of the Company's internal control over financial reporting as at December 31, 2018. In making this assessment, it used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission in Internal Control – Integrated Framework (2013).

Based on the assessment under these criteria, SAP management has concluded that, as at December 31, 2018, the Company's internal control over financial reporting was effective.

KPMG AG Wirtschaftsprüfungsgesellschaft, our independent registered public accounting firm, has issued its attestation report on the effectiveness of SAP's internal control over financial reporting. It is included in the independent auditor's report on the Consolidated Financial Statements as at December 31, 2018.

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About This Further Information on Economic, Environmental, and Social Performance

The social and environmental data and information included in the SAP Integrated Report has been prepared in accordance with the GRI Standards: Core option. This option indicates that a report contains the minimum information needed to understand the nature of the organization, its material topics and related impacts, and how these are managed.

The Further Information on Economic, Environmental, and Social Performance includes information that is required to comply with the GRI Standards. In addition, we present our Connectivity model that shows the interrelations between social, environmental, and financial performance. We also report on our contribution towards the United Nations Sustainable Development Goals.

Connectivity of Financial and Non-Financial Indicators¹

Gaining a Holistic View of Our Performance

At SAP, we believe that companies with a strong purpose have a significant competitive advantage. Customers, investors, as well as future and current employees can decide from whom they buy, in whom they invest, and for whom they work. Numerous studies provide strong evidence for this: For example, 87% of consumers believe companies perform best over time if their purpose goes beyond profit², 80% of executives say purpose helps increase customer loyalty³, and organizations driven by purpose and values outperformed the market by 15 to 1⁴. Thus, SAP has been able for several years to connect non-financial data, such as employee engagement, with financial success, providing a more complete picture of the total value created.

Integrated reporting is based on the idea that social, environmental, and economic performance are interrelated, with each creating tangible impacts on the others. To achieve a truly integrated strategy, we must understand these connections and work to support them throughout SAP. Figure 1 below shows how different elements connect, exemplified through profitability.



Figure 1: Connectivity Between Social, Environmental, and Economic Performance. SAP's main KPIs are marked in orange.

¹EY (2016): Winning with Purpose. Available at: <https://www.ey.com/Publication/vwLUAssets/EY-purpose-led-organizations/%24FILE/EY-purpose-led-organizations.pdf> [Accessed November 7, 2018].

²HBR and EY (2015): The Business Case for Purpose. Available at:

<https://www.ey.com/Publication/vwLUAssets/ey-the-business-case-for-purpose/%24FILE/ey-the-business-case-for-purpose.pdf> [Accessed November 7, 2018].

³BizShifts Trends (2014): Power of Purpose-Driven... Business, Leadership, Management. Available at: <http://bizshifts-trends.com/power-purpose-driven-business-leadership-management-focus-mission-vision-reason-exist-really-matters/> [Accessed November 7, 2018].

Putting a Value on Non-Financial Performance Indicators

At SAP, we put a monetary value on how our operating profit is affected by selected non-financial indicators that measure, for example, how well we engage with our employees and inspire them to commit to our vision and strategy, support a healthy business culture, and succeed in reducing our carbon emissions.

To achieve this quantification, we created cause-and-effect chains that show how specific actions we take at SAP lead to shifts in behavior. This behavior impacts on our business and has a financial consequence.

Such analysis establishes more than just a correlation between non-financial indicators and financial impact. It also reveals why and how something such as employee engagement ultimately leads to gains or losses in business performance. We believe that such insights are a prerequisite for fully modeling the financial impact of non-financial performance.

Using Cause-and-Effect Analysis

To create and validate these chains of cause and effect, we turned to both internal and external stakeholders. We started with those inside SAP, meeting in small groups that rigorously examined the impacts of activities related to each of our non-financial indicators.

Next, we conferred with external stakeholders, including academics, financial investors, and industry peers, to vet our findings. Finally, we used real data from SAP to translate our cause-and-effect chains into a quantified impact on operating profit.

Documenting Financial Impact

Since 2014, SAP has used techniques such as linear regression analysis to document the financial impact of four non-financial indicators. We assess each indicator to see what a change of 1 percentage point (pp) (or 1% for carbon emissions) would mean for our operating profit. The results for 2018⁵ are below:

Non-Financial Indicator	Impact on Operating Profit (€ millions, non-IFRS)
Business Health Culture Index	90 to 100 per pp
Employee engagement	50 to 60 per pp
Retention	55 to 65 per pp
Carbon emissions	6 per percent

⁵The information in the section Connectivity of Financial and Non-Financial Indicators is not in the scope of the Independent Assurance Report from KPMG. These results reflect the quantification of a gross effect related to a change in a particular key performance indicator. They do not allow for any net impact measurement. The evaluation of required investment to change the non-financial indicator is excluded from the scope of analysis. The economic gross impact of a single indicator includes interdependencies with other indicators, hence our results do not allow for a cumulative effect across all indicators included in this report. All calculations are based on the initial linear regression analysis results of 2014 and on non-IFRS figures (as shown in our Integrated Report 2018).

Case Study: Documenting the Financial Impact of a Healthy Work Culture

Our Business Health Culture Index assesses the health of both our organizational culture and our employees. Figure 2 shows how activities that support health at SAP strengthen our organizational

culture and help our employees perform at their best. For example, we see that flexibility improves stress resilience and enhances the work-life balance. This leads to greater productivity, resulting in higher operating profit.

Cause-and-Effect Chain for the Business Health Culture Index (BHCI)

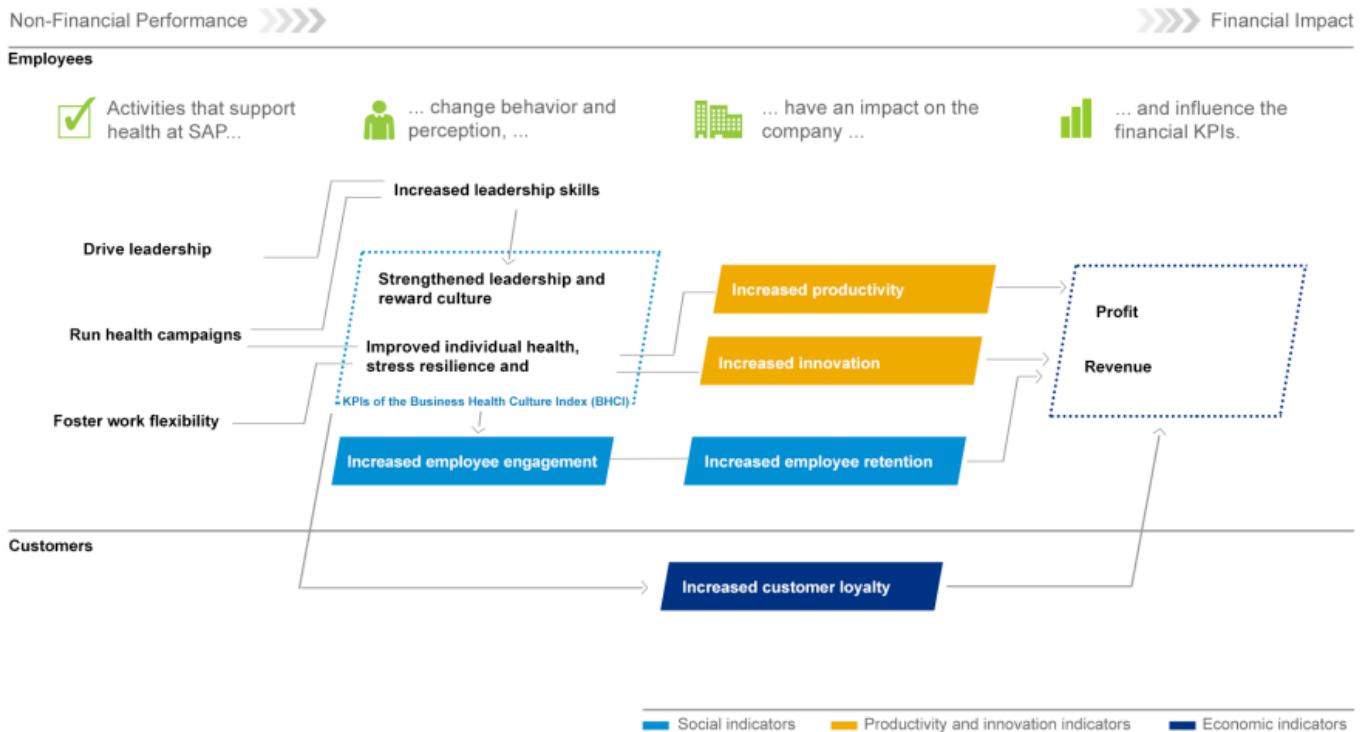


Figure 2: Impact Pathway of the Business Health Culture Index

Case Study: Calculating ROI for Our “Join In – Stay Fit!” Health Initiative

As part of the “Join In – Stay Fit!” program at SAP Germany, we implemented a number of measures to improve the work-life balance of our staff. These include workshops that raise health awareness and provide tips for employees on how to change unhealthy behavior.

Before and after the launch of the program, we mapped direct and indirect costs related to this activity. We also measured the impact of the program on employees' work-life balance as well as its impact on the BHCI. In 2015, beside the multiple positive effects on individual health and engagement, the program resulted in an ROI of 3.9 for the year of the investment. This means that operating profit increased €3.90 for every €1 invested in the program during that year. These financial effects stem to a large part from the increase in our BHCI, which we believe is now at a very high level and thus we do not expect it to rise this substantially in the future.

Promoting Sustainability Measures as a Way to Boost Financial Performance

Documenting the financial impact of non-financial indicators helps us move closer to achieving our sustainability goals. Rather than simply stating the business case for social or environmental change, we now have the numbers to back it up.

Our findings help us shift the conversation for business leaders, investors, employees, and other key stakeholders, and firmly establish non-financial indicators as playing a crucial role in our financial success. As a result, engaging employees or reducing our emissions is no longer seen as a nice-to-have, but rather as essential to carrying out a successful business strategy.

Moving forward, we are promoting the use of sustainability measures as a way to improve financial performance, both inside and outside of SAP. By embedding this approach into our decision making and quarterly business reviews, our sustainability performance steers our business along with factors such as revenue and cost. Our goal is for all senior business leaders at SAP to recognize – and be held accountable for – the fact that improving such measures as employee engagement also boosts financial performance.

Embedding Non-Financial Performance Indicators into Our Solutions

We continue to share our methodology with our customers to help them win in the marketplace. We believe that companies achieve higher operating profit – resulting from both greater cost efficiency as well as revenue growth – by addressing economic, social, and environmental considerations. More importantly, these companies are better equipped to lead in the future, as they navigate the world's most pressing challenges and help to bring about long-term sustainable change.

Currently, our connectivity model focuses predominantly on internal steering for SAP. However, we are working to enhance our model to include the social, environmental, and economic impacts of SAP software and services when they are used by our customers. In 2017, we conducted a research project to exemplary identify and quantify relevant external (societal) impacts along SAP's value chain. Quantifications were performed separately for the three distinct areas of "upstream," "operations," and "downstream," with an emphasis on the last aspect, when SAP software and services are used by our customers. Rather than a very detailed customer impact index, we will pilot to integrate the contribution of future investment cases to our external aspirations of zero waste and zero unemployment as additional decision support.

Using the connectivity model, we have been able to embed non-financial key performance indicators into our solutions. We see this in our SAP Digital Boardroom offering, for example. By incorporating this connection into our software, the integrated approach to financial and non-financial performance not only helps SAP but also our customers. In this way, we can turn our vision into reality: enabling our customers to use our technology to make the world a better place.

Details: How Our Non-Financial and Financial Performance Indicators Are Interconnected

Employee Engagement

Employee engagement is the level of employee commitment, pride, and loyalty, as well as the feeling of employees of being advocates for their company.

Capability Building > Employee Engagement

Because it is closely linked to how much a company develops its employees and supports their careers, internal hiring to management and expert positions positively affects employees' commitment and loyalty. This hypothesis was confirmed by a study by Bedarkar & Pandita (2014), which identified "career opportunities" as the key driver of employee engagement.⁶

Social Investment > Employee Engagement

By engaging our employees in social sabbaticals, their creating of significant social impact led to increased employee engagement.

Mueller et al. (2012) have found that employees' perception of a company's commitment to corporate social responsibility is positively linked to their own commitment to the organization.⁷

Employee Engagement > Profitability

Since 2014, we have used real data from SAP to analyze and prove the financial impact of employee engagement. We can show what a change by 1pp of employee engagement would mean for SAP's operating profit, as detailed in the *Documenting Financial Impact* section.

Profitability > Employee Engagement

In our view, a high operating profit, as great business news, can raise employee morale, encourage identification with our vision, and thus drive employee engagement. On the other hand, we believe that a high profit can also have a negative impact on employee engagement. For example, if cost savings and budget cuts are implemented to reach an ambitious profit target, employees might feel constrained and dissatisfied.

Business Health Culture Index (BHCI) > Employee Engagement

Since 2014, we have been using real data from SAP to analyze and prove the financial impact of the BHCI. We have been able to prove a significant positive correlation between the BHCI and employee engagement. The BHCI positively influences the Leadership Trust Index, which positively influences the Employee Engagement Index; all correlations are significant. This hypothesis was also confirmed by several studies, for example by Johnson, Sheena et al. (2018)⁸.

Employee Engagement > Employee Retention

Since 2014, we have been using real data from SAP to analyze and prove the financial impact of employee engagement. We have been able to prove a significant positive correlation between employee engagement and employee retention.

Greenhouse Gas (GHG) Footprint > Employee Engagement

We believe that lowering SAP's GHG footprint can have a positive impact on employee engagement because loyalty should rise as employees see their company act responsibly towards the environment. However, because lowering emissions also brings certain restrictions, such as on business travel, it may also have a negative impact on employee engagement.

Employee Engagement > GHG Footprint

We believe that engaged employees are more likely to want to help SAP achieve our own target in lowering GHG emissions. Yet another possible outcome is that a higher level of employee engagement may lead to more business activity requiring travel, and therefore could lead to an increase in GHG emissions.

Employee Engagement > Growth

Since 2014, we have been using real data from SAP to analyze and prove the financial impact of employee engagement. We have

⁶ Bedarkar, M., Pandita, D. (2014): A Study on the drivers of employee engagement impacting employee performance. In: Procedia – Social and Behavioral Sciences, Vol. 133, pp. 106–115.

⁷ Mueller, K., Hattrup, K., Spiess, S., Lin-Hi, N. (2012): The effects of corporate social responsibility on employees' affective commitment: A cross-cultural investigation. In: Journal of Applied Psychology, Vol. 97(6), pp. 1186–1200.

⁸ Johnson, Sheena et al., 2018. WELL-BEING: Productivity and Happiness at Work 2, ed. 2018., Cham: Springer International Publishing Imprint: Palgrave Macmillan.

been able to prove a significant positive correlation between employee engagement and revenue.

Growth > Employee Engagement

We believe that higher revenue has a positive impact on a company's work environment, thereby increasing employee pride and loyalty. This is also stated in a study of Harter et al. (2010), which states that improving financial performance appears to increase general satisfaction and some specific work perceptions.⁹

Business Health Culture Index (BHCI)

Our Business Health Culture Index assesses the health of both our organizational culture and our employees

Women in Management > BHCI

We believe that a balance of men and women in management roles helps create a more balanced working environment, one in which diversity is valued and people feel free to express their individual styles. It is our expectation that such an environment will positively affect our BHCI.

BHCI > Women in Management

McKinsey (2013) found that different elements of the BHCI, such as flexible working hours, the ability to work from home, and career flexibility, can make it easier for employees to balance work and family life.¹⁰ This leads us to conclude that the higher our BHCI, the more attractive SAP becomes to women who are also seeking management positions.

BHCI > Profitability

Since 2014, we have been using real data from SAP to analyze and prove the financial impact of the BHCI. We can show what a change by 1pp of the BHCI would mean for SAP's operating profit, as detailed in the *Documenting Financial Impact* section.

Social Investment > BHCI

We believe that by supporting our employees in engaging in activities with a positive social impact, such as skills-based volunteering, we are enhancing the meaning they find in work. This sense of purpose can help create a richer and more rewarding work environment that reduces stress and promotes satisfaction and well-being. Additionally, volunteering can increase overall employee health, which is shown in a study by S. S. Johnson (2017)¹¹.

BHCI > Employee Engagement

Since 2014, we have been using real data from SAP to analyze and prove the financial impact of the BHCI. We have been able to prove a significant positive correlation between the BHCI and employee engagement. The BHCI positively influences the Leadership Trust Index, which positively influences the Employee Engagement Index; all correlations are significant. This hypothesis was also confirmed by several studies, for example by Johnson, Sheena et al. (2018)¹².

⁹ Harter, J., Schmidt, F., Asplund, J., Kilham, E., Agrawal, S. (2010): Causal Impact of Employee Work Perceptions on the Bottom Line of Organizations. In: Perspectives on Psychological Science, Vol. 5(4), pp. 378–389.

¹⁰ McKinsey & Company (2013): Women Matter. Gender diversity in top management: Moving corporate culture, moving boundaries. Available at: [http://www.mckinsey.com/~media/McKinsey/Global%20Themes/Women%20matter/WomenMatter%202013%20Report%20\(8\).ashx](http://www.mckinsey.com/~media/McKinsey/Global%20Themes/Women%20matter/WomenMatter%202013%20Report%20(8).ashx) [Accessed December 16, 2016].

¹¹ Johnson, S.S., 2017. The Art of Health Promotion ideas for improving health outcomes. American Journal of Health Promotion, 31(2), pp.163–164.

¹² Johnson, Sheena et al., 2018. WELL-BEING: Productivity and Happiness at Work 2. ed. 2018, Cham: Springer International Publishing Imprint: Palgrave Macmillan.

BHCI > Growth

Since 2014, we have been using real data from SAP to analyze and prove the financial impact of the BHCI. We have been able to prove a significant positive correlation between the BHCI and revenue.

GHG Footprint > BHCI

Many of SAP's GHG emissions are caused by business travel and commuting, which we believe can have both negative and positive impacts on employee health. Some people may experience greater stress from more travel because they have less time to spend at home, suffer from jetlag, or lose valuable working time; others may enjoy travel because it enables them to experience other places and cultures as well as meet new people. Studies show that business travel potentially increases stress and poses a threat to employees' mental and physical health: see, for example, the study by Rundle, Revenson & Friedman (2017)¹³.

BHCI > Customer Loyalty

Since 2014, we have been using real data from SAP to analyze and prove the financial impact of the BHCI. We have been able to prove a significant positive correlation between the BHCI and customer loyalty. Recent studies, for example by Reed, Goolsby & Johnston (2016) also suggest this correlation.¹⁴

Employee Retention

Employee retention is the ratio of the average headcount (expressed in full-time equivalents), minus employee-initiated terminations (turnover), divided by the average headcount, taking into account the past 12 months.

Capability Building > Employee Retention

According to the Global Workforce Study (2012), the "chances to advance the career" is the second-most important driver of employee retention.¹⁵ By promoting and thus growing from within, SAP creates career opportunities for our employees. In turn, it is our expectation that this opportunity leads to an increase in employee retention.

Employee Engagement > Employee Retention

Since 2014, we have been using real data from SAP to analyze and prove the financial impact of employee engagement. We have been able to prove a significant positive correlation between employee engagement and employee retention.

Employee Retention > Growth

Meifert (2005) stated a clear relationship between employee retention and a company's revenue and margin.¹⁶

¹³ Rundle, A. G., Revenson T. A. & Friedman, M. 2017. Business travel and behavioral and mental health. Journal of Occupational and Environmental Medicine, 1 DOI: 10.1097/JOM.0000000000001262.

¹⁴ Reed, Goolsby & Johnston, 2016. Listening in and out: Listening to customers and employees to strengthen an integrated market-oriented system. Journal of Business Research, 69(9), pp.3591–3599.

¹⁵ Towers Watson (2012): Global Workforce Study. Geld, Karriere, Sicherheit? Was Mitarbeiter motiviert und in ihrem Unternehmen hält. Available at: <https://www.towerswatson.com/de-AT/Insights/IC-Types/Survey-Research-Results/2012/07/Towers-Watson-Global-Workforce-Study-2012-Deutschlandergebnisse> [Accessed December 16, 2016].

¹⁶ Meifert, M. (2005): Mitarbeiterbindung: eine empirische Analyse betrieblicher Weiterbildung in deutschen Großunternehmen. München and Mering: Hampf Verlag.

Employee Retention > Customer Loyalty

Koys (2001) has found evidence that employee turnover has a negative impact on customer satisfaction.¹⁷ We believe this effect stems from the fact that experienced employees work more efficiently, have better product knowledge, and can build trusting relationships with colleagues and customers, so therefore have the ability to better serve customers' needs.

Employee Retention > Profitability

We have been using real data from SAP to analyze and prove the financial impact of employee retention. We can show what a change by 1pp of employee retention would mean for SAP's operating profit, as detailed in the *Documenting Financial Impact* section.

Women in Management

"Women in Management" means the share of women in management positions (managing teams, managing managers, board members) as compared to the total number of managers.

Capability Building > Women in Management

Like many of our IT industry peers, SAP has less women than men in senior positions. Given our significant pool of talent, we assume that internal promotions will increase the percentage of women in management positions.

Women in Management > BHCI

We believe that a balance of men and women in management helps create a more balanced working environment, one in which diversity is valued and people feel free to express their individual styles. It is our expectation that such an environment will positively affect our BHCI.

BHCI > Women in Management

McKinsey (2013) found that different elements of the BHCI, such as flexible working hours, the ability to work from home, and career flexibility, can make it easier for employees to balance work and family life.¹⁸ This leads us to conclude that the higher our BHCI, the more attractive SAP becomes to women who are also seeking management positions.

Women in Management > Growth

Studies show that companies with a relatively high percentage of women in upper management or as board members achieve stronger financial performance compared to those with a relatively low percentage (Catalyst, 2013).¹⁹ We believe that having a higher share of women in management positions will increase our revenue as it helps us better serve our diverse customer base.

Women in Management > Customer Loyalty

Diversity programs – including those focused on the promotion of women to management positions – have a direct and positive impact on customer satisfaction (Catalyst, 2013).²⁰

Women in Management > Profitability

Studies show that companies with a high level of gender diversity outperform companies with an average level in terms of return on equity (11.4% versus an average 10.3%); operating results (EBIT 11.1% versus 5.8%); and stock price increases (64% versus 47% over the period 2005–2007) (McKinsey, 2007).²¹ It is therefore likely that having a higher share of women in management positions will result in higher profit for SAP.

Social Investment

Social investment reflects SAP's activities in volunteering and technology as well as cash donations.

Social Investment > BHCI

We believe that by supporting our employees in engaging in activities with a positive social impact, such as skills-based volunteering, we are enhancing the meaning they find in work. This sense of purpose helps create a richer and more rewarding work environment that reduces stress and promotes satisfaction and well-being. Additionally, volunteering can increase overall employee health, which is shown in a study by S. S. Johnson (2017)²².

Social Investment > Employee Engagement

By engaging our employees in social sabbaticals, their creating of significant social impact led to increased employee engagement.

Mueller et al. (2012) have found that employees' perception of a company's commitment to corporate social responsibility is positively linked to their own commitment to the organization.²³

Social Investment > Growth

A study by Muritala (2013) suggests that corporate social responsibility (or what we characterize as social investment) is likely to have a positive impact on an organization's financial performance.²⁴ In our experience, social investments do, in fact, have a positive impact on our ability to acquire new customers, especially in emerging markets.

Profitability > Social Investment

It is a common practice for companies to invest a certain percentage of their annual profits in programs and activities that create a positive social impact. We believe that higher profit is therefore likely to lead SAP to make greater social investments.

¹⁷ Koys, D. (2001): The effects of employee satisfaction, organizational citizenship behavior, and turnover on organizational effectiveness: A unit-level, longitudinal study. In: *Personnel Psychology*, Vol. 54(1), pp. 101–114.

¹⁸ McKinsey & Company (2013): Women Matter. Gender diversity in top management: Moving corporate culture, moving boundaries. Available at: [http://www.mckinsey.com/~media/McKinsey/Global%20Themes/Women%20matter/WomenMatter%202013%20Report%20\(8\).ashx](http://www.mckinsey.com/~media/McKinsey/Global%20Themes/Women%20matter/WomenMatter%202013%20Report%20(8).ashx) [Accessed December 16, 2016].

¹⁹ Catalyst Information Center (2013): Why Diversity Matters. Available at: http://www.catalyst.org/system/files/why_diversity_matters_catalyst_0.pdf [Accessed December 16, 2016].

²⁰ Catalyst Information Center (2013): Why Diversity Matters. Available at: http://www.catalyst.org/system/files/why_diversity_matters_catalyst_0.pdf [Accessed December 16, 2016].

²¹ McKinsey & Company (2007): Women Matter. Gender diversity, a corporate performance driver. Available at: http://www.mckinsey.com/~media/McKinsey/Business%20Functions/Organization/Our%20Insights/Women%20matter/Women_matter_oct2007_english.ashx [Accessed December 16, 2016].

²² Johnson, S.S., 2017. The Art of Health Promotion ideas for improving health outcomes. *American Journal of Health Promotion*, 31(2), pp.163–164.

²³ Mueller, K., Hattrup, K., Spiess, S., Lin-Hi, N. (2012): The effects of corporate social responsibility on employees' affective commitment: A cross-cultural investigation. In: *Journal of Applied Psychology*, Vol. 97(6), pp. 1186–1200.

²⁴ Muritala, T. (2013): Does CSR Improve Organization Financial Performance? Evidence from Nigeria Using Triangulation Analysis. In: *Economics and Applied Informatics*, Issue 3, pp. 41–46.

Capability Building

Capability building is the internal hiring rate (promotions only) into management or expert positions as compared to the external hiring rate into such positions.

Capability Building > Employee Retention

According to the Global Workforce Study (2012), the "chances to advance the career" is the second-most important driver of employee retention.²⁵ By promoting and thus growing from within, SAP creates career opportunities for our employees. In turn, it is our expectation that this opportunity leads to an increase in employee retention.

Capability Building > Employee Engagement

Because it is closely linked to how much a company develops its employees and supports their careers, internal hiring to management and expert positions positively affects employees' commitment and loyalty. This hypothesis was confirmed by a study by Bedarkar & Pandita (2014), which identified "career opportunities" as the key driver of employee engagement.²⁶

Capability Building > Women in Management

Like many of our IT industry peers, SAP has less women than men in senior positions. Given our significant pool of talent, we assume that internal promotions will increase the percentage of women in management positions.

Growth

Growth is one of our strategic objectives. We measure it through several KPIs, for example total revenue that SAP receives from the sale of our products and services.

Social Investment > Growth

A study by Muritala (2013) suggests that corporate social responsibility (or what we characterize as social investment) is likely to have a positive impact on an organization's financial performance.²⁷ In our experience, social investments do, in fact, have a positive impact on our ability to acquire new customers, especially in emerging markets.

Women in Management > Growth

Studies show that companies with a relatively high percentage of women in upper management ranks or as board members achieve stronger financial performance compared to those with a relatively low percentage (Catalyst, 2013).²⁸ We believe that having a higher share of women in management positions will increase our revenue as it helps us to better serve our diverse customer base.

BHCI > Growth

Since 2014, we have been using real data from SAP to analyze and prove the financial impact of the BHCI. We have been able to prove a significant positive correlation between the BHCI and revenue.

²⁵ Towers Watson (2012): Global Workforce Study. Geld, Karriere, Sicherheit? Was Mitarbeiter motiviert und in ihrem Unternehmen hält. Available at: <https://www.towerswatson.com/de-AT/Insights/IC-Types/Survey-Research-Results/2012/07/Towers-Watson-Global-Workforce-Study-2012-Deutschlandergebnisse> [Accessed December 16, 2016].

²⁶ Bedarkar, M., Pandita, D. (2014): A Study on the drivers of employee engagement impacting employee performance. In: Procedia – Social and Behavioral Sciences, Vol. 133, pp. 106–115.

²⁷ Muritala, T. (2013): Does CSR Improve Organization Financial Performance? Evidence from Nigeria Using Triangulation Analysis. In: Economics and Applied Informatics, Issue 3, pp. 41–46.

²⁸ Catalyst Information Center (2013): Why Diversity Matters. Available at: http://www.catalyst.org/system/files/why_diversity_matters_catalyst_0.pdf [Accessed December 16, 2016].

Employee Retention > Growth

Meifert (2005) stated a clear relationship between employee retention and the company's revenue and margin.²⁹

GHG Footprint > Growth

Lowering SAP's GHG footprint could have a positive impact on SAP's revenue because customers increasingly ask their suppliers to act sustainably. This reasoning is supported by a study by PwC (2013) confirming the existence of a positive correlation between a company's environmental performance and financial performance.³⁰ On the other hand, where additional travel is conducted to generate additional business, the resulting increase in SAP's GHG footprint could have positive impact on growth.

Employee Engagement > Growth

Since 2014, we have been using real data from SAP to analyze and prove the financial impact of employee engagement. We have been able to prove a significant positive correlation between employee engagement and revenue.

Growth > Employee Engagement

We believe that a higher revenue will have a positive impact on a company's work environment, thereby increasing employee pride and loyalty. This is also stated in a study of Harter et al. (2010), stating that improving financial performance appears to increase general satisfaction and some specific work perceptions.³¹

Customer Loyalty > Growth

Reichheld (2003) found a strong correlation between companies' Customer NPS results and their revenue growth rates.³² We support this view, as we believe that loyal SAP customers are likely to recommend SAP products to other companies, which is likely to result in increased sales and stronger revenue.

Growth > Profitability

Profit (or loss) is the total of income less expenses; if revenue as the main part of total income grows at a higher rate than costs, it will lead to greater profit.

Profitability

Profitability is one of our strategic objectives. We measure it through operating profit. Profit (or loss) is the total of income less expenses.

BHCI > Profitability

Since 2014, we have been using real data from SAP to analyze and prove the financial impact of the BHCI. We can show what a change by 1pp of the BHCI would mean for SAP's operating profit, as detailed in the *Documenting Financial Impact* section.

²⁹ Meifert, M. (2005): Mitarbeiterbindung: eine empirische Analyse betrieblicher Weiterbildung in deutschen Großunternehmen. München and Mering: Hampf Verlag.

³⁰ PwC (2013): Busting the carbon budget – Low Carbon Economy Index 2013. Available at: <https://www.pwc-wissen.de/pwc/de/shop/publikationen/Low+Carbon+Economy+Index+2013/?card=12994> [Accessed December 16, 2016].

³¹ Harter, J., Schmidt, F., Asplund, J., Kilham, E., Agrawal, S. (2010): Causal Impact of Employee Work Perceptions on the Bottom Line of Organizations. In: Perspectives on Psychological Science, Vol. 5(4), pp. 378–389.

³² Reichheld, F. (2003): The One Number You Need to Grow. In: Harvard Business Review, Vol. 81(12), pp. 46–54.

Employee Engagement > Profitability

Since 2014, we have been using real data from SAP to analyze and prove the financial impact of employee engagement. We can show what a change by 1pp of employee engagement would mean for SAP's operating profit, as detailed in the *Documenting Financial Impact* section.

Profitability > Employee Engagement

In our view, high profits, as great business news, can raise employee morale, encourage identification with our vision, and help increase employee engagement. On the other hand, we believe that a high profit expectation can also have a negative impact on employee engagement. If cost savings and budget cuts are implemented to reach an ambitious profit target, employees might feel constrained and dissatisfied.

Women in Management > Profitability

Studies show that companies with a high level of gender diversity outperform companies with an average level in terms of return on equity (11.4% versus an average 10.3%); operating results (EBIT 11.1% versus 5.8%); and stock price increases (64% versus 47% over the period 2005–2007) (McKinsey, 2007).³³ It is therefore likely that having a higher share of women in management positions will result in higher profit for SAP.

Profitability > Social Investment

It is a common practice for companies to invest a certain percentage of their annual profits in programs and activities that create a positive social impact. We believe that a higher profit is therefore likely to lead SAP to make greater social investments.

Employee Retention > Profitability

We have been using real data from SAP to analyze and prove the financial impact of employee retention. We can show what a change by 1pp of employee retention would mean for SAP's operating profit, as detailed in the *Documenting Financial Impact* section.

Total Energy Consumed > Profitability

We have found that reduced energy consumption is strongly correlated with a reduction in costs. Therefore, any cost avoidance achieved has a positive impact on our profit.

Growth > Profitability

Profit (or loss) is the total of income less expenses; if revenue as the main part of total income grows at a higher rate than costs, it will lead to greater profit.

Customer Loyalty > Profitability

We believe that positive experiences among our customers can significantly increase business with existing customers, as well as help attract new customers. Both results can lower the cost of sales, thereby increasing our profit.

GHG Footprint > Profitability

Since 2014, we have been using real data from SAP to analyze and prove the financial impact of our GHG footprint. We can show

what a reduction of SAP's carbon emissions by 1pp would mean for SAP's operating profit, as detailed in the *Documenting Financial Impact* section.

Customer Loyalty

Customer loyalty is measured with the Net Promoter Score: Percentage of customers that are likely to recommend SAP to friends or colleagues minus the percentage of customers that are unlikely to do so.

Women in Management > Customer Loyalty

Diversity programs – including those focused on the promotion of women to management positions – have a direct and positive impact on customer satisfaction (Catalyst, 2013).³⁴

Employee Retention > Customer Loyalty

Koys (2001) has found evidence that employee turnover has a negative impact on customer satisfaction.³⁵ We believe this effect stems from the fact that experienced employees work more efficiently, have better product knowledge, and can build trusting relationships with colleagues and customers, so therefore have the ability to better serve customers' needs.

GHG Footprint > Customer Loyalty

We believe that lowering SAP's carbon emissions has a positive reputational effect, thereby enhancing SAP's standing with its customers.

Customer Loyalty > Growth

Reichheld (2003) found a strong correlation between companies' Customer NPS results and their revenue growth rates.³⁶ We support this view, as we believe that loyal SAP customers are likely to recommend SAP products to other companies, which is likely to result in increased sales and stronger revenue.

Customer Loyalty > Profitability

We believe that positive experiences among our customers can significantly increase business with existing customers, as well as help attract new customers. Both results can lower the cost of sales, thereby increasing our profit.

BHCI > Customer Loyalty

Since 2014, we have been using real data from SAP to analyze and prove the financial impact of the BHCI. We have been able to prove a significant positive correlation between the BHCI and customer loyalty. Recent studies, for example by Reed, Goolsby & Johnston (2016) also suggest this correlation.³⁷

GHG Footprint

Our GHG footprint is the sum of all greenhouse gas emissions measured and reported, including renewable energy and third-party reductions, for example, offsets.

³³ McKinsey & Company (2007): Women Matter. Gender diversity, a corporate performance driver. Available at:
http://www.mckinsey.com/~/media/McKinsey/Business%20functions/Organization/Our%20Insights/Women%20matter/_oct2007_english.ashx [Accessed December 16, 2016].

³⁴ Catalyst Information Center (2013): Why Diversity Matters. Available at:
http://www.catalyst.org/system/files/why_diversity_matters_catalyst_0.pdf [Accessed December 16, 2016].

³⁵ Koys, D. (2001): The effects of employee satisfaction, organizational citizenship behavior, and turnover on organizational effectiveness: A unit-level, longitudinal study. In: *Personnel Psychology*, Vol. 54(1), pp. 101–114.

³⁶ Reichheld, F. (2003): The One Number You Need to Grow. In: *Harvard Business Review*, Vol. 81(12), pp. 46–54.

³⁷ Reed, Goolsby & Johnston, 2016. Listening in and out: Listening to customers and employees to strengthen an integrated market-oriented system. *Journal of Business Research*, 69(9), pp.3591–3599.

GHG Footprint > BHCI

Many of SAP's GHG emissions are caused by business travel and commuting, which we believe can have both negative and positive impacts on employee health. Some people may experience greater stress from more travel because they have less time to spend at home, suffer from jetlag, or lose valuable working time; others may enjoy travel because it enables them to experience other places and cultures as well as meet new people. Studies show that business travel potentially increases stress and poses a threat to employees' mental and physical health, see for example the study by Rundle, Revenson & Friedman (2017)³⁸.

GHG Footprint > Employee Engagement

We believe that lowering SAP's GHG footprint can have a positive impact on employee engagement because loyalty should rise as employees see their company act responsibly towards the environment. However, because lowering emissions also brings certain restrictions, such as on business travel, it may also have a negative impact on employee engagement.

Employee Engagement > GHG Footprint

We believe that engaged employees are likely to want to help SAP achieve our target in lowering GHG emissions. Yet another possible outcome is that a higher level of employee engagement may lead to more business activity requiring travel, and therefore could lead to an increase in GHG emissions.

GHG Footprint > Growth

Lowering SAP's GHG footprint could have a positive impact on SAP's revenue because customers increasingly ask their suppliers to act sustainably. This reasoning is supported by a study by PwC (2013) confirming the existence of a positive correlation between a company's environmental performance and financial performance.³⁹ On the other hand, where additional travel is conducted to generate additional business, the resulting increase in SAP's GHG footprint could have positive impact on growth.

GHG Footprint > Customer Loyalty

We believe that lowering SAP's carbon emissions has a positive effect on our reputation, thereby enhancing SAP's standing with our customers.

Total Energy Consumed > GHG Footprint

The emissions caused by SAP's energy consumption add directly to the corporate carbon footprint if they are not reduced through offsets or – for electricity consumption – renewable energy certificates (RECs).

GHG Footprint > Profitability

Since 2014, we have been using real data from SAP to analyze and prove the financial impact of the GHG footprint. We can show what a reduction of SAP's carbon emissions by one percentage would mean for SAP's operating profit, as detailed in the *Documenting Financial Impact* section.

Total Energy Consumed

Total energy consumed is the sum of all energy consumed through SAP's own operations, including energy from renewable sources.

Total Energy Consumed > Profitability

We have found that reduced energy consumption is strongly correlated with a reduction in costs. The cost avoidance thus achieved has a positive impact on our profit.

Total Energy Consumed > GHG Footprint

The emissions caused by SAP's energy consumption add directly to the corporate carbon footprint if they are not reduced through offsets or – for electricity consumption – renewable energy certificates (RECs).

³⁸ Rundle, A. G., Revenson T. A. & Friedman, M. 2017. Business travel and behavioral and mental health. Journal of Occupational and Environmental Medicine.1 DOI: 10.1097/JOM.00000000000001262.

³⁹ PwC (2013): Busting the carbon budget – Low Carbon Economy Index 2013. Available at: <https://www.pwc.com>

wissen.de/pwc/de/shop/publikationen/Low+Carbon+Economy+Index+2013/?card=12994 [Accessed December 16, 2016].

Materiality

Defining Key Priorities for Our Non-Financial Reporting

By understanding which environmental, social, and governance issues are key priorities for our stakeholders, we are better able to allocate time, budget, and resources accordingly within our integrated reporting. Based on our existing material topics, in 2016, we completed a materiality assessment to help identify and validate those topics which are the most relevant to our stakeholders such as employees, investors, and customers. The assessment also highlights those topics which contribute most to value creation both in our own operations and in those of our customers.

Our materiality assessment process combined the GRI G4 guidelines for sustainability reporting and the International Integrated Reporting Framework. Key stages of the process are detailed below.

Identification

During this stage, we drew up a long list of potential topics based on guidance from GRI G4 and the Sustainability Accounting Standards Board (SASB), as well as our existing material topics. We also considered a materiality assessment for the ICT industry by the Global E-Sustainability Initiative (GeSI) as well as the United Nations' Sustainable Development Goals (SDGs).

When identifying our key topics and their boundaries, we looked first at areas related to our operations and supply chain. Second, we looked at topics related to how our software can help our customers contribute to the achievement of the SDGs.

Prioritization

During the prioritization stage, we looked at the extent to which each individual topic affects our ability to create value at SAP. We assessed whether this value was financial, operational, strategic, reputational, or regulatory. All topics that were identified as delivering value in three or more areas were then included on our short list of seven categories, as follows:

- Business conduct
- Climate and energy
- Financial performance
- Human and digital rights
- Human capital
- Innovation
- Impact on society

Next, we conducted semi-structured interviews with selected stakeholders to validate the shortlisted topics. We asked stakeholders to rate topics on a scale from 0 to 5 (where 0 is not important at all and 5 is very important) based on the following questions for the first six categories:

- To what degree does this topic influence SAP's ability to create value?
- How important is that topic for you to engage in a business relationship with SAP?

To assess the category "impact on society," we asked stakeholders the following questions:

- How high is the potential of SAP to enable our customers to achieve the SDGs?
- How important is our ability to do this for you to engage in a business relationship with SAP?

We have included in our materiality matrix all topics with stakeholder ratings in the upper 50% for both questions respectively.

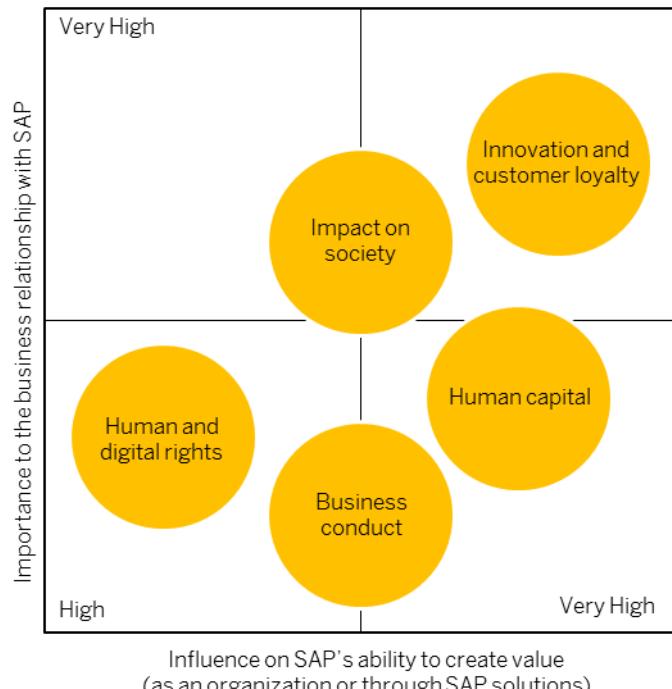
Validation

The results of the materiality analysis were reviewed and confirmed by our steering committee for integrated reporting and our sustainability advisory panel. The results were also reviewed by our chief financial officer, who is the board sponsor for sustainability and integrated reporting.

Review

Feedback on and analysis of the SAP Integrated Report will serve as an input for future materiality assessments.

Results



Materiality Matrix Non-Financial Topics (the chart only shows topics with high or very high scores)

Key points of our materiality assessment results include:

- Stakeholders saw financial performance as a mandatory part of reporting. As a result, in several interviews, its materiality was not expressly discussed. However, this category received high individual scores.
- The innovation and customer loyalty, business conduct, and human capital categories received the highest scores and response rates.
- The climate and energy category, which looks at the way in which SAP reduces emissions and energy consumption in our own operations, had the lowest response rates and scores.
- In evaluating our impact on society through the SAP portfolio, our stakeholders identified seven SDGs as material:
 - SDG 9 Industry, innovation, and infrastructure
 - SDG 3 Good health and well-being
 - SDG 8 Decent work and economic growth
 - SDG 13 Climate action
 - SDG 17 Global partnerships
 - SDG 12 Responsible consumption and production
 - SDG 4 Quality education

Understanding the Relevance of Our Material and Other Reported Topics

Each of our material topics has significant impact on the business success of SAP as described below.

Business Conduct

For more information, see the [Business Conduct](#) section.

Climate and Energy

For more information, see the [Energy and Emissions](#) section.

Financial Performance

Not only do we create financial value for SAP and our shareholders, we also create wealth for a broad range of stakeholders. We do this through employee wages and benefits, payments to our value chain and ecosystem, and tax payments to local governments and economies, for example.

Human and Digital Rights

For more information, see the [Security, Privacy, and Data Protection](#) section and the [Human Rights and Labor Standards](#) section.

Human Capital

Nothing has a greater impact on our long-term success than the creativity, talent, and commitment of our people. Their ability to innovate and understand the needs of our customers delivers sustainable value to our company and our society. For more information, see the [Employees and Social Investments](#) section.

Impact on Society

We believe that digital technologies will help companies and organizations contribute to the United Nations' 17 SDGs. We provide our customers and partners with the solutions that help them make a difference. This may be through empowering those disadvantaged in society through financial services, providing personalized medicine, building infrastructure, or combating climate change. For more information, see the [Our Contribution to the UN Sustainable Development Goals](#) section.

As well as creating positive impacts through our solutions, we focus on three strategic pillars that foster digital inclusion and create opportunity for all people by building digital skills, accelerating non-profit organizations and social enterprises to be best run, and connecting our employees with purpose. For more information, see the [Employees and Social Investments](#) section.

Innovation and Customer Loyalty

At SAP, we are committed to our vision of helping the world run better and improving people's lives. To help achieve this vision, we create innovations that help accelerate economic prosperity, drive positive social impact, and safeguard the planet. Our customers inspire what we do, from the first spark of innovation to the design and completion of new products, not to mention the way in which we serve their needs over time.

For more information about customer loyalty, see the [Customers](#) section.

Stakeholder Engagement

For SAP, stakeholder engagement and collaboration are deeply embedded into our process of innovation and the development of our products and services. Before we can design a new solution, we must first understand the issue we are addressing. For this reason, design thinking and co-innovation are essential.

To be able to innovate, we regularly engage with the stakeholder groups described below, including our sustainability advisory panel. We selected these groups as they are critical to our value creation.

Customers

For more information about our customer engagement programs, see the [Customers](#) section.

Employees

We survey employees annually. For the results of our latest employee survey and action items resulting from it, see the [Employees and Social Investments](#) section.

Our Supervisory Board comprises 50% employee representation, and we strive for constructive labor relations across the world, working within each country's requirements. We currently have works councils in place in Belgium, France, Germany, Israel, the Netherlands, Slovenia, and Spain. In Italy, there is a union representative in place. In the United Kingdom and Ireland, employee consultation forums represent the employees' interests. In Romania and Sweden, union stewards serve this purpose. The majority of the SAP employees in Canada is represented by a Joint Health & Safety Committee. Furthermore, employee representatives are in place at SAP Japan Co. Limited. Employees of SAP Austria decided to be represented by an ombudsteam. In the Czech Republic, labor unions have been established in all SAP entities. In China, a trade union for employees employed under the SAP China Beijing branch has been formed. In addition, we have an SE Works Council Europe that represents SAP employees in the 28 countries of the European Economic Area.

These employee representation bodies consist of elected union members and non-union members, and are consulted by SAP management on topics that define the work environment and work processes. These topics include HR initiatives, talent development, payment and benefits, equal opportunities, changes in work or IT processes, privacy, and health and safety protection.

Collective bargaining agreements with unions are only made in countries where legally required. Overall, about 50% of our employees are represented by works councils, an independent trade union, or are covered by collective bargaining agreements.

In addition, the Executive Board answers employees' questions in quarterly all-hands meetings. In regular coffee corner sessions, senior executives explain our strategy to employees and answer their questions directly.

Financial Analysts and Investors

For more information about our dialog with investors, see the [Investor Relations](#) section.

Governments

For more information about our dialog with governments, see the [Public Policy](#) section.

Industry Analysts

Our Analyst Relations team, the Executive Board, and executives have strong relations and work strategically with IT analysts on a frequent basis. We engage with these analysts on key SAP topics including Intelligent Enterprise, SAP HANA, ERP and SAP S/4HANA, CRM and SAP C/4HANA on SAP Cloud Platform, SAP Leonardo, industry solutions, cloud solutions, ecosystem, and services. The latest industry-positioning material integrates economic, social, and environmental impact creation.

Non-Governmental Organizations (NGOs), Not-For-Profit Organizations (NPOs), and Academia

Our dialog with NGOs, NPOs, and academic institutions helps us understand how we can address today's most pressing issues with our solutions and what is expected from us as a corporation. For example, in 2018 our SAP Next-Gen program accelerated the impact of its partnership with UN Women through #sheinnovates, a program launched in 2017 that supports the goals of the Global Innovation Coalition for Change to drive industry-wide action to make innovation and technology work better for young women and girls, and which builds up the community on behalf of the movement.

Partners

With more than 18,000 partners around the world, the SAP ecosystem is vital to our success. We take a multifaceted approach to partner engagement that begins with the dedicated, interactive partner portal, SAPPartnerEdge.com. Partners receive a weekly, customized newsletter with the latest announcements, training offers, and thought leadership information relevant to their specific partnership type. Additionally, partner-dedicated focus groups and events such as the SAP Global Partner Summit are held throughout the year, around the globe, to educate partners and further gauge their feedback on how SAP can continuously improve. For more information about our ecosystem, see the section [Products, Research & Development, and Services](#).

Sustainability Advisory Panel

Our sustainability advisory panel consists of expert representatives from our customers, investors, partners, NGOs, and academia. In 2018, the panel met with our chief financial officer (CFO) and a member of our Supervisory Board, as well as with SAP representatives from the areas of solutions, finance and administration, corporate affairs, and marketing. The group discussed how SAP can better embed sustainability into our core business and how our solution portfolio and technology will enable our customers to run sustainable businesses.

Sustainability Management and Policies

Putting Sustainability at the Heart of Our Strategy

At SAP, we believe that it is not enough to simply have a sustainability strategy but that, instead, our overall corporate strategy must itself be sustainable. Only by achieving this can we fulfill our vision and purpose to help the world run better and improve people's lives. We therefore strive to promote sustainability across our entire business and beyond: for example, through our recent branding campaign, which has sustainability at its core.

Led by our chief sustainability officer, a dedicated team works to embed sustainability into our corporate strategy and promotes new sustainability initiatives across the organization. We also aim to integrate measures that promote positive economic, social, and environmental impacts within our existing solutions, processes, and operations.

Our chief financial officer (CFO) is the sponsor for sustainability on the Executive Board, and we also have a dedicated person in charge of sustainability in each board area. These individuals are responsible for embedding sustainability in their business practices, for example, by setting relevant targets and implementing related programs. They are held accountable for their achievements, in review meetings with the CFO and the chief sustainability officer that take place twice a year.

Managing Our Response to Our Material and Other Reported Aspects

SAP has dedicated personnel addressing the material aspects identified in our materiality analysis. For each topic, we look at ways in which we can manage our response, and how we can evaluate whether our approach is effective.

Business Conduct

For information about our compliance management approach, see the [Business Conduct](#) section.

Climate and Energy

For information about our climate and energy management approach, see the [Energy and Emissions](#) section.

Financial Performance

The Executive Board retains ultimate responsibility for revenue growth, profitability, and the financial stability of SAP. For more information, see the [Corporate Governance Report](#) and the [Report by the Supervisory Board](#).

Human and Digital Rights

For information about our management approach on human and digital rights, see the [Security, Privacy, and Data Protection](#) section and the [Human Rights](#) section.

Human Capital

Overall responsibility for our human resources strategy lies with the Executive Board, led by the Executive Board member responsible for Human Resources.

Our key policies include a global health and safety management policy and a diversity and inclusion policy. The global health and safety management policy aims to nurture our employees' long-term employability, engagement, and creativity by integrating health, occupational safety, well-being, and stress management topics. The diversity and inclusion policy provides a framework for an inclusive working environment.

For more information about our human capital management approach, see the [Employees and Social Investments](#) section.

Impact on Society

When assessing our impact on society, we consider two key areas: Firstly, we look at the contribution we make towards the fulfilment of the United Nations Sustainable Development Goals (SDGs, also called UN Global Goals) through our software solutions; and secondly, we consider our efforts to make the world a better place through our corporate social responsibility (CSR) programs.

Our contribution to the SDGs is a cross-company effort driven by experts from almost every board area. We illustrate examples of our existing engagement with customers and other activities contributing to the SDGs in our continuously updated Web book [SAP and the UN Global Goals](#). In addition, we pursue partnerships with the World Economic Forum (WEF), United Nations Industrial Development Organization (UNIDO), UN Women, and UN Global Compact, as well as other organizations and non-governmental organizations (NGOs). In this way, we drive ideas, innovation, execution, and adoption for solutions to achieve the UN's 2030 Agenda for Sustainable Development.

Our global CSR policy offers all SAP employees the opportunity to volunteer for up to eight working hours each year at a CSR event. For more information about our CSR events and activities, see the [Employees and Social Investments](#) section.

Our Global CSR Governance Committee, consisting of executive level representatives of different board areas at SAP, advises and approves the strategic direction of our overall CSR mission. In addition, regional CSR governance committees advise and approve all major CSR partnerships and efforts. Led by our head of global CSR, our global CSR team is part of the Office of the CEO and Corporate Affairs organization. There is also a regional CSR lead for each of our major SAP regions.

On a group level, we ensure that donations are made in an appropriate manner through financial and compliance control processes described in our global CSR policy, and we monitor all major CSR programs for social impact. For example, in our SAP Social Sabbatical program, we survey both the participants and the non-profit organization or social business involved to determine whether our team has met the agreed deliverables. To capture

long-term impact, the evaluation is repeated six to nine months after our team's departure.

Innovation and Customer Loyalty

Every Executive Board member is responsible for innovation in their area. For more information about our software and services innovation efforts, see the *Products, Research & Development, and Services* section.

In addition to the Executive Board, our Customer Experience Strategy Council looks at customer feedback and helps drive improvements in our customer experience. For more information about customer loyalty and our efforts to improve the customer experience, see the *Customers* section.

Changing Our Behavior and Culture

Employee engagement is essential, as the ideas and commitment of our staff help drive change throughout SAP. We run a number of programs to help employees understand how sustainability is engrained in our vision and purpose to help the world run better and improve people's lives, and how they can contribute.

We kicked off 2018 with a purpose campaign linking purpose to the SDGs. It encompassed a dedicated virtual employee kick-off, interviews, and blogs with board members and senior executives on the company intranet that focus on selected SDGs, and a "Watch and Win" contest featuring 17 videos dedicated to each SDG. We also integrated content about our vision and purpose into global employee all-hands meetings and created videos that explore our sustainability goals and efforts.

In addition, the SDG Network provides a platform that helps employees working on initiatives involving SDGs to align and consolidate efforts and create synergies.

SAP continues to include sustainability in its onboarding training for new hires. Sustainability is integrated in our training courses on vision and strategy. Furthermore, employees can take openSAP online courses on sustainability through digital transformation, and on climate change, which are also available to the general public.

Our new SAP Together program provides an easy-to-access online platform to help SAP employees engage in activities and volunteering opportunities. We have also encouraged employee engagement through initiatives such as an online SDG quiz or the "What's your goal?" challenge, with SAP staff submitting stories

about how they contribute to the SDGs. Furthermore, programs such as the "Bike to Work" and "Fit@SAP" schemes connect health and environmental goals by linking fitness activities with financial contributions to organizations such as Plant-for-the-Planet, which educates people about climate change.

Focusing on Transparency and Building Awareness

Change starts with transparency and awareness. To gain a holistic overview of our performance, our Executive Board and Supervisory Board have access to our SAP Digital Boardroom solution that includes key financial and non-financial data such as human capital indicators.

In addition, employees can access a dashboard detailing the environmental and social performance and its impact on the financial performance for our company as a whole, single sites, or departments. For example, data on employee retention and women in management helps create transparency with regard to the social performance of our company. A personalized app also provides employees with statistics about their personal impact through activities such as driving a company car or using electronic equipment.

We measure the success of our initiatives through our annual People Survey. In 2018, 93% of our employees agreed with the statement "It is important for SAP to pursue sustainability". This was unchanged from 2017 (2009: 77%). Furthermore, 83% of our employees stated "I actively contribute to sustainability goals at SAP." This is slightly down from 84% in 2017 but up from 47% in 2009 when we introduced the question.

Nurturing a Network of Sustainability Champions

To help drive progress in our sustainability initiatives, we need the support of employees in every part of SAP. We have a global internal network of about 150 sustainability champions who represent different regions and areas of the business at SAP. Not only do they act as role models, they also tailor sustainability engagement activities to local and lines-of-business needs and interests, and share best practices.

Our Contribution to the UN Sustainable Development Goals

The information in the section Our Contribution to the UN Sustainable Development Goals is not in the scope of the Independent Assurance Report from KPMG.

The 17 United Nations Sustainable Development Goals (SDGs) provide a globally accepted framework for communicating our vision and purpose to "help the world run better and improve people's lives". We strive to execute on this vision by being a role model for sustainable, purpose-led operations and by enabling our customers to operate in a sustainable way.

Following the adoption of the SDGs by world leaders in September 2015, we identified and aligned existing initiatives with all 17 SDGs. For example, we looked at the environmental and social impacts of customers using SAP technology and applications, linking these impacts to the SDGs. The resulting Web book

(www.sap.com/unglobalgoals) was published in early 2016 and has been updated regularly.

To validate and refine the focus of our impact through our operations and solutions, we included the SDGs in our 2016 materiality analysis and discussed them with our external sustainability advisory panel. This highlighted the importance of focusing on SDGs for which there is a tangible and material link between our own operational activities or the use of our software by customers. For more information, see the [Materiality](#) section.

The following table describes the potential positive and negative direct or indirect impacts of our company and of our products and services related to SDGs that have received a high ranking in our materiality analysis. We use "direct" when we refer to impacts through our own operations; "indirect" describes impacts through the use of our solutions and technology or in our ecosystem.

Our Potential Direct and Indirect Impact	Our Key Performance Indicators and Targets	Our Policies and Selected Activities and Programs to Enhance Positive Impacts and Mitigate Negative Impacts	Where You Can Find More Information in the SAP Integrated Report and Other Sources
SDG 9 Industry, Innovation, and Infrastructure			
Direct: + Increase inclusive and sustainable industrialization through SAP's investments in research and development (including in developing countries)	NA	Direct: SAP Labs Network; One Billion Lives initiative fostering purpose-driven innovation Indirect: SAP support for startups through various programs	Products, Research & Development, and Services Employees and Social Investments SAP & SDG9 SAP Innovation SAP Partnering with Social Enterprise Forum One Billion Lives Initiative SAP.io
Indirect: + Support providers of infrastructure, financial services and clean technologies + Providing "Best Practice" business processes through standard software solutions + Integrate small and medium-sized enterprises into global value chains and markets			
SDG 3 Good Health and Well-Being			
Direct: + Provide access to a healthy lifestyle and a safe and healthy working environment for employees	Business Health Culture Index	Direct: Global Health and Safety Management Policy; Employee Assistance Program; Corporate Oncology Program for Employees Indirect: SAP Connected Health, SAP Work-Life	Employees and Social Investments SAP & SDG3 Healthcare SAP Connected Worker Safety SAP Work-Life
Indirect: + Enhance safe and healthy working conditions, healthcare, and personalized medicine on a global scale - Increase transparency of physical, medical, and health conditions of individuals, which might be abused			
SDG 8 Decent Work and Economic Growth			
Direct: + Create decent jobs at SAP through our growth plans, specifically in developing markets	Number of employees (overall and in developing markets)	Direct: SAP recruiting programs; Diversity & Inclusion policy and programs including EDGE certification Indirect: Create three million jobs in our ecosystem	Employees and Social Investments Sustainable Procurement SAP & SDG8 Diversity & Inclusion Powering Opportunity Through Digital Inclusion SAP Rural Sourcing Management
Indirect: + Create three million jobs in our ecosystem			

Our Potential Direct and Indirect Impact	Our Key Performance Indicators and Targets	Our Policies and Selected Activities and Programs to Enhance Positive Impacts and Mitigate Negative Impacts	Where You Can Find More Information in the SAP Integrated Report and Other Sources
<ul style="list-style-type: none"> + Enable an inclusive economy + Combat forced and child labor throughout supply chains - Fuel negative effects on employment through digitalization and automation; potentially increase precarious jobs - Decouple societal groups from entire areas of employment through an accelerated digital divide and lack of digital skills 		SAP Rural Sourcing Management; SAP Ariba Supplier Risk in cooperation with Made In A Free World	SAP Ariba
SDG 13 Climate Action			
<p>Direct:</p> <ul style="list-style-type: none"> + Assuming responsibility for products in use-related emissions by running customer applications in the SAP green Cloud - Emit greenhouse gases <p>Indirect:</p> <ul style="list-style-type: none"> + Contribute to climate change mitigation and strengthen resilience and adaptive capacity to climate-related hazards and natural disasters of our customers + Enable holistic operational steering by integrating climate change relevant parameter - Increase customers' energy consumption through use of software 	Become carbon neutral by 2025	<p>Direct:</p> <ul style="list-style-type: none"> Global Environmental Policy; Report and reduce CO2 emissions and energy consumption; Procure 100% renewable electricity <p>Indirect:</p> <ul style="list-style-type: none"> Green Cloud; Breakthrough Energy Coalition 	Energy and Emissions SAP & SDG13 Climate Change: What SAP Is Doing Breakthrough Energy
SDG 17 Partnerships for the Goals			
<p>Direct:</p> <ul style="list-style-type: none"> + Build capacity throughout our broader ecosystem <p>Indirect:</p> <ul style="list-style-type: none"> + Decouple economic prosperity from resource consumption by enabling transparency and optimizing resource productivity in linear or circular economies - Increase absolute resource and energy consumption because efficiency gains through automation may be counteracted (rebound effect) 	NA	<p>Engage in Global Partnership for Development Data, IMPACT 2030, UN Global Compact, or Social World Enterprise Forum</p>	Employees and Social Investment SAP & SDG17 SAP Ariba Partnering with UN Global Compact SAP Partnering with Social Enterprise Forum
SDG 12 Responsible Consumption and Production			
<p>Direct:</p> <ul style="list-style-type: none"> + Drive sustainable business practices and integrated reporting - Use energy, water, resources, production of waste <p>Indirect:</p> <ul style="list-style-type: none"> + Decouple economic prosperity from resource consumption by enabling transparency and optimizing resource productivity in linear or circular economies - Increase absolute resource and energy consumption because efficiency gains through automation may be counteracted (rebound effect) 	We aspire to a world with zero waste.	<p>Direct: Supplier Code of Conduct; Sustainable Procurement; e-waste recycling</p> <p>Indirect: SAP Plastics Challenge</p>	Energy and Emissions Waste and Water Sustainable Procurement SAP & SDG12 SAP Leonardo Plastics Challenge
SDG 4 Quality Education			
<p>Direct:</p> <ul style="list-style-type: none"> + Train and educate SAP employees <p>Indirect:</p> <ul style="list-style-type: none"> + Build capability in our ecosystem and among our customers 	<p>Engaging four million children, youth, and young adults in digital skills and coding programs by 2020.</p>	<p>Direct:</p> <ul style="list-style-type: none"> Cloud-based learning management system for employees <p>Indirect:</p> <ul style="list-style-type: none"> openSAP; CSR digital literacy programs 	Employees and Social Investments SAP & SDG4 SAP Learning for Life Powering Opportunity Through Digital Inclusion

Human Rights and Labor Standards

Upholding High Standards

Whether within SAP, across our extended supply chain, or through the impact of our solutions, we are committed to respecting human rights. We maintain high ethical standards and establish fairness, diversity, and inclusion across our business operations. In this way, we believe we can better attract and keep top talent, increase innovation and productivity, and enhance our reputation.

SAP is a signatory of the United Nations (UN) Global Compact initiative. This is a voluntary undertaking to align our strategy and operations with universal principles on human rights, labor, the environment, and anticorruption.

By integrating human rights considerations into our standard business practices, we also support the values of the *Universal Declaration of Human Rights*, the *OECD Guidelines for Multinational Enterprises*, and the *International Labor Organization Declaration on Fundamental Principles and Rights at Work*. To ensure that our commitment to human rights translates into practice, we take guidance from the *UN "Protect, Respect and Remedy" framework*.

Making a Commitment

The *SAP Global Human Rights Commitment Statement* details our response to the international standards mentioned above and is our public commitment to becoming a role model of sustainability. Based on the SAP Code of Business Conduct and approved by our Executive Board, the statement focuses on three main areas: our employees, our ecosystem of partners and suppliers, and our solutions.

Our commitment statement applies to all our operations and subsidiaries globally and is reviewed on a regular basis. It also contains references to our other guidelines such as health and safety management, and data protection and privacy.

To communicate and enforce this commitment statement, SAP established a governance structure for human rights. This includes a steering committee and allocates responsibility for maintaining human rights standards across board areas.

Understanding Our Strengths and Weaknesses

SAP undertook a human-rights risk and capacity assessment in 2017 to analyze human rights processes and ongoing due diligence activity. With help from an external consulting company, we reviewed and mapped SAP documents against best-practice human rights initiatives and frameworks. We conducted internal consultations and external stakeholder interviews to identify key strengths and opportunities for improvement.

In 2018, we reworked our Global Human Rights Commitment Statement to incorporate these assessment results, and restructured the document slightly to improve readability and to more closely align to the UN framework.

The key changes include information on our new governance model and a new subchapter on the grievance processes we offer. Other inclusions reflect the connection we see between human

rights and our products in the area of artificial intelligence (AI) and responsible business principles, which means we encourage our customers to embrace jointly with us their ethical responsibilities and share our commitment to the UN Global Compact

Protecting Human Rights

Launched within SAP in 2018, the SAP Ariba Supplier Risk solution will allow us to continuously monitor suppliers to protect our company from exposure to environmental, reputational, compliance, financial, and operational risks. We intend to add forced-labor data, from non-profit organizations such as Made In A Free World, to help us review conditions for external workers and assess modern slavery risks within our supply chain in selected regions.

We also received external endorsement of our human rights efforts. SAP has again been recognized as a leader in sustainability practices in the software industry according to the 2018 Dow Jones Sustainability Indices and RobecoSAM Corporate Sustainability Assessment. Our score for the category human rights in particular increased by over 50 percentage points.

Enforcing Our Standards

To assess our human rights measures, we consider external benchmarks, performance ratings, audit results, and stakeholder feedback. In addition, since 2012, we have conducted regular internal audits to check internal compliance with our policies and verify that our subsidiaries adhere to our human rights standards.

In 2018, we conducted a labor audit across nine countries in the Middle East and North Africa within the EMEA region. It reviewed labor conditions, wages and hours, health and safety, the environment, management system, and business practices. While we did not encounter any labor rights abuses, the audit revealed some issues related to global data security standards, the HR compliance monitoring system, and the HR workforce plan. We took steps to address these shortcomings by increasing physical security elements and reworking our internal processes.

Respecting the Rights of Our Employees

We have a long-standing policy of nondiscrimination in our dealings with all employees and provide training on human rights issues that are most relevant to our business. These include security, privacy, and antidiscrimination.

We encourage any employees, including vulnerable groups such as temporary external staff, who feel they are subjected to conduct that violates our antidiscrimination policies to report it. They can reach out confidentially to their managers, HR officers, compliance officers, or colleagues who are trained to be part of our internal mediation pool.

In addition, our global ombudsperson receives employee complaints and mediates fair settlements. The ombudsperson also helps the Executive Board analyze HR-related complaints and consider ways to address potential issues before they occur.

Maintaining High Standards Across Our Supply Chain

We expect all our business partners to respect human rights and to avoid complicity in human rights abuses. Our codes of conduct for suppliers and partners require them to uphold labor rights and to provide a safe and healthy work environment for all employees. In addition, we carry out due diligence regularly to assess their human rights performance.

Respecting Human Rights Throughout Our Product Lifecycle

As reflected in our human rights risk assessment, we are committed to respecting human rights throughout the lifecycle of our products – from design through development to use. We develop innovative solutions that help customers embed human rights standards into their business and supply chain strategies. For example, our customers can use the SAP Ariba Supplier Risk solution to gain the intelligence and transparency they need to understand human rights risks within their supply chains. They can then make informed procurement decisions that may improve lives.

SAP is also looking at the ethical and societal implications of the latest advances in technology, such as artificial intelligence (AI), and is contributing to the public debate about these subjects. Our objective is to continue creating software that allows users to reach

their full intellectual potential. Hence, SAP has launched *guiding principles on AI* that are intended to steer the development and deployment of our AI software. These guidelines were formulated through the expertise of an internal group of SAP executives and will be updated in conjunction with an external advisory panel. Our guiding principles mark a starting point for a deep and continuous engagement with the wider challenges of AI and will be an evolving reflection on these discussions and the ever-changing technological landscape.

As the largest German software company, SAP sees a responsibility to lead a broad social discourse on the handling of innovative digital technologies. Thus, SAP supports the efforts of the German Federal Ministry of Justice and Consumer Protection in developing guidelines and principles for corporate digital responsibility.

When designing any solution, our development teams ensure that the product complies with human rights standards. For example, accessibility is a key area of focus and we follow *Web content accessibility guidelines* such as the Section 508 standards to ensure inclusive design in all our software.

The protection of personal information is another key area of focus for our development teams. To help ensure that our products enable our customers to respect digital rights, we adhere to robust privacy and security standards. These are defined in our global product development, quality, product standards, and data protection and privacy policies.

Sustainable Procurement

Making Our Supply Chain More Sustainable

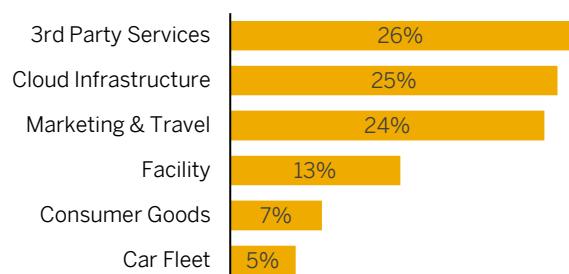
A significant part of our social and environmental impact is delivered through our supply chain. Based on their volume, structure, and geographic distribution, we estimate that our purchases generated employment for approximately 120,000 full-time equivalents (FTEs) in 2017 in the businesses that supply goods and services to us. Furthermore, total greenhouse gases emissions from our supply chain were linked to cumulated annual societal costs of approximately €160 million in 2017. At SAP, we work hard to minimize any negative impacts associated with our supply chain.

What We Buy and Where We Buy It From

At SAP, we consider our suppliers to be key partners in our business success. In 2018, we spent approximately €5.9 billion for purchases from more than 16,000 suppliers worldwide. Within our six categories¹, we approach sustainability from different angles: Cloud Infrastructure (for example, sustainable cooling of data centers), 3rd Party Services (for example, CO₂-reduced mobility concepts), Marketing & Travel (for example, sustainable merchandise and CO₂ compensation), Consumer Goods (for example, reduced packaging), Facility (for example, green energy), and Car Fleet (for example, sustainable mobility concepts).

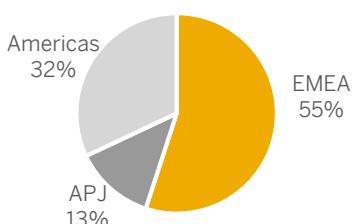
Suppliers by Category (Tier 1)

Percent of total spend



Supplier Locations

Percent of total spend



Promoting Supplier Diversity

Including more diverse businesses – that is, minority enterprises defined by gender, ethnicity, disability, sexual orientation, and other characteristics – into our supplier base has become a key priority for SAP. We believe that our commitment to an inclusive, bias-free culture in our workplace must be mirrored in our approach to our supplier base. In addition, we believe that diverse businesses bring significant added value to SAP through their flexibility and a high innovation potential.

Driven by our Global Procurement Organization (GPO), our supplier diversity program is an integral part of our supplier management program. It strives to ensure that diverse businesses have a fair chance at competing for contracts and are treated equally with other SAP suppliers. Targeted to reach a 5% spend ratio for diversity suppliers in selected countries by 2020, the GPO proactively involves diversity suppliers in all categories into our sourcing process. While supplier diversity classification definitions vary from region to region, SAP aligns with Dunn & Bradstreet's supplier diversity classification definitions including, but not limited to, Women Business Enterprise (WBE), Disabled Veteran Business Enterprise, and Small Disadvantaged Business (SDB).

In 2018, based on our previous pilot project, we implemented a supplier diversity task force that comprises dedicated buyers from all categories, aimed at identifying potential diversity-certified suppliers for all Requests for Proposals (RFP). Looking at the United States, SAP already exceeded its own goal in 2017, with 5.3% spend coming from diverse businesses. We are currently developing an extension to also include tier-2 suppliers into our supplier diversity program and further enhance our fraction of diversity suppliers.

As part of its supplier diversity program, SAP was a corporate member of the following minority supplier certification organizations in 2018:

- National Minority Supplier Development Council (NMSDC)
- WEConnect International
- Minority Supplier Development UK (MSDUK)
- US Business Leadership Network (USBLN)

In the spring of 2018, SAP partnered with the Social Enterprise World Forum (SEWF) to further enhance our diverse supplier network. Furthermore, diversity and inclusion-related content is included in our Supplier Code of Conduct. We recommend SAP suppliers to deliver goods and services that are accessible to everyone, including people with disabilities.

¹3rd Party Services includes professional services as well as HR-related procurement. Cloud Infrastructure procures products and services for SAP's cloud business. Marketing & Travel focuses on transactions regarding SAP's marketing and business travel. Facility includes procurement for our buildings across the globe (and does not include leases and construction). Consumer goods primarily covers procurement in the area of telecommunications and IT-related products/services other than cloud infrastructure. Car fleet includes procurement regarding the global company car fleet.

Upholding High Standards Across Our Supply Chain

Our supplier code of conduct is included in our standard supplier contracts and will become an essential part of our supplier registration. This supplier registration ensures that potential suppliers of SAP are aware of SAP's basic code of acceptable conduct. We review and update our supplier code of conduct regularly to maintain high standards within our supplier network. This strengthens its enforceability and sends a clear signal about its importance for SAP.

The current version of the SAP *Supplier Code of Conduct* also contains provisions on the Modern Slavery Act, diversity and inclusion, and a labor standards chapter that explicitly refers to human rights.

Improving Sustainability Through Innovation

In 2018, we further enhanced our SAP Ariba Supplier Risk solution. It enables the procurement departments of our customers as well as our GPO to identify, manage, and mitigate sustainability risks within our supply chain. These risks include, for example,

unethical practice, workplace discrimination, workplace safety neglect, the use of child labor, human trafficking, and environmental disasters such as oil spills and radioactive contamination.

In addition, this innovative solution helps SAP measure due diligence activity and report on information-sharing programs across the supply chain. By providing insights into supplier risk, the solution enables us to detect early warning signals, minimize costly disruptions, and proactively monitor risk factors for each supplier. In this way, SAP can prioritize its corporate responsibilities, quantify the impact it wants its business to have, and identify the critical issues affecting the supply chain.

SAP has also set up a cross-category task force of GPO buyers that is dedicated to actively improving our sustainability and initiating close collaboration with suppliers to find new and innovative ways to make our supply chain more sustainable. We have a number of ongoing projects that minimize our impact on the environment in areas such as waste management, energy, enterprise mobility, catering, office supplies, and SAP events.

Our chief procurement officer and chief sustainability officer meet each quarter to discuss progress and challenges related to embedding sustainability in our procurement practices.

Waste and Water

Taking a Global Approach

Our waste and water strategy ensures that we minimize the impact SAP has on our environment. By promoting company-wide initiatives, we dispose less waste and reduce the amount of water we use in locations worldwide. A global approach combined with local targets and initiatives ensures that we optimize our environmental performance.

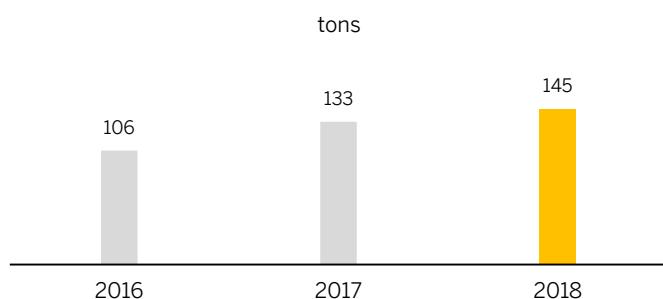
Taking steps to recycle our waste and save water also contributes to our business performance. Through ongoing initiatives at SAP sites, we reduce our operational costs while engaging our employees in our efforts.

Managing Our E-Waste

Our e-waste comes from the data center servers and from IT equipment including PCs, peripherals, and mobile devices. Our servers and IT equipment are either resold or recycled in an environmentally friendly manner depending on their condition. In 2018, we continued our engagement with our international sustainable e-waste disposal partner. We also work together with local e-waste disposal partners.

In addition, we support the reuse of IT equipment internally through used-equipment shops in some country locations. A sustainable procurement program complements our waste reduction efforts by offering sustainably produced IT equipment.

E-Waste (Recycled)



Cutting Down on Landfill Waste

In 2018, we continued to roll out 'zero waste' diversion programs at offices across the globe as part of our ISO 14001 program, with specific targets to achieve and maintain landfill diversion at or above 90%. This approach focuses on eliminating the need to send waste to landfill, by changing processes or promoting the reuse of materials.

We reduced our paper usage by almost 43% since 2009. Initiatives such as our global printing optimization support this decrease, despite a 102.8% increase in employee headcount over the same period. Among other improvements, this initiative sets printers to produce double-sided, black-and-white printouts by default. In 2018, we continued our approach of paperless contracting. By using the SAP Signature Management application

by DocuSign to enable electronic signatures, we have been able to handle 97,035 pages of contract, cutting down on paper-based contracts significantly.

We have also successfully changed working behavior to significantly reduce the number of pages that our employees print. A secure pull-printing system requires that employees bring their ID badges to a printing device to activate a job. This ensures better document security, and makes people think about whether the printout is really needed. More than 89,000 employees are currently using this system. Through all of these initiatives, our printing volume has gone down by 25.6 million pages in total since 2014. SAP employees can access a printing dashboard that shows the company's progress in reducing paper consumption at global, regional, and country levels.

Finding Alternatives to Plastic

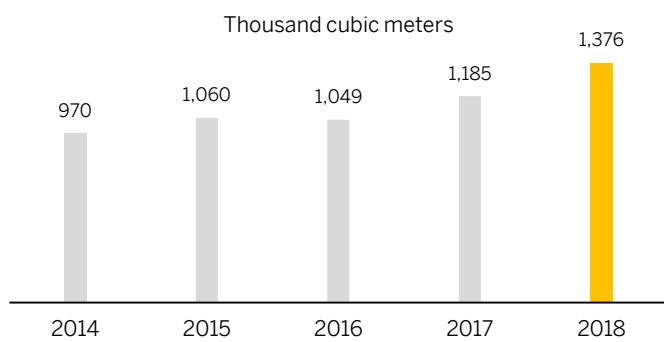
In a bid to reduce the amount of plastic in our everyday lives, and in support of the United Nations Sustainable Development Goals for a more sustainable future for all, we ran the plastic-free initiative throughout October. Employees worldwide were challenged to find alternatives for everyday products that are usually packaged in plastic, and to share their photographs and stories on the company's intranet and social media channels. The employee with the most suggestions then won the competition. Some of the ideas included switching to reusable materials such as stainless steel, as well as compostable materials. A further initiative at local was the implementation of reusable mugs in our office in Newtown Square, PA, United States.

Using Water Efficiently

While our operations are not water-intensive, we continue to use water as efficiently as possible. As part of our efficiency efforts, we use rain and run-off water for irrigation and toilets in our headquarters in Walldorf, Germany, and other office locations.

A few of our offices are located in areas with significant water scarcity. In locations such as Bangalore, India, Johannesburg, South Africa, Sofia, Bulgaria, or Ra'anana, Israel, we have been addressing this issue with dedicated water management efforts. These range from the reuse of treated sewage water to harvesting systems, and boreholes to save clean, fresh water.

Global Water Usage



Public Policy

SAP has developed trusting relationships with governments worldwide by exploring the potential for information and communications technology (ICT) to spur economic growth, create jobs, and address societal challenges. This includes governments in their role as our customers by supporting their digital transformation to become more efficient, effective, and citizen-oriented.

SAP engages with governments around the globe on a number of public policy issues, including the creation of reasonable framework conditions for new technologies or business models such as cloud computing, the Internet of Things, and Big Data.

SAP supports global best practices to ensure cybersecurity and the protection of personal data to build trust in digital technologies. SAP favors global policy frameworks and international standards that enable the free flow of data across borders and the free trade of digital products and services.

SAP believes in transparency in the political process. Accordingly, we are registered in the European Transparency Register for interest representatives. In the United States, our company is registered and reports in compliance with the Lobbying Disclosure Act.

Political Contributions

SAP does not support any political parties. Under the laws of the United States, a number of SAP employees exercise their right to create a political action committee (PAC). The SAP America PAC is an independent, registered, and strictly regulated organization that allows eligible employees in the United States to support political candidates at the state and federal level. Consistent with U.S. law, SAP exercises no control over or influence on the SAP America PAC. SAP America PAC expenditures are transparent and available on the U.S. Federal Election Commission Web site.

Memberships

To better understand and enable sustainable performance on a global level, both for our company and customers, SAP subscribes to and routinely engages in a range of third-party organizations, including:

- Advancing Women Executives
- Alliance for Integrity
- Bitkom e.V.
- Business for Social Responsibility
- Cellular Telephone Industries Association
- Deutschland sicher im Netz e.V.
- DIGITALEUROPE
- econsense
- Federation of German Industries
- Industrial Internet Consortium
- Information Technology Industry Council
- International Integrated Reporting Council
- Mechanical Engineering Industry Association
- Organization for International Investment
- Russian-German Chamber of Commerce
- Schmalenbach-Gesellschaft für Betriebswirtschaft e.V.
- Society of Corporate Compliance & Ethics
- The Conference Board, Inc.
- The Sustainability Consortium
- The Wall Street Journal CEO Council
- TRACE International
- Transparency International Germany
- United Nations Global Compact (since 2000)
- U.S. Chamber of Commerce
- World Economic Forum

Non-Financial Notes: Social Performance

General Information About Social Indicators

Boundaries

Our boundaries take two different perspectives: SAP as a company, which includes all our legal entities and operations and supply chain, and SAP as a solution provider enabling our customers. These boundaries are listed in detail in the GRI Standard Content Index.

Social Indicators

Data for our social indicators is collected and reported on a quarterly or annual basis and is subject to external assurance for annual reporting.

Employee Retention

We define employee retention as a ratio that puts emphasis on employee-initiated turnover – in other words, we seek to measure how many employees choose to stay with SAP. As opposed to keeping a low turnover rate – which companies generally seek to do – we aim to keep our retention rate high. A higher retention rate signifies that fewer employees are choosing to leave SAP. The number of voluntarily departed employees now excludes the voluntary part of restructuring-related departures for more transparency and precise headcount management purposes.

Women in Management

We define “women in management” as the share of women in management positions as compared to the total number of managers.

At SAP, we differentiate between the following categories of managers:

- Managers managing teams: Refers to managing teams of at least one employee or vacant positions

- Managers managing managers: Refers to managing managers that manage teams
- Board members

Business Health Culture Index

The Business Health Culture Index (BHCI) measures the general cultural conditions in an organization that enable employees to stay healthy and balanced. The index covers questions concerning how employees rate their personal well-being and the working conditions at SAP, including our leadership culture. The BHCI is an indicator of the extent to which SAP successfully offers employees a working environment that promotes health supporting their long-term employability and their active engagement in reaching our ambitious corporate goals.

The BHCI is calculated based on the results of an employee survey (“People Survey”) conducted annually. All employees were invited to take part in the 2018 People Survey and approximately 72,000 employees participated (response rate: 73%). The BHCI score for 2014 was recalculated from 70% to 72% based on two updated questions in the people survey concerning work-life balance. The changes were carried out to simplify the questionnaire and to better compare against external benchmarks.

Employee Engagement

We define employee engagement as a score for the level of employee commitment, pride, and loyalty, as well as our employees' feeling of advocacy for SAP.

It is calculated based on the results of an employee survey that is conducted annually (see BHCI).

In 2015, we simplified our Employee Engagement Index and recalculated our score for 2015 from 81% to 82%. This calculation method has been applied moving forward.

Non-Financial Notes: Environmental Performance

Environmental Performance

We understand environmental performance as the measurable outcome of SAP's ability to meet environmental objectives and targets set forth in our environmental policy. In this context, we determine SAP's greenhouse gas footprint, total energy consumed, and data center energy as the three key environmental performance indicators. Furthermore, we realize external reductions by purchasing offsets and renewable energy which is partly self-generated in SAP locations but primarily purchased in the form of Renewable Energy Certificates (RECs). Plus, we identify SAP's waste and water consumption as additional environmental aspects.

By looking at the energy usage and emissions throughout our entire value chain, we gain insights to help us manage our environmental performance and, in turn, help our customers to do the same.

The activities and trends behind our results for 2018 are detailed below. This includes information about the areas in which we consume the most purchased electricity, as well as the impact caused by the use of our products.

Our net carbon footprint is calculated by reducing purchased renewable energy certificates and carbon offsets from our gross carbon footprint in the respective reporting period. Our gross carbon footprint for 2018 was 734 kilotons CO₂e (2017: 680 kilotons CO₂e), including all GHG emission categories in Scope 1 and 2, as well as selected categories of Scope 3 as outlined in figure 1.

General Information

We consider the principle of sustainability context in a number of ways, such as by looking at global issues or trends including climate change and demographic shifts. For example, we assess our greenhouse gas emissions in the context of the emissions of the entire information and communications technology landscape, with particular focus on the abatement potential of the industry. When it comes to completeness, we recognize that while we comply with this principle in reporting on our own operations, we are still developing methodologies to reliably quantify our impact through our solutions.

Boundaries

Our boundaries take two different perspectives: SAP as a company, which includes all our legal entities and operations and supply chain, and SAP as a solution provider enabling our customers. These boundaries are listed in detail in the Content Index of the Global Reporting Initiative (GRI).

Reporting Approach

Data for our environmental indicators is collected and reported on a quarterly basis and is subject to external assurance for annual reporting.

Reporting on total energy consumed and data center energy is based on the data collected for the calculation of our greenhouse gas (GHG) footprint. All numbers are based on the metric system. Whenever we state "tons," we mean metric tons.

The indicators greenhouse gas emissions per employee and total energy consumed per employee are calculated on the basis of an average number of employees. This average is calculated by adding the FTEs at the end of each quarter and then dividing the result by four.

Greenhouse Gas Footprint

Definition

We define the GHG footprint or carbon footprint as the sum of all greenhouse gas emissions measured and reported for SAP, including the compensation with renewable energy or offsets.

Reporting Principles

SAP's preparation of the GHG footprint is based on the Corporate Accounting and Reporting Standard (Scope 1 and 2) and the Corporate Value Chain (Scope 3) Standard of the World Resources Institute/World Business Council for Sustainable Development. This approach conforms to the requirements of GRI Standard indicators 302-1, 302-2, 305-1, 305-2, and 305-3.

In more detail, SAP reports our net greenhouse gas emissions according to the GHG Protocol Scope 2. In this context, two different calculation approaches are possible: the classic location-based method and the recently introduced market-based method, which is an amendment to the GHG Protocol Scope 2.

Organizational Boundaries

SAP defines our organizational boundaries by applying the operational control approach as set out in the GHG Protocol.

Operational control is established when SAP has the full authority to introduce and implement its operating policies. The emissions of all operations over which the company has operational control and all owned, leased facilities, co-location data centers, and vehicles that the company occupies or operates are accounted for in the GHG footprint. They are based either on measurements or, where no measured data is available, on estimations and extrapolations.

A portion of SAP's leased facilities operates under full-service or multitenant leases, where SAP does not have access to actual energy consumption information. SAP includes these facilities in our definition of operational control and accounts for them by estimating related energy consumption.

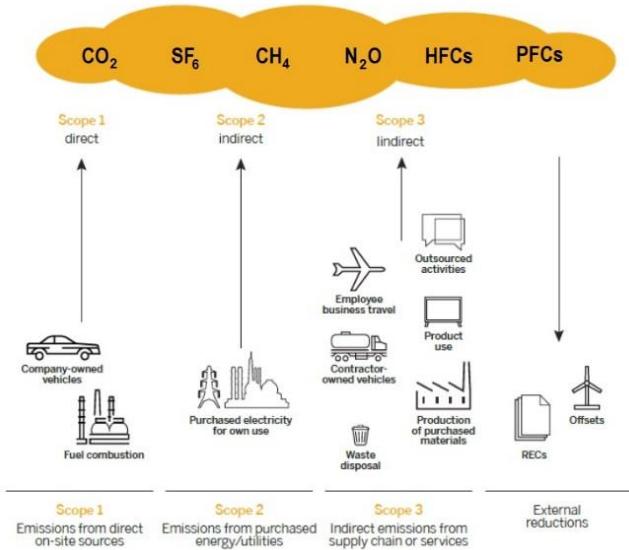
To support the growing demand for SAP's cloud offerings, we subcontract computation power in local third-party data centers. Carbon emissions are approximated and included based on the consumed computation power.

In most instances, however, SAP has 100% ownership of our subsidiaries. Accordingly, the difference between applying the control versus the equity approach is about 0.6% based on SAP revenue. If additional investments in associates were included, the difference would be even smaller, about 0.5%.

Data Consistency

Comparability

SAP uses a significance threshold of 5% for structural or organizational changes and 1% for methodology changes of total current-year emissions. A structural or organizational change that increases or decreases the total inventory by 5% or more will trigger an adjustment of past years. A structural or organizational change that increases or decreases the total inventory by less than 5% will be considered insignificant and thus no adjustment will be made.



Additionally, we annually measure the cumulative cost avoidance of our carbon emissions, compared to a business-as-usual scenario. In 2015, we introduced a cumulative cost avoidance calculation based on a triennial rolling method. This leads to additional comparability and thus, we continued this approach in 2018.

Error Correction

If a significant error is found in the base year inventory, it will be corrected. If a significant error is found that does not affect the base year but has an impact on this year's or last year's emissions, it will be corrected. An error is significant if it affects SAP's gross carbon footprint by more than 1%. No restatement due to error correction of historical data was necessary in 2018.

CO₂ Emission Factors

The calculation of the GHG emissions is based on factors for conversion and extrapolation provided, among others, by IEA, WRI, US EPA, UK DEFRA, DEHSt, Environment Canada, GHG Protocol, and SAP's own measurements.

Where relevant, our CO₂ emissions factors consider all CO₂ equivalents (CO₂e) for all greenhouse gases. Global Warming Potential factors are based on the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC).

In 2016, we updated our emissions and extrapolation factors for the categories stationary combustion facilities, corporate cars, corporate jets, business flights, rental cars, train travel, business trips with private cars, employee commuting, and paper consumption, leading to a 10% downward impact on SAP's 2016 gross CO₂ emissions.

Methodology & Further Details

We are reporting all our GHG emissions in CO₂ equivalents (CO₂e) including the impact from CH₄, N₂O, and HFCs in our Scope 1 and 2 emissions. As SF₆ and PFCs mainly occur in chemical processes, they are not relevant for us.

Below you will find the different parameters contributing to our carbon footprint. The methodology explanation will be complemented by activities and trends.

Scope 1

Refers to direct greenhouse gas emissions and is defined as emissions from sources that are owned or controlled by the organization. At SAP, the following areas are covered by Scope 1:

- **Stationary Combustion Facilities:** Emission calculation is based on building gas or oil consumption in kWh. Where no measured data is available, stable values (kWh/m²) are used for extrapolation of buildings (58% measured data). In cases where no specific information is available, natural gas reported by local sites is assumed to be reported in Lower Heating Value. Besides gas and oil, we also began using wood pellets to produce thermal heat for our buildings. The Scope 1 emissions of wood pellets can be set to net '0', since the wood itself absorbs an equivalent amount of CO₂ during the growth phase as the amount of CO₂ released through combustion. Still, to ensure complete accounting for all emissions caused, we document the direct carbon dioxide (CO₂) impact of burning wood pellets as 'outside of scopes' CO₂ emissions. In 2018, these emissions accounted for 782 tons of CO₂.
- **Refrigerants Facilities:** Refrigerant data is reported for completeness of our carbon footprint, but HFC emissions are fully estimated (0% measured data) based on the number of server units and office space with an A/C system; all refrigerants are assumed to be HFC134a.
- **Mobile Combustion Corporate Cars:** Emission calculation is based on fuel consumption. In 2018, 28 countries reported actual fuel data (93% data coverage); for other countries, stable values (liters/car) are used for extrapolation based on the number of corporate cars reported. The stable values for extrapolation are based on SAP's 2017 carbon footprint data.
- **Refrigerants Corporate Cars:** Refrigerant emissions are based on a rough estimate of HFC emissions per car and are

extrapolated based on the number of corporate cars reported (93% measured data).

- **Mobile Combustion Corporate Jets:** Emission calculation for SAP's own jets is based on actual fuel consumption (100% data coverage).

Consumption of fuel for our company cars remains the single greatest contributor to our Scope 1 emissions. In 2018, we continued to enhance our car policy by linking emissions caps to efficiency improvements of the automotive industry. In addition, we focused on greater shifts in commuting habits. We continued the global rollout of TwoGo by SAP, our car-sharing solution, which is now available in 114 SAP locations worldwide. To increase the scale and attractiveness of TwoGo, we make the solution available to the public free of charge. As part of our initiative to increase the proportion of electric vehicles in our car fleet to 20% by 2020, we continue to offer incentives to our employees to purchase electrical cars. As an example of additional transportation alternatives for our employees, we offer a company bike program in Germany, where employees can now also use a bicycle in addition to their company car to commute to work. A further commuting alternative to a company car in Germany is participation in a national reduced train fare program called "BahnCard 100."

Scope 2

Refers to indirect greenhouse gas emissions and is defined as emissions from the consumption of purchased electricity, steam, or other sources of energy generated upstream from the organization. At SAP, the following areas are covered by Scope 2:

- **Electricity Office:** Calculations of emissions is based on building electricity consumption. Emission factors are updated annually. Where no measured data is available, stable values (kWh/m²) based on SAP's 2017 carbon footprint data are used for extrapolation (75% data coverage).
- **Electricity Data Centers:** SAP-owned and SAP-managed data centers coming from acquisitions. Calculations of emissions is based on data center electricity consumption. Emission factors are updated annually. Where no data is available, electricity consumption for internal data centers is extrapolated based on the number of server units (94% data coverage). The stable values are based on SAP's 2017 carbon footprint data.
- **Purchased Chilled and Hot Water, Steam:** Calculations of emissions is based on consumption of district heating. Emission factors are updated annually. Where no measured data is available, stable values (kWh/m²) based on SAP's 2017 carbon footprint data are used for extrapolation (66% data coverage).

We continued a wide range of efficiency projects to reduce our electricity usage, including facility upgrades and new LEED certifications. We also expanded the management of our environmental performance through ISO 14001. In addition, we are one of the global corporations that have signed on to the RE100 initiative. Led by The Climate Group in partnership with CDP (formerly Carbon Disclosure Project), the goal of the RE100 campaign is to have 100 of the world's most influential businesses committed to 100% renewable electricity.

Scope 3

Refers to other indirect greenhouse gas emissions and is defined as emissions that are a consequence of operations of an organization, but are not directly owned or controlled by the

organization. Scope 3 emissions are divided into upstream and downstream emissions.

Only selected upstream emissions are measured directly and hence included in our corporate target. The additional upstream emissions such as products and services or grey energy of our buildings are based on an estimate. Together, our upstream emissions including these estimates are responsible for about 11% of SAP's total carbon footprint.

The following scope 3 GHG emissions are included in our corporate GHG target:

- **Business Flights:** Calculation of emissions is based on actual distance travelled and actual costs spent (61% data coverage). This data is used to determine average emission factors for short, medium, and long-haul flights. For CO₂ calculation, these factors are applied to actual controlling costs for business flights. Emission factors for business flights do not consider the radiative forcing factors.
- **Rental Cars:** Average emission factors from rental cars are calculated based on actual distance and actual costs spent (86% data coverage). These factors are used for extrapolation based on the controlling costs.
- **Train Travel:** Average emission factors from train travel are calculated based on actual distance traveled and actual costs spent (35% data coverage). These factors are used for extrapolation based on the controlling costs.
- **Business Trips with Private Cars:** Carbon calculation is based on distance traveled with a private car; extrapolation is based on FTE (81% data coverage). Company car trips are excluded from this activity type.
- **Employee Commuting:** A system-integrated commuting survey about the distance to work and the mode of transport was again conducted in 2018 for SAP globally. The survey responses are the basis for carbon calculation of employee commuting in the following year. Approximately 28,000 employees responded to the survey in 2018. Commuting data for non-responding employees and quarterly updates are extrapolated based on the number of FTEs excluding those employees who own a company car.
- **Electricity External Data Centers:** An external data center (co-location) is a local computing center with server units running SAP software that is operated by an external partner. CO₂ conversion factors are updated annually based on country specific grid factors and include CH₄ and N₂O factors. Electricity consumption for external data centers is extrapolated based on the data center capacity, a utilization factor, and a power usage effectiveness (PUE) factor. As the utilization and PUE factors are not available for all external data centers, average factors are determined as follows: The utilization factor for external data centers is calculated as the sum of all actual consumptions divided by the sum of contracted server power of these data centers. The average PUE is calculated as the sum of all provided PUEs divided by the number of data centers that have provided this factor (81.5% data coverage).
- **Logistics:** Calculation is based on the actual number of parcels and mail sent from our logistics center in Germany and is extrapolated globally.
- **Data Download:** Carbon calculation is based on the data volume downloaded by our customers globally (100% data coverage).

- **Paper Consumption:** Calculation of emissions caused by the consumption of printing paper is based on printer tracker data (100% data coverage).

Additionally, each year we measure and publish the following Scope 3 GHG emissions based on the GHG Protocol's Corporate Value Chain (Scope 3) Accounting and Reporting Standard. These GHG emissions are not included in our corporate target and are meant for indicative purposes only.

Upstream

Due to the link of our upstream emissions to operating expenses, for 2018, we extrapolated our upstream figures by multiplying our four key contributors to our upstream emissions from 2017 with the year-over-year increase of operating expenses between 2017 and 2018.

Downstream

- **Use of Sold Products:** The vast majority of our overall emissions stem from the use of our software. When SAP software runs on our customers' hardware and on their premises, the resulting carbon footprint is about 38 times the size of our own net carbon footprint (11.7 million tons in 2018). SAP is eager to cooperate with customers to optimize their on-premise landscapes. However, given that we have no control over our customers' IT landscapes as they usually contain a lot of third-party products, we share this responsibility with others. Resource need per year is determined using a landscape simulation. It is extrapolated globally based on the number of productive installations and power usage effectiveness (PUE). We use a PUE factor of 1.61, which is the average PUE of our external data centers. Emissions are calculated using a global electricity emission factor. Due to the special characteristics of software products, we chose an assessment of resource need per year. This deviates from the minimum boundaries as defined by the GHG Protocol's Corporate Value Chain (Scope 3) Accounting and Reporting Standard, which requires assessment and disclosure of "direct use-phase emissions of sold products over their expected lifetime." The calculation covers all of our major solutions, including on-premise software. Cloud solutions are not included, as they are part of our Scope 2 emissions. Mobile solutions (for example, SAP apps running on customer IT equipment) are also not included. Calculation parameters will be adapted when significant technology changes occur.
- **Other Scope 3 Emissions Not Included:** Upstream Transportation and Distribution (due to data complexity and de minimis); Upstream Leased Assets (not applicable); Processing of Sold Products (not applicable); End-of-Life Treatment of Sold Products (not applicable); Downstream Leased Assets (not applicable); Franchises (not applicable); and investments (not applicable).

External Reduction

SAP uses external reductions, such as purchases of renewable energy and certified voluntary "offsets," to achieve its GHG targets. Emission reductions are subtracted from gross Scope 1 to 3 GHG emissions to achieve a net GHG inventory.

Renewable Electricity

We define renewable energy as electricity coming from renewable energy sources such as wind, solar, hydro, and

geothermal. The shares of renewable energy used by SAP are calculated by adding the amount of renewable energy specifically sourced, produced onsite by our own solar cells, and covered by Renewable Energy Certificates (RECs). We have developed a quality standard that defines key criteria for the procurement of RECs to drive change in the electricity market and to avoid the risk caused by low-quality products. The key characteristics of our renewable energy purchasing guidelines are as follows:

- **Type of Renewable Electricity:** SAP considers solar, wind, biogas, geothermal, and hydro power as renewable electricity. In 2018, we sourced only wind and solar energy.
- **Installation:** The power plant producing the renewable energy shall not be older than 10 years. In case of a renovation of an old power plant, the 10-year rule applies only to the additional electricity output due to efficiency increase. Furthermore, SAP does not consider RECs from government supported power plants.
- **Vintage:** The renewable electricity must be produced in the same year or the year preceding the reporting period to which it will be applied.
- **Accounting:** SAP uses the grid-specific emissions factor to calculate the carbon reduction achieved by the RECs. As RECs are considered independently to the electricity achieved through their procurement, they can be allocated to any location globally

All energy outside the aforementioned categories falls within conventional energy. We define conventional energy as electricity coming from the standard electricity grid. The electricity grid provides a country-specific energy mix including all available sources, either fossil, nuclear, or renewable. Energy from renewable sources as part of the local grid is calculated as conventional energy and not displayed as part of renewable energy.

To calculate the carbon reductions of the RECs, the amount of purchased electricity is multiplied by the grid-specific carbon factor derived from the location where the renewable energy was produced. The sum over all certificates is the global renewable energy emissions value of SAP. However, data is only valid with an official certificate or written confirmation of the electricity supplier (100% data coverage).

In the net carbon footprint, the purchased as well as the produced renewable electricity is already deducted from our Scope 2 emissions.

Offsets

We compensate our Scope 3 emissions by investing in the Livelihood Funds and their high-quality carbon credits, which are included in our overall net carbon footprint. By using this investment, the Fund aims to abate emissions or sequester carbon from the atmosphere, while at the same time ensuring additional social benefits for developing countries.

On top of this, SAP invests in carbon emission offsets for air travel by charging an internal carbon price which is later invested in sustainable projects worldwide. Furthermore, for employees who own a so-called climate neutral fuel card for their company car, SAP pays a small additional fee per liter gas purchased, which is then invested in gold standard certified compensation projects.

The investments in sustainable projects are equivalent to a certain amount of carbon reductions.

A requirement for offsets is that the minimum standard (Voluntary Carbon Standard, VCS) is applied. SAP ensures that the quantified GHG emission reductions from offsets are credible and that they meet four key accounting principles:

- **Real:** The GHG reductions represent actual emission reductions that have already occurred.
 - **Additional:** The GHG reductions are surplus to regulation and would not have happened without the offset.
 - **Permanent:** The GHG reductions are permanent or have guarantees to ensure that any losses are replaced in the future.
 - **Verifiable:** The performance of the GHG reduction projects can be readily and accurately quantified, monitored, and verified.
- In the net carbon footprint, purchased offsets are already deducted from our gross emissions.

Total Energy Consumed

We define total energy consumed as the sum of all energy consumed through SAP-owned operations, including energy from renewable sources. It is calculated based on the consumption data obtained through our measurements for the GHG footprint and is the sum of energy consumption from stationary combustion facilities, mobile combustion corporate cars, mobile combustion corporate jets, electricity offices, electricity data centers, purchased chilled water, purchased hot water, and purchased steam.

Data Center Electricity

We define data center electricity as the sum of electricity consumed to provide internal and external computation power in SAP data centers and contracted third-party data centers. A data center is any global, regional, or local computing center (location

with any number of server units) that is part of our global IT infrastructure strategy. In 2018, we continued analyzing and reporting internal and external data center energy consumption intensity against our non-IFRS revenue.

Data center energy consumption per euro is calculated by dividing the electricity consumption of all internal and external data centers measured for the calculation of our GHG footprint by our revenue.

We will continuously improve the data quality of energy consumption of external data centers.

As we expect that emissions from external data centers will continue to grow in the future, SAP committed to a green cloud strategy and to compensate the emissions with renewable electricity certificates. By referring to the green cloud, we mean that SAP's cloud is carbon neutral due to purchasing 100% renewable electricity certificates and compensation by offsets.

Additional Environmental Aspects

Water

By water, we mean the total amount of freshwater withdrawn for our facilities. Data is based on estimations from sites and is largely extrapolated. Data was provided (estimated) for 61% of the total space; remaining data is extrapolated based on square meter footage.

E-Waste

By e-waste, we mean any discarded electric devices used in our offices and data centers. Data is based on the actual weight of the devices (data coverage 100%).

GRI Index and UN Global Compact Communication on Progress

The social and environmental data and information included in the SAP Integrated Report 2018 has been prepared in accordance with the GRI Standards: Core option.

General Standard Disclosures	Links and Content	UN Global Compact Principles
102-1	<i>Strategy and Business Model</i>	
102-2	<i>Strategy and Business Model</i>	
102-3	<i>Strategy and Business Model</i>	
102-4	<i>Strategy and Business Model</i>	
102-5	<i>Strategy and Business Model</i>	
102-6	<i>Financial Performance – Review and Analysis;</i> <i>Strategy and Business Model;</i> https://www.sap.com/industries.html	
102-7	<i>Headcount and Personnel Expense;</i> <i>Scope of Consolidation, Subsidiaries and Other Equity Investments;</i> <i>Consolidated Financial Statements IFRS;</i> <i>Financial Performance: Review and Analysis</i>	
102-8	<i>Chart Generator;</i> <i>Non-Financial Notes</i>	6
102-9	<i>Sustainable Procurement</i>	3
102-10	There were no changes with significant impacts regarding our own organization or our supply chain.	
102-11	We support a precautionary approach towards environmental management. While we see little apparent risk for our own operations, we do see an opportunity to help our customers anticipate and manage this risk in a more agile and responsive fashion through effective product lifecycle management and sustainable design.	7
102-12	<i>Memberships</i>	
102-13	<i>Memberships</i>	
102-14	<i>Letter from the CEO</i>	
102-16	<i>Business Conduct;</i> <i>Employees and Social Investments</i>	10
102-18	<i>Corporate Governance Report;</i> <i>Sustainability Management and Policies</i>	
102-40	<i>Stakeholder Engagement</i>	
102-41	<i>Stakeholder Engagement</i>	
102-42	<i>Stakeholder Engagement</i>	
102-43	<i>Stakeholder Engagement;</i> <i>Customers</i>	
102-44	<i>Stakeholder Engagement;</i> <i>Customers;</i> <i>Employees and Social Investments</i>	
102-45	<i>Scope of Consolidation, Subsidiaries and Other Equity Investments ;</i> <i>All entities are covered by the report.</i>	
102-46	<i>Materiality;</i> <i>Non-Financial Notes</i>	

General Standard Disclosures	Links and Content			UN Global Compact Principles
102-47	Materiality			
102-48	Non-Financial Notes			
102-49	Non-Financial Notes			
102-50	About This Report			
102-51	February 28, 2018			
102-52	Annual Reporting Cycle			
102-53	Investor Services			
102-54	About This Report			
102-55	GRI Content Index			
102-56	<i>Independent Assurance Report;</i> <i>Management's Acknowledgement of the SAP Integrated Report 2018;</i> <i>About This Report</i>			
103-1	Materiality; GRI Content Index ; Non-Financial Notes			
103-2	Sustainability Management and Policies			
103-3	Sustainability Management and Policies			
Disclosures on Management Approach (DMA) and Indicators	Links and Content	Omissions	Boundaries	Sustainable Development Goal UN Global Compact Principles
DMA	Business Conduct			10
205-1	Business Conduct; Risk Management and Risks	SAP	16	10
206-1	Other Litigation, Claims, and Legal Contingencies	SAP	16	
415-1	Public Policy		16	10
DMA	Energy and Emissions			
302-1	Energy and Emissions; Non-Financial Notes; Chart Generator	SAP	7, 8, 12, 13	7, 8
302-2	Energy and Emissions; Non-Financial Notes	SAP + external parties	7, 8, 12, 13	7, 8
302-3	Energy and Emissions; Non-Financial Notes; Chart Generator ;	SAP	7, 8, 12, 13	8
	The ratio uses only energy consumption within the organization.			
302-4	Energy and Emissions; Non-Financial Notes	SAP	7, 8, 13	8
305-1	Energy and Emissions; Non-Financial Notes; Chart Generator	SAP	3, 12, 13, 14, 15	7, 8
305-2	Energy and Emissions; Non-Financial Notes; Chart Generator	SAP	3, 12, 13, 14, 15	7, 8
305-3	Energy and Emissions; Non-Financial Notes; Chart Generator	External parties	3, 12, 13, 14, 15	7, 8

Disclosures on Management Approach (DMA) and Indicators	Links and Content	Omissions	Boundaries	Sustainable Development Goal	UN Global Compact Principles
305-4	<i>Chart Generator; Non-Financial Notes</i>		SAP + external parties	13, 14, 15	8
305-5	<i>Energy and Emissions; Non-Financial Notes; Chart Generator</i>		SAP + external parties	13, 14, 15	8, 9
305-6		The emission of ozone-depleting substances (ODS) is not material to us as a software		3, 12, 13	
DMA	<i>Sustainability Management and Policies; Expected Developments and Opportunities; Report by the Supervisory Board</i> We are working on understanding the impact our solutions have on our customers' success, and we document this impact in case studies. SAP does not conduct community assessment programs.				
Growth and Profitability	<i>Financial Performance: Review and Analysis</i>		SAP		
203-1		The amount of these investments is not material for SAP.			
203-2	<i>Strategy and Business Model; http://www.sap.com/purpose</i>		External parties	1, 3, 8	9
DMA	<i>Sustainability Management and Policies; Employees and Social Investments</i>				1, 2, 6
Employee Engagement	<i>Employees and Social Investments</i>		SAP		6
Business Health Culture Index	<i>Employees and Social Investments</i>	Injuries, diseases, lost days, or absenteeism are not a material issue for SAP as we track our Business Health Culture Index on a global basis.	SAP	3	
Leadership	<i>Employees and Social Investments</i>		SAP		6
403-1		Workers representation in formal joint management-worker health and safety committees are not a material topic to SAP, as there are no workers with a high incidence or high risk of diseases due to their work within SAP.	SAP	8	
403-3	There are no workers with a high incidence or high risk of diseases due to their work within SAP.			3, 8	
405-1	<i>Corporate Governance Statement; https://www.sap.com/corporate/en/investors/governance/executive-board.html; Chart Generator</i>		SAP	5, 8	
DMA	<i>Sustainability Management and Policies</i>				

Disclosures on Management Approach (DMA) and Indicators	Links and Content	Omissions	Boundaries	Sustainable Development Goal	UN Global Compact Principles
404-1	<i>Employees and Social Investments</i>	Training hours split by gender and employee category are not a material issue for SAP as we align our training activities according to the needs of each employee and do not tolerate discrimination.	SAP	4, 5, 8, 10	
404-2	<i>Employees and Social Investments</i>	For continued employability issues and managing career endings, SAP has dedicated staff to support generational intelligence. These experts work on continuously improving processes and designing programs for sustaining employability as long as possible; providing training for cross-generation collaboration; managing career endings in a flexible way (for example, part-time options); and keeping employees connected with the company after retirement. SAP also participates in external research studies and networks on workforce demographics to share and learn about best practices in this field.	SAP	8	
404-3	<i>Employees and Social Investments</i>	The split by gender is proprietary information for SAP.	SAP	5, 8, 10	
R&D and Local Innovation	<i>Products, Research & Development, and Services</i>		SAP		
DMA	<i>Security and Privacy; Human Rights and Labor Standards</i>			8, 16	
418-1	<i>Security and Privacy</i>		SAP + external parties	16	
407-1	<i>Human Rights and Labor Standards</i>	We are not aware of any operations or suppliers in which the right to exercise freedom of association and collective bargaining may be at significant risk.	SAP	8	3
408-1	<i>Human Rights and Labor Standards</i>	We are not aware of any operations or suppliers as having significant risk for incidents of child labor.	SAP	8, 16	5
409-1	<i>Human Rights and Labor Standards</i>	We are not aware of any operations or suppliers as having significant risk for incidents of forced or compulsory labor.	SAP	8	4
DMA	<i>Sustainability Management and Policies</i>				

Disclosures on Management Approach (DMA) and Indicators	Links and Content	Omissions	Boundaries	Sustainable Development Goal	UN Global Compact Principles
UN Sustainable Development Goals	<i>Strategy and Business Model: Our Contribution to the UN SDGs</i>		External parties	1 to 17	
Social Investments	<i>Employees and Social Investments</i>		SAP + external parties		

Task Force on Climate-Related Financial Disclosure (TCFD)

The TCFD recommends companies to disclose their climate-related financial risks to investors, lenders, insurers, and other stakeholders. In 2018, SAP started to report in alignment with the TCFD recommendations. For more information, see the table below.

Area	Content	Chapter
Governance	SAP's governance of climate-related risks and opportunities.	<i>Energy & Emissions</i>
Strategy	Actual and potential impacts of climate-related risks and opportunities on SAP's businesses, strategy, and financial planning where such information is material.	<i>Risk Management & Risks; Strategy & Business Model; Energy & Emissions</i>
Risk Management	How does SAP identify, assess, and manage climate-related risks?	<i>Risk Management & Risks</i>
Metrics and Targets	Metrics and targets that SAP uses to assess and manage relevant climate-related risks and opportunities where such information is material.	<i>Energy & Emissions; Risk Management & Risks; Chart Generator</i>

Management's Acknowledgement of the SAP Integrated Report 2018

The International Integrated Reporting (<IR>) Framework launched by the International Integrated Reporting Council in December 2013 has a provision that an integrated report should include a statement in which management acknowledges its responsibility for the report. Our respective statement for 2018 is as follows:

The Executive Board is aware of its responsibility to ensure the integrity of the SAP Integrated Report 2018. The members of the Executive Board have applied their collective mind to the preparation and presentation of our integrated report.

Similar to previous reports, we have applied the Guiding Principles of the <IR> Framework, but we also must ensure our compliance with legal requirements, such as the provisions regarding financial reporting in the German Commercial Code as set out in detail in the German Accounting Standard 20 Group Management Report, while balancing other reporting standards such as the GRI Standards of the Global Sustainability Standards Board, with the <IR> Framework.

Our Executive Board has reviewed the SAP Integrated Report 2018, including the consolidated financial statements, the combined management report, and the further information on economic, environmental, and social performance.

Our Executive Board believes that the integrated report is presented in accordance with the <IR> Framework as far as possible given the aforementioned restrictions. Should the aforementioned restrictions ever cease to apply, we will continue to strive for further alignment with the <IR> Framework in future reports.

Assurance Report of the Independent Auditor on Selected Qualitative and Quantitative Sustainability Disclosures

To the Executive Board of SAP SE, Walldorf

We have performed an independent assurance engagement on selected qualitative and quantitative sustainability disclosures included in the Integrated Report 2018 (further: the "Report") of SAP SE, Walldorf (further "SAP"), published under <https://www.sap.com/integrated-reports/2018/en.html>.

For the quantitative sustainability indicators Business Health Culture Index, Employee Engagement, Employee Retention, Women in Management, Greenhouse Gas Emissions (Scope 1 and 2 as well as selected Scope 3 emissions including business flights and employee commuting), Renewable Energy, Total Energy Consumed, and Customer Net Promoter Score including the explanatory notes supplementing these indicators, a reasonable assurance engagement was performed.

For the selected qualitative and quantitative sustainability disclosures on Sustainability Management and Policies, Sustainable Procurement, Public Policy, Human Rights, Employees and Social Investment, Energy and Emissions (including selected Greenhouse Gas Protocol Scope 3 Emissions), Waste and Water, GRI Index/UN Global Compact, About This Report, Materiality, and Stakeholder Engagement as well as for the other qualitative and quantitative sustainability disclosures in relation to these aspects, a limited assurance engagement was performed.

Management's Responsibility

The legal representatives of SAP are responsible for the preparation of the Report in accordance with the Reporting Criteria. SAP applies the principles and standard disclosures of the Sustainability Reporting Standards of the Global Reporting Initiative (GRI) in combination with the Corporate Accounting and Reporting Standard (Scope 1 and 2) and the Corporate Value Chain (Scope 3) Standard of the World Resources Institute / World Business Council for Sustainable Development, as well as internally developed definitions, as described in the 'Non-Financial Notes: Social Performance' and the 'Non-Financial Notes: Environmental Performance' as Reporting Criteria.

This responsibility of the legal representatives includes the selection and application of appropriate methods to prepare the Report and the use of assumptions and estimates for individual qualitative and quantitative sustainability disclosures, which are reasonable under the circumstances. Furthermore, this responsibility includes designing, implementing and maintaining systems and processes relevant for the preparation of the Report in a way that is free of – intended or unintended – material misstatements.

Independence and Quality Assurance on the Part of the Auditing Firm

We are independent from the entity in accordance with the requirements of independence and quality assurance set out in legal provisions and professional pronouncements and have fulfilled our additional professional obligations in accordance with these requirements.

Our audit firm applies the national statutory provisions and professional pronouncements for quality assurance, in particular the Professional Code for German Public Auditors and Chartered Accountants (in Germany) and the quality assurance standard of the German Institute of Public Auditors (Institut der Wirtschaftsprüfer, IDW) regarding quality assurance requirements in audit practice (IDW QS 1).

Practitioner's Responsibility

Our responsibility is to express a conclusion based on our work performed and the evidence obtained on the qualitative and quantitative sustainability disclosures described above.

We conducted our work in accordance with the International Standard on Assurance Engagements (ISAE) 3000 (Revised): "Assurance Engagements other than Audits or Reviews of Historical Financial Information" of the International Auditing and Assurance Standards Board (IAASB). These standards require that we comply with our professional duties and plan and perform the assurance engagement to obtain a reasonable level of assurance to conclude that the above mentioned selected quantitative sustainability indicators are prepared, in all material respects, in accordance with the aforementioned Reporting Criteria; and respectively to obtain limited assurance whether any matters have come to our attention that cause us to believe that the selected qualitative and quantitative sustainability disclosures of the entity have not been prepared, in all material respects, in accordance with the Reporting Criteria. We do not, however, provide a separate conclusion for each disclosure. In a limited assurance engagement the evidence gathering procedures are more limited than in a reasonable assurance engagement and therefore less assurance is obtained than in a reasonable assurance engagement. The choice of audit procedures is subject to the auditor's own judgement.

Within the scope of our engagement, we performed amongst others the following procedures when conducting the limited assurance:

- An evaluation of the process for determining material aspects and respective boundaries, including results of SAP's stakeholder engagement.
- A risk analysis, including a media search, to identify relevant sustainability aspects for SAP in the reporting period.

- Interviewing management at corporate level responsible for sustainability performance goal setting and monitoring process.
- Reviewing the suitability of the internally developed reporting criteria.
- Evaluation of the design and implementation of the systems and processes for the collection, processing and control of the data on sustainability performance indicators, including the consolidation of the data.
- Interviews with relevant staff at corporate level responsible for providing the data, carrying out internal control procedures and consolidating the data, including the 'Non-Financial Notes'.
- Evaluating internal and external documentation to determine whether selected qualitative claims and quantitative indicators on sustainability performance are supported by sufficient evidence.
- Reviewing the consistency of GRI Standard's in accordance with 'Core Option' as declared by SAP with sustainability performance information presented in the online Integrated Report.

In addition, we conducted the following procedures to obtain reasonable assurance:

- An evaluation of the design, existence, and testing of the operation of the systems and methods used to collect and process data reported for Business Health Culture Index, Employee Engagement, Employee Retention, Women in Management, Customer Net Promoter Score, Greenhouse Gas Footprint (Scope 1 and 2 as well as selected Scope 3 emissions including business flights and employee commuting), Renewable Energy, Total Energy Consumed, including the aggregation of the data into the information as presented on the online Integrated Report.
- Auditing the 2018 data using internal and external documentation in order to determine in detail whether the data correspond to the information in the relevant underlying sources, and whether all the relevant information contained in such underlying sources has been included in SAP's online Integrated Report.
- Conducting site visits to Walldorf, St. Leon Rot (both Germany) and Shanghai (China) to assess the quality of information management systems and the reliability of the data as reported to corporate level.

Conclusions

Based on the procedures performed and evidence received to obtain reasonable assurance, the selected quantitative sustainability indicators Business Health Culture Index, Employee Engagement, Employee Retention, Women in Management, Greenhouse Gas Emissions (Scope 1 and 2 as well as selected Scope 3 emissions including business flights and employee commuting), Renewable Energy, Total Energy Consumed, and Customer Net Promoter Score, published in the SAP Integrated Report 2018, including the explanatory notes supplementing these indicators, are, in all material respects, presented in accordance with the Reporting Criteria.

Based on the procedures performed and evidence received to obtain limited assurance, nothing has come to our attention that causes us to believe that the selected qualitative and quantitative sustainability disclosures on Sustainability Management and

Policies, Sustainable Procurement, Public Policy, Human Rights, Employees and Social Investment, Energy and Emissions (including selected Greenhouse Gas Protocol Scope 3 Emissions), Waste and Water, GRI Index/UN Global Compact, About This Report, Materiality, and Stakeholder Engagement as well as for the other qualitative and quantitative sustainability disclosures in relation to these aspects, published in the SAP Integrated Report 2018, are, in all material respects, not prepared in accordance with the Reporting Criteria.

Restriction of Use / Clause on General Engagement Terms

This report is issued for purposes of the Executive Board of SAP SE, Walldorf, only. We assume no responsibility with regard to any third parties.

Our assignment for the Executive Board of SAP SE, Walldorf, and professional liability is governed by the General Engagement Terms for Wirtschaftsprüfer and Wirtschaftsprüfungsgesellschaften (Allgemeine Auftragsbedingungen für Wirtschaftsprüfer und Wirtschaftsprüfungsgesellschaften) in the version dated January 1, 2017 (https://www.kpmg.de/bescheinigungen/lib/aab_english.pdf).

By reading and using the information contained in this report, each recipient confirms notice of provisions of the General Engagement Terms (including the limitation of our liability for negligence to EUR 4 million as stipulated in No. 9) and accepts the validity of the General Engagement Terms with respect to us.

Munich, February 20, 2019

KPMG AG Wirtschaftsprüfungsgesellschaft

Hell ppa. Dollhofer

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Five-Year Summary¹⁾

€ millions, unless otherwise stated	2018	2017	2016	2015	2014
Revenues					
Cloud subscriptions and support (IFRS)	4,993	3,769	2,993	2,286	1,087
Non-IFRS adjustments	33	2	2	10	14
Cloud subscriptions and support (non-IFRS)	5,027	3,771	2,995	2,296	1,101
Software licenses (IFRS)	4,647	4,872	4,859	4,835	4,399
Non-IFRS adjustments	0	0	2	1	0
Software licenses (non-IFRS)	4,647	4,872	4,861	4,836	4,399
Software support (IFRS)	10,981	10,908	10,571	10,093	8,829
Non-IFRS adjustments	0	0	1	0	5
Software support (non-IFRS)	10,982	10,908	10,572	10,094	8,834
Cloud and software (IFRS)	20,622	19,549	18,424	17,214	14,315
Non-IFRS adjustments	33	3	3	11	19
Cloud and software (non-IFRS)	20,655	19,552	18,427	17,226	14,334
Services (IFRS = non-IFRS)	4,086	3,912	3,639	3,579	3,245
Total revenue (IFRS)	24,708	23,461	22,062	20,793	17,560
Non-IFRS adjustments	33	3	5	11	19
Total revenue (non-IFRS)	24,741	23,464	22,067	20,805	17,580
Share of predictable revenue (IFRS, in %)	65	63	61	60	56
Share of predictable revenue (non-IFRS, in %)	65	63	61	60	57
Operating expenses					
Cost of cloud subscriptions and support (IFRS)	-2,068	-1,660	-1,313	-1,022	-481
Non-IFRS adjustments	213	233	247	232	88
Cost of cloud subscriptions and support (non-IFRS)	-1,855	-1,427	-1,066	-789	-393
Cost of software licenses and support (IFRS)	-2,092	-2,234	-2,182	-2,291	-2,076
Non-IFRS adjustments	130	190	238	283	258
Cost of software licenses and support (non-IFRS)	-1,962	-2,044	-1,944	-2,008	-1,818
Cost of cloud and software (IFRS)	-4,160	-3,893	-3,495	-3,313	-2,557
Non-IFRS adjustments	343	423	485	516	346
Cost of cloud and software (non-IFRS)	-3,817	-3,471	-3,010	-2,797	-2,211
Cost of services (IFRS)	-3,302	-3,158	-3,089	-2,932	-2,426
Non-IFRS adjustments	151	166	113	167	122
Cost of services (non-IFRS)	-3,151	-2,991	-2,976	-2,765	-2,304
Total cost of revenue (IFRS)	-7,462	-7,051	-6,583	-6,245	-4,983
Non-IFRS adjustments	494	589	598	683	467
Total cost of revenue (non-IFRS)	-6,969	-6,462	-5,985	-5,562	-4,515
Research and development (IFRS)	-3,624	-3,352	-3,044	-2,845	-2,331
Research and development (in % of total revenue, IFRS)	14.7	14.3	13.8	13.7	13.3
Research and development (in % of total operating expenses, IFRS)	19.1	18.0	18.0	17.2	17.6
Sales and marketing (IFRS)	-6,781	-6,924	-6,265	-5,782	-4,593
General and administration (IFRS)	-1,098	-1,075	-1,005	-1,048	-892
Depreciation and amortization (IFRS)	-1,362	-1,272	-1,268	-1,289	-1,010
Profits and Margins					
Cloud subscriptions and support margin (in % of corresponding revenue, IFRS)	58.6	56.0	56.1	55.3	55.8
Cloud subscriptions and support margin (in % of corresponding revenue, non-IFRS)	63.1	62.2	64.4	65.6	64.3

€ millions, unless otherwise stated	2018	2017	2016	2015	2014
Cloud and software margin (in % of corresponding revenue, IFRS)	79.8	80.1	81.0	80.8	82.1
Cloud and software margin (in % of corresponding revenue, non-IFRS)	81.5	82.2	83.7	83.8	84.6
Services margin (in % of corresponding revenue, IFRS)	19.2	19.3	15.1	18.1	25.2
Services margin (in % of corresponding revenue, non-IFRS)	22.9	23.5	18.2	22.7	29.0
Software and support gross margin (IFRS, in %)	86.6	85.8	85.9	84.7	84.3
Software and support gross margin (non-IFRS, in %)	87.4	87.0	87.4	86.6	86.3
Total gross margin (in % of total revenue, IFRS)	69.8	69.9	70.2	70.0	71.6
Total gross margin (in % of total revenue, non-IFRS)	71.8	72.5	72.9	73.3	74.3
Operating profit (IFRS)	5,703	4,877	5,135	4,252	4,331
Non-IFRS adjustments	1,459	1,892	1,498	2,095	1,307
Operating profit (non-IFRS)	7,163	6,769	6,633	6,348	5,638
Operating margin (in % of total revenue, IFRS)	23.1	20.8	23.3	20.5	24.7
Operating margin (in % of total revenue, non-IFRS)	29.0	28.9	30.1	30.5	32.1
Financial income, net	-47	188	-29	-5	-25
Profit before tax (PBT)	5,600	5,029	4,872	3,991	4,355
PBT margin (in % of revenues)	22.7	21.4	22.1	19.2	24.8
Income tax expense	-1,511	-983	-1,242	-935	-1,075
Profit after tax	4,088	4,046	3,629	3,056	3,280
Effective tax rate (IFRS, in %)	27.0	19.5	25.5	23.4	24.7
Effective tax rate (non-IFRS, in %)	26.3	22.8	26.9	26.1	26.1
Return on equity (profit after tax in percentage of average equity)	15	16	15	14	18
Order Entry					
New cloud bookings	1,814	1,448	1,147	874	436
Contract liabilities / Deferred income - current (IFRS) ⁷⁾	3,047	2,771	2,383	2,001	1,680
Orders – Number of on-premise software deals (in transactions)	58,530	59,147	57,291	57,439	54,120
Share of software orders greater than € 5 million (in % of total software order entry)	29	30	29	27	22
Share of software orders less than € 1 million (in % of total software order entry)	39	40	38	40	44
Non-IFRS Adjustments					
Revenue adjustments	33	3	5	11	19
Adjustment for acquisition-related charges	577	587	680	738	562
Adjustment for share-based payment expenses	830	1,120	785	724	290
Adjustment for restructuring	29	182	28	621	126
Adjustment for TomorrowNow and Versata litigation	0	0	0	0	309
Segment revenues and results					
Applications, Technology & Services ¹¹⁾					
Segment revenue	20,806	20,218	19,211	19,134	16,734
Gross margin (in % of corresponding revenue)	73	74	74	74	75
Segment profit	8,746	8,478	8,335	7,742	6,946
Segment margin (Segment profit in % of Segment revenue)	42	42	43	40	42
SAP Business Network					
Segment revenue	2,629	2,261	1,925	1,616	647
Gross margin (in % of corresponding revenue)	69	68	67	68	67
Segment profit	531	388	340	317	105
Segment margin (Segment profit in % of Segment revenue)	20	17	18	20	16
Customer Experience					
Segment revenue	951	643	637	NA	NA
Gross margin (in % of corresponding revenue)	79	80	87	NA	NA

€ millions, unless otherwise stated	2018	2017	2016	2015	2014
Segment profit	138	85	164	NA	NA
Segment margin (Segment profit in % of Segment revenue)	14	13	26	NA	NA
Liquidity and cash flow					
Net cash flows from operating activities	4,303	5,045	4,628	3,638	3,499
Net cash flows from investing activities	-3,066	-1,112	-1,799	-334	-7,240
Net cash flows from financing activities	3,283	-3,406	-2,705	-3,356	4,298
Free cash flow	2,843	3,770	3,627	3,001	2,762
Free cash flow in % of total revenue	12	16	16	14	16
Cash conversion rate (net cash flows from operating activities in % of profit after tax)	105	125	128	119	107
Cash and cash equivalents	8,627	4,011	3,702	3,411	3,328
Short-term investments	211	774	971	148	95
Group liquidity (cash and cash equivalents/short-term investments/restricted cash)	8,838	4,785	4,673	3,559	3,423
Financial debts (due to banks, private placements, bonds)	11,331	6,264	7,826	9,174	11,093
Net liquidity	-2,493	-1,479	-3,153	-5,615	-7,670
Days' sales outstanding (DSO, in days)	70	70	74	71	65
Assets, equity and liabilities					
Trade and other receivables	6,480	6,017	6,050	5,362	4,443
Total current assets	16,620	11,930	11,564	9,739	8,999
Goodwill	23,725	21,271	23,311	22,689	21,000
Total non-current assets	34,871	30,554	32,713	31,651	29,566
Total current liabilities	10,481	10,210	9,674	7,867	8,574
Total non-current liabilities	12,133	6,759	8,205	10,228	10,457
Total equity	28,877	25,515	26,397	23,295	19,534
Total assets	51,491	42,484	44,277	41,390	38,565
Equity ratio (total equity in % of total assets)	56	60	60	56	51
Debt ratio (total liabilities ²⁾ in % of total assets)	44	40	40	44	49
Investments in goodwill, intangible assets or property, plant, and equipment (including capitalizations due to acquisitions)	3,715	1,630	1,145	676	8,636
Key SAP Stock Facts					
Issued shares ⁷⁾ (in millions)	1,229	1,229	1,229	1,229	1,229
Earnings per share, basic (in €)	3.42	3.35	3.04	2.56	2.75
Earnings per share, basic (non-IFRS, in €)	4.35	4.43	3.77	3.77	3.50
Earnings per share, diluted (in €)	3.42	3.35	3.04	2.56	2.74
Dividend per share ³⁾ (in €)	1.50	1.40	1.25	1.15	1.10
Total dividend distributed ³⁾	1,790	1,671	1,498	1,378	1,315
Total dividend distributed in % of profit after tax ³⁾	44	41	41	45	40
SAP share price ⁷⁾ (in €)	86.93	93.45	82.81	73.38	58.26
SAP share price – peak (in €)	108.02	100.35	82.81	74.85	62.55
SAP share price – low (in €)	82.47	82.43	64.90	54.53	50.90
Market capitalization ⁷⁾ (in € billions)	106.80	114.80	101.73	90.18	71.60
Return on SAP shares ⁴⁾ 1-year investment period (in %)	-7.0	12.8	14.7	25.9	-4.8
Return on SAP shares ⁴⁾ 5-year investment period (in %)	6.9	9.0	17.3	14.0	13.9
Return on SAP shares ⁴⁾ 10-year investment period (in %)	13.2	10.2	9.2	6.7	7.4
Employees and personnel expenses					
Number of employees ^{5), 7)}	96,498	88,543	84,183	76,986	74,406
Number of employees, annual average ⁵⁾	93,709	86,999	80,609	75,180	68,343

€ millions, unless otherwise stated	2018	2017	2016	2015	2014
Number of employees in research and development ^{5), 7)}	27,060	24,872	23,363	20,938	18,908
Personnel expenses	11,595	11,643	10,229	10,170	7,877
Personnel expenses – excluding share-based payments	10,765	10,523	9,444	9,446	7,587
Personnel expenses per employee – excluding share-based payments (in € thousands)	115	121	117	126	111
Operating profit per employee (in € thousands)	61	56	64	57	63
Women working at SAP (in %)	33	33	32	31	31
Women in management ⁷⁾ (total, in % of total number of employees)	25.7	25.4	24.5	23.6	21.3
Women managing managers ^{6), 7)} (in %)	21.1	21.7	20.8	19.2	15.9
Women managing teams ^{6), 7)} (in %)	27.5	26.8	25.9	25.3	23.3
Employee Engagement Index (in %)	84	85	85	82	79
Business Health Culture Index ¹⁰⁾ (BHCI, in %)	78	79	78	75	72
Leadership Trust Index (LTI, in %)	60	61	57	52	47
Employee retention (in %)	93.9	94.6	93.7	91.8	93.5
Total turnover rate (in %)	8	8	8	11	9
Customer					
Customer Net Promoter Score ⁹⁾ (in %)	-5.0	17.8	19.2	22.4	19.1
Environment					
Net Greenhouse gas emissions (in kilotons)	310	325	380	455	500
Greenhouse gas emissions per employee ⁵⁾ (in tons)	3.3	3.8	4.7	6.0	7.3
Greenhouse gas emissions per € revenue (in grams)	12.6	13.9	17.3	21.9	28.4
Total energy consumption (in GWh)	919	920	950	965	920
Energy consumed per employee ⁵⁾ (in kWh)	9,800	10,600	11,800	12,500	13,400
Total data center electricity (in GWh)	318	265	243	249	179
Data center energy per € revenue ⁸⁾ (in Wh)	13	11	11	12	10
Renewable energy sourced (in %)	100	100	100	100	100

¹⁾ SAP Group. Amounts according to IFRS, unless otherwise stated.²⁾ As sum of current and non-current liability.³⁾ Numbers are based on the proposed dividend and on level of treasury stock at year-end.⁴⁾ Average Annual Return. Assuming all dividends are reinvested.⁵⁾ Full-time equivalents.⁶⁾ Relates to different levels of management position.⁷⁾ Numbers based on at year-end.⁸⁾ Data center energy consumption normalized against € revenue combines a relative measure of required energy to develop and operate solution in internal and external data center.⁹⁾ Due to changes in sampling, Customer NPS is not fully comparable to the prior years scores.¹⁰⁾ The BHCI score for 2014 was recalculated from 70% to 72% based on two updated questions in the people survey concerning work-life balance.¹¹⁾ Due to reorganizations numbers from 2018, 2017, and 2016 are not fully comparable to other years.

Glossary

A

Africa Code Week – Corporate social responsibility initiative led by SAP initiated in 2015 to help instill digital literacy and coding skills in the young generation across African countries. This program works closely with private, public, and non-profit partners to drive sustainable learning impact across Africa. 2008 results were phenomenal, with 2.3 million young Africans introduced to digital skills.

Americas' SAP Users' Group (ASUG) – Non-profit organization comprising customer companies dedicated to providing educational and networking opportunities in support of SAP software and implementation. User groups are established in regions around the world to share knowledge and influence SAP development efforts. ASUG is the largest user group with more than 100,000 members from thousands of companies across the SAP ecosystem.

analytics – Discovery and communication of meaningful patterns in data. It is applied to business data to describe, predict, and improve business performance; recommend action; and guide decision making across all organizations and functions in a company. Analytics helps companies gain new insight and understanding of their business performance based on data and statistical methods. See "SAP Analytics."

application lifecycle management – Processes, tools, services, and organizational model used to manage SAP and third-party software throughout the solution lifecycle, from concept to phase-out. This recommended approach to application lifecycle management enables companies to adopt innovations from SAP rapidly and gain optimal value from their business solutions. See "SAP Solution Manager" and "SAP Cloud ALM."

Ariba Network – Business commerce network where companies of all sizes can connect to their trading partners anywhere, at any time from any application or device to buy, sell, and manage their cash more efficiently and effectively than ever before. Companies around the world use Ariba Network to simplify interenterprise commerce and enhance the results they deliver. See "business network."

artificial intelligence (AI) – A standard definition of AI refers to the simulation of human intelligence processes by machines and computer systems. These processes include learning through the acquisition of information and rules for using information; reasoning through using the rules to reach approximate or definite conclusions; and by self-correction. AI capabilities are built into SAP Leonardo Machine Learning and several applications powered by SAP Leonardo. See "SAP Leonardo Machine Learning."

Autism at Work – Outreach program connects people on the autism spectrum with SAP employment resources with an emphasis on careers in technology. In 2018, SAP onboarded people with autism in 23 different roles, in 13 countries, and 28 locations through this program.

B

Big Data – Large volume of data created by billions of connected devices and people generating a tremendous amount of information about their behavior, location, and activity. This availability of massive amounts of data requires companies to rethink technology architecture and database structures.

blockchain – Based on distributed ledgers, blockchain technology securely records information across peer-to-peer networks. Although originally created for trading Bitcoin, the potential of blockchain reaches far beyond cryptocurrency. Blockchain ledgers can include land titles, loans, identities, logistics manifests – almost anything of value. The technology is still developing and areas for business application are growing. See "SAP Leonardo Blockchain."

Build Customers for Life – Program that focuses on establishing unified post-sales process standards and supporting IT infrastructure across all cloud offerings. It enables one harmonized customer experience across both digital and direct interaction points to deliver one lifecycle experience across our portfolio.

Business Beyond Bias – Concept addressed by SAP SuccessFactors solutions that helps move business beyond bias in the hiring process. Solutions in SAP SuccessFactors HCM Suite cover the full range of talent decision-making processes, including decisions around whom to hire, how to manage, and whom to develop, reward, and promote. Organizations can make informed decisions, preventing, detecting, and eliminating bias right where it occurs.

business data platform – See "SAP HANA."

Business Health Culture Index (BHCI) – Score for the general cultural conditions in an organization that enable employees to stay healthy and balanced. The index is calculated based on the results of regular employee surveys.

business network – An online service that connects businesses and their systems to those of their trading partners and enables new processes and information and insight sharing only possible in a digital environment. See "Ariba Network."

C

CallidusCloud – See "Callidus Software."

Callidus Software – Sales performance management company acquired by SAP in April 2018 known for its lead-to-cash and configure, price, quote (CPQ) solutions. Most of the offerings branded as CallidusCloud are part of the SAP Sales Cloud solution and the broader SAP C/4HANA suite. See "SAP C/4HANA," "SAP Sales Cloud," and "SAP CPQ."

Call to Lead – SAP program that bring together thought leaders and executives from across industries to share personal experiences and best practices for creating and supporting diverse and inclusive communities. Call to Lead Unplugged is the related event series for executives to network and share their stories about thought leadership and customer experience

carbon credit – A tradable certificate that allows the holder to emit one ton of CO₂ or the respective equivalent of any other greenhouse gas.

carbon emission offset – Unit of carbon dioxide-equivalent (CO₂ equivalent) that is reduced, avoided, or sequestered to compensate for emissions occurring elsewhere.

carbon neutral – Goal or state of emitting net zero greenhouse gases for certain activities. This includes reducing emissions, but also using renewable electricity certificates or carbon credits.

cloud computing – Generic term for flexible, IT-related services available through, or hosted on, the Internet for consumers and business, including storage, computing power, software development environments, and applications, combined with service delivery. Accessed as needed “in the cloud,” these services eliminate the need for in-house IT resources. See “cloud service model.”

cloud credit(s) – As part of the consumption-based commercial model for SAP Cloud Platform, cloud credits are the monetary value for prepaid service consumption. These credits are acquired through the SAP Cloud Platform Enterprise Agreement through a pre-investment. With cloud credits as a payment equivalent, customers can consume the cloud services they need. See “SAP Cloud Platform” and “SAP Cloud Platform Enterprise Agreement.”

Cloud ERP – Unified portfolio encompassing all our cloud-based ERP solutions including SAP S/4HANA Cloud as the flagship ERP solution for midsize companies and large enterprises; SAP Business ByDesign for growing small to midsize enterprises; and SAP Business One for small businesses.

cloud service model – “As-a-service” offerings where cloud services are offered as infrastructure as a service (IaaS), platform as a service (PaaS), or software as a service (SaaS).

cloud solutions from SAP – Category used to communicate all of SAP offerings and efforts related to the cloud, including platform, managed services, solutions, technology, and infrastructure.

Code of Business Conduct – Global compliance document communicated to all SAP employees globally that contains a fundamental set of rules that define how we conduct our business and require the highest levels of integrity and ethics. The Code sets the standard for our dealings with customers, partners, competitors, and vendors, and each of our employees is bound by it. It is adapted locally and translated into local languages. We also expect our partners and suppliers to commit to meeting our high standards of integrity and sustainability through the SAP Partner Code of Conduct and the SAP Supplier Code of Conduct.

Concur Drive – Add-on to the Concur Expense solution, this Web service allows businesses to automatically capture distance driven as an automated alternative to self-reported mileage, reducing overspending in organizations. See “Concur Expense.”

Concur Expense – Cloud solution that helps customers track, analyze, and report on spending. It does not include the travel management capabilities found in Concur Travel & Expense.

Concur Technologies – see “SAP Concur.”

Concur Travel & Expense – Signature offering from acquired company Concur that helps businesses simplify the entire travel expense management process, from spend requests to reconciliation, with an integrated expense reporting solution. Easy-to-use tools help improve productivity, increase compliance, and gain control over spend. See “SAP Concur.”

connectivity – Framework that describes the interrelatedness of SAP’s social, environmental, and economic performance. Based on statistical analysis, it allows us to quantify the impact of non-financial measures on the operating profit offering a holistic understanding of SAP’s value creation.

Coresystems – Crowd sourcing and field service management company based in Switzerland acquired by SAP in November 2018. With its artificial intelligence capabilities, Coresystems software provides advanced scheduling of field service activities in real time. Service organizations can use crowd sourcing to build and expand service networks beyond their own workforce. Coresystems offerings are now part of SAP Service Cloud and available in the SAP C/4HANA suite. See “SAP C/4HANA” and “SAP Service Cloud.”

corporate social responsibility – The Corporate Social Responsibility (CSR) organization at SAP fosters digital inclusion and creates opportunity for underserved people and communities through programming and partnerships that build digital skills, accelerate best-run NGOs and social enterprises, and connect SAP employees with purpose. See “SAP4Good.”

Customer First – Global internal initiative that focuses on efforts to improve the way everyone at SAP works and cares for our customers by ensuring we provide a consistent, positive, end-to-end experience that delivers successful outcomes.

Customer Net Promoter Score (NPS) – Metric that describes the willingness of customers to recommend or promote an organization or company to others. It is defined as the percentage of customers that are likely to recommend an organization or company to friends or colleagues (promoters) minus the percentage of customers that are unlikely to do so.

D

data center energy – Amount of energy consumed in SAP’s own and external data centers. An external data center is a local computing center with server units running SAP software that is operated by an external partner.

digital core – Integrated system that enables customers to predict, simulate, plan, and even anticipate future business outcomes in a digital economy. SAP offers the SAP S/4HANA suite as a digital core, providing the framework that allows customers to run an entire enterprise in the cloud – such as finance, procurement, sales, inventory management, project system, and product lifecycle management. In this way, companies can achieve the real-time visibility they need into all mission-critical business processes and processes around their customers, suppliers, workforce, Big Data, and the Internet of Things. See “SAP S/4HANA.”

Digital Partner Network for SAP Fieldglass solutions – Network launched in 2018 as a new ecosystem network to help customers transform how they engage and manage an external workforce of freelancers, contingent workers, independent contractors, and other service providers. See “SAP Fieldglass.”

digital platform – Suite of tools, including SAP Cloud Platform and SAP HANA Data Management Suite, to manage and orchestrate distributed data from any source (from an SAP solution or a third-party application) and in any format (structured or unstructured). The digital platform offers out-of-the-box cloud

enterprise readiness guaranteed across the different infrastructure providers. See "Intelligent Enterprise."

digital transformation – Concept that refers to the changes associated with the application of digital technology in all aspects of society. Digital technologies empower customers and consumers in a way they never could before, transforming their relationship with brands and products. Businesses need to meet these new challenges or will miss the potential business success to be realized in the digital economy.

DSAG – Abbreviation for *Deutschsprachige SAP-Anwendergruppe* (German-Speaking SAP Users' Group), with more than 60,000 members in more than 3,500-member companies in German-speaking countries (Austria, Germany, and Switzerland).

E

Employee Engagement Index – Score for the level of employee commitment, pride, and loyalty, as well as the feeling of employees of being advocates for their company. The index is calculated based on the results of regular employee surveys.

employee retention – Ratio of the average number of employees minus the employees who voluntarily departed, to the average number of employees, taking into account the past 12 months (in full-time equivalents, FTEs)

enterprise resource planning – See "SAP ERP."

e-waste (electronic waste) – Any discarded electric devices used in our offices and data centers, such as computers, computer monitors, or mobile devices.

ExpenseIt – The mobile app was fully integrated with SAP Concur solutions this year, providing valuable functionality that uses receipt scanning technology powered by machine learning to turn receipts into expense report line items. See "SAP Concur."

Expense Pay Global – Add-on to the Concur Expense solution, this Web service allows customers to gain greater visibility into all spend by standardizing the process on one end-to-end payment solution. This Web service improves communication, ensures timely payment, reduces or eliminates human intervention to speed up reimbursement time, and helps control cash flow. See "Concur Expense."

F

Fieldglass – See "SAP Fieldglass."

G

Gigya – Company acquired by SAP in 2017 that offers customer identity technology and access management solutions designed to meet privacy, compliance, and security best practices. Gigya solutions are now included in the SAP Customer Data Cloud solution as part of the SAP C/4HANA suite. See "SAP Customer Data Cloud."

Global Customer Reference Program – Program offering detailed information about reference customers from around the world using a database that channel partners can access to help close a deal with a new SAP customer. Reference customers have agreed to participate in one or more reference activities on behalf of SAP.

Global Partner Operations (GPO) – Organization created in mid-2014 at SAP that is responsible for all SAP partner relationships.

green cloud – Term to describe how SAP's environmental strategy to use 100% renewable electricity is tied to our business strategy. By using our green cloud services and cloud data centers, customers can significantly reduce their carbon footprint.

greenhouse gas (GHG) footprint – Sum of all greenhouse gas emissions measured and reported, including renewable energy and third-party reductions, for example, offsets.

H

Hasso Plattner Founders' Award – Introduced in 2014, this employee award is the highest employee recognition at SAP, presented annually by the CEO to an individual or a team. The award is named after one of the original founders of SAP and current chairman of the SAP Supervisory Board, Prof. Dr. Hasso Plattner.

"How We Run" – Core values that describe how we get things done at SAP and what makes our culture unique. These five behaviors are a cornerstone of our value-driven company: tell it like it is; stay curious; embrace differences; keep the promise; build bridges, not silos.

I

Industry 4.0 – refers to the current trend of automation and data exchange in manufacturing technologies. It includes cyber-physical systems, the Internet of Things, cloud computing, and cognitive computing. See "Open Industry 4.0 Alliance."

industry portfolios – Software portfolios that address the business needs of 25 different industries.

Innovation Score – Measure from our yearly employee survey that focuses on how the Innovation culture at SAP is perceived by our employees.

Intelligent Enterprise – SAP's concept of an event-driven, real-time business powered by intelligent applications and platforms. Enterprise data is at the core of a cycle whereby proprietary data assets from internal systems of record are combined with real-time, external data feeds to train intelligent algorithms. By embedding intelligence in core processes, businesses of all sizes will benefit from the automation of routine tasks and improved decision-making driven by advanced analytics.

intelligent suite – The intelligent suite is a fully unified, but still modular, sum of all SAP applications, enabling seamless cross-application business processes delivered through consistent and personalized user experiences. Built on a uniform data model and a central data storage, the intelligent suite allows you to leverage the possibilities of embedded artificial intelligence and machine learning. See "Intelligent Enterprise."

intelligent technologies – Intelligent technologies that scale innovation in the intelligent suite. These technologies, including machine learning, IoT, and analytics capabilities from SAP Leonardo will be embedded in SAP applications. To let our customers and partners apply these technologies equally for innovation, they will be readily accessible through SAP Cloud Platform as managed and reusable services. See "Intelligent Enterprise" and "SAP Leonardo."

K

key performance indicator (KPI) – Performance figure for which threshold values are defined and against which validation is executed.

Klaus Tschira Innovation Award – Award that honors SAP partners and customers that have contributed a unique and innovative solution in the field of human resources, named in honor of one of the original founders of SAP.

L

Leadership Trust Score – Based on the Net Promoter Score (NPS) methodology that results from a question in our annual global employee survey that gauges employees' trust in our leaders. It measures our collective effort to foster a work environment based on trust. We use this score to further enhance accountability for our leaders and executive management.

Learning for Life – Program for all skill building initiatives from the Corporate Social Responsibility (CSR) team at SAP. This program helps support future workforce needs, reskilling efforts, and underserved people in the education/tech space including: women and those from culturally diverse backgrounds. Examples of existing initiatives are **SAP Women Forward: Autism at Work**; and SAP Skills for Africa.

line of business (LoB) – Internal organizational area or business unit in a company (division) that combines all responsibilities for a product, group, or set of processes, such as sales, purchasing, human resources, finance, marketing, and so on. SAP organizes its functional areas currently into 12 LoBs: asset management, commerce, finance, human resources, manufacturing, marketing, R&D/engineering, sales, service, sourcing and procurement, supply chain management, and sustainability.

M

machine learning – Technology that teaches computers how to perform tasks by learning from data – instead of being explicitly programmed. It uses sophisticated algorithms to “learn” from massive volumes of Big Data. Machine learning describes algorithms that learn from data and support employees to focus on higher value work, thus empowering enterprises to scale innovative solutions and make their organization intelligent. See “SAP Leonardo Machine Learning.”

managed cloud – Deployment model that implies resources are dedicated to one customer and accessed through a VPN. The infrastructure is owned, managed, and operated by the cloud provider in the cloud provider's data center. SAP HANA Enterprise Cloud is SAP's managed cloud service. See “SAP HANA Enterprise Cloud.”

O

Open Data Initiative – Partnership initiative established in 2018 (www.sap.com/about/announcement/open-data-initiative.html), between SAP, Microsoft, and Adobe. the goal of which is to meet a core need – to unlock a single view of our customers by bringing siloed data together. A shared vision for the secure exchange of data across systems is the basis for this initiative. Customers can then enable artificial intelligence-driven business processes to

determine compelling insights and intelligence from their now-unified landscape, build trust by incorporating consumer consent, and preferences around data rights and usage.

Open Industry 4.0 Alliance – Collaborative initiative between manufacturers and other asset providers as well as original equipment manufacturers (OEMs) to digitally transform industrial processes and interoperability. Manufacturers can assist operators in bringing intelligent Industry 4.0 products online quickly through a standard open platform and support ongoing operations. Operators can accelerate deployment and onboarding of new or replacement machines and equipment at lower costs.

open source – Software based on the concept of software developers coming together to build a virtual community and solving a common problem by developing working software that everyone has a right to change. Successful development projects under the open source model include Linux, a free operating system supported by SAP.

Own SAP – Share purchase plan for SAP employees. In 2018, 66% of our employees participated in Own SAP, purchasing a total of 5.2 million of shares.

P

People Survey – SAP's annual employee survey that allows employees to provide feedback about issues that impact them.

People Weeks – In 2018, SAP again sponsored a global event designed to expose employees to trending topics and cultivate greater connections across cultures. With the motto “Thrive in the Intelligent Enterprise,” People Weeks 2018 reached 30,470 participants worldwide through global sessions and local activities in 57 countries.

platform as a service (PaaS) – Cloud infrastructure, operating system, programming languages, libraries, services, tools and typically a defined level of support for consumers to deploy consumer-created or acquired applications. PaaS consumers do not manage underlying cloud infrastructure but have control over deployed applications. SAP Cloud Platform is the PaaS offering from SAP. See “SAP Cloud Platform.”

private edition – See “single tenant edition.”

private option – See “single tenant edition.”

Processes Simplification Score – Measure from our yearly employee survey that focuses on how internal and external processes are perceived by our employees.

product footprint – Environmental impact of products, processes, or services by production, usage, and disposal.

project “Kyma” – Offering in prototype phase for the development and provisioning of microservices for the solutions within the SAP Customer Experience portfolio. See “SAP Customer Experience.”

public cloud – Cloud deployment that provides consumers access to a provider's software applications running in a cloud infrastructure. The resources are located on the premises of the cloud provider, not of the customer, and are shared by multiple customers accessing them through the Internet.

Q

Qualtrics International – In December 2018, SAP announced the intention to acquire Qualtrics, the global pioneer of experience management (XM) software. The company, with headquarters in

Provo, Utah, and Seattle, Washington, serves more than 9,000 enterprises worldwide with a technology platform that organizations use to collect, manage, and act on experience data. The Qualtrics XM Platform is a “system of action,” used by teams, departments, and entire organizations to manage the four core experiences of business – customer, product, employee and brand – on one platform.

R

Relief.iO – Program, under the business unit of the same name, provides targeted support and services, engagement opportunities, and capital through seed funding of selected development and business from areas across SAP. To organically drive breakthrough innovation in new markets, the program is currently investing in strategic areas that include, but are not limited to, security, digital intelligence, healthcare, and cloud APIs.

renewable energy – Shares and types of electricity obtained from renewable sources such as hydro, wind, solar, geothermal, and biomass. It is calculated by adding the amount of renewable energy specifically sourced, produced on-site by our own solar cells and covered by Renewable Energy Certificates (RECs).

responsible growth – Economic growth that integrates with environmental responsibility and social equity.

Resume Matching – Machine-learning powered service that automatically reads and ranks candidates based on role requirements, identifying best-fit candidates while increasing efficiency and speed to hire. See “machine learning” and “SAP Leonardo Machine Learning.”

S

SAP Activate – Innovation adoption framework introduced for SAP S/4HANA that combines SAP Best Practices, methodology, and guided configuration delivered with a reference landscape. The SAP Activate methodology is the SAP guidance for implementation, enhancements, upgrades, or co-innovation of SAP solutions starting with SAP S/4HANA. It enables cost-effective, agile, and fast delivery of the SAP solution to the customer and supports deployments in the cloud, on premise, or in hybrid deployment.

SAP ActiveAttention – Enhanced engagement services for optimizing solutions and accelerating adoption of technologies without disrupting customer businesses. It is a premium-level engagement similar to the New MaxAttention but designed to support smaller businesses requiring a less intense engagement level. Formerly called SAP ActiveEmbedded.

SAP Advanced Deployment – Service that simplifies and accelerates the deployment of SAP S/4HANA for SAP-led project implementation for planning, design, and execution services. Based on proven SAP Activate methodology and tailored to enterprise’s specific transition scenario, the service streamlines the implementation or migration to a high-performing, sustainable digital core. This end-to-end service offering also contains a complete implementation including execution services for SAP S/4HANA software. It is offered in parallel to SAP Value Assurance service packages, which address partner-led projects. See “SAP Value Assurance.”

SAP Alumni Network – Network and online community that provides a platform to reconnect with former colleagues and to unleash the power of a trusted network for the benefit of SAP and

our ecosystem. In 2018, community members included 3,472 former and 2,160 current SAP employees.

SAP Analytics – Portfolio of solutions that help customers achieve the power of collective insight in Big Data by empowering them with the right information at the right time to make insightful business decisions, anticipate change, and uncover new opportunities. SAP Analytics solutions cover the areas of business intelligence, enterprise performance management, and governance, risk, and compliance. Formerly called analytics solutions from SAP.

SAP Analytics Cloud – Software as a service (SaaS) built natively on SAP Cloud Platform that allows organizations to close the gap between transactions, data preparation, analysis and action providing all analytics capabilities in one offering. SAP Analytics Cloud combines business intelligence (BI), planning, and predictive analytics as well as new capabilities such as simulation and automated discovery in BI, as well as storytelling and predicted forecasts in planning. The solution allows customers to take advantage of high-speed innovation in the cloud, while using their existing on-premise investments. Customers can subscribe to SAP Analytics Cloud as a single solution with specific capabilities that can be licensed separately or together. The **SAP Digital Boardroom** solution is based on SAP Analytics Cloud.

SAP App Center – One-stop shop (www.sapappcenter.com) where customers, partners, and developers can find, buy, and sell solutions developed on SAP HANA. It provides links to SAP Store, where transactions take place. Content is available from SAP App Content Center. Formerly called SAP HANA App Center. See “SAP App Content Center.”

SAP App Content Center – Online marketplace where customers can subscribe to or buy third-party data content and services for their applications without requiring additional development. Customers buy applications from SAP App Center and then within the application itself, they can access the content center to purchase additional application-specific content to enhance the application. See “SAP App Center.”

SAP Ariba – Portfolio that includes cloud solutions for procurement, financials, and sourcing and the signature Ariba Network. SAP Ariba solutions offer an online business-to-business marketplace connecting more than 3.6 million sellers in more than 190 countries, with sellers realizing more than US\$2.2 trillion in goods and services every year.

SAP Asset Intelligence Network – Cloud subscription-based network hosted by SAP where manufacturers, asset owners, operators, regulators, and service providers can connect to each other. Content related to assets can be shared and stored on the network, and maintenance and service applications can be delivered through the network.

SAP Beyond – Customer advocacy program designed for and tailored to customers that have purchased SAP S/4HANA as the foundation for their business future. The program takes a unique and positive approach as it offers these valued customers a range of tools and resources to support them at every stage of the journey, from helping to engage fully with the broader SAP community to providing a variety of opportunities to share ideas and experiences.

SAP Business One – ERP solution designed for small businesses with up to 100 employees, providing a single, integrated solution for managing the entire business across all functions. A

cloud version is available as SAP Business One Cloud, which is part of the Cloud ERP portfolio. See "Cloud ERP."

SAP BW/4HANA – Data warehouse solution built entirely on SAP HANA that provides customers with enhanced data modelling and governance, so they can manage the availability, integrity, and security of data. The solution can be connected to various data sources, including SAP or unstructured third-party data, such as Hadoop.

SAP C/4HANA – Launched at SAPPHIRE NOW in June 2018, this unified suite of cloud solutions represents the next generation of CRM and is the cornerstone of the SAP Customer Experience portfolio. It brings together customer data, machine learning technology, and microservices to power real-time customer engagements across sales, service, marketing, commerce, customer data, and beyond. SAP C/4HANA provides companies with a single, holistic view of each customer across all channels and connects demand to the fulfillment engine in one end-to-end value chain. Concretely, it comprises five cloud solution portfolios: SAP Sales Cloud; SAP Service Cloud; SAP Marketing Cloud; SAP Customer Data Cloud; and SAP Commerce Cloud. The suite includes individual offerings from acquired companies Callidus Software, Coresystems, and Gigya. See "SAP Customer Experience," "CallidusCloud," "Coresystems," and "Gigya."

SAP City Connect – Solution that helps urban organizations and small business owners with tourism development, visitor and crowd management, business event subscriptions, and neighborhood development. Part of the SAP Future Cities initiative. See "SAP Future Cities."

SAP Cloud – See "cloud solutions from SAP."

SAP Cloud ALM – New cloud-based tool for application lifecycle management (ALM) that covers all stages of the application lifecycle, from discovery of cloud solution capabilities to implementation, operations, and continuous innovation as well as business value realization and enhancement. It helps track and manage the needs of customers that use (only or predominantly) cloud solutions from SAP. Customers subscribing to a cloud solution from SAP automatically receive SAP Cloud ALM. It is complementary to SAP Solution Manager which provides comparable capabilities for on-premise landscapes. See "application lifecycle management" and "SAP Solution Manager."

SAP Cloud for Customer – A cloud-based offering of CRM applications and tools developed for sales, service, and marketing teams that provides an overview of end-to-end business, as well as deep customer insight and personalized engagement, so that they can deliver a relevant experience at every step of the customer's journey. It also offers designed-in social collaboration to help transform social media conversations into business insight. An Edge edition is available for small and midsize enterprises. Formerly called SAP Hybris Cloud for Customer.

SAP Cloud Platform – An open business platform designed to help companies innovate, integrate, and extend applications with agility, flexibility, and choice. With a multi-cloud foundation, customers can leverage the latest cloud-native technologies and benefit from major hyperscaler infrastructures. It is one platform for creating intelligent, mobile-ready, applications. As the foundation for an intelligent enterprise, SAP Cloud Platform enables companies to react, adapt, and grow quickly to match new market expectations. SAP Cloud Platform

(<https://cloudplatform.sap.com>) is available by subscription or through consumption-based pricing. See "cloud credit(s)."

SAP Cloud Platform Extension Factory – Enterprise-class extension framework that helps reduce the complexity of configuring and managing cloud solutions. Customers use one framework to connect systems and extend cloud applications from SAP using the capabilities of SAP Cloud Platform, allowing them to focus on business logic and user experience to build extensions without disruption to the business. Available Q2/2019.

SAP Cloud Platform Integration Suite – Umbrella term for all SAP Cloud Platform Integration offerings. This suite integrates cloud applications, data, devices, and people with on-premise and cloud solutions from SAP and third-party vendors. Users with different skillsets can apply a variety of integration approaches, intuitive tools, and prepackaged content to achieve results faster and to gain business agility with this versatile, dynamic, and enterprise-grade cloud integration platform.

SAP Co-Innovation Lab(s) – Physical location(s) featuring a simulated, heterogeneous data center that incorporates hardware and infrastructure software from various vendors. The lab provides a hands-on environment for SAP, customers, and partners to innovate, accelerate, and showcase new business solutions and technologies collaboratively. Customers and partners can visit the lab to evaluate the latest SAP and partner solutions in a simulated, real-world infrastructure.

SAP Commerce – Solution that offers customers a platform enabled for the cloud that supports product content management and unified commerce processes. It gives a business a single view of its customers, products, and orders, and its customers a single view of the business. It combines functionality. Formerly called SAP Hybris Commerce.

SAP Commerce Cloud – One of the five solution categories within the SAP Customer Experience portfolio and in the SAP C/4HANA suite. This digital business solution helps integrate digital and physical customer touchpoints onto a single, robust platform, helping companies deliver a superior omnichannel commerce experience with state-of-the-art security and authentication technology. Individual offerings combine capabilities for product and Web content management, order management, personalization, bundling, and accelerators – all through a built-in omnichannel storefront. Formerly called SAP Hybris Commerce Cloud. See "SAP C/4HANA."

SAP Commerce Cloud on Microsoft Azure – Partnership with Microsoft that combines SAP's market-leading solution for B2B and B2C scenarios with the Microsoft Azure public cloud infrastructure.

SAP Concur – Unified brand and portfolio of offerings for travel and expense management resulting from the acquisition of Concur Technologies in 2014. SAP Concur solutions provide an integrated system for expense, invoice, travel, and spend intelligence in the cloud. With close to 56 million users worldwide, SAP Concur is the world's leading travel and expense management software. These solutions help companies of all sizes and stages go beyond automation to a connected spend management system that encompasses travel, expense, invoice, compliance, and risk.

SAP Conversational AI – Collection of natural language processing and bot building services that developers and corporations can use to build conversational interfaces or "chat bots" through intent classification, entity detection, question

answering, sentiment analysis, and other high-order capabilities. Ready-to-use chat bots are also included. SAP Conversational AI provides a way to build bots that automate conversational interactions through natural language processing within SAP offerings in the SAP C/4HANA suite, for example. SAP customers and partners are also able to create their own custom bots with this service.

SAP Conversational AI Foundation – Technical basis for building conversational applications using state-of-the-art natural language processing (NLP) and machine learning algorithms. You can use SAP CoPilot, a digital assistant for the enterprise, to expose the apps or use standard channels such as Slack, Microsoft Teams, or Facebook Messenger. See “SAP CoPilot.”

SAP CoPilot – Digital assistant that runs on top of other SAP applications to enable productivity tasks such as real-time information exchange, note-taking, creation of reminders, and creation of draft objects that can be completed later. SAP CoPilot contextualizes, analyzes, and uses informal and unstructured speech to execute actions and present users with business objects, options, and other relevant data in a simple and conversational way.

SAP CPQ – Cloud solution that enables customers, channel partners, and sales teams to configure and price products accurately and efficiently. Rename of the CallidusCloud CPQ offering as a result of the acquisition of Callidus Software. See “Callidus Software.”

SAP Custom Development – See “SAP Innovative Business Solutions.”

SAP Customer Data Cloud – One of the five solution categories within the SAP Customer Experience portfolio and in the SAP C/4HANA suite. It encompasses all products across the customer experience that enable the collection, transparency, and harnessing of customer information. Individual offerings within this portfolio include solutions from acquired company Gigya, renamed SAP Customer Consent, SAP Customer Identity, and SAP Customer Profile. See “Gigya” and “SAP C/4HANA.”

SAP Customer Experience – Extensible portfolio of customer experience solutions that speaks directly to the business benefits we seek to deliver to our C-suite audiences and shows category of solutions has evolved from traditional customer relationship management (CRM) to greater customer centricity. Launched at SAPPHIRE NOW in 2018, this portfolio brings together our SAP Hybris, CallidusCloud, Gigya, and Coresystems solutions under one umbrella, SAP C/4HANA is the name of the unified, front-office suite of customer experience solutions for LoBs that is the basis for this portfolio. See “SAP C/4HANA.”

SAP Customer Experience Labs – Physical locations that showcase futuristic prototypes and innovations that demonstrate the potential of SAP Customer Experience offerings.

SAP Customer Experience LIVE – Annual series of events that help SAP customers network, discover new solutions, and improve their overall customer experience. It is co-located with SAPPHIRE NOW in Orlando, Florida (USA), in 2019.

SAP Database and Data Management – See “SAP HANA Data Management Suite.”

SAP data center – Physical facilities around the world used to house computer systems and associated components and meet the highest security standards. Comprised of various interconnected elements, the entire infrastructure is a feat of

modern engineering predicated on keeping customer data safe. SAP data centers are currently located in Australia, Brazil, China, Europe, and on the U.S. east coast.

SAP Data Hub – Data operations management solution that enables data orchestration, pipelining, and governance as well as agile sharing of all data across a connected data landscape. This solution runs in the cloud. This solution enables businesses to manage data from numerous sources – SAP or third party – without having to centralize data into one location. SAP Data Hub allows data to be processed “in flow,” for example, while data is being recorded to the data store, or being prepared for use in machine learning. It also provides enterprise data governance to see who changed or accessed the data. The solution lets companies safely and effectively move and share their data to enable agile data operations across the enterprise.

SAP Data Network – Cloud-based platform of networked business data that enables users to analyze and gain insight into their own business data, benchmark themselves against their industry competition, and enrich, distribute, and ultimately monetize their own data assets.

SAP Design Thinking – Methodology for routine innovation that brings together the right side of the brain (creative) with the left side of the brain (analytical). SAP Design Thinking workshops are a key differentiator for deployment of the SAP Leonardo digital innovation system.

SAP Digital Boardroom – Premier solution that contextualizes the boardroom, locations, and devices into a real-time enterprise experience. Powered by SAP HANA and experienced through the SAP S/4HANA suite and the SAP Analytics Cloud solution, the solution empowers leaders to monitor, simulate, and drive change in a digital economy. See “SAP Analytics Cloud.”

SAP Digital Business Services – Name of the service and support organization at SAP that provides a new approach to helping customers accelerate their digital transformation and business innovation. It is also the name of the service and support portfolio that helps customers maximize the value of their SAP implementations including the New **SAP MaxAttention**, **SAP Enterprise Support**, and other support offerings to enable an intelligent enterprise. The people, processes, and tools help customers of SAP Digital Business Services achieve digital transformation, enabling them to produce exceptional business outcomes. In 2018, SAP continued the process to simplify our services portfolio, creating three categories – continuous success, premium success, and project success – and expanded the range of intelligent tools designed to underpin service and support offerings.

SAP Digital Supply Chain – New portfolio offering enterprises an integrated suite of digital supply chain solutions to plan, design, manufacture, deliver, and operate their products. With these solutions, customers can blend the physical and the digital world throughout the complete supply chain – from design, planning, and manufacturing to logistics and ongoing maintenance – embedding intelligence and ensuring their customers are central to every phase of their business. Customers get total visibility as products are designed, delivered, and deployed by connecting their business processes with real-time data from assets, equipment, customers, and suppliers. This visibility is used to adequately anticipate and respond to real-world physical realities. Note that SAP Leonardo Internet of Things (IoT) and related IoT offerings are no longer part

of this portfolio. SAP Digital Supply Chain is also the name of the organization responsible for this portfolio.

SAP Enterprise Support – Services that provide proactive support in addition to all features of SAP Standard Support services. These proactive support services encompass tools, processes, and services that enable continuous improvement, holistic application lifecycle management for continuous innovation, business and operational process improvements, and levers to address the total cost of operation (TCO). SAP Enterprise Support, cloud editions offering is a foundational success plan included with any cloud subscription you have from SAP. It supports successful cloud adoption across your enterprise.

SAP ERP – Application designed to optimize business and IT processes by reducing IT complexity, increasing adaptability, and delivering more IT value at a lower cost than traditional ERP solutions. It can support mission-critical, end-to-end business processes for finance, human capital management, asset management, sales, procurement, and other essential corporate functions. SAP ERP can also support industry-specific processes by providing industry-specific business functions that can be activated selectively via the switch framework, keeping the application core stable and helping ensure maximum performance.

SAP Experience Center – Open space for Inspiration, Ideation, Innovation, and Illustration of digital opportunities today. A part of this is our maker space where organizations can test ideas and build digital and physical prototypes. Current centers exist in Copenhagen, Denmark, and Hudson Yards, in New York City.

SAP Fieldglass – Unified brand and portfolio of offerings for contingent workforce resulting from the acquisition of Fieldglass in May 2014 that help companies manage their entire workforce including contract workers and permanent staff. The signature SAP Fieldglass Vendor Management System includes cloud-based applications for external workforce management and services procurement. In 2018, SAP Fieldglass solutions connected customers with 6.2 million active external workers and more than 123,000 suppliers in over 220 countries and territories.

SAP Fieldglass Live Insights – Machine learning data-as-a-service offering that enables organizations to plan, simulate, predict, and engage external talent in a seamless, intuitive workflow. The service provides real-time visibility, speed, and agility in activating new workforce strategies using a robust talent procurement data set supplemented with their data and trusted third-party data.

SAP Fiori – First developed as a set of extensible HTML5 apps specific to key user roles, offering a seamless user experience across devices using responsive design principles. SAP Fiori apps target all employees of existing SAP customers, addressing the most common business functions, such as workflow approvals, information lookups, and self-service tasks. A free launchpad allows users to access their SAP Fiori apps from one single entry point. A cloud version is available as SAP Fiori Cloud.

SAP Fiori for iOS – This design language combines SAP Fiori UX with a consumer-grade iOS experience to meet enterprise user needs. It is used to create native business apps for iPhone and iPad, built using Swift, Apple's modern, secure, and interactive programming language. Part of an Apple and SAP partnership, established in May 2016 to revolutionize the mobile work experience, combining powerful native apps for iPhone and iPad with the cutting-edge capabilities of the SAP HANA platform. SAP

Fiori for Android was launched in 2018 and takes the strengths of the Fiori user interface and the Android operating system to deliver enterprise applications.

SAP Fiori user experience (UX) – Umbrella term for the user experience for SAP software. Based on modern design principles, it represents a consumer-like, consistent experience across devices, including tablets and smartphones.

SAP4Good – Name used in social media channels to communicate the activities of the Corporate Social Responsibility (CSR) organization at SAP as well as the work SAP is doing in areas such as sustainability, diversity, and inclusion. See "corporate social responsibility."

SAP Future Cities – Umbrella term for an initiative that includes the strategy, solutions, and vision associated with smart urban management, targeting state and local governments worldwide. It represents a unified range of SAP offerings for government organizations that help them improve the lives of their citizens and make urban living sustainable. See "SAP City Connect."

SAP Global Partner Summit – Exclusive event held for all SAP partners on the day prior to SAPPHIRE NOW. A day full of practical business-building insights, strategies, innovations, enablement, business opportunities, and networking dedicated to all things partner, helping maximize the SAP partnership.

SAP HANA – Business data platform that is SAP's flagship in-memory database, available both on premise and as a service in the cloud. It enables businesses to process and analyze live data and make business decisions based on the most up-to-date information, a requirement in today's digital economy. The innovative architecture in SAP HANA allows both transactional processing for data capture and retrieval, and analytical processing for business intelligence and reporting. It reduces time-consuming database and data management tasks and underpins intelligent applications that use advanced analytic processing. It includes features such as text analysis, multitenant database containers to support multiple isolated databases in a single SAP HANA instance, as well as external machine learning libraries.

SAP HANA Data Management Suite – SAP's open, modular, hybrid, multi-cloud solution suite that integrates all data types into a trusted, unified landscape, while reducing the complexity and overhead of harnessing rapidly growing data resources. It is the umbrella term that represents SAP's entire data-oriented product portfolio to support the data foundation for the intelligent enterprise – enabling businesses to receive trusted, connected, and intelligent data much more simply, especially for data that is outside of their SAP environment. SAP HANA Data Management Suite currently comprises the following offerings: SAP HANA; SAP Data Hub; SAP Enterprise Architecture Designer; SAP Cloud Platform Big Data Services. Formerly called SAP Database and Data Management.

SAP HANA Enterprise Cloud – This service enables customers to access solutions in the cloud. It contains managed cloud applications, in-memory infrastructure, managed services, and through an additional license, SAP Cloud Platform to build custom applications in the cloud. On-premise applications from SAP can be delivered to customers through SAP HANA Enterprise Cloud.

SAP HANA One – A deployment of SAP HANA certified for productive use on the Amazon Web Services Cloud. SAP HANA One can be deployed for production use with small data sets, in

minutes, opening a door to starter projects from customers, ISVs, and startups.

SAP Hybris – See “SAP Customer Experience.”

SAP Innovation Center – This organization manages co-innovation projects with industry, academic, and research partners.

SAP Innovation Framework – A framework that helps customers organize their portfolio investment planning. This methodology helps explain the difference between embedded intelligence, SAP Leonardo industry innovation kits, and open innovation; categorize industry scenarios into different buckets so our customers can understand the scenarios more simply; and enable account executives on a guided selling approach. There are three categories of innovations within the SAP Innovation Framework: optimize existing processes for more efficiency or reliability; extend current business processes to capture new sources of value; and transform company’s value chain or business mode.

SAP Innovation Services – Portfolio of services that offers a flexible, open innovation approach to help businesses apply emerging technologies such as machine learning, Internet of Things, or blockchain to bring intelligence and commercial value to their organizations. It is also the name of the delivery unit in SAP Digital Business Services formerly called SAP Leonardo Services. Formerly called SAP Leonardo Innovation Services.

SAP Innovative Business Solutions – SAP organization that specializes in building individual software solutions that address the unique needs of customers, and that fit seamlessly with existing SAP software. The organization draws on SAP innovations, especially SAP HANA, to deliver unmatched impact and value for specific customer use cases. Formerly called SAP Custom Development.

SAP Integrated Business Planning – This solution is powered by SAP HANA and delivers real-time supply chain planning capabilities for sales and operations, demand and supply planning, and inventory optimization in the cloud. It provides the necessary information to make business decisions using embedded analytics, simulation, prediction, and decision support. Specific SAP Integrated Business Planning applications can be used with the established SAP Fiori user experience interface or with a Microsoft Excel plug-in, allowing users to run optimization scenarios directly in their spreadsheets.

SAP Intelligent Asset Management – A group of five SAP offerings that enable an organization to use sensor technologies and predictive analytics to improve asset health. The five offerings are SAP Asset Intelligence Network; SAP Predictive Maintenance and Service; SAP Mobile Asset Management; SAP Asset Strategy and Performance Management; and SAP Predictive Engineering Insights.

SAP.iO – SAP’s startup incubation engine and related program that helps innovators inside and outside of SAP build products, find customers, and ultimately change industries. The SAP.iO team works with the best entrepreneurs, developers, designers, and data scientists to upend how business works.

SAP Jam – Social software platform that enables sales teams and internal experts to socially connect and communicate with customers in the context of each opportunity. Customers can also easily provide feedback and share what is important to them to strengthen relationships. Available in two compatible elements, SAP Jam Collaboration and SAP Jam Communities.

SAP Leonardo – Launched in 2017, SAP Leonardo provides the innovative technology and capabilities for analytics, blockchain, Big Data, data intelligence, IoT, and machine learning, as well as accelerator packages to ease implementation and deployment, industry innovative kits to address specific industry challenges, software applications powered by SAP Leonardo, SAP Cloud Platform, and SAP Design Thinking workshops held in SAP Leonardo Center locations across the globe.

SAP Leonardo Blockchain – Innovative technology provided by SAP Leonardo to embed blockchain services into business applications to help ensure trust in peer-to-peer transactions, provide full visibility of goods provenance and history of ownership, and increase auditability and decreased fraud.

SAP Leonardo Center(s) – Global network of connected, physical locations and go-to places for digital inspiration and co-innovation that also are home to SAP Innovation Services. These centers provide customers opportunities to collaborate with SAP development and consulting experts to start their innovation journeys based on the SAP Leonardo technologies. SAP Leonardo Centers currently exist in Palo Alto, California (USA); Paris; Shanghai; São Leopoldo (Brazil); SAP Leonardo Centers are planned to open around the world, including Berlin, China, Johannesburg, Moscow, Seoul, Singapore, Silicon Valley, and Tokyo.

SAP Leonardo industry innovation kit(s) – Packages of software, services, and tools that address industry-specific challenges and combine deep industry expertise from SAP with pre-integrated capabilities to rapidly solve critical industry problems. With fixed pricing and a single contract, each innovative kit addresses specific business functions or processes in a particular industry.

SAP Leonardo Internet of Things – Innovative technology provided by SAP Leonardo to connect things with people and processes, including connected products, assets, and fleets to drive Industrial IoT, and connected infrastructures, markets, and people to enable the “Internet of Everything.” Enterprise IoT capabilities we provide are catalysts for digital transformation, delivering real-time and forward-looking predictive insights that our customers need for their intelligent enterprises.

SAP Leonardo Machine Learning – Innovative technology in SAP Leonardo that embeds intelligence into enterprise applications to solve common business challenges and train and deploy deep learning models. These intelligent capabilities are orchestrated through SAP Leonardo Machine Learning Foundation, which runs on SAP Cloud Platform, and provides a variety of functional and business services. Individual applications include **SAP Resume Matching**, SAP Cash Application, and SAP Service Ticket Intelligence, among others.

SAP Leonardo microservices and APIs – Microservices and application programming interfaces (APIs) are available in the SAP Leonardo digital innovation system to help customers and partners integrate SAP Leonardo capabilities into their own applications. These microservices and APIs run on SAP Cloud Platform.

SAP Loyalty Management – A solution that helps marketing and commerce customers track customer behavior and create and manage loyalty programs. It is not a company loyalty program for SAP Hybris solutions. Formerly called SAP Hybris Loyalty.

SAP Marketing Cloud – One of the five solution categories within the SAP Customer Experience portfolio and in the SAP

C/4HANA suite. It includes all marketing solutions to support developing a single view of the customer, gaining deeper customer insights, enabling consent-based marketing, delivering individualized marketing experiences, lead and account management, and optimizing marketing through closed loop planning, execution, and measurement. See "SAP C/4HANA."

SAP MaxAttention – Our premium support offering, designed specifically for customers whose operations demand mission-critical customized support. The support option includes a full range of services for individual customer needs and covers all stages of an SAP solution's lifecycle. The program was completely redesigned in 2018, following close consultation with customers. **New SAP MaxAttention** helps customers turn ideas into value-based predictable outcomes with precise business and technical guidance – from innovation to operation – and is composed one service portfolio for all deployment types, one team with clear accountabilities; and one commercial framework offers pay-as-you-use services with predictable outcomes. As the highest engagement level throughout the software lifecycle, this customized, on-site program orchestrates all SAP experts to work with our customers to innovate, develop ideas, and accelerate their digital transformation. It enables our customers to simplify and optimize their IT operations.

SAP Model Company – Preconfigured ready-to-run reference solution with business content, accelerators, and engineered services for multiple industries or lines of business. This service provides the building blocks for a solution, helping customers accelerate deployment and digital transformation.

SAP Month of Service – Held annually in October, SAP's signature corporate volunteerism effort offers SAP employees around the world opportunities to come together to support social change in their communities. SAP Month of Service, an annual volunteering campaign, employees executed 800 projects globally. SAP Together will serve as a digital hub for employee volunteerism, continuing to build on the momentum from SAP Month of Service year-round. See "SAP Together."

SAP One Billion Lives – Program that invites SAP colleagues to propose and gain support for projects that would benefit the public sector, specifically in the areas of education, health care, and disaster management and response. "SAP 1BLives" is used to refer to the program on social media.

SAP ONE Support – Designed for flexibility and simplification of the customer experience, this program helps deliver a harmonized and integrated support experience to companies of all sizes and across all deployment scenarios – in the cloud, on-premise or in hybrid scenarios. The SAP ONE Support program is available through the SAP Enterprise Support and SAP Preferred Care offerings. See "SAP Enterprise Support."

SAPPHIRE NOW – SAP's signature business technology event and the largest SAP customer-driven conference is held annually in several locations around the globe. The global event in the United States is co-located with the Americas' SAP Users' Group (ASUG) annual conference. Attendees discover new initiatives, solutions, products, and services, as well as unique access to the latest business strategies and industry best practices from SAP customers, partners, executives, and industry experts to help them drive business results across all levels.

Sapphire Ventures – Name of independent venture firm spun off from SAP, providing the agility of a start-up while allowing

companies to tap into SAP's global enterprise ecosystem of customers and partners. The firm partners with outstanding entrepreneurs and venture firms worldwide to build industry-leading businesses. Formerly called SAP Ventures.

SAP Pinnacle Award – Annual partner recognition awarded to SAP partners excelling in various categories.

SAP Predictive Analytics – Software that provides an intuitive tool for predictive model design and visualization. It is available as a stand-alone solution or as part of SAP Leonardo Analytics and SAP Leonardo Machine Learning technologies.

SAP Preferred Success – Subscription-based customer success offering available on top of select cloud solution subscriptions. It offers a bundle of prescriptive customer success resources that accelerate cloud adoption and achieve quick business outcomes. This support engagement combines insight-driven recommendations to optimize cloud solution capabilities, a tailored learning strategy, and change management guidance. It also provides advanced support benefits to anticipate risks and address critical issues, such as enhanced customer response levels (target service-level agreements) and proactive health checks.

SAP Readiness Check – Tool included in all customer maintenance contracts at no extra charge. It enables customers to understand the implications of a potential conversion project by analyzing software prerequisites, infrastructure requirements, functional implications, necessary custom code adaptations, and application data migration requirements that are required before they can convert their SAP ERP system to a newer SAP system. The first use case is for SAP S/4HANA.

SAP Sales Cloud – One of the five solution categories within the SAP Customer Experience portfolio and in the SAP C/4HANA suite. Individual offerings help companies improve sales with better selling experiences, enhancing sales reps' daily work experience, while improving customer experiences and accelerating the buying process. It includes the former SAP Cloud for Sales solution. See "SAP C/4HANA."

SAP Service Cloud – One of the five solution categories within the SAP Customer Experience portfolio and in the SAP C/4HANA suite. It encompasses all products across the customer experience that help secure customer satisfaction in support of ongoing loyalty. Individual offerings target sales and service organizations with designed-in social collaboration to help transform social media conversations into business insight. It includes the former SAP Hybris Cloud for Service solution. See "SAP C/4HANA."

SAP S/4HANA – Launched in February 2015, SAP's next-generation business suite runs on the SAP HANA business data platform, is available in on-premise and cloud deployments, and is designed with role-based SAP Fiori UX. SAP S/4HANA is our enterprise resource planning (ERP) suite for the intelligent enterprise. More than 10,000 customers have chosen the suite to support their digital transformation. The SAP S/4HANA suite spans all business functions including finance, human resources, sales, service, procurement, manufacturing, asset management, supply chain, and R&D and acts as the digital core. See "digital core."

SAP S/4HANA Cloud – SAP's flagship next-generation cloud ERP suite provides functionality that allows companies to run integrated and intelligent digital businesses in real time. SAP S/4HANA Cloud is built on SAP Cloud Platform with an open architecture that helps connect it to the wider SAP portfolio. The

SAP S/4HANA Cloud software development kit (SDK) allows customers and partners to innovate quickly and easily on SAP Cloud Platform while leveraging the capabilities of their digital core.

SAP S/4HANA Enterprise Management – Core on-premise solution in the SAP S/4HANA suite covering all mission-critical processes of an enterprise. It is natively built on the SAP HANA platform, designed with SAP Fiori UX.

SAP S/4HANA Finance – Global financial solution available in the SAP S/4HANA suite as one of the SAP S/4HANA Line-of-Business (LoB) Solutions.

SAP S/4HANA Marketing Cloud – See “SAP Marketing Cloud.”

SAP S/4HANA Movement – SAP program and initiative to promote and accelerate adoption of SAP S/4HANA. This is an easy-to-use adoption starter engagement that helps customers structure and assess their transformation to SAP S/4HANA.

SAP Solution Manager – End-to-end application lifecycle management solution to help streamline business processes and proactively address improvement options, increasing efficiency and decreasing risk with the SAP maintenance agreement. Customers can centralize, enhance, automate, and improve the management of their entire system landscape (SAP and third party), thus reducing total cost of ownership. The solution includes features such as diagnostics, testing, root cause analysis, and solution monitoring. A category of focused solutions for SAP Solution Manager is available on SAP Store.

SAP Standard Support – Support option offering a reliable response to technical disruptions and for maintaining system health and integrity. This basic support offering features updates, problem resolution, knowledge transfer, quality management, and more to keep IT landscapes up-to-date and stable. SAP Standard Support delivers support services to enable continuous and effective business operations.

SAP Store – Public online store (www.sapstore.com) where you can discover, download, and buy SAP solutions, services, mobile apps, demos, and free trials from SAP and partners.

SAP SuccessFactors – Solutions that help organizations increase the value of their workforce by developing, managing, engaging, and empowering their people. Delivered as a complete digital suite, these solutions address all aspects of human resources (HR), from administration, payroll, and benefits to talent management and collaboration across the employee journey. These solutions integrate fully with the customer’s other business software, including SAP S/4HANA. See “SAP SuccessFactors HCM Suite.”

SAP SuccessFactors digital assistant – Digital tool developed to provide a business’ entire workforce with a personalized, engaging experience by applying machine learning to guide and recommend actions based on verbal and written questions or commands.

SAP SuccessFactors HCM Suite – Suite of HR solutions for talent management, core HR, collaboration, and workforce analytics. The cloud-based suite provides solutions to bridge the gap between strategy and execution with tools to hire, reward, and develop the right people with the right skills to grow a business sustainably. Several key features were added to existing HCM solutions in 2018, including functionality for the General Data Protection Regulation (GDPR), a set of laws that came into force on May 25, 2018, which dramatically affects data privacy practices throughout the European Union (EU). This GDPR functionality is

now embedded across the entire HCM suite, making it easier for HR leaders to properly handle and protect sensitive employee and candidate data.

SAP SuccessFactors Mobile for Android – Further improving usability across mobile devices, SAP partnered with Google to redesign the mobile app for Android users. Employees and managers can now more easily engage and complete critical people-related tasks.

SAP SuccessFactors Visa and Permits Management – First SAP SuccessFactors solution built natively on SAP Cloud Platform. It offers a single place for HR to centrally manage, automate, and gain insight into complex employee work visa and permit processes for international hiring.

SAP SuccessFactors Work-Life – Cloud solution for HR professionals to improve employee engagement and health at work. Real-time data and machine-learning algorithms help enterprises to attract and retain talents. Organizations access aggregated real-time data to better respond to the needs of their workforce. This solution is part of the Well-Being at Work program. Formerly called SAP Work-Life. See “Well-Being at Work.”

SAP Together – New cloud-based employee engagement platform, as well as funding of non-profit organizations. In this way, SAP works to foster employee engagement and societal impact. In 2018, more than 20,000 SAP employees volunteered, dedicating more than 298,000 hours of service. See “SAP Month of Service.”

SAP Transformation Navigator – Marketing tool used to provide customers with clear guidance on their road map to an SAP S/4HANA centric application landscape and to support the design and implementation of new business models and business processes. It is available at no cost.

SAP Trust Center – External subsite of SAP.com that consolidates for prospective customers all trust-related content – for cloud and on-premise – such as details about SAP products, cybersecurity, data center security, data privacy, proof of compliance through international standards, and frequently asked questions. Formerly called SAP Cloud Trust Center.

SAP University Alliances – Program that introduces students to the exciting technologies shaping business today and designed to connect students around the world interested in SAP solutions, careers, and research opportunities. Students participate in classroom sessions, app development, networking opportunities, events, and more. The SAP University Alliances community provides connections between university leaders and students, SAP customers and partners, and SAP internal experts.

SAP Upscale Commerce – Next-generation cloud commerce solution to enable rapid deployment and consumption. It is targeted to midmarket consumer products and retail customers as well as direct-to-consumer companies looking to deploy a fast and highly engaging commerce experience. Built for a mobile-first consumer with rich AI-powered experiences, it can be deployed quickly. Launched in 2018, it is initially available only in North America but planned to expand globally in the future.

SAP User Group Executive Network (SUGEN) – Umbrella network to promote the exchange of information, expertise, and experiences between user groups; identifies global priorities; and communicates consolidated customer feedback to SAP. Currently, 21 SAP user groups exist across five continents with the shared aim of defining priorities and agreeing on plans of action to bring

greater focus to the dialog between SAP and our user groups on the global scale. See "ASUG" and "DSAG."

SAP Value Assurance – Program that encourages customer migration to SAP software by communicating an assurance that SAP is committed to the success of the customer's migration. Service packages offer dedicated planning, design support, and safeguarding services orchestrated by a technical quality manager. No implementation or execution services are provided in this program. SAP Value Assurance service packages safeguard implementations led by customers and partners by giving them access to best practices, methodologies, tools, and deep technology expertise, enabling them to accelerate the deployment of SAP S/4HANA and SAP BW/4HANA. For SAP-led projects, see "SAP Advanced Deployment."

SAP Women Forward – Externally-facing women's initiative (<https://discover.sap.com/women-forward/en-us/index.html>) that includes an online community, newsletter, and annual events.

Scope 1 (emissions) – Direct greenhouse gas emissions from sources that are owned or controlled by the reporting company, for example, fuel burned in corporate cars.

Scope 2 (emissions) – Indirect greenhouse gas emissions from consumption of purchased electricity, heat, or steam.

Scope 3 (emissions) – Indirect emissions that are a consequence of the activities of the reporting company but occur from sources owned or controlled by another company, such as business flights.

single tenant edition – Deployment model that implies resources are dedicated to one customer and accessed through the Internet. The infrastructure is owned, managed and operated by the customer, a third-party, or both, and is on the premises of the customer, cloud provider, or a third party. Formerly called private option or private edition.

SME Premier – A Web site and a program for small and midsize enterprises (SMEs) and members focused on a thought leadership community. The objective is to unite people with common interests to share engaging content on how to innovate and grow a small and midmarket business as well as to build awareness and engage with prospects, customers, influencers, analysts, partners, and SAP employees.

spatial solutions from SAP – Category of solutions used to communicate all SAP offerings and efforts related to spatial intelligence, location intelligence, and geospatial analytics. It includes spatial capabilities in SAP HANA spatial services, SAP HANA geospatial content, SAP Geographical Enablement Framework, and SAP Geographical Enablement Framework for SAP S/4HANA.

SuccessFactors – See "SAP SuccessFactors."

sustainability – Method to create social, environmental, and economic value for long-term business success and responsible global development.

T

total energy consumed – Sum of all energy consumed through SAP's own operations, including energy from renewable sources and energy consumed by external data centers delivering our cloud offerings.

U

UN Protect, Respect and Remedy – Framework provided by the United Nations which offers states and companies guidance regarding the fulfillment of their duty to protect, respect, and remedy human rights.

UN Sustainable Development Goals (SDGs or UN Global Goals) – Set of 17 global development goals by the United Nations which are aimed to ensure an environmentally, socially, and economically sustainable future by tackling adverse challenges to humanity like poverty, hunger, and inequality.

user experience (UX) – In general terms, UX represents the quality of a user's interaction with and perceptions of a system. UX at SAP is a characteristic of solutions or products that use SAP Fiori UX technology and follow SAP Fiori UX guidelines to offer a next-generation experience to our users. See "SAP Fiori user experience."

W

Well-Being at Work – The SAP SuccessFactors organization joined forces with Thrive Global to introduce, a new initiative that puts employee well-being at the heart of organizations and positions technology as a catalyst for this cultural shift. SAP SuccessFactors Work-Life is the first solution to come from this partnership. It provides real-time insights into well-being needs and makes recommendations to improve employee satisfaction and engagement. See "SAP SuccessFactors Work-Life."

women in management – Phrase used to refer to the percentage of women in management positions (managing teams, managing managers, executive boards) as compared to the total number of managers, expressed by the number of individuals and not full-time equivalents (FTEs). Throughout 2018, SAP sponsored and hosted events to attract, develop, and support women around the world. Ongoing initiatives include the Women's Professional Growth Webinar series, our grassroots Business Women's Network, and our Women@SAP online community. In addition, SAP offers the Leadership Excellence Acceleration Program (LEAP), a highly respected and award-winning development program that helps prepare high-potential women for leadership roles.

works council – As dictated by the German Works Council Constitution Act, a works council is a legal body for representing employees' interests to the employer and codetermining the works in private companies. On June 21, 2006, the SAP AG employees working in Germany elected its first works council. A European works council was created in the spring of 2012. The SAP AG works council evolved to become the SAP SE works council in 2014 to reflect the legal entity of SAP SE.

World Space Alliance – An initiative between SAP and the European Space Agency (ESA) to develop and promote digital technologies and Earth observation data for a range of space-related stakeholders including providers of satellite and drone data, spatial algorithms, and space software applications for start-ups, corporations, universities, and research institutes.

Financial Calendar and Addresses

Financial Calendar

2019

April 24

Results for the first quarter of 2019
Record date for dividend payment

May 15

Annual General Meeting of Shareholders,
Mannheim, Germany

May 20

Dividend payment

July 18

Results for the second quarter and half-year 2019

October 21

Results for the third quarter of 2019

2020

January 28

Results for the fourth quarter and full-year 2019

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Financial and Sustainability Publications

We present our financial, social, and environmental performance in the SAP Integrated Report 2018, which is available at www.sapintegratedreport.com. This excerpt from the SAP Integrated Report 2018 comprises all of the information required by accounting and disclosure standards applicable to us.

The following publications are available in English at www.sap.com/investor, or in German at www.sap.de/investor:

- Annual Report on Form 20-F (IFRS, in English)
- SAP Integrated Report (PDF)
- SAP SE Statutory Financial Statements and Review of Operations (HGB, in German)
- Interim Reports (in English and German)
- SAP INVESTOR, SAP's quarterly shareholder magazine (in German)

Complete information on the governance of SAP is available at www.sap.com/corpgovernance. Materials include:

- Information about the management of the company, including the members of the Executive Board and the Supervisory Board and their curriculum vitae
- Details of the managers' transactions in SAP shares
- Shareholder meeting documents and ballot results
- Articles of Incorporation
- Agreement on the Involvement of Employees in SAP SE
- German Code of Corporate Governance
- Declaration of Implementation pursuant to the German Stock Corporation Act, Section 161
- Code of Business Conduct for Employees
- Corporate Governance Statement pursuant to the German Commercial Code, Section 289f
- Corporate Governance Report
- Rules of Procedure for the Supervisory Board
- Profile of Skills and Expertise for the Supervisory Board

Additional SAP policies are made public at www.sap.com/corporate-sustainability:

- SAP Human Rights Commitment
- SAP Global Health and Safety Management Policy
- SAP Environmental Policy
- SAP Global Anti-Discrimination Policy
- SAP Global Diversity and Inclusion Commitment
- SAP's Guiding Principles for Artificial Intelligence
- SAP Supplier Code of Conduct
- SAP Partner Code of Conduct

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