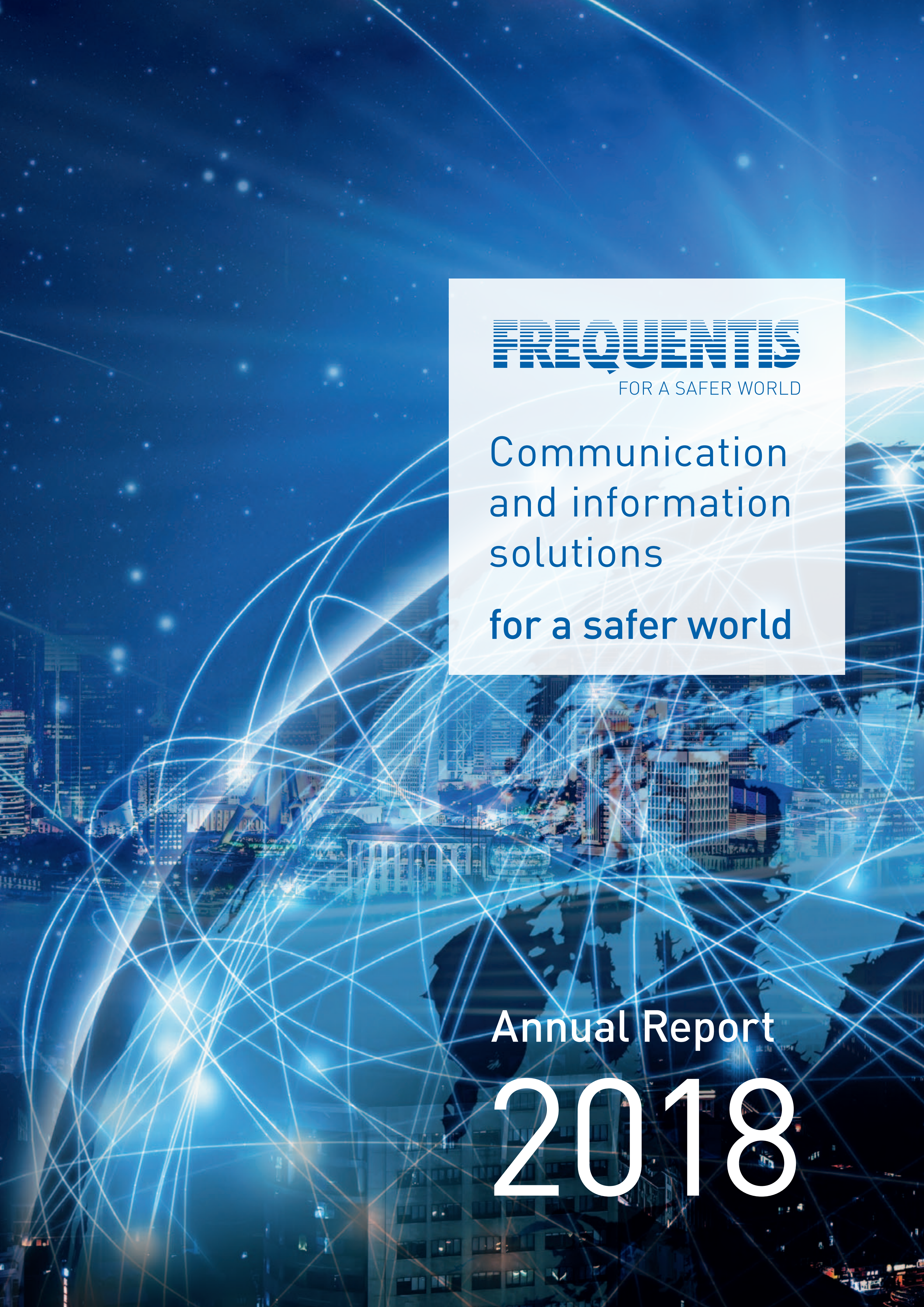


FREQUENTIS

FOR A SAFER WORLD

Communication and information solutions

for a safer world

Annual Report 2018

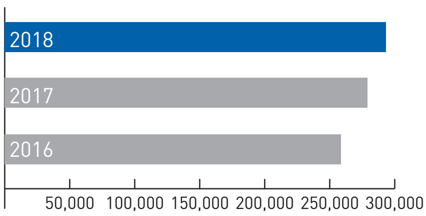
Innovative solutions from Frequentis set standards.

Frequentis experts take the lead in many standardisation bodies such as NG911, EENA, and EUROCAE.

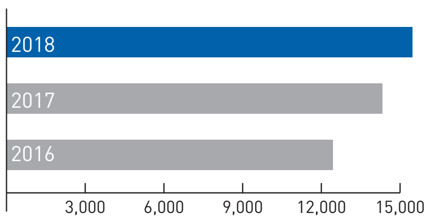
Key figures

	2018	2017	2016
Total operating performance in EUR thousand	293,884	274,545	252,214
EBIT in EUR thousand	15,603	14,321	12,425
EBIT margin in %	5.3	5.2	4.9
Equity in EUR thousand	85,634	90,095	81,047
Equity ratio in %	43.3	46.3	44.1
Net cash position in EUR thousand	55,386	70,029	59,475
Free cash flow in EUR thousand	120	12,275	23,054
Employees (FTE as of reporting date)	1,843	1,741	1,637
Average no. of employees (FTE)	1,763	1,697	1,606
Order intake in EUR thousand	306,259	287,767	259,545
Increase order intake in %	6.4	10.9	18.4
Increase total operating performance in %	7.0	8.9	10.7
Increase EBIT in %	9.0	15.3	-1.0

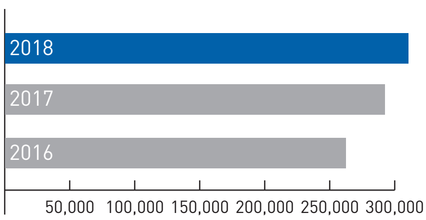
Total operating performance in EUR thousand



EBIT in EUR thousand



Order intake in EUR thousand



2018 at a glance

Total operating performance in EUR thousand	EBIT in EUR thousand	Order intake in EUR thousand
293,884	15,603	306,259
+7.0%	+9.0%	+6.4%

Equity ratio	Free cash flow in EUR thousand	Average no. of employees (FTE)
43.3%	120	1,763

Contents

Group profile

Over 70 years of innovation for a safer world.

Wherever Frequentis systems are used, people bear responsibility for the safety of other people and goods. Frequentis is an international provider of communication and information systems for control centres for safety-critical tasks. Custom-tailored control centre solutions are developed and marketed by Frequentis´ Air Traffic Management segment (for civil and military air traffic control, AIM, air defence) and Public Safety & Transport segment (for police forces, fire brigades, emergency medical services, shipping, and railways).

As a recognised specialist, Frequentis designs future-oriented solutions for command and control centres in collaboration with key account customers and makes new technologies usable for safety-critical applications. Using a human-centric design process, integrated systems are created to provide safer and more stable working environments for end-users in control centres, such as air traffic controllers, operators, and dispatchers.

Frequentis rethinks control centres.

Frequentis develops and optimises systems for customers in safety-critical areas of the global mega-markets for transport and safety infrastructure – wherever high-performance, efficient, and flexible solutions are required. Increasing mobility, digitalisation, and rising safety and security requirements are driving long-term growth. Modern technologies are used to optimise control centres for traffic and public safety.

Frequentis solutions are already used by air traffic controllers, dispatchers, and operators at more than 25,000 working positions. The knowledge and experience of around 1,850 employees worldwide (including 990 at Frequentis AG, the company's headquarters in Vienna), together with a network of subsidiaries and local representatives in more than fifty countries, enable Frequentis to serve more than 500 customers in some 140 countries.

Founded in 1947, Frequentis is the global market leader in voice communication systems for air traffic control with a market share of around 30%. Moreover, the Frequentis Group's systems are global leaders in AIM (aeronautical information management) and aeronautical message handling systems, as well as in GSM-R systems in the field of Public Transport. In 2018, the Group´s total operating income was EUR 293.9 million.

Frequentis sets standards.

Frequentis´ customers are public authorities, organisations, and companies with safety-critical tasks. Its control centre solutions comprise proprietary software solutions and hardware components that are specifically configured by the company for its applications.

The company develops and integrates state-of-the-art IT components in comprehensive communication and information systems that meet the highest demands made on safety-critical applications. In addition, Frequentis provides a range of supplementary services to support customers throughout the entire life cycle of their systems. Work on standardisation bodies such as

NG911, EENA, and EUROCAE enables Frequentis to base its solutions on standards and regulations. That underscores the future-proofing of Frequentis solutions.

Control centre solutions

Control centre solutions is a generic term for command centres with safety-critical tasks, as encountered daily by Frequentis on its customers´ premises. Control centre solutions are used either to control traffic or to organise safety. The same tasks have to be carried out, although they are labelled differently in each application.

To put it simply, basically three components always interact:

- A tactical situation report that shows the operator the current situation
- A planning and management tool that helps make the right decision quickly and safely
- A communication system to communicate with transport users, emergency services, or security forces

Voice and data communication, an area where Frequentis is the world leader, is an indispensable element in every control centre. The communication system is therefore often a good starting point for the development of fully integrated solutions for customers, using additional products and services from the Frequentis service portfolio.

In addition, networks are becoming the centre of communication solutions. For example, traditional voice communication systems are being extended by networked voice and data communication services.

Highlights 2018

Management changes and structural adjustments

- New Chairman of the Executive Board at Frequentis AG

  Norbert Haslacher took over the function of CEO of Frequentis AG from Johannes Bardach, the long-standing CEO and majority owner; Executive Board reduced from four to three members

- Structural change and introduction of a strong governance organisation

  Optimisation of the interaction between central teams of experts and the business entities

Strategy process as a basis for further growth

- Corporate strategy 2022 updated and refined
- Stronger focus on IT and software in the Frequentis Group
- Establishment of a central unit for structure development of new business

Further expansion of the Frequentis Group

- Establishment of Frequentis Middle East in Abu Dhabi (UAE) to strengthen local presence
- Establishment of Frequentis DFS Aerosense by Frequentis AG and Deutsche Flugsicherung DFS for global marketing and delivery of turnkey remote (digital) tower solutions

Air Traffic Management business segment

Signature of a major order as part of Australia's OneSKY programme

- Delivery of an end-to-end internet protocol (IP) voice communication and airfield management system for a uniform nationwide civil and military air traffic management system in Australia

Expansion of ATM Civil´s market leadership in voice communications in China

- New order for Chengdu airport in western China

Go-operational of a remote (digital) tower for DFS in Saarbrücken

- Remote monitoring by the Remote Tower Control Center in Leipzig

First order for a military remote virtual tower (RVT) from the US Department of Defense

- Delivery of two stationary RVT systems and two mobile systems for the air force and other DoD agencies

Tests on drone management in EU airspace

- Frequentis is taking part in extensive drone tests in the Gulf of Finland as part of the SESAR programme to reorganise European airspace (GOF U-space project)

Public Safety & Transport business segment

First go-lives of the public safety collaboration platform 3020 LifeX

- By the end of 2018, six LifeX systems were fully operational for various police forces (Bavaria, Liechtenstein, Austria, ...)

Long-term maintenance contract with the Norwegian public safety network Nødnett

- Extensive service contract for the TETRA-based digital nationwide wireless network for police, fire brigade, and emergency medical services in Norway

Major projects for the rail emergency management (REM) system

- Go-operational of the system at Sydney Trains´ Rail Operations Center
- First order from a railway operator (Arriva in the UK)

Completion of the SASEMAR coast guard project in Spain

- IP-based communication and information system for the Spanish coast guard covering an area of over 300 nautical miles

Preface by the Chairman of the Executive Board

Ladies and gentlemen,

Frequentis set some important milestones in 2018: we introduced an extensive strategy process and made structural adjustments to pave the way for further sustained growth. One major change concerned me personally: in April 2018, I took over as Chairman of the Executive Board from our majority shareholder Hannes Bardach, who had held this office for many years. This is a role that I perform with a great deal of pleasure, pride, and respect.

My colleagues on the Executive Board, Sylvia Bardach and Hermann Mattanovich, and I took over a solidly positioned group of companies, which we continued to grow in 2018. We are still able to count on the expertise and support of Hannes Bardach, who actively provides advice on mission-critical tasks as Chairman of the Supervisory Board.

Our total operating performance increased by 7.0% from EUR 274.5 million in 2017 to EUR 293.9 million. Order intake broke the EUR 300 million sound barrier, rising 6.4% year-on-year to EUR 306.3 million. The Frequentis Group generated earnings before interest and taxes of EUR 15.6 million in 2018 – up 9.0% from EUR 14.3 million in 2017.

Structurally, we also prepared for further growth by establishing new subsidiaries: we set up Frequentis Middle East in Abu Dhabi to strengthen our presence in this region. Together with the German air traffic control organisation Deutsche Flugsicherung DFS, Frequentis established DFS Aerosense to produce and assemble turnkey remote (digital) tower solutions.

The Air Traffic Management business segment continued its positive development in 2018. Frequentis is the market leader in voice communications for air traffic control, aeronautical information management (AIM), and message handling systems (MHS). Including our surveillance expertise, in other words, systems to visualise the situation in the airspace, we cover a broad range of technologies for air traffic control and are therefore well-positioned to meet present and future customer requirements.

Our strong market position is underscored by major successes. Examples are a contract for more than 20 years for OneSKY CMATS in Australia, a programme to establish a nationwide air traffic management system for military and civil use, and the first go-live of a remote (digital) tower in Saarbrücken, Germany. An order for a first remote virtual tower for the US Department of Defense was another key success in 2018.

In the Public Safety & Transport business segment as well, Frequentis achieved notable success in acquiring new orders, for example the conclusion of a long-term maintenance contract with the Norwegian public safety network Nødnett. This highlights the importance of established customers and installed base business for Frequentis. The 3020 LifeX multimedia collaboration platform for public safety also developed well. At the end of 2018, six fully operational LifeX systems were in use by various police forces.

In the railway sector, we were pleased to obtain a contract from the Polish railways as part of the rollout of the nationwide GSM-R mobile communication network. The Maritime business unit completed a project for SASEMAR. Our technology is used by the Spanish coastguard to monitor and respond to maritime incidents in the area between Gibraltar and Tenerife, which is under Spanish responsibility.

The Frequentis Group is continuing to focus on sustained growth. Using a professional strategy process, in 2018 we set out our core development objectives and how we intend to achieve them. A key success factor for our company is the even more extensive use of our excellent global sales network and, in connection with that, intensive marketing. Our goal is to gain or extend market leadership in the markets for our present product portfolio. Here we will be supported by intensive collaboration with our key account customers and continued establishment of a strong wpartner & prime network.

As a recognised innovation leader in the markets we serve, business with new products and innovations is also very important for us. In 2018, we decided to set up a central New Business Development department, which is currently working on a range of new business areas and on extending our present business units. The focus is on three key issues: the management of drones in the field of air traffic control, the use of the LTE mobile communications standard in safety-critical environments, and evaluation and structured establishment of the airport business at Frequentis.

Our daily work is still characterised by the distinctive Frequentis culture of dealing with safety-critical processes, which is a feature of the entire Group. Over 70 years´ experience of highly innovative projects geared to the multiple requirements of safety-critical environments have enabled us to build up extensive know-how and a deep - and emotional - knowledge and understanding of our customers´ needs.

Together with my colleagues on the Executive Board, I would like to take this opportunity to extend our sincere thanks to Frequentis´ customers and business partners for their trust and constructive collaboration. I would also like to thank all staff of the Frequentis Group for their hard work, motivation, and commitment. My thanks are also due to the Supervisory Board and especially its new chairman, Hannes Bardach, my predecessor as CEO, for their trust and constructive support.

Yours,

Norbert Haslacher
Chairman of the Executive Board

Executive Board and Supervisory Board

Executive Board

Johannes Bardach	Managing Director since 1983 Chairman of the Executive Board from 2007 until 16 April 2018
Norbert Haslacher	Chairman of the Executive Board since 16 April 2018 CSO since 2015, responsible for sales & marketing
Sylvia Bardach	Commercial Director since 2000 CFO since 2007, responsible for finance & shared services
Hermann Mattanovich	CTO, COO since 2009 Responsible for technology management & projects

Supervisory Board

Georg Bahn	Chairman from 2007 until 16 April 2018
Johannes Bardach	Chairman since 16 April 2018
Rainer Hasenauer	Deputy Chairman from 2007 until 16 April 2018
Karl Michael Millauer	Member since 2007 Deputy Chairman since 16 April 2018
Boris Nemsic	Member since 2007
Reinhold Daxecker	Member since 16 April 2018
Gabriele Schedl	Member since 2015 delegated by the Workers´ Council
Dubravka Maglicic	Member from 2015 until 31 December 2018 delegated by the Workers´ Council
Siegfried Meisel	Member since 1 January 2019; delegated by the Workers´ Council

On behalf of the Supervisory Board of Frequentis AG, I would like to express my sincere thanks and appreciation to the entire Executive Board and all staff for their work in the past financial year. The enormous commitment, dedication, and innovative capability of our international teams pave the way for the sustained success of Frequentis.

Report of the Supervisory Board

The Supervisory Board of Frequentis AG held four regular meetings and one extraordinary meeting in 2018. The Supervisory Board's Audit Committee held three meetings.

The Chairman of the Supervisory Board, Georg Bahn, and the Deputy Chairman of the Supervisory Board, Rainer Hasenauer, stepped down from the Supervisory Board with effect from 16 April 2018. On behalf of the Executive Board and company´s staff, the entire Supervisory Board would like to thank Mr. Bahn and Mr. Hasenauer for their valuable service to the company over many years and for their countless contributions as members of the Supervisory Board. At the Annual General Meeting on 16 April 2018, Johannes Bardach and Reinhold Daxecker were appointed to the Supervisory Board. At the extraordinary meeting of the Supervisory Board, which was also held on 16 April 2018, Johannes Bardach was elected Chairman of the Supervisory Board and Karl Michael Millauer was elected Deputy Chairman of the Supervisory Board.

At the Supervisory Board meetings, the Executive Board reported in detail on the company's business performance and situation, the most important projects in progress and related issues. In this context, the Supervisory Board discussed, questioned, and examined the information provided by the Executive Board. This examination, which took the form of an open discussion between the Executive Board and the Supervisory Board, did not result in any objections. The approval of the Supervisory Board was obtained on matters where this was required by the articles of association or rules of procedure.

The annual financial statements of Frequentis AG and the consolidated financial statements as at 31 December 2018 and the management report and group management report on the 2018 financial year were audited by the appointed auditors, BDO Austria GmbH. The audit did not give rise to any objections and the statutory requirements were complied with in full, so the auditors issued an unqualified audit opinion.

The Supervisory Board´s Audit Committee examined the annual financial statements and the consolidated financial statements at its meeting on 8 April 2019 and recommended that they be approved by the Supervisory Board. The Supervisory Board examined the annual financial statements and consolidated financial statements submitted to it, together with proposal for the distribution of the profit, the Executive Board's management report and the group management report, and agreed with the audit findings. It approved the Executive Board´s management report and group management report and concurs with the proposal for the distribution of the profit. The annual financial statements and consolidated financial statements for the 2018 financial year were accepted by the Supervisory Board, so they are deemed to be approved pursuant to section 96(4) of the Austrian Companies Act.

Vienna, 8 April 2019

Johannes Bardach
Chairman of the Supervisory Board

Sustainability & corporate social responsibility

In accordance with its corporate mission statement, “for a safer world”, the Frequentis Group is committed to corporate social responsibility and sustainability in everything it does. In 2018, it continued and extended its sustainability-related CSR activities.

Frequentis also endeavours to implement extensive corporate social responsibility and sustainability measures at its subsidiaries. Corresponding measures are undertaken by the subsidiaries within the local legal framework.

Processes & quality

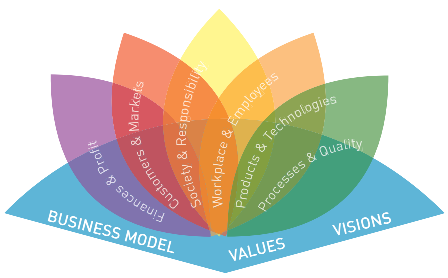

Continuous optimisation

Frequentis implements its social responsibility through an integrated management system which is controlled by means of processes. These processes, which are divided into core processes, management processes, and support processes, are the basis for the continuous optimisation of the company and its efficiency.

- The results of the core processes create direct value for customers.
- Management processes define activities geared to strategic alignment and management of the company. Examples are innovation and product management.
- The support processes define the workflows required to support the core processes. Support processes include the supply chain and development.

These processes form a sound basis for obtaining and upholding certification under the following standards:

- ISO 9001:2015 (quality)
- ISO 14001:2015 (environment)
- ISO 27001:2013 (information security) & UK Cyber Essentials Certificate
- OHSAS 18001:2007 (occupational safety)



The content and application of the processes are verified in audits, which are performed at regular intervals by external certification authorities.

Frequentis´ processes are applicable for all subsidiaries. The exceptions are those subsidiaries that have their own independently certified quality management system with customised processes, such as Frequentis California and Frequentis USA.

In 2018, a number of certification audits were performed at the Frequentis subsidiaries in Slovakia (ISO 9001, ISO 27001) and at Frequentis Comsoft (ISO 27001).

In addition, special attention was paid to preparations to switch the occupational management system from OHASA 18001 to the new ISO 45001:2018 during recertification in 2019, and to preparing for the energy efficiency re-audit scheduled for 2019. Here, Frequentis aims to identify and report on energy flows and further potential to increase energy efficiency.

Workplace & measures taken for employees

Extensive occupational healthcare

As a responsible employer, Frequentis has a genuine desire to actively foster the health of its employees. Vaccinations (influenza, FSME), annual health checks, and specific projects such as heart check days, lung function tests, eye tests, and vein checks are offered annually to staff at the Vienna location as part of the company´s occupational healthcare activities. These are supplemented by occupational psychology measures such as stress checks and burnout prevention, bioimpedance analyses, and other activities to promote health through the vitality programme.

In addition, the company´s medical officer offered a new first aid workshop focusing on reanimation, cardiopulmonary resuscitation (CPR), and how to use a defibrillator.

Wide-ranging and free sports acitivities

The wide-ranging vitality programme at the Vienna headquarters includes an extensive choice of free sports activities and a range of discounted sports and fitness offerings. In 2018, around 100 employees took part in the Vienna City Marathon and the Vienna Business Run. Participation was sponsored by Frequentis. Other activities sponsored by the company include table tennis and football.

A key aspect of the Frequentis vitality programme is healthy nutrition for employees and guests at the Vienna location. Meals are freshly cooked daily and four different menus are available. Great emphasis is placed on the top quality and on using regional and seasonal produce. Another focus is steadily extending the range of vegetarian dishes through innovative new recipes and regular speciality weeks. For example, in November the “local superfood” week took employees on a culinary tour of the wide range of Austrian vegetables.

To make the lunch break as pleasant as possible, the restaurant area was extended by 88 sqm in autumn 2018. It now has seating for about 160 people indoors and around 48 people outdoors.

Where possible, programmes geared to promoting physical and mental health are also offered by subsidiaries. Examples are the activities at Frequentis Norway, which offers free annual health checks, team sports events, and subsidised gym membership.

Frequentis Romania supports a sports initiative with a corporate social responsibility component: teams from this subsidiary take part in a “swimathon” to raise money to help young people with diabetes and to combat food waste.

Frequentis also pays great attention to the compatibility of work and family life. As a family-friendly company, it has organised the “Frequenty Children's Weeks” childcare programme during the summer holidays since 2012. Around 100 employees´ children between the ages of four and twelve took part in this initiative in 2018.

The motto of the programme in 2018 was "A trip around the world". This exciting and varied full-day programme was held directly on Frequentis´ premises, supplemented by a variety of off-site workshops and excursions. Sports activities are also included in the programme. In this way, Frequentis makes an active contribution to the "Companies for Families" programme of the Austrian Ministry of Family. Frequentis has been involved in this initiative as a network partner since 2015.

100
children at Frequenty Children's Weeks

The highly popular "Frequenty Children´s Weeks" initiative, which mainly takes place at the company's headquarters to give children an insight into their parents world of work, will be continued in 2019.

To help staff pursue their personal interests, the company also supports parental and educational leave.

During the annual salary review, employees and their managers use statutory requirements and external benchmarks to examine whether salaries meet the minimum requirements and also correspond to market conditions. Succession planning is supported by an internationally customisable leadership development programme. Group-wide, gaining and sharing knowledge is supported by extending skills management and by virtual platforms and distant learning.

At the end of 2018, 83 distant learning modules were available to staff of the Frequentis Group. More than 30 new modules were produced during the year and added to the training plan. Examples are the Group-wide domain training "Air Traffic Management 2", an e-learning module on the General Data Protection Regulation (GDPR), which is available Group-wide in English and German, and an English-language module on Austrian occupational protection regulations aimed at staff who do not speak German.

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Distant learning modules

The enormous interest in the further extension of the distant learning modules was shown by a survey at Frequentis´ subsidiaries at the end of 2018. The response rate was unexpectedly high and the results are being used to plan, extend, and sharpen the offering in 2019.

Frequentis regards informal learning as a key element in modern vocational training and continuing professional development: it enhances the effectiveness and sustainability of learning processes. Communities of practice at Frequentis are a platform for cross-functional and cross-organisational communication and knowledge sharing. Specific measures are designed to foster this development. One example was the first "Frequentis Community Day", where the Frequentis communities invited everyone interested to get involved.

Communities of Practice

A new "expert search" function was introduced as part of skill management in 2018 to improve collaboration and encourage efficient and effective networking. This function enables all staff to find experts with specific skills.

Products & technologies

Sustainability and environmental awareness also have a place in the company's production processes. Careful use of primary energy and raw materials, reducing harmful waste, and the use of environmentally friendly production methods are documented and verified in a regular HSE report.

The photovoltaic system, which was installed in 2014 and extended in 2016, is proving effective and is now operating at a capacity of 115.3 kWp. The waste heat from the integration and assembly building is used to heat the company's premises in Innovationsstrasse. An interdepartmental energy team constantly explores further potential to save energy, especially in the integration building.

Frequentis has an open culture where all employees´ ideas and suggestions are recognised and valued. A continuous improvement process and an active suggestion system are essential components of a functioning quality management system.

IDEAS platform for improvement suggestions

The "FREQUENTIS IDEAS" platform was introduced in 2014. Here, Frequentis´ employees are asked to proactively contribute ideas for improvement, i.e. ideas that could be profitable for the company in the widest sense of term, or which enable better or wiser use of the available resources. This also includes improvements to workflows.

Around 10 ideas are submitted every month. They are evaluated and examined transparently with the contributor with a view to potential implementation. An idea to improve the process used for shipping of goods received an award in 2018. Other notable ideas included simplifying travel planning and technical ideas, such as an innovative tool for quality of service (QoS) network measurement and monitoring, and smart IP-controlled socket strips to save electricity.

Innovations are also at the heart of the "Frequentis Innovate!" initiative, which was held for the third time in September 2018. During an "innovation day", a 24-hour time window, internal innovation plans can be worked out or implemented by Group-wide teams. The results are then presented to a jury which evaluates the scope for realisation in the Frequentis Group.

Handling safety-critical systems is a key aspect of the Frequentis corporate culture. An extensive security awareness campaign was run in autumn 2018 to further enhance security awareness with regard to both in-house IT infrastructure and the rising security requirements of customers´ systems.

Customers & markets

NATS 2018 Collaborative Supplier Award

Frequentis focuses on long-term business relationships characterised by transparency, fairness, and integrity. The company has an outstanding reputation with customers, suppliers, and the international community as a reliable and respected partner. This outstanding reputation is repeatedly highlighted by awards and accolades presented by customers and partners. In 2018, for example, the Frequentis Group received the "NATS 2018 Collaborative Supplier Award" presented by the British air navigation service provider NATS.

Proximity to customers, which is very important for Frequentis, has constantly been extended through the sales structure implemented in 2016. At its heart is the establishment of regional sales units in all key markets served by Frequentis. Close cooperation with the business units secures professional expertise as well as regional know-how.

Suppliers are selected on the basis of objective criteria. Customers and suppliers that are also competitors are treated fairly and not placed at a disadvantage. Regular training of staff in supply chain management ensures compliance with the principles of transparency in the supply chain, including strict avoidance of slavery, human trafficking, all forms of forced or compulsory labour, child labour, and any other type of discrimination. Audits cover subcontractors, suppliers, and employment agencies and take into account any specific national and/or sector risks.

Code of Conduct for responsible and integral action

Frequentis strictly observes national and international laws and official regulations in every country where it does business. One example is the “Modern Slavery Act” in Great Britain.

Integrity and high ethical standards naturally form the basis of all Frequentis´ business activities. The principles and guidelines for responsible action and integrity are set out in a code of conduct issued in 2016 and clearly summarised for customers and partners.

Finances & profit

Frequentis stands for sustainable business practices. That is a duty arising from its special corporate culture geared to safety-critical applications.

Long-term customer and supplier relationships also ensure the sustainability of the company‘s business activities. This is supported by the long-term stability of Frequentis´ teams.

Transparent reporting and an open communications policy are the basis for credibility and for trust in the company‘s management.

Consistent growth

Consistent growth in the total operating performance over the past 30 years, an excellent equity base, and soundly based liquidity document Frequentis´ sustainable development. This is also highlighted by the stable equity ratio, which was 43.3% in 2018, compared with 46.3% in 2017.

Frequentis´ extensive financial management provides funding for the Group. This ensures the company‘s financial independence and continuous liquidity, as well as permanently monitoring all interest rate and currency risks.

Society & responsibility

In accordance with its mission statement, “for a safer world”, Frequentis considers that it has a social responsibility and an obligation to make a contribution to disaster relief to express solidarity with those in need.

The most vulnerable members of society – children – are a special area of focus. Frequentis has been a business partner of the UN child welfare organisation, UNICEF, for many years. UNICEF provides aid wherever children are in danger – due to war, disasters, epidemics, or violent conflicts. By providing both rapid emergency aid and support in long-term rebuilding, UNICEF helps set the course for boys and girls worldwide to grow up healthy and safe, with a bright future.

Rapid support for children in need

Frequentis also supports innovation initiatives. One example is an emergency call app for the deaf, which Frequentis employees were involved in developing.

Resources handling

Frequentis makes a sustained effort to reduce the use of resources within the company and to minimise the use of hazardous materials in production. An annual HSE audit evaluates the action taken and recommends new initiatives.

Environmental protection plays an important role throughout the entire value chain at Frequentis, from the selection of materials and processing to recyclability. Considerable attention is paid to reducing the use of hazardous materials in production.

Power consumption is another important indicator. Over the past few years, Frequentis has succeeded in significantly reducing consumption or maintaining it at the same level through a range of measures such as free cooling and the use of water pumps and solar installations.

In 2018, for the first time, the Frequentis Group took part in Earth Hour, the WWF's biggest worldwide climate protection campaign. Alongside the Vienna location, where around 10,000 KWh power were saved in one weekend, many other companies in the Frequentis Group joined in this initiative.

The subsidiaries have further initiatives to ensure resources are used efficiently. A good example is Frequentis Canada: its office building has received gold level certification under the Canada Green Building Council´s Leadership in Energy and Environmental Design (LEED) programme. LEED certification is independent evidence of a building's outstanding performance in terms of its location and transport connections, sustainable location development, water savings, energy efficiency, material selection, and the quality of interior design. Further, Frequentis Canada has implemented a range of waste avoidance measures, with a focus on the use of recyclable materials.

Service teams around the world

Another Group-wide contribution to the conservation of resources and sustainability is based on the fact that Frequentis products and solutions are operated by customers for many years, often decades. Frequentis supports this long service life by providing extensive service and maintenance programmes and through life cycle management. Customer service offers various service levels and service teams are available worldwide around the clock.

Educational sponsorship

Frequentis has provided selective educational sponsorship for technical schools and universities for many years. Special technically oriented training facilities require considerable financial resources and basic state funding generally only covers part of the cost. Exchange with industry is also vital to ensure top-quality, practice-oriented training that is state-of-the-art. Close collaboration between business and education is therefore essential.

Joint courses with universities

For many years, Frequentis has worked with the FH Technikum Vienna, the FH Campus, the Vienna Technical University, as well as the Vienna University of Economics and Business to support top-quality education at these institutions. In cooperation with Vienna Technical University, for some years now it has held joint training events where experts from Frequentis give students an insight into control centre know-how and examples of best practices. Frequentis also supervises bachelor´s and master's theses. Its activities also include sponsorship, workshops, and study trips for higher technical colleges in Vienna and Lower Austria. In addition, it is actively involved in developing courses (e.g. in software design & engineering).

Similarly, Frequentis has had a long-term cooperation with FH St. Pölten since 2010. This focuses on an exchange on IT-related topics such as cyber security. Furthermore, Frequentis managers are represented on advisory boards for security & information security and railway technology & mobility.

The Frequentis Start-Up Centre in Phorusgasse in Vienna, which was established in 2001, helps graduates from Vienna Technical University set up their own businesses. The support programme basically lasts three years. In addition to an inexpensive and flexible location with appropriate infrastructure, during this time young entrepreneurs have access to a range of services, including the possibility of tapping into business opportunities at Frequentis. In total, more than 50 companies with over 200 employees in IT, hardware & software development and technology consulting have found their "first home" at the Start-Up Centre.

To supplement this, an international start-up network is currently being built up. One example is the investment in Altitude Angel Ltd. in the UK. Frequentis acquired a strategic minority shareholding in this aviation technology company in January 2018.

Some insights into Corporate Social Responsibility projects

Participation in the climate protection initiative "Earth Hour"

In 2018, the world's largest climate protection campaign organised by the WWF took place for the eleventh time - Frequentis joined in for the first time. On 24 March 2018, comprehensive energy-saving measures were taken at the Vienna site.
By consistently shutting down systems in the integration rooms and the assembly hall, total electricity consumption was reduced by a third compared with a weekend in the previous year. This corresponds to a saving of approx. 10,000 KWh over the Earth Hour weekend and the annual consumption of two single-family houses.

Work on emergency call app for deaf people

Frequentis is supporting a private initiative where members of its staff are developing an emergency call app for deaf people, combined with standards-based core elements for control centre allocation and forwarding of emergency calls. The app enables people who are deaf or have a hearing impairment to communicate with the emergency control centre via text messages. In addition, their exact location can be transmitted to speed up assistance. In this way, Frequentis is making an important contribution to standardisation and implementation of future emergency call technology.

NATS 2018 Collaborative Supplier Award for the Frequentis Group

The British air navigation service provider NATS has awarded a very special prize to the Frequentis Group: The "Collaborative Supplier of the Year Award" was presented in recognition of the excellent support provided by Frequentis Comsoft in the project for the new flight plan software, the FPRSA (Flight Plan Reception Suite Automation) system at NATS, and the ongoing voice communications support provided by Frequentis AG.

Innovation Week at Frequentis

"Frequentis Innovate!" was held for the third time in September. This initiative gives staff in the Frequentis Group an opportunity to contribute their creativity with support from Corporate Research. During a 24-hour window on "Innovation Day", teams can develop or implement innovation ideas. The results are presented to a jury and some are then taken on by Frequentis. In 2018 there was an additional focus on patents and "Frequentis Ideas".

Close collaboration with universities

Sponsoring education and supporting highly talented young people are very important to Frequentis and its subsidiaries. In 2018 Frequentis Romania worked closely with Babeș-Bolyai university and the Technical University in Cluj on the Erasmus programme and a special internship programme for students. In addition, it supervised work on two successful dissertations by two students at the Technical University.

Frequenty Children´s Weeks

As a family-friendly company, Frequentis has run the "Frequenty" childcare programme since 2012. For two weeks in the summer holidays, an experienced team of specialists runs a special programme of workshops, excursions, fun and games for employees´ kids at the company´s headquarters. The motto for the Frequenty programme in 2018 was "A trip around the whole world". Around 100 children aged between four and 12 took part in the cultural and culinary activities.

Group Management Report 2018

Economic environment & industry development

Global economy

Economic sentiment deteriorated in many parts of the world in 2018, despite the sustained good economic development. The main reasons for this were trade disputes between major trading blocs and mounting geopolitical tension. The global economy grew by 3.7% in 2018, as in the previous year. In the USA alone, a policy of tax incentives increased the pace of economic growth. The macro-economic increase in output in the USA remained strong – despite global trade disputes and the resultant drop in investor confidence. Based on projections by the International Monetary Fund, in 2018 economic growth was 2.9% in the USA and 2.0% in the euro zone.

In the euro zone, the economy lost momentum. The principal factors holding back growth were Italy´s trade dispute with the EU and the possibility of a no-deal Brexit. In Japan, economic growth was 1.1%, which was lower than in the previous year (1.9%). The IMF also expected that economic growth in the emerging and developing countries would drop slightly from 4.7% to 4.6%.

Euro zone

In the euro zone, economic growth[1,2] declined slightly to 2.0% in 2018. That was below the prior-year level of 2.4%. In export-oriented countries within the euro zone the economy was held back by the drop in export trade from the start of 2018. The forecast by the IMF's experts puts growth in German GDP at 1.9% in 2018 and 2019. According to the IMF, the reasons for this are cooling export business and lower industrial output.

An international comparison shows that Austria's economy did well in 2018. According to the WIFO economic forecast, the economic growth rate increased by around 2.7% as a result of the buoyant industrial situation. For 2019, it is forecasting a growth rate of 2.0% for Austria. Consumer spending is continuing to support the positive economic trend, but cannot fully offset the drop in export demand.

Mobility

Rising global mobility as a business driver

Rising global mobility is a major business driver for the Frequentis Group. Frequentis offers solutions for safety-critical control centres for air traffic control, public safety (police, fire brigades, ambulance services), railways, and shipping. Rising international risk awareness and further growth in the transport of goods and services is increasing demand for technologies and solutions for monitoring and optimisation of transport and public safety operations.

[1] https://www.imf.org/en/Publications/WEO/Issues/2018/09/24/world-economic-outlook-october-2018

[2] https://konjunktur.wifo.ac.at/index.php?id=78

There was a further rise in global air passenger figures in 2018. IATA assumes that passenger kilometres increased by 6.5% in 2018, a slight drop compared with the 2017 growth rate of 8.0%. Global freight volume, measured in tonnes per kilometre, rose by 3.5%, but that was nevertheless a sharp decline compared with the previous year´s growth rate of 9.7%[3].

The United Nations Conference on Trade and Development (UNCTAD) estimates that sea freight grew by 4.0% in 2017 and that this good trend continued in 2018 with a projected growth rate of 4.0%. Both volumes and fleet capacity increased, with containerised shipping and dry bulk cargo increasing faster than tanker shipments[4].

The "Worldwide Market for Railway Industry" report by the SCI consultancy forecasts higher growth rates for the railway sector in 2018. Based on the current market volume of EUR 183 billion, it forecasts an annual growth rate of 2.8% (2017: EUR 2.4%). Alongside the high performance of rail-based transportation systems, environmental protection and decarbonisation are singled out as significant growth drivers[5].

Safety

Frequentis´ customer base includes global air traffic control organisations, authorities, internal and external security organisations, police forces, fire brigades, ambulance services, railways, and shipping. In view of the safety-critical nature of their operations, they place very high demands on solutions providers. Demand for safety and security-critical solutions has increased sharply worldwide. According to estimates by market researcher Gartner[6], global spending on IT security products and services rose to over USD 114 billion in 2018. That was an increase of 12.4% compared with the previous year. The growth rate will probably drop back slightly to 8.7% in 2019[6].

Regrettably, the global economy was again exposed to cyber security threats in 2018. Experts in this sector anticipate that such threats will increase and will hamper their organisations. By skewed logic, many cyber criminals see themselves as digital pioneers – and their successes show that they operate worldwide. They can easily access extended analytical functions, enabling them to target large numbers of small victims[7].

In both the mobility market and the safety market, Frequentis benefits from high market entry barriers and has so far been able to defend its good market position and drive forward penetration of its target market segments. The basis for this is long-term collaboration with customers and an excellent reference base.

Long-term collaboration with customers

[3] IATA Air Passenger Market Analysis (December 2018) & Air Freight Market Analysis (December 2018) https://www.iata.org/publications/economics/Pages/index.aspx?menu=MarketDevelopments#

[4] United Nations Conference on Trade and Development, Review of Maritime Transport in 2018, https://unctad.org/en/PublicationsLibrary/rmt2018_en.pdf

[5] SCI study forecasts upturn in global rail market, 14 September 2018, https://www.sci.de/en/document/news/worldwide-market-for-railway-industries-2016/

[6] Source Gartner, Veröffentlichung 15 August 2018, https://www.gartner.com/en/newsroom/press-releases/2018-08-15-gartner-forecasts-information-security-spending-to-exceed-124-billion-in-2019

[7] https://www.gartner.com/doc/3846477/cybersecurity-digital-risk-management-cios

Market outlook

In January 2019, the IMF slightly revised the outlook it had published in October 2018. Global economic growth is expected to be lower in 2019 and 2020. Various risk factors have now prompted the IMF to alter its GDP forecast. China is currently suffering the most from the uncertainty. It seems more likely than ever that the Chinese administration will inject billions into the economy. A global recession is certainly not yet around the corner. However, the trade dispute, Brexit risks, and stock market turbulence are having an effect. The risk of a sharper drop in global growth has increased according to the IMF.

The IMF now forecasts that global gross domestic product will only grow by 3.5% in 2019 and by 3.6% in 2020. In October, it was still predicting a growth rate of 3.7% for both years. For Germany, the forecast for 2019 has been cut from 1.9% to 1.3%, while for 2020 GDP growth of 1.6% is still anticipated. In 2018 growth was 1.5%. Further risk factors for the economic situation in Europe are the stalemate surrounding the UK´s exit from the EU, budget problems in Italy, and turbulence on the financial markets.

The growth forecast for the USA is 2.5% for 2019, but only 1.8% for 2020. Growth is continuing in the USA, but the forecast assumes that it will drop when the fiscal incentives come to an end.

The increasingly uncertain global political situation and emerging protectionism by individual governments could hamper or jeopardise Frequentis' international projects. However, there has not yet been any impact on the Group's business activities. As a general rule, Frequentis´ business lags the global economic trend. This is due to long project lead times and the fact that projects often take several years to complete. Moreover, the markets targeted by Frequentis have high entry barriers due to the special security requirements in safety-critical areas.

Subsidiaries & associated companies

Frequentis AG is based in Vienna and is the parent company of the Frequentis Group, which bundles the main business activities and strategic corporate functions. Frequentis and its subsidiaries and associated companies are organised in the following functional areas: regional sales & operations, software & products, and services & solutions. The continuous expansion of the Frequentis Group is also aligned to these three functional areas (further details can be found in the description of the consolidated Group in the notes to the consolidated financial statements).

FREQUENTIS AG

> Regional Sales & Operations

- FREQUENTIS Australasia Pty. Ltd.
- FREQUENTIS do Brasil Ltda.
- FREQUENTIS (Canada) Ltd.
- FREQUENTIS Deutschland GmbH
- FREQUENTIS France SARL
- FREQUENTIS Middle East Ltd.
- FREQUENTIS Norway AS
- FREQUENTIS (Shanghai) Co., Ltd.
- FREQUENTIS Singapore Pte. Ltd.
- FREQUENTIS (UK) Ltd.
- FREQUENTIS USA Inc.

> Software & Products

- FREQUENTIS Czech Republic s.r.o.
- FREQUENTIS România SRL
- FREQUENTIS Slovakia s.r.o.
- PDTS GmbH, Vienna
- ELARA Leitstellentechnik GmbH, Aachen
- AIRNAV Technology Services Inc., Philippines

> Services & Solutions

- FREQUENTIS California Inc.
- FREQUENTIS COMSOFT Solutions Gmbh, Karlsruhe
- FREQUENTIS Solutions s.r.o., Bratislava
- CNS-Solutions & Support GmbH, Vienna
- Secure Service Provision GmbH, Leipzig
- FREQUENTIS DFS Aerosense GmbH, Vienna
- TEAM Communication Technology Mgt. GmbH, Vienna
- Systems Interface Ltd., UK
- GroupEAD Europe S.L., Madrid
- Mission Embedded GmbH, Vienna

Simplified visualisation of direct and indirect shareholdings of more than 20%

Regional sales & operations

The regional sales & operations function at Frequentis comprises a powerful network of subsidiaries. The structure and expansion of these subsidiaries is shaped by large trend-setting customer projects. As part of the expansion of Frequentis´ sales organisation, these companies are gradually being developed into regional sales units with responsibility for the region assigned to them.

Powerful network of subsidiaries

In addition to sales activities, the goal is to successively raise local value added in sales and after-sales and to shift some project management activities to the subsidiaries. Governance will remain with the central units at Frequentis AG in Vienna, allowing rapid implementation of organisational and structural adjustments.

Software & products

The software & products function comprises all Group companies that provide internal development services in the areas of hardware and software.

Services & solutions

The companies in the services & solutions function work together with other companies in the Frequentis Group, but operate independently on the market. Their products and services complement the Frequentis portfolio of solutions.

Changes in the Group structure

To strengthen the Group's regional presence in the Middle East, Frequentis Middle East Ltd. was established in March 2018. This wholly owned subsidiary of Frequentis AG is based in Abu Dhabi (UAE).

Since September 2018, the services & solutions function has been strengthened by Frequentis DFS Aerosense GmbH. This company is owned by Frequentis AG (70%) and Deutsche Flugsicherung DFS (30%), through its subsidiary DFS Aviation Services. Its purpose is the production and assembly of turnkey remote (digital) tower solutions.

Financial situation

Key performance indicators

Frequentis uses three key indicators to plan and evaluate its business performance:

- Order intake as a basis for the efficiency of sales activities
- Total operating performance (the sum of revenues, change in inventories of finished goods and work in progress, own work capitalised*), and other operating expenses) as an indicator of project execution
- EBIT and the EBIT margin as a percentage of total operating performance define the profitability of the business

*) R&D activities are not capitalised.

Supplementary performance indicators

In addition to the key performance indicators, Frequentis uses the following supplementary indicators:

- Equity and the equity ratio (equity as a percentage of equity and total liabilities) as an initial yardstick of creditworthiness for lenders
- Net cash or net debt (time deposits + cash and cash equivalents less liabilities to banks and other financial liabilities) as a second yardstick of creditworthiness for lenders

Earnings and financial position

2018 was another year of sustained growth for the Frequentis Group.
Order intake was 6.4% higher than in the previous year, while the total operating performance increased by 7.0% and EBIT rose by 9.0%.

Order intake

Order intake was EUR 306.3 million in 2018, an increase of EUR 18.5 million (6.4%) compared with 2017. The Air Traffic Management (ATM) business segment accounted for EUR 197.5 million of this (64%) and the Public Safety & Transport (PST) business segment accounted for EUR 108.8 million (36%).

Total operating performance

Total operating performance increased by EUR 19.4 million to EUR 293.9 million in 2018 (2017: EUR 274.5 million). This was principally because revenues increased by 7.0% (EUR 18.8 million).

Total operating performance	2018 in EUR	2017 in EUR
Revenues	285,763,623.66	266,927,005.77
Change in inventories of finished goods and work in progress	679,010.46	0.00
Own work capitalised	20,709.24	65,182.15
Other operating income	7,421,052.83	7,553,013.33
Total operating performance	**293,884,396.19**	**274,545,201.25**

In 2018, EUR 207.8 million of the total operating performance was generated by the ATM business segment and EUR 84.7 million by the PST business segment.

Expenses

Expenses increased by EUR 18.1 million to EUR 278.3 million in 2018, a rise of 6.9%, which was almost the same as the increase in the total operating performance.

	2018 in EUR	2017 in EUR
Cost of materials and purchased services	76,813,931.02	75,510,089.67
Staff expenses	142,945,966.71	134,509,040.60
Depreciation and amortisation	5,987,929.67	5,701,894.70
Other operating expenses	52,533,595.83	44,503,258.06
Total	**278,281,423.23**	**260,224,283.03**

The cost of materials and purchased services increased by EUR 1.3 million to EUR 76.8 million in 2018, a rise of 1.7%.

Staff expenses were also higher in 2018. The 6.3% (EUR 8.4 million) rise to EUR 142.9 million was slightly less than the increase in total operating performance. Other operating expenses rose by EUR 8.0 million in 2018, from EUR 44.5 million to EUR 52.5 million. The main factors here were the EUR 3.3 million increase in project provisions, the EUR 0.8 million rise in legal and consulting costs, and the EUR 0.7 million rise in insurance costs.

EBIT

EBIT grew EUR 1.3 million year-on-year from EUR 14.3 million to EUR 15.6 million in 2018. The EBIT margin therefore improved from 5.2% to 5.3% in 2018.

Equity and financial resources

Equity declined from EUR 90.1 million to EUR 85.6 million in the reporting period, principally due to the net result of the bonus dividend payment in 2018 (EUR 14.4 million) and the profit for the financial year. As a result, the equity ratio declined from 46.3% to 43.3%. Net cash, which is an important reserve for investments, project financing and acquisitions, dropped by EUR 14.6 million, from EUR 70.0 million in 2017 to EUR 55.4 million in 2018.

Report on the business segments

Frequentis operates in highly specialised sub-sectors of the global mega-markets for transport and safety infrastructure. Its customers are public authorities, organisations, and companies which perform safety-critical tasks.

Air Traffic Management business segment

Frequentis AG's Air Traffic Management (ATM) segment includes ATM Civil (which also comprises AIM (Aeronautical Information Management), Surveillance, and Message Handling) and Defence. This segment's main customers are civil and military air traffic control organisations and homeland security authorities. These organisations are responsible for managing air traffic in their national airspaces or have shared responsibility for central monitoring and coordination tasks.

The sub-units market similar products, based on the same product platform. Additional encryption solutions are available for the Defence market. The safety and quality management requirements are the same: the same international regulations for standardisation of air traffic (ICAO) apply. Moreover, the infrastructure to be installed for customers is similar (radar, radio transmission, networks). The main target group comprises civil and military air traffic control organisations, which normally means one customer per country. There are high market entry barriers.

In 2018, order intake in the ATM business segment was EUR 197.5 million and it generated a total operating performance of EUR 207.8 million. For comparison, in 2017 order intake was around the same level at EUR 200.4 million, and the total operating performance was EUR 185.8 million.

ATM Civil – Frequentis´ largest business unit – was again highly successful in 2018. One particularly significant source of orders was the OneSKY project in Australia, the world's first fully integrated air traffic management system for joint civil and military use, covering the entire Australian continent. This strategic project, which has attracted enormous international attention, comprises a seven-year implementation phase and 22 years´ support.

Other gratifying sales successes were scored in the USA and in China, where the voice communication system for Chengdu airport deserves special mention. Frequentis´ voice communication systems gained a foothold in four new countries – Italy, Ireland, Cyprus, and Greece.

Important milestones were achieved in the market for remote (digital) towers. As well as starting up the remote tower for the German air traffic control organisation DFS in Saarbrücken, significant progress was made with the remote tower projects in Argentina, Iceland, and Jersey. ATM Networks also achieved major successes in the USA and Thailand.

A major AIM project is under way with Jeppesen: this comprises joint development of AIM COTS (commercial off-the-shelf) products for the global market. Further project development milestones were the EASI project at Deutsche Flugsicherung (DFS), which entails starting up the central European AIS Database (EAD) for DFS´ flight consulting, and go-live at the Australian airline Qantas, which uses an AIM system for flight planning and optimisation.

The "SESAR 2020" follow-on program for the European aviation research programme SESAR (Single European Sky Air Traffic Management Research) places great importance on interoperable, product-focused solutions. Together with partners, in the current phase ("WAVE 1"), Frequentis is involved in 10 projects covering the areas of tower, virtual centre, remote tower, future communication infrastructure, ATM networks, AIM, and SWIM (system-wide information management).

The Surveillance unit, which develops and supplies systems to track aircraft, posted a stable performance in 2018. Special mention should be made here of a support contract for the British air navigation service provider NATS.

In AMHS (aeronautical message handling systems), where Frequentis is the world market leader in delivering systems to process and forward aeronautical messages, two new customers were acquired: Malta and Chile.

Defence posted strong order intake in 2018, especially in Australia (OneSKY) and the USA. One highlight was the first military remote virtual tower contract for the US Air Force. The rollout of voice communications systems for the major IVSR programme in the USA and the SATCC programme (equipment of aircraft carriers) continued successfully.

The 20-year collaboration with the Swiss Air Force was also continued successfully with the FLORAKO programme, where an additional extensive order for voice and data recording was secured.

Public Safety & Transport business segment

Frequentis AG´s PST business segment comprises the Public Safety, Public Transport, and Maritime business units. The main customers in the Public Safety business unit are "flashing blue-light organisations", fire and rescue services, police and emergency medical services, as well as authorities and organisations responsible for public safety. The main customers in the Public Transport business unit are rail infrastructure operators, while Maritime's main customers are coast guards and organisations operating canals, ports, and inland waterways.

The business units market similar products, based on the same product platform. Public Safety offers additional encryption solutions for police forces. The infrastructure to be installed for customers is similar (phones, radio transmission, networks). The target customer groups are public authorities and related organisations with monitoring and command functions (police forces, fire brigades, ambulance services, railway operators, coast guards, port operators, ...) so there are many customers in each country. Despite several international standardisation efforts, different regional requirements and regulations still apply.

This business segment achieved a substantial increase in orders, which rose by nearly 25% in 2018 – from EUR 87.4 million in 2017 to EUR 108.8 million in 2018. The total operating performance was EUR 84.7 million in 2018, compared with EUR 86.7 million in 2017, mainly due to delays in new orders and in projects.

The key account customer Nødnett (Norwegian public safety network) was responsible for significant order intake in the Public Safety business unit in 2018. In addition, the company won an order from the Scottish police force against tough international competition, highlighting Frequentis Public Safety unit's strong position on the British market. Following go-live for the North Wales Police, the first 3020 LifeX system in the UK is fully operational.

LifeX systems also came into service for the police in Liechtenstein, the Austrian Federal Ministry of the Interior´s ELKOS project, and at the Bavarian police force's control centre in Nuremberg.

The success of Frequentis´ ASGARD product line, which is designed specifically for control centres for fire brigades and in industry, further strengthened Frequentis´ position in Germany.

The Public Transport business unit achieved its highest order intake to date, securing Frequentis´ global position with projects in Poland, Italy, and Australia. Frequentis is the supplier for the first LTE railway project and will be providing state-of-the-art 3GPP-compliant safety-critical communications services. In the UK, Frequentis Public Transport secured its first order from a train operating company, enabling it to enter a new customer segment.

In a year that was difficult from a sales perspective, Maritime scored some important successes in project delivery. The system supplied for the major Norwegian coastal radio project was taken into service and the system for the Spanish coast guard Marina Mercante also started operating. Factory acceptance was performed for the RIS Nile soft-loan project in Egypt.

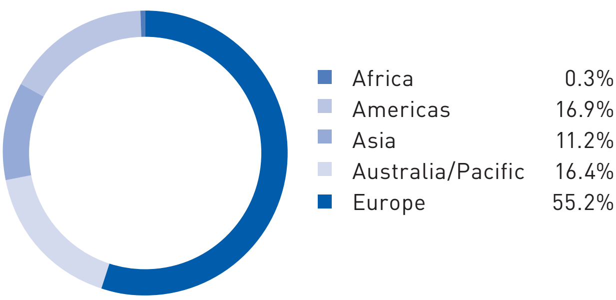
Regional distribution

The breakdown of order intake by markets in 2018 was as follows: orders are still dominated by the European market, which accounted for 55.2%, followed by North and Latin America (16.9%), Australia/Pacific (16.4%), Asia (11.2%), and Africa (0.3%). The impact of major projects in the ranking is also clear: as a result of OneSKY in Australia, this region switched places with Asia.

This breakdown also reflects different regional focuses in each market area. Frequentis´ ATM Civil and Martime business units serve the world market, while the Defence unit´s activities concentrate on Europe and the USA. Public Safety's main focus is on Germany, Austria, Switzerland, Norway, and the UK, while Public Transport is focused on Europe.

Order intake by region	31.12.2018 in %	31.12.2017 in %
Europe	55.2	67.0
Americas	16.9	15.5
Asia	11.2	13.6
Australia/Pacific	16.4	2.8
Africa	0.3	1.1

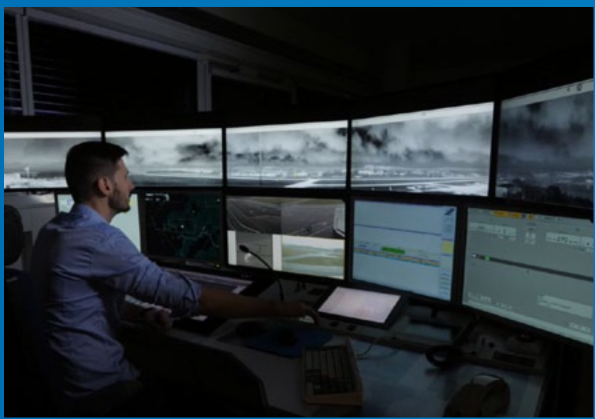
Note: Order intake is not identical to the breakdown of total operating performance: since major orders are processed over several years, there is a shift in the total operating performance.



Some insights into Frequentis projects

German air navigation service provider DFS relies on European AIS Database

DFS is the first major European air navigation service provider (ANSP) to deploy the central European AIS Database (EAD) for its pre-flight information service. The EAD service is provided by EUROCONTROL on behalf of its member states and enables the seamless exchange of aeronautical data between ANSPs, airspace users, and the EUROCONTROL Network Manager.



First remote digital tower in Germany (Leipzig) is operational

Since 4 December 2018, air traffic controllers at DFS, the German air navigation service provider, have been controlling traffic at Saarbrücken airport from a site in Leipzig – 450 kilometres away to the east. This is the location of the new DFS Remote Tower Control Centre, which was developed together with Frequentis. Using high-definition video and infrared cameras, air traffic controllers can monitor traffic in the air and on the ground from there. Saarbrücken is the largest airport in the world where daily operations are controlled remotely.

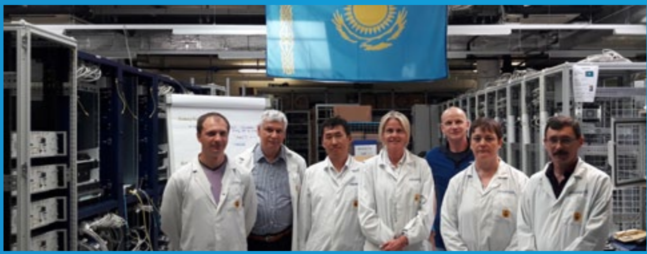
Success for the Frequentis Group in Georgia

An important order for the Frequentis Group from Georgia: following detailed negotiations, the contract for the renewal of the AIM and AMHS systems at the Georgian air navigation service provider Sakaeronavigatsia was signed at the customer´s site in Tiflis.
This Frequentis Comsoft success adds to the existing customer relationship by Systems Interface Ltd., also a member of the Frequentis Group, which has successfully delivered and integrated NAVAIDS for Sakaeronavigatsia for many years.

Frequentis voice communication solution ASGARD to be installed at Nuremberg Airport

ASGARD, the Frequentis VoIP-based communication system, specially designed for the requirements of German fire brigades and industry, is to be installed for the first time at an international airport control centre – at the fire brigade control centre at Nuremberg Airport.
ASGARD provides professional communication management for safety-critical control centres thanks to its high-level of flexibility, reliability, and numerous possibilities for infrastructure integration.

Country-wide ATM network in Kazakhstan



Major success in a new market for Frequentis: The company was awarded the contract for the first phase of the modernisation of the nationwide ATM network in Kazakhstan. The current delivery for the end customer, the air navigation service provider Kazaeronavigatsia, comprises 25 VCX-IP network nodes for 13 locations in Kazakhstan.
Factory acceptance took place in May 2018, on-site acceptance followed in early 2019.

Frequentis signs subcontract with Thales for the VCS and Airfield Management System segment of the OneSKY programme

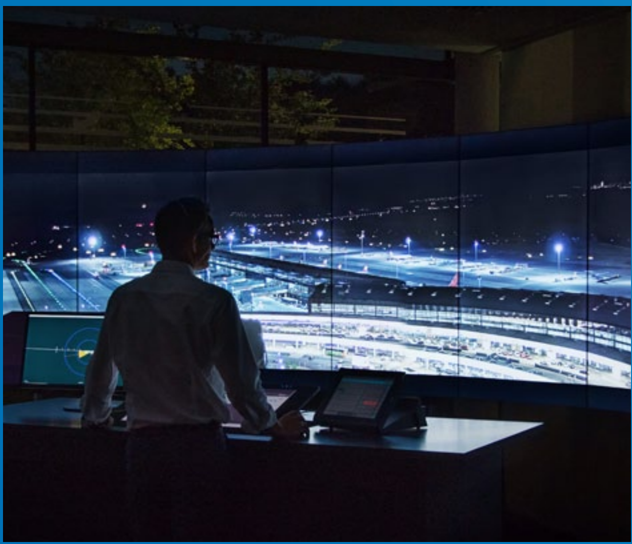
Under the OneSKY programme for Airservices Australia and the Department of Defence, Thales has subcontracted Frequentis for the supply of its end-to-end Internet Protocol (IP) Voice Communications System (VCS) and Airfield Management systems (AFM). The contract marks another important milestone in the progress of this transformational programme to establish a single harmonised Civil-Military Air Traffic Management System (CMATS) that will serve Australia for decades to come.

National GSM-R rollout in Poland goes to Frequentis

GSM-R (Global System for Mobile Communications – Railway) is an international wireless communications standard for railway communication and applications. It enables reliable, digital communications between train drivers and signallers, improves call quality and introduces functional numbering, as well as new services, such as group calls, resulting in a fundamentally enhanced customer experience.
Frequentis is to provide PKP Polskie Linie Kolejowe S.A. with its dispatcher terminals and communication nodes as part of a nationwide GSM-R mobile communications network to be deployed by prime contractor Nokia.

armasuisse expands partnership with Frequentis Voice Communication Systems

After an intense tender procedure, Frequentis was awarded the VCS airbase project by armasuisse, which aims to renew and harmonise the main VCS system landscape, using the same voice communication system for airbases and the Swiss Airforce´s Air Defence Direction Center. This will enable further synergies to be created through the operation and overall life cycle concept.
In this way, Frequentis is supporting the procurement agency of the Federal Department of Defence, Civil Protection and Sport (DDPS), armasuisse, in their overall strategy for system harmonisation.



Frequentis awarded first military remote virtual tower contract

The US Department of Defense (DoD) has selected Frequentis´ remote virtual tower (RVT) technology. The project is a first of its type including two fixed-base RVT systems and two deployable systems for use by the Air Force and other DoD agencies.
In the civil domain, RVT solutions have already been tested and put into operation at airports around the world, safely managing instrument flight rules (IFR) and visual flight rules (VFR) operations from remote locations. There is even greater potential to add value in military scenarios. By replacing the "out-of-the-window" view with a visualisation system at a remote site, situational awareness is not only increased through enhanced visibility, but military staff can now be located out of harm's way so they can carry out their duties at a safe and secure remote location.

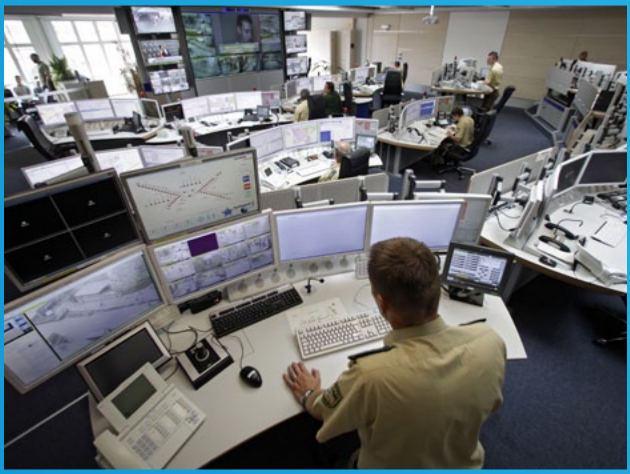
Spanish coastguard relies on Frequentis

At the end of August 2018, the Spanish organisation SASEMAR (Sociedad de Salvamento y Seguridad Marítima - Spanish Maritime Rescue and Safety Association) officially put the new IP-based Frequentis communication and information system into operation. With the help of this system – the project leader is Cellnex Telecom of Spain – the distress areas under Spanish responsibility are monitored and contact is established in the event of incidents via coastal radio. The area covered is over 300 nautical miles, from Gibraltar along the entire Spanish coast to Tenerife. Three geo-redundant control centers in Valencia, La Coruña, and Las Palmas (on Gran Canaria) provide 24-hour surveillance of the Spanish coast.

Frequentis equips co-located police and fire control rooms in Norway

The Norwegian police reform has been in the process of integrating 27 police districts into 12 for the past two years and co-locating fire control centres, as part of a restructuring drive to create a more efficient emergency response. The control centre in Ski, in the Øst (east) police district in Norway, is the fourth to be successfully co-located and was officially opened by the Minister of Justice at the end of March 2018.
This success proves the trust that the agencies have in Frequentis and their satisfaction with the initial installations for the huge Norwegian public safety network project, Nødnett.

Bavarian police force successfully deploys Frequentis communication platform at Nuremberg headquarters



The Bavarian police force successfully opened its first operations centre at police headquarters in Nuremberg in mid-September 2018. At the heart of the communication system is the Frequentis 3020 LifeX platform, including digital radio connections and the newly developed AudioHub. The headquarters in Nuremberg are the second largest operations centre in the German state of Bavaria, comprising 21 operator working positions that receive and process between 800 and 1,200 emergency calls per day. In case of need, additional 13 operator working positions can be activated.

Provision of major railway management upgrade for Arriva UK Trains Limited

Together with its partner, German-based IVU Traffic Technologies, Frequentis will be providing crucial technology upgrades for the train operating group Arriva UK. IVU will deploy its rolling stock and crew management system, which will be complemented by the Frequentis Rail Emergency Management (REM) system to implement critical decision-making support in the event of an incident or service disruption. Arriva UK Trains Limited is the largest train operating company in the UK. The Frequentis REM will form part of an integrated solution to help re-plan services and minimise delays to passengers if an incident occurs.

FREQUENTIS COMSOFT provides UK´s ANSP with essential Flight Plan Gateway

NATS´ previous Flight Plan Reception Suite Automation (FPRSA) system was reaching the end of its life cycle, so a suitable interim replacement was needed to provide a link between the European and UK data systems and to enable the British air navigation service provider NATS to continue its reliable and efficient service, until the successor system could be implemented. The basis for the new FPRSA system is Frequentis Comsoft´s market-leading message handling product.

Research & development

Frequentis constantly monitors the technology market and examines new developments for suitability for safety-critical applications.

A solid technological basis and high innovative capability are the drivers of research and development at Frequentis. The company is recognised as an innovation leader in the market it serves and plays a leading role in all significant standardisation bodies such as NG911, EENA, and EUROCAE.

14%
R&D quota

Based on development work as part of customer projects and free research performed by the Corporate Research department, on average around 14% (gross) of revenues is invested in research and development every year (the net expense, i.e. excluding R&D work for customer projects, is around EUR 19.4 million). The aim is to utilise modern technologies for control centres – the latest examples being LTE, integration of videos and social media.

R&D activities in the customer environment

Rising cost pressure and continual changes in the operating environment are currently the greatest challenges for customers operating safety-critical services. Users need more flexible systems to ensure they continue to meet the demanding safety and security requirements. Operating resources and operational locations must be easy to adapt to current needs. Therefore, flexible means of communication and integrated control room solutions are necessary. The migration of data and voice communication to joint IP networks creates the technical preconditions for greater flexibility. At the same time, cyber security is becoming more and more important as a result of increased networking.

Frequentis is responding to this development by providing IP-based systems. In the next phase, the networks will become the centre of communications solutions. Traditional voice communication systems are being extended by networked voice and data communication systems. Thanks to new application platforms, such as 3020 LifeX for public safety and the MosaiX integrated voice and data platform for air traffic control, Frequentis is able to provide the necessary services in its customers´ networks.

Frequentis uses a special user-centric process to support changes in customers´ working environments. These make it easier for end-users (air traffic controllers, dispatchers, ...) to switch to new technologies in control centres.

Proximity to customers and integrating developments into the business segments are proving their worth in increasingly solution-oriented, software-based tasks. The company uses its technological expertise to ensure its systems and solutions remain state-of-the-art. At the same time, it actively drives progress. Product development derives enormous stimulus from project work.

Growing importance of drone management

Close interaction with customers, with most of whom Frequentis has a long-standing partnership, allows early identification and a timely response to technological developments. Alongside rising security requirements, one example is the increasing importance of managing drones (unmanned aeronautical vehicles/UAV). Together with industry, research and government partners, Frequentis is exploring new options for the detection of drones and their controlled and secure integration into public (air) spaces. Another challenge relates to the new LTE and 5G mobile communications standards. Frequentis is working on developments to allow them to be used in applications for safety-critical control centres.

International research projects

The extensive valuation phase for the project "remote tower for multiple airports" as part of SESAR 2020 (Single European Sky Air Traffic Management Research) is proceeding successfully and attracting much international attention. This project allows simultaneous control of several airports from a distant single working position.

A central research topic in SESAR is SWIM (system-wide information management), the newly developed concept for exchanging air traffic management information, which enhances situation awareness and information management.

Another focus of SESAR is guaranteeing safe and environment-friendly operation of drones. New possibilities for drone services are to be created in "U-space". As a member of the GOF U-space Consortium, Frequentis is taking part in large-scale drone tests in the Gulf of Finland.

Together with the virtualisation drive as part of the European ATM masterplan, Frequentis is also working with its SESAR partners on the operational concept for the virtual centre. This concept aims to provide ATM functionalities to increase operational flexibility. It is based on SWIM (system-wide information management) and an open, service-oriented architecture (SOA).

The importance of constantly generating innovations and new business to secure corporate growth is a core element of Frequentis´ strategy. A central New Business Development department established at the end of 2018 will be concentrating on this role.

Future aspects such as examining artificial intelligence or blockchain technology for possible use in safety-critical applications are driven forward centrally by the Corporate Research department. Frequentis´ involvement in a range of national and EU-funded projects is also focused on such issues in the safety-critical environment.

Wherever possible, Frequentis´ innovations are patent-protected.

In addition, an international start-up network is being established. One example here is the investment in Altitude Angel Ltd. in the UK. This aviation technology company specialises in developing solutions for the secure integration and use of completely autonomous drones in air space.

Some insights into R&D projects & initiatives

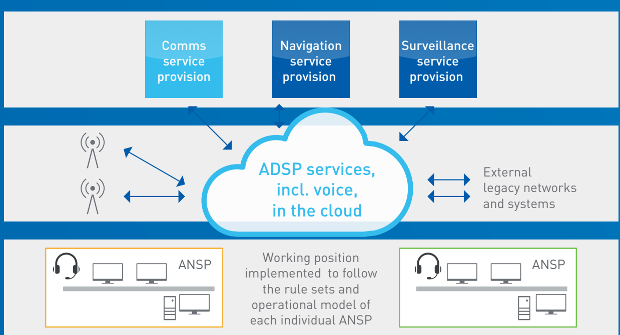
IHS Jane's Technology Award 2019 for FREQUENTIS, Qantas, and Smart4Aviation

The annual Jane's ATC Awards are presented in six categories for special achievements in the past year. In March 2019, Frequentis, the Australian airline Qantas, and the Dutch company Smart4aviation received this highly respected industry award for the development, together with the University of Sydney, of an innovative, route-optimised flight planning platform. The intelligent combination of comprehensive data enables the continuous optimisation of flight routes. This results in increased efficiency in flight operations and associated fuel savings and a reduction in emissions.

EUROCAE Standard ED-240A MASPS for Remote Tower Optical Systems

In November 2018, EUROCAE published the standard ED-240A "MASPS for Remote Tower Optical Systems" which was developed by the Working Group 100 Remote & Virtual Tower with representatives of more than 40 different organisations from around the globe. Frequentis Corporate Research contributed by acting as main editor of the standard, comprising concept development, elaboration of technical aspects, as well as the integration of the document. The ED-240A MASPS (Minimum Aviation System Performance Standard) pertains to remote tower optical systems and is applicable to all optical sensor configurations to be used for the implementation of remote air traffic services to an aerodrome.

SESAR Virtual Centre – Trendsetting workshop to specify operational use cases



The Virtual Centre concept of the European research programme for the reshaping of air traffic control, SESAR, aims for joint provision of ATM functionality. The objective is to increase the flexibility in operation and to allow services between different air traffic service units to be used as common services. Frequentis, together with the SESAR partners, successfully generates first joint views on future Virtual Centre operational procedures and objectives through Frequentis´ Information Stream Design, part of the Frequentis aware® toolbox, highlighting the important communication paths. At the end of October 2018, a first workshop hosted by HungaroControl started a successful series of information stream workshops.

“INTERPRETER“ app proves itself during a civil protection exercise

As a partner of the AIT Austrian Institute of Technology, Frequentis contributes its expertise to the INTERPRETER research project for the provision and integration of safety-critical systems. The project, funded by the Austrian Security Research Programme KIRAS, comprises the electronic information exchange between civil and military command centers for civil protection and disaster control. During the civil protection exercise in Murau (Austria) in October 2018, the application was tested in various scenarios.

“Operation Zenith“ - successful drone integration trial at Manchester Airport

Frequentis technology successfully connected ATM (Air Traffic Management) and UTM (Unmanned Traffic Management) in a real-life drone integration test. Staged at Manchester Airport in the UK, the demonstration consisted of eight complete scenarios where potential drone usage could occur around an airport and was broadcasted live from Manchester Airport to the Royal Aeronautical Society in London. During the test, the electronic flight strips from Frequentis proved their efficiency.

GOF U-space: Drone management in the EU

GOF U-space

In the context of the SESAR programme to reshape the European airspace, ensuring safe and environmentally friendly drone operations in ground-level airspace is essential. Frequentis is a member of the GOF U-space consortium, which was commissioned by the European Commission to carry out the comprehensive tests. These take place in Northern Europe, in the Gulf of Finland (long bay in the Baltic Sea between Finland and Estonia). The objective is the comprehensive testing of a traffic management system for unmanned aeronautical vehicles (UAV) in order to create new opportunities for drone services.

Employees

Employees are the most important factor for the successful achievement of Frequentis´ corporate objectives and for international growth. Their commitment and dedication and the innovative capability of multi-cultural teams are the foundations on which Frequentis has built more than 30 years of profitable growth and give the company key competitive advantages on the international market.

High qualification level and expertise

75%
highly qualified engineers and specialists

About 75% of Frequentis´ employees are highly qualified engineers and specialists. Their broad yet deep specialist knowledge and their extensive practical focus on customer and market needs are widely appreciated. As a high-tech company, Frequentis employs both young, highly trained university graduates and staff with practical experience. It offers them all an attractive working environment characterised by continuity and sustainability.

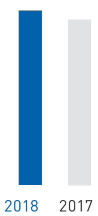
One particular feature of day-to-day work is Frequentis´ unique corporate culture, which is characterised by years of experience with safety-critical systems. That responsibility is also reflected in the corporate slogan “for a safer world”. This expresses a deeply rooted technical and emotional understanding of customers´ needs, along with a highly developed ability to understand current challenges and working processes, and strong identification with the task in hand. Other key attributes are openness, flexibility, and transparency – both in internal collaboration and in customer relationships.

international Teams

Customers greatly appreciate the internationality of Frequentis´ teams. The culture on which this is based is a key competitive factor on the international market. That is why every effort is made to ensure that it is a sustainable, group-wide element in the fast-growing Frequentis Group. An optimum work-life balance should be possible for all employees, irrespective of their age, gender, culture, religion, or background.

Another aspect of this corporate culture is the priority given to long-term staff retention. This is also in line with the continuous focus on customer relationships and efforts to retain know-how in the company wherever possible.

In 2018, recruitment of new employees concentrated on technical staff for various management levels, especially engineers for project execution and maintenance/service at Frequentis, software engineers, technical staff for pre-sales, integration engineers, and IT and systems security experts. The company gives high priority to a thorough and exhaustive recruiting process. Alongside professional qualifications, Frequentis looks for an understanding of its business and its specific safety-critical culture.



The number of employees in the Frequentis Group rose from an average of 1,697 in 2017 to 1,763, a growth rate of 3.9%. 1,843 people were employed as at 31 December 2018 (for comparison: 1,741 as at 31 December 2017). Almost 54% of them worked at the company's headquarters in Vienna (990 people were employed at this location as at 31 December 2018).

Widespread employee development

Onboarding and trainee programmes within the Frequentis Group ensure that new employees, in particular, are rapidly integrated into the company and given the necessary knowledge of project management, systems engineering, and software development.

The onboarding programme at the headquarters in Vienna sets the standard for the other companies in the Group. Subsidiaries offer their new staff a blend of corporate standards and a local touch.

Some changes to the trainee programmes were introduced in 2018 to complement the established elements. For the first time, Frequentis designed and ran its own trainee programme for integration engineers. The aim was to take account of the strategic importance of this role for all business areas at Frequentis. The task of integration engineers is to ensure the sustained quality of Frequentis products and reduce costs in customer projects.

Established career model & talent management

In addition to the Frequentis career model, which places management, expert, and project management careers on an equal footing, specific attention is paid to cross-departmental and cross-border development of talented employees and those with potential. Talent management, which covers more than three-quarters of all employees in the Frequentis Group, provides an overview of the distribution of performance and potential in the company and its organisational units and teams. At the same time, it provides a specific case-by-case insight into where development measures are necessary. Company-wide vocational training and continuing professional development programmes are aligned to these needs. Further, identifying key staff and key functions allows long-term succession planning. Data on succession planning for management and key staff forms the basis for plans to drive forward development of the group-wide talent programme in 2019.

In 2018, Frequentis staff participated in more than 5,550 training sessions. These were mainly held by internal trainers. This in an important element in passing on knowledge and safeguarding Frequentis-specific know-how.

In the area of personal development, the focus was on intercultural training for lateral leadership. Training was also provided in specialist areas such as analysing information flows to optimise understanding and support for customers´ business processes, and in new technologies such as blockchain, docker, and cloud technologies. This was supplemented by well-attended security training sessions and mandatory training in the General Data Protection Regulation.

In addition, attention was paid to the leadership programmes in 2018. In consultation with managers, the established programme was updated and driven forward to meet the demands made on a global organisation. The project management education programme was also revised and given a more international focus to provide focused support and development for project managers at various management levels.

Company-wide knowledge management

Frequentis sees shared knowledge as a fundamental factor in creating value and a guarantor of success. Company-wide knowledge management therefore encourages the sharing of experience and international collaboration within the Frequentis Group. Frequentis regards itself as a network of experts, where every member of staff develops, contributes, and gains knowledge. At the same time, this network encourages staff to develop and test new ideas.

The wide range of applications and components that facilitate the acquisition and sharing of knowledge include further expansion of skills management, a lessons learned database, and ramping up distant learning.

In addition to focusing on specific topics, emphasis was placed on developing the corporate culture, for example, by stepping up the self-study principle to encourage people to take the initiative in personal development, and by supporting "communities of practice".

These communities are platforms for cross-functional, cross-organisational communication and knowledge sharing that encourage informal learning. In this way, they support the effectiveness and sustainability of learning processes. Six such communities (e.g. Agile Community, SW Excellence Community) took part in the first "Frequentis Community Day", an element in the community support programme, which was held for the first time at the start of 2018.

Frequentis also supports employees by providing health-related offerings. For instance, the Vienna location has a wide range of free sports activities. Recurring highlights in 2018 were the running events in Vienna (Vienna City Marathon, Vienna Business Run), in which more than 100 employees took part.

Flexible working time model

A flexible working time model aligned to the legal requirements in different regions allows personal needs to be taken into account and encourages a good work-life balance.

Human Resources International

An in-house competence centre is responsible for the main tasks required to provide continuous support for international employees and to set up international assignments. The Human Resources International competence centre also provides valuable assistance for the rollout of HR processes and for knowledge sharing and knowledge transfer across the Group.

These services were extended in 2018, e.g. through local strategy and team workshops and "educational visits" to corporate headquarters. Further support comes from the International Management Handbook, a practical tool to assist managers in different countries and at different levels in their day-to-day HR work. It provides international access to HR standards and processes, and useful tips on aspects such as onboarding, appraisal interviews, and team development.

An important element to increase foreign assignments is the successful reintegration of returning staff. Discussions with (new) managers, tax advice for returning employees, and individual coaching pave the way for ongoing career success at headquarters in Vienna.

Another goal is to establish local HR managers or HR support staff. One focus in 2018 was on continuing to establish HR staff at the subsidiaries. Following on from Romania and Frequentis Comsoft in Karlsruhe, attention turned to Slovakia, Australia, and the UK. In the area of knowledge management, the focus is on efficiently and effectively strengthening international knowledge transfer within the Frequentis Group, for example by giving subsidiaries access to the group-wide learning centre's training catalogue and content.

This knowledge transfer includes recruitment activities. Group-wide, Frequentis uses selected recruiting platforms and events such as job fairs to position itself as an attractive employer in the IT sector. Social media platforms are becoming increasingly important, especially in the area of active sourcing. In 2018, Frequentis was once again awarded the "silver quality seal" in the "best recruiters by career" competition for its recruiting activities and professional employer branding.

The company is proud of what it has achieved so far and sees this as an incentive to continue to strengthen and expand its position as an attractive and respected employer.

Opportunity & risk management

Frequentis has implemented an active risk management system throughout the Group. The fundamental aim is to identify opportunities and risks as soon as possible and take suitable measures to maintain profitability and secure the continued existence of the Group. Risk awareness, the vigilance of all staff, and early identification of business and natural risks are well developed and incorporated in a sound risk policy.

Variable capacity utilisation scenarios are a central risk factor, which the company handles through extensive scenario management. This allows timely recognition and group-wide counteraction, even in business situations that develop in an unforeseen manner.

Project management as an operational mainstay

Risk management is therefore essential in projects, which form Frequentis´ core business and are the mainstay of its operations. As part of effective and professional project management, an in-depth risk analysis examines the entire project life cycle. Risks are identified, tracked, mitigated, and eliminated to ensure clear management of risks and results.

Continuous improvement of project management excellence and processes

The entire project portfolio is managed by a project management board that meets periodically. This board reviews projects and allocates them to the relevant business types. It also drives forward the continuous improvement of project management excellence, project methods, and project management processes.

In addition, projects are evaluated several times a year by an extended management circle. All key projects are presented, risk assessments and deviations are discussed, and the action to be taken is agreed. Performance of the projects, invoicing, and receipt of payments are monitored continuously.

These project evaluations are supplemented by periodic status meetings in the individual business units, which monitor total operating performance and marginal income with a view to the Group's profit.

Group-wide risk management

Risk and opportunity management is an important precondition for business activity. The Frequentis Group therefore regularly undertakes an extensive evaluation of all relevant risks and opportunities. These are compiled in a Group-wide risk report, which is discussed by an extended management circle. As well as exploiting opportunities, Frequentis enters into risks with a view to enhancing the value of the company. To ensure early identification and proactive management of risks, the Frequentis Group has a Group-wide risk management system, an extensive internal control (ICS) system and an internal audit department.

Essentially, Frequentis systematically evaluates and summaries the strategy, the prevailing competitive landscape, the political situation in the countries with the greatest project exposure, the organisation ensuring professional project execution, and liquidity management. The resulting measures to utilise opportunities and reduce identified risks are discussed by an extended management circle and the appropriate action is decided on. The Vice President Group Controlling is responsible for this process.

The Frequentis Group has an internal control system (ICS) integrated into its accounting process. This includes controls on capital management. The reliability of the internal control system is monitored by the internal audit department. The Group has initiated several processes based on best practice standards to ensure that its risk management is effective. The fundamental aim is to identify opportunities and risks as soon as possible and take suitable measures to maintain profitability and secure the continued existence of the Group. Risk awareness, the vigilance of all staff, and early identification of business and natural risks are well developed and incorporated in a sound risk management policy.

Central risks

The economic success of the Frequentis Group depends on the political framework and the general macro-economic situation. Declining global economic growth or a recession, the ongoing debt crisis, and the emergence of new crises could make access to debt and equity financing more difficult. Protectionist restrictions in the free movement of people or goods would hamper international business.

Foreign currencies

In international business, it is necessary to conclude contracts in foreign currencies. The Group's foreign currency risk results principally from future business transactions, insofar as they are performed in a currency other than the functional currency of the parent company or the respective subsidiary. Frequentis uses financial derivatives to hedge such contracts in order to limit the risk of fluctuations in exchange rates. The biggest foreign exchange items are due to exports in AUD, CAD, CHF, GBP, NIK, PLN, SGD, and USD.

Credit risk

Since most of the Frequentis Group´s customers are public authorities, government-related businesses or, in the case of general contractors, large international companies, the credit risk is classified as low. One aspect of risk management at Frequentis is that business relationships are only entered into with third parties that are deemed to be creditworthy. The creditworthiness of customers is systematically evaluated and deliveries are only made if they have appropriate credit standing or if adequate steps are taken to address the risks identified.

If a higher risk is identified during the quotation process, credit insurance, advances by customers, or letters of credit are used to reduce the credit risk.

The carrying amounts of financial assets are the maximum credit risk.

Market risk

Market risk refers to market conditions and developments and poses a significant risk for Frequentis that is subject to constant monitoring. One major risk in the case of international tenders is that orders may be delayed by objections or official procedures or there may be seasonal variations in orders from government-related customers towards the end of the financial year. In this context, there is also a risk that progressive customer concentration could prove detrimental to the Group. Frequentis endeavours to limit this risk on the one hand by diversifying into several market segments and on the other by using optimised scenario management.

International business may be adversely affected by changes in legal and political conditions in other countries. Frequentis addresses this risk by continuous monitoring of its international investments.

The market is characterised by increasing competition, which could result in a loss of profitability. Frequentis counters this risk through specialisation and ongoing research and development into niche products to ensure an excellent market position.

Contract risks

The Frequentis Group could be adversely affected by non-negotiable contract clauses in public sector tender processes. Changes in the legal and political framework or the application or interpretation of laws, especially regulatory, trading, financial, and tax law in other countries, could hamper foreign business, or make it more expensive or impossible.

In tender processes, Frequentis endeavours to make the best possible estimate of the associated risks and to mitigate the risks through its own approval process or to consciously accept and approve the remaining entrepreneurial risk.

Liquidity risk

A functioning banking system is of fundamental importance for Frequentis and its customers. Frequentis requires access to debt to pre-finance project services up to settlement of the invoice. Therefore, it continuously monitors, controls, and evaluates its financial and liquidity position in order to limit the associated risks. The Group manages liquidity risks through careful planning and management of its liquidity requirements. Suitable measures are defined on the basis of cash flow forecasts and the Group ensures that it has adequate financial reserves to cover operational requirements and monitors credit lines.

In addition, the risk of default by customers is reduced by mandatory credit assessments and measures to secure payment.

Outlook

Global economic and political developments are important for the development of the Frequentis Group and thus of Frequentis AG. Events such as the shutdown in the USA at the start of 2019, the tension between the USA and China, and the discussions about Brexit could influence business performance, since a high proportion of Frequentis´ customers are public authorities.

Continuation of sustained growth

Subject to the development of such events, and assuming a stable macroeconomic trend, Frequentis AG aims to continue its sustained growth in 2019, based on its established product and customer portfolio. In view of the long acquisition cycles, established customers and installed base business are particularly important. All business areas selectively acquire new customers.

The European market is still very important for Frequentis as it can generate further growth with innovative new products. Here, the company can use its high innovative capability and constantly expanding product portfolio to benefit fully from its strength as a recognised expert in its dealings with established and new customers.

In addition, Frequentis is continuing to raise its presence in markets outside of Europe, especially in the USA, Latin America, Australia, and Asia. Here it is well positioned, for example with major air traffic control projects in Brazil and the USA.

High priority is also being given to the ongoing successful rollout of major projects such as OneSKY in Australia and the Norwegian public safety network Nødnett. Ongoing optimisation of organisational and process structures, especially in the area of project execution, will make Frequentis even more competitive. Systematic investment in new technologies and ongoing development of existing projects support Frequentis´ strong global position as a provider of solutions for safety-critical communication and information systems and pave the way for further growth.

The company assumes that there will be a further increase in order intake in 2019. Orders on hand at the start of the year already covered more than 60% of total operating performance in 2019.

For a safer world

In places where Frequentis systems are in operation, people bear responsibility for the safety of other individuals and goods.

The following pages will give you insights into the innovative strength of Frequentis solutions.

Paradigm shift in air traffic control

The pace of digitalisation is opening up new opportunities for military and civil air traffic control. Remote digital towers allow air traffic to be managed from a distant control centre. The visualisation systems used for this improve situational awareness. This also increases safety, especially in military use, because it means that military air traffic controllers can perform their tasks from a safe, distant location.

Drone-related opportunities and challenges

Drones are creating new opportunities. However, they are also a source of new threat scenarios. These include collisions and the use of drones to assess potentially dangerous situations. With its British partner Altitude Angel, Frequentis is developing a range of air traffic management solutions to integrate drones safely and legally into airspace. As a member of the GOF U-space consortium – part of the SESAR programme to reshape European airspace – Frequentis is actively involved in testing drone traffic.

New technologies and solutions for “networked safety”

Modern communication devices such as smartphones and tablets are increasingly being used in the public safety domain. New technologies and with them, safety-critical broadband applications secure "networked safety with added value" based on Frequentis´ 3020 LifeX multimedia collaboration platform. This platform is already being used successfully by several police forces. Using real time data and video information enhances management of crisis situations and supports decision-making processes.

LTE to extend control rooms

Frequentis aims to make mission-critical application services available for LTE application servers so that highly reliable, high-speed end-to-end broadband voice and data communication is available in all markets it serves. Initial projects are under way with the Metropolitan Police in the UK (Public Safety) and with one of Public Transport's customers in Australia, where state-of-the-art information based on the latest standards for safety-critical communication services is being made available for railway communications.

New concept for airspace data management

System-wide information management (SWIM) is a global concept for uniform management of data in air traffic management (ATM). SWIM is an important element in SESAR, the Single European Sky ATM Research Programme, and the Federal Aviation Authority´s NextGen programme in the USA: it gives all users on the ground and in the air free access to a uniform data base – a sort of ATM intranet. System-wide interoperability and secure, seamless information access and interchange improve situational awareness and information management.

Integrated solutions for safety-critical control centres

Frequentis develops efficient and flexible solutions to support customers´ workflows. Based on a human-centric design process, it creates integrated systems that provide a safe and stable working environment for end-users in control centres, for example air traffic controllers, operators, and dispatchers. Integrated solutions in the maritime area include critical control centre applications for a full range of critical operations. Examples are search & rescue (SAR), vessel traffic services (VTS), and coastal surveillance systems (CSS).

Consolidated Financial Statements 2018

Consolidated financial statements as at 31 December 2018

Consolidated income statement

	Note	2018 EUR	2017 EUR
Revenues	(3)	285,763,623.66	266,927,005.77
Change in inventories of finished goods and work in progress		679,010.46	0.00
Own work capitalised	(4)	20,709.24	65,182.15
Other operating income	(5)	7,421,052.83	7,553,013.33
Total operating income (total operating performance)		**293,884,396.19**	**274,545,201.25**
Cost of materials and purchased services	(6)	-76,813,931.02	-75,510,089.67
Staff expenses	(7)	-142,945,966.71	-134,509,040.60
Depreciation and amortisation	(8)	-5,987,929.67	-5,701,894.70
Other operating expenses	(9)	-52,533,595.83	-44,503,258.06
Earnings before interest and taxes (EBIT)		**15,602,972.96**	**14,320,918.22**
Financial income	(10)	502,518.79	465,202.92
Financial expenses	(10)	-428,904.63	-519,135.04
Other financial results	(10)	-7,786.52	-59,234.93
Financial results		**65,827.64**	**-113,167.05**
Income from associated companies	(11)	243,543.05	177,074.51
Profit before tax		**15,912,343.65**	**14,384,825.68**
Income taxes	(12)	-4,081,180.52	-3,688,636.15
Profit for the financial year		**11,831,163.13**	**10,696,189.53**
Profit attributable to:			
Equity holders of the company		**11,264,876.82**	**9,852,146.43**
Non-controlling interests		**566,286.31**	**844,043.10**
		11,831,163.13	**10,696,189.53**
Basic earnings per share	(13)	**0.94**	**0.82**
Diluted earnings per share	(13)	**0.94**	**0.82**

Consolidated statement of comprehensive income

	Note	2018 EUR	2017 EUR
Profit for the financial year		**11,831,163.13**	**10,696,189.53**
Items that may be reclassified to the income statement in the future			
Foreign currency translation differences		70,722.05	-919,879.90
Unrealised gains and losses on available-for-sale financial assets		0.00	-25,274.52
Valuation of cash flow hedges	(42)	-244,858.24	1,321,774.43
Taxes on items that may be reclassified to the income statement		61,214.56	-324,124.98
Items that cannot be reclassified to the income statement			
Actuarial gains or losses from post-employment benefits	(31) (32)	-662,993.14	-39,062.72
Actuarial gains or losses from post-employment benefits – from associated companies		-186.71	-580.11
Taxes on items that cannot be reclassified to the income statement		165,748.29	9,765.68
Other comprehensive income for the period, net of tax		**-610,353.19**	**22,617.88**
Total comprehensive income		**11,220,809.94**	**10,718,807.41**
Total comprehensive income attributable to:			
Equity holders of the company		**10,654,875.69**	**9,864,323.57**
Non-controlling interests		**565,934.25**	**854,483.84**
		11,220,809.94	**10,718,807.41**

Consolidated balance sheet

ASSETS	Note	31 Dec. 2018 EUR	31 Dec. 2017 EUR
Non-current assets			
Property, plant and equipment	(14)	9,131,278.76	8,699,120.55
Intangible assets	(15)	6,499,116.01	8,046,632.70
Goodwill	(16)	2,227,983.84	2,227,983.84
Investments in associated companies	(17)	664,617.94	591,418.75
Securities and equity investments	(18)	575,494.61	884,089.66
Other non-current assets		193,067.04	162,755.71
Time deposits	(19)	7,997,600.00	0.00
Deferred tax assets	(20)	1,497,398.70	1,739,494.76
		28,786,556.90	**22,351,495.97**
Current assets			
Inventories	(21)	13,114,252.92	10,213,153.59
Trade accounts receivable	(22)	44,365,669.98	39,147,846.14
Receivables from construction contracts under IAS 11	(23)	0.00	33,474,298.12
Contract assets from contracts with customers	(23)	40,850,007.24	0.00
Contract costs	(24)	1,697,451.96	0.00
Receivables from affiliated and associated companies	(25)	30,578.19	9,406.76
Other current assets	(26)	10,283,219.45	10,660,676.24*)
Current tax receivables		3,293,259.51	1,014,531.26*)
Securities		0.00	1,700,000.00
Time deposits	(19)	9,997,000.00	0.00
Cash and cash equivalents	(19)	45,543,004.15	76,033,527.18
		169,174,443.40	**172,253,439.29**
Total assets		**197,961,000.30**	**194,604,935.26**

*) Prior-year amount reclassified (see section “Changes in accounting policies”)

LIABILITIES AND EQUITY	Note	31 Dec. 2018 EUR	31 Dec. 2017 EUR
Equity			
Share capital	(27)	12,000,000.00	12,000,000.00
Reserves	(28)	-2,768,166.88	-2,098,377.19
Retained earnings	(27)	75,594,681.26	79,543,711.06
Adjustments for foreign currency translation		-533,525.82	-604,247.87
Equity attributable to equity holders of the parent company		**84,292,988.56**	**88,841,086.00**
Non-controlling interests	(29)	1,340,632.59	1,254,198.34
Total equity		**85,633,621.15**	**90,095,284.34**
Non-current liabilities			
Liabilities to banks and other financial liabilities	(36)	6,500,000.00	7,500,000.00
Provisions	(30)-(34)	14,190,906.45	14,834,025.94
Contract liabilities from contracts with customers	(36) (37)	1,071,898.06	0.00
Trade accounts payable	(36)	748,340.70	362,884.96
Other non-current liabilities	(36) (39)	3,492,955.76	3,204,627.35
Deferred tax liabilities	(35)	3,963,876.75	2,859,972.14
		29,967,977.72	**28,761,510.39**
Current liabilities			
Liabilities to banks and other financial liabilities	(36)	1,651,439.74	204,415.15
Advances from customers	(36)	0.00	38,556,069.66
Contract liabilities from contracts with customers	(36) (37)	47,550,379.91	0.00
Trade accounts payable	(36)	13,026,746.25	10,284,653.62
Payables to affiliated and associated companies	(36) (38)	226,248.50	132,143.66
Other current liabilities	(36) (39)	8,822,048.46	11,829,893.71 *)
Current tax liabilities	(36)	1,149,840.72	550,181.03
Provisions	(40)	9,932,697.85	14,190,783.70 *)
		82,359,401.43	**75,748,140.53**
Total equity and liabilities		**197,961,000.30**	**194,604,935.26**

*) Prior-year amount reclassified (see section "Changes in accounting policies")

Consolidated cash flow statement

	Note	2018 EUR	2017 EUR
Profit before tax		15,912,344	14,384,826
Adjustments for non-cash items:			
Currency differences		152,067	-861,476
Profit/loss from the disposal of assets		5,830	28,173
Depreciation of property, plant and equipment and amortisation of intangible assets	(14) (15)	5,987,930	5,761,130
Income from associated companies	(11)	-243,543	-177,075
Other non-cash income/expenses		5,105	0
Changes in assets and liabilities			
Changes in inventories, trade accounts receivable and other assets, not related to investing or financing activities	(21)-(26)	-16,978,099	-3,537,829
Change in provisions	(30)-(34) (40)	-5,553,451	623,504
Changes in trade accounts payable and other liabilities, not related to investing or financing activities	(36)-(39)	9,036,793	5,221,603
Net interest income		223,573	62,661
Interest paid		-428,905	-512,335
Interest received		205,332	449,674
Dividends received		171,651	144,897 *)
Income taxes paid	(12)	-3,938,042	-4,896,153
Net cash flow from operating activities		**4,558,585**	**16,691,600**
Cash inflows from intangible assets, property, plant and equipment	(14) (15)	60,736	73,946
Cash inflows from securities and equity investments	(18)	877,808	286,484
Cash outflows for intangible assets, property, plant and equipment	(14) (15)	-4,807,894	-4,658,280
Cash outflows for securities and equity investments	(18)	-569,377	-103,680
Cash outflows for the acquisition of associated companies	(17)	0	-15,253
Net cash flow from investing activities		**-4,438,727**	**-4,416,783**
Dividends paid to owners	(27)	-14,400,000	-1,440,000
Dividends paid to non-controlling interests		-530,315	-980,580
Payments from non-controlling interests		10,500	700,000
Cash inflows from loans and other financing		13,716,687	5,000,000
Cash outflows for repayment of loans and other financing		-13,019,663	-6,930,680
Net cash flow from financing activities		**-14,222,791**	**-3,651,260**
Change in cash and cash equivalents			
Net cash flow from operating activities		4,558,585	16,691,600
Net cash flow from investing activities		-4,438,727	-4,416,783
Net cash flow from financing activities		-14,222,791	-3,651,260
Cash-flow related change in cash and cash equivalents		**-14,102,933**	**8,623,557**
Cash and cash equivalents at start of period		**77,733,527**	**69,109,970**
Cash-flow related change in cash and cash equivalents		-14,102,933	8,623,557
Non-cash change in cash and cash equivalents		-18,000,000	0.00
Currency differences		-83,873	0.00
Valuation allowance		-3,716	0.00
Cash and cash equivalents at end of period		**45,543,005**	**77,733,527**

*) Prior-year amount reclassified (see section “Changes in accounting policies”)
For further information on the consolidated cash flow statement, see note 41.

Consolidated statement of changes in equity

	Share capital	Capital reserves	IAS 19 reserve (net of tax)	IAS 39 reserve (net of tax)	Cash flow hedge reserve (net of tax)	Retained earnings	Foreign currency translation	Equity attributable to equity holders of the parent company	Non-controlling interests	Total equity
Note	(27)		(31) (32)						(29)	
As at 1 January 2018	12,000,000.00	1,774,002.96	-4,015,194.60	142,814.45	0.00	79,543,711.06	-604,247.87	88,841,086.00	1,254,198.34	90,095,284.34
Changes in accounting policies				-142,814.45	153,747.94	-773,503.80		-762,570.31	0.00	-762,570.31
As at 1 January 2018	12,000,000.00	1,774,002.96	-4,015,194.60	0.00	153,747.94	78,770,207.26	-604,247.87	88,078,515.69	1,254,198.34	89,332,714.03
Payments from non-controlling interests						0.00		0.00	10,500.00	10,500.00
Profit for the financial year						11,264,876.82		11,264,876.82	566,286.31	11,831,163.13
Other comprehensive income for the period	0.00	0.00	-497,079.50	0.00	-183,643.68	0.00	70,722.05	-610,001.13	-352.06	-610,353.19
Total comprehensive income for the period	0.00	0.00	-497,079.50	0.00	-183,643.68	11,264,876.82	70,722.05	10,654,875.69	565,934.26	11,220,809.94
Dividends						-14,400,000.00		-14,400,000.00	-530,315.28	-14,930,315.28
Other changes						-87.54		- 87.54	0.00	- 87.54
Increase(+)/decrease(-) in non-controlling interests						-40,315.28		-40,315.28	40,315.28	0.00
As at 31 December 2018	**12,000,000.00**	**1,774,002.96**	**-4,512,274.10**	**0.00**	**-29,895.74**	**75,594,681.26**	**-533,525.82**	**84,292,988.56**	**1,340,632.60**	**85,633,621.16**

	Share capital	Capital reserves	IAS 19 reserve (net of tax)	IAS 39 reserve (net of tax)	Retained earnings	Foreign currency translation	Non-controlling interests	Total equity
As at 1 January 2017	12,000,000.00	1,774,002.96	-3,978,573.20	-829,560.48	71,431,664.86	315,632.03	333,956.84	81,047,123.01
Cash outflows for the acquisition of associated companies					0.00		0.00	0.00
Net profit for the period					9,852,146.43		844,043.10	10,696,189.53
Other comprehensive income for the period	0.00	0.00	-40,317.89	972,374.93	0.00	-919,879.90	10,440.74	22,617.88
Total comprehensive income for the period	0.00	0.00	-40,317.89	972,374.93	9,852,146.43	-919,879.90	854,483.84	10,718,807.41
Dividends					-1,440,000.00		-980,579.54	-2,420,579.54
Other changes					2,259.22		0.00	2,259.22
Increase(+)/decrease(-) in non-controlling interests			3,696.49		-302,359.45		1,046,337.20	747,674.24
As at 31 December 2017	**12,000,000.00**	**1,774,002.96**	**-4,015,194.60**	**142,814.45**	**79,543,711.06**	**-604,247.87**	**1,254,198.34**	**90,095,284.34**

Notes to the consolidated financial statements

1. General information

Reporting

The consolidated financial statements of Frequentis AG for the 2018 financial year have been prepared in accordance with the provisions of the International Financial Reporting Standards (IFRS) as adopted by the European Union. Similarly, all interpretations of the International Financial Reporting Interpretations Committee (IFRIC) that were mandatory for 2018 have been applied.

The present consolidated financial statements, including the group management report, comply with section 245a of the Austrian Commercial Code (UGB) on consolidated financial statements according to internationally accepted accounting standards.

Information on the company

These consolidated financial statements cover Frequentis AG, registered address Innovationstrasse 1, 1100 Vienna, Austria, and its subsidiaries.

Its parent company, Frequentis Group Holding GmbH (66% of shares in Frequentis AG), files all necessary financial statements at its registered office (Dommayergasse 8/15, 1130 Vienna, Austria) and at Vienna Commercial Court under the number FN 477997 m.

Frequentis AG was founded in 1947 and has been registered in the commercial register at Vienna Commercial Court under the number FN 72115 b since 30 August 1948.

According to section 2 of the articles of association, the purpose of the company is the development, production, distribution, and maintenance of control systems, information processing, and transmission systems and communication systems, especially for air traffic control, road, rail and water transport, and public safety organisations.

The reporting date is 31 December 2018.

The financial year is 1 January to 31 December.

In the reporting period, the Executive Board comprised:

- Johannes Bardach, Chairman (until 16 April 2018)
- Norbert Haslacher, Chairman (from 16 April 2018)
- Sylvia Bardach
- Hermann Mattanovich

The Supervisory Board comprised:

- Dr. Georg Bahn, Chairman until 16 April 2018
- Johannes Bardach, Chairman since 16 April 2018
- Hon. Prof. Rainer Hasenauer, Deputy Chairman until 16 April 2018
- Dr. Karl Michael Millauer, Deputy Chairman from 16 April 2018
- Dr. Boris Nemsic, member
- Reinhold Daxecker, member from 16 April 2018
- Gabriele Schedl, member pursuant to section 110 of the Austrian Labour Relations Act (ArbVG)

- Dubravka Maglicic, member pursuant to section 110 ArbVG until 31 December 2018
- Siegfried Meisel, member pursuant to section 110 ArbVG from 1 January 2019

The consolidated financial statements were prepared by the Executive Board on the date of signature, subject to the approval of the financial statements by the Supervisory Board at its first meeting in 2019.

Consolidated group

Alongside Frequentis AG, which is the parent company of the consolidated group, the consolidated financial statements of Frequentis AG include 5 (2017: 4) domestic subsidiaries and 22 (2017: 21) foreign subsidiaries controlled by Frequentis AG.

The Group controls an entity if it is exposed to, or has rights to, variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity. The financial statements of subsidiaries are included in the consolidated financial statements from the date on which control commences until the date when control ends.

Two foreign companies and one domestic company are included in the consolidated financial statements using the equity method.

a) **Fully consolidated Austrian subsidiaries**
   - BlueCall Systems GmbH, Vienna (100%)
   - CNS-Solutions & Support GmbH, Vienna (100%)
   - Frequentis DFS Aerosense GmbH, Vienna (70%)
   - PDTS GmbH, Vienna (100%)
   - Team Communication Technology Management GmbH, Vienna (51.0%)

b) **Fully consolidated foreign subsidiaries**
   - ELARA Leitstellentechnik GmbH, Aachen (51%)
   - Frequentis Australasia Pty. Ltd., Hendra (100%)
   - Frequentis California Inc., Monterey (100%)
   - Frequentis Canada Ltd., Ottawa (100%)
   - Frequentis Comsoft GmbH, Karlsruhe (100%)
   - Frequentis Czech Republic s.r.o., Prague (100%)
   - Frequentis Defense Inc., Columbia (100%)
   - Frequentis Deutschland GmbH, Langen (100%)
   - Frequentis do Brasil Assessoria, Serviços e Comércio de Sistemas de Informação e Comunicação Ltda., São Paulo (100%)
   - Frequentis France SARL, Toulouse (100%)
   - Frequentis Middle East Limited, Abu Dhabi (100%)
   - Frequentis Norway AS, Oslo (100%)
   - Frequentis Romania S.R.L., Cluj-Napoca (100%)
   - Frequentis Saudi Arabia Ltd. in liquidation, Riyadh (100%)
   - Frequentis (Shanghai) Co. Ltd., Shanghai (100%)
   - Frequentis Singapore Pte. Ltd., Singapore (100%)
   - Frequentis Slovakia s.r.o., Bratislava (100%)
   - Frequentis Solutions s.r.o., Bratislava (100%)
   - Frequentis UK Ltd., Twickenham (100%)
   - Frequentis USA Inc., Columbia (100%)
   - Secure Service Provision GmbH, Leipzig (80%)
   - Systems Interface Ltd., Surrey (51%)

All information on the consolidation scope relate to the circumstances as at 31 December 2018.

c) **Equity method**
- AIRNAV Technology Services Inc., Iloilo (40%)
- GroupEAD Europe S.L., Madrid (28%)
- Mission Embedded GmbH, Vienna (20%)

Changes to the consolidated group

Frequentis DFS Aerosense GmbH, which is registered in Vienna, and Frequentis Middle East Limited, which is registered in Abu Dhabi, were established in the reporting period. The owners of Frequentis DFS Aerosense GmbH are Frequentis AG (70%) and Deutsche Flugsicherung DFS (30%), through its subsidiary DFS Aviation Services.

The establishment of these companies in March and September 2018 did not have a material impact on the Group's assets, financial position, and financial performance for the reporting period.

2. Accounting and valuation policies

The financial statements of all consolidated companies were prepared using uniform Group-wide accounting and valuation policies. There are no significant differences in the valuation policies used for the associated companies included at equity compared to those applied by the Frequentis Group.

In the event of business combinations, the assets, liabilities, and contingent liabilities of the subsidiaries acquired are measured at fair value at the date of acquisition as specified by IFRS 3. If the cost of acquisition exceeds the fair value of the acquired identifiable assets and liabilities, the difference is presented as goodwill. Negative differences are recognised in profit or loss as at the acquisition date.

The foreign subsidiaries are financially, economically, and organisationally autonomous entities. Their local currency is their functional currency.

The annual financial statements of the foreign subsidiaries included in the consolidated financial statements are translated into the reporting currency (EUR) using the modified closing rate method. Investments in consolidated subsidiaries and the equity items that are offset are translated at the historical exchange rate; the other balance sheet items are translated using the average exchange rate as at the reporting date. Income statement items are translated using average annual exchange rates. The translation differences on the balance sheet arising from different exchange rates are presented in a separate item "adjustments for foreign currency translation".

The following exchange rates are used for translation of the main currencies (exchange rates for EUR 1):

Currency		Closing rate 31 Dec. 2018	Closing rate 31 Dec. 2017	Average rate 31 Dec. 2018	Average rate 31 Dec. 2017
AUD	Australian dollar	1.62	1.53	1.58	1.48
BRL	Brazilian real	4.44	3.97	4.33	3.64
CAD	Canadian dollar	1.56	1.50	1.53	1.47
CNY	Chinese renminbi yuan	7.88	7.80	7.82	7.66
CZK	Czech koruna	25.72	25.54	25.68	26.29
GBP	British pound	0.89	0.89	0.89	0.88
NOK	Norwegian krone	9.95	9.84	9.63	9.37
SGD	Singapore dollar	1.56	1.60	1.59	1.56
RON	Romanian leu	4.66	4.66	4.66	4.57
USD	US dollar	1.15	1.20	1.18	1.14

Revenues, income, expenses, receivables, and liabilities from cross-charging between consolidated companies and interim profits resulting from intragroup transactions (except where they are negligible) are eliminated, taking into account deferred taxes.

The reporting date for all companies included in the financial statements is 31 December. The figures in the consolidated financial statements of Frequentis AG are reported in EUR.

The addition of rounded amounts and percentages may result in rounding differences as a result of the use of automatic data processing.

New and amended standards and interpretations

The following amendments to existing IASs, IFRSs and interpretations, and the following newly issued standards and interpretations were used in the preparation of the consolidated financial statements, insofar as they had been endorsed by the European Union up to 31 December 2018 and had come into effect by this date:

- IFRS 9 "Financial Instruments"
- IFRS 15 "Revenue from Contracts with Customers"
- Clarifications to IFRS 15 "Revenue from Contracts with Customers"
- Classification and Measurement of Share-based Payment Transactions – Amendments to IFRS 2
- Applying IFRS 9 Financial Instruments with IFRS 4 Insurance Contracts – Amendments to IFRS 4
- Annual Improvements to IFRS Standards (2014 - 2016 Cycle)
- Transfers of Investment Property (Amendments to IAS 40)
- IFIRC 22 "Foreign Currency Transactions and Advance Consideration"

The above amendments/standards were applied in these consolidated financial statements, insofar as they were applicable. Application of IFRS 9 and IFRS 15 resulted in retrospective restatements. The effects of these changes on the financial statements are outlined in more detail in the section "Changes in accounting policies".

In addition, as at 31 December 2018, the following new and amended standards had been endorsed by the EU, but were not effective for the 2018 financial year:

	Newly amended IFRSs	Endorsement by the EU	Effective date	Significant effects
IAS 1 and IAS 8	Definition of Material (amendments)	Planned for 2019	2020	None
IAS 19	Plan Amendment, Curtailment or Settlement (amendments)	13 March 2019	2019	None
IAS 28	Long-Term Interests in Associates and Joint Ventures (amendments)	8 February 2019	2019	None
IAS 23, IFRS 3 and IFRS 11	Annual Improvements to IFRS Standards (2015 - 2017 Cycle)	14 March 2019	2019	None
IFRS 3	Definition of Business (amendments)	Planned for 2019	2020	None
IFRS 9	Prepayment Features with Negative Compensation (amendments)	22 March 2018	2019	None
IFRS 16	Leases	31 October 2017	2019	Outlined below
IFRS 17	Insurance Contracts	Open	2020	None
IFRIC 23	Uncertainty over Income Tax Treatments	23 October 2018	2019	None

IFRS 16 "Leases" sets out the principles for the recognition, measurement, presentation, and disclosure of leases in financial statements. This standard provides a single model for the recognition of leases by lessees. Under this model, on its balance sheet the lessee recognises a right to use the underlying asset, corresponding to the present value of the future lease payments plus any direct costs incurred, and a lease liability for future payments. Exemptions are provided for leases with a term of up to 12 months and for low-value assets. For lessors, the provisions of the new standard are similar the provisions of the previous standard, IAS 17.

The standard will mainly affect the reporting of operating leases where the Frequentis Group is a lessee. The Group will apply the standard as of 1 January 2019, when it becomes mandatory, and intends to use the modified retrospective method. Consequently, the comparative amounts for the year prior to application will not be restated retrospectively. All right-of-use assets will be measured at the amount of the lease liability on recognition.

The exemptions for short-term leases, leases for low-value assets, and maintaining the original estimate for existing leases will not be used.

In the past year, all of the Group's leases were reviewed with regard to the new accounting requirements. Based on the information currently available, the Group estimates that as at 1 January 2019 it will recognise additional assets and lease liabilities totalling EUR 38,805 thousand (of which EUR 37,982 thousand relate to land and buildings and EUR 823 thousand to vehicles).

To calculate the assets, interest rates ranging from 0% to a maximum of 3.44% were assumed. In view of these low interest rates, the impact on EBIT will be immaterial. Key figures such as EBIT and EBITDA will improve slightly. The net cash flow for operating activities will increase slightly and there will be a corresponding reduction in the net cash flow from financing activities.

The actual impact of applying this standard may deviate from the information provided above because the Group has not yet completed its tests and the assessment of the controls on its new IT system. Moreover, the new accounting policies could be subject to change until publication of the first consolidated financial statements following the date of initial application.

No significant changes are expected in respect of leases where the Group is the lessor. These are exclusively operating leases and generated lease revenue of EUR 115 thousand in the reporting period.

There are no further standards or interpretations that are not yet mandatory and that could have a significant effect on the Group.

Changes in accounting policies

For initial application of IFRS 15 as at 1 January 2018 (date of initial application), the Group elected to use the modified retrospective approach. This allows application of the standard either to all contracts in effect at the date of initial application, or exclusively to contracts that have not been closed at this date. The Group decided to apply this standard to all contracts in effect as at 1 January 2018.

The accumulated effect at the date of initial application of IFRS 15 is recognised as an adjustment to the opening balance of retained earnings at the date of initial application. Therefore, the comparative information has not been restated and is still reported in accordance with IAS 11, IAS 18, and the associated interpretations.

The Group has applied IFRS 9 prospectively with 1 January 2018 as the date of initial application. The comparative information has not been restated and is still presented in accordance with IAS 39. The effect arising from first-time application of IFRS 9 were recognised directly in retained earnings and other equity components. The accumulated impact as at the date of initial application, 1 January 2018, is as follows:

	31 Dec. 2017 EUR	IFRS 9 EUR	IFRS 15 EUR	Deferred taxes EUR	1 Jan. 2018 EUR
ASSETS					
Current assets					
Inventories	10,213,153.59		403,570.43		**10,616,724.02**
Trade accounts receivable	39,147,846.14	-132,252.55	18,851,998.03		**57,867,591.62**
Receivables from construction contracts under IAS 11	33,474,298.12		-33,474,298.12		**0.00**
Contract assets from contracts with customers	0.00		32,996,337.72		**32,996,337.72**
Contract costs	0.00		3,885,264.38		**3,885,264.38**
LIABILITIES AND EQUITY					
Equity					
Reserves	-2,098,377.19	14,577.98		-3,644.49	**-2,087,443.70**
Retained earnings	79,543,711.06	-146,830.53	-879,648.55	252,975.28	**78,770,207.26**
Non-current liabilities					
Provisions	14,834,025.94		-1,784,184.87		**13,049,841.07**
Contract liabilities from contracts with customers	0.00		1,784,184.87		**1,784,184.87**
Deferred tax liabilities	2,859,972.14			-249,330.78	**2,610,641.36**
Current liabilities					
Advances from customers	38,556,069.66		-38,556,069.66		**0.00**
Contract liabilities from contracts with customers	0.00		66,995,384.47		**66,995,384.47**
Trade accounts payable	10,284,653.62		1,756,237.84		**12,040,891.46**
Other liabilities	11,829,893.71		-2,638,240.79		**9,191,652.92**
Provisions	14,190,783.70		-4,014,790.87		**10,175,992.83**

IFRS 15 "Revenue from Contracts with Customers" replaces the previous standards on revenue recognition, including IAS 18 "Revenue", IAS 11 "Construction Contracts", and IFRIC 13 "Customer Loyalty Programmes". The core principle of IFRS 15 is that an entity should recognise revenue in an amount that reflects the consideration to which the entity expects to be entitled in exchange for the performance obligation(s), i.e. the transfer of goods or the provision of services. The new 5-step model is used to determine the amount of revenue and whether it is recognised at a point in time or over a period of time.

The 5-step model was applied to determine the possible impact of IFRS 15 on customer contracts that are already in effect:

Construction contracts: Until now, revenues from customer-specific construction contracts were recognised using the percentage of completion method. Under IFRS 15 the revenues allocated to identified performance obligations are recognised when control of the goods or services is transferred to the customer. When a contract is entered into, it is necessary to determine whether the resulting revenue is to be recognised at a specific point in time or over time. Based on the outcomes of the analyses, the construction contracts currently in effect meet the criteria set out in IFRS 15 for revenue recognition over a period of time.

Multi-component contracts: The Frequentis Group concludes some multi-component contracts where a system solution and a subsequent maintenance contract are performed over a defined period of time. As regards the application of IFRS 15, it examined, in particular, whether there was any change in the timing and amount of revenue recognition. This analysis only showed a shift in revenues in a few exceptional cases and there was no impact on earnings in the reporting period.

Contract costs: IFRS 15 requires capitalisation of certain costs arising in the acquisition and performance of a contract to deliver goods and services to the customer, provided that the relevant criteria are met. In the Frequentis Group, these costs are mainly sales commission. In the past, these costs were contained in the contract fulfilment costs (project costs). Separating them from project costs results in a shift in the progress towards satisfying the performance obligation on which revenue recognition over time is based and thus in a shift in revenue recognition. The counter effect on equity is mainly visible in the reclassification between the items "receivables from construction contracts under IAS 11" and "contract assets from contracts with customers". For some contracts, the review of contract costs led to a reassessment of the timing of recognition of rights to commission payments that are contingent on certain conditions (normally payment by the customer). This assessment results in earlier recognition of contract costs accompanied by recognition of a corresponding liability. This effect is shown in the reconciliation by an increase in trade accounts payable.

Contractual claims to instalment payments: Where contracts permitted billing of advance payment for work still to be performed on ongoing projects, but the amounts billed had not been paid by customers by the reporting date, they were not previously recognised in the financial statements. Under IFRS 15 there is now an unconditional claim to consideration (i.e. a receivable, even if this is only for an instalment payment), which must be recognised on the balance sheet. At the same time, this gives rise to a contractual performance obligation with respect to the customer. As at 1 January 2018, both trade accounts receivable and contract liabilities from contracts with customers increased by EUR 18,852 thousand.

Changes in presentation: Most of the amounts previously recognised in "receivables from construction contracts under IAS 11" are now recognised in "contract assets from contracts with customers". Analogously to this, the amounts previously recognised as advances from customers are now recognised in "contract liabilities from contracts with customers". The provisions for expected residual expenses from contracts where final invoices have been issued, which were previously recognised in "provisions", are now included in contract liabilities from contracts with customers as they comprise a performance obligation to customers. This also applies to advances received for maintenance services, which were included in "other current liabilities" as at 31 December 2017.

The new requirements for the determination of the transaction price and significant financing components did not result in any changes in the financial statements for the Frequentis Group.

As a result of initial application of IFRS 15 as at 1 January 2018, capital was reduced by an accumulated amount of EUR 880 thousand (before taxes).

The following tables summarise the effects of applying IFRS 15 to the relevant positions on the consolidated balance sheet as at 31 December 2018 and the consolidated income statement for the 2018 financial year. The impact on the consolidated cash flow statement as at 31 December 2018 is negligible.

	Amount reported as at 31 Dec. 2018 EUR	Adjustments EUR	Amount without adjustment for IFRS 15 EUR
ASSETS			
Current assets			
Trade accounts receivable	44,365,669.98	-9,862,834.77	**34,502,835.21**
Receivables from construction contracts under IAS 11	0.00	41,998,443.85	**41,998,443.85**
Contract assets from contracts with customers	40,850,007.24	-40,850,007.24	**0.00**
Contract costs	1,697,451.96	-1,697,451.96	**0.00**
LIABILITIES AND EQUITY			
Equity			
Retained earnings	75,594,681.26	848,446.82	**76,443,128.08**
Non-current liabilities			
Provisions	14,190,906.45	1,071,898.06	**15,262,804.51**
Contract liabilities from contracts with customers	1,071,898.06	-1,071,898.06	**0.00**
Deferred tax liabilities	3,963,876.75	278,435.27	**4,242,312.02**
Current liabilities			
Advances from customers	0.00	24,879,686.07	**24,879,686.07**
Contract liabilities from contracts with customers	47,550,379.91	-47,550,379.91	**0.00**
Other liabilities	8,822,048.46	5,694,719.21	**14,516,767.67**
Provisions	9,932,697.85	5,437,242.42	**15,369,940.27**

	Amount reported as at 31 Dec. 2018 EUR	Adjustments EUR	Amount without adjustment for IFRS 15 EUR
Revenues	285,763,623.66	2,912,197.56	**288,675,821.22**
Change in inventories of finished goods and work in progress	679,010.46		**679,010.46**
Own work capitalised	20,709.24		**20,709.24**
Other operating income	7,421,052.83	-5,063.55	**7,415,989.28**
Total operating performance	**293,884,396.19**	**2,907,134.01**	**296,791,530.20**
Cost of materials and purchased services	-76,813,931.02	-1,697,451.96	**-78,511,382.98**
Staff expenses	-142,945,966.71		**-142,945,966.71**
Depreciation and amortisation	-5,987,929.67		**-5,987,929.67**
Other operating expenses	-52,533,595.83	-82,799.96	**-52,616,395.79**
Earnings before interest and taxes (EBIT)	**15,602,972.96**	**1,126,882.09**	**16,729,855.05**
Financial income	502,518.79		**502,518.79**
Financial expenses	-428,904.63		**-428,904.63**
Other financial results	-7,786.52		**-7,786.52**
Financial results	**65,827.64**		**65,827.64**
Income from associated companies	243,543.05		**243,543.05**
Profit before tax	**15,912,343.65**	**1,126,882.09**	**17,039,225.74**
Income taxes	-4,081,180.52	-278,435.27	**-4,359,615.79**
Profit for the financial year	**11,831,163.13**	**848,446.82**	**12,679,609.95**

IFRS 9 "Financial Instruments" sets out the requirements for the recognition and measurement of financial assets, financial liabilities, and some contracts to buy and sell non-financial contracts.

The new impairment model based on expected credit losses affects the measurement of the Group's financial assets, especially trade accounts receivable. IFRS 9 replaces the incurred loss model prescribed by IAS 39 by the forward-looking expected credit loss model. Separate presentation of the impairment losses according to IAS 1.82 (ba) in the income statement was waived on materiality grounds.

As a result of initial application of IFRS 9 as at 1 January 2018, capital was reduced by an accumulated amount of EUR 132 thousand (before taxes).

IFRS 9 specifies three categories for the classification of financial assets: measured at amortised cost, measured at fair value through other comprehensive income (FVOCI) and measured at fair value through profit or loss (FVTPL). Classification of financial assets under IFRS 9 is based on the business model used by the company to manage financial assets and the characteristics of the contractual cash flows. IFRS 9 eliminates the previous categories defined by IAS 39: financial investments held to maturity, loans and receivables, and available-for-sale financial assets.

The following table shows the original valuation category under IAS 39 and the new valuation category under IFRS 9 as at 1 January 2018. The effect of initial application of IFRS 9 results exclusively from the new rules on the recognition of impairments.

	Original classification under IAS 39	New classification under IFRS 9	Carrying amount as at 31 Dec. 2017 EUR thousand	Carrying amount as at 1 Jan. 2018 EUR thousand	Adjustments under IFRS 9 EUR thousand
Financial assets					
Securities	Available-for-sale	At fair value through profit or loss	880	880	
Equity investments	Available-for-sale	At fair value through profit or loss	4	4	
Trade accounts receivable	Loans and receivables	At amortised cost	39,148	39,016	-132
Receivables from associated companies	Loans and receivables	At amortised cost	9	9	
Financial derivatives: forward exchange contracts	Assets held for trading	At fair value through profit or loss	6	6	
Financial derivatives: forward exchange contracts	Hedge accounting	At fair value through profit or loss	365	365	
Other current and non-current assets	Loans and receivables	At amortised cost	2,075	2,075	
Securities	Loans and receivables	At amortised cost	1,700	1,700	
Cash and cash equivalents	Loans and receivables	At amortised cost	76,034	76,034	
Financial liabilities					
Liabilities to banks and other financial liabilities	Loans and payables	At amortised cost	7,704	7,704	
Trade accounts payable	Loans and payables	At amortised cost	10,648	10,648	
Liabilities to associated companies	Loans and payables	At amortised cost	132	132	
Financial derivatives: forward exchange contracts	Liabilities held for trading	At fair value through profit or loss	252	252	
Financial derivatives: forward exchange contracts	Hedge accounting	At fair value through profit or loss	160	160	
Other liabilities	Loans and payables	At amortised cost	2,614	2,614	

Under IAS 39, securities and equity investments were classified as available-for-sale and measured at fair value through other comprehensive income. Under IFRS 9, securities and equity investments are divided into equity and debt instruments and are assessed on the basis of the business model and cash flows.

Since IFRS 9 introduces a principle-based approach, as a rule more hedge relationships can be considered for hedge accounting. The Frequentis Group's hedging relationships were classified as continuing hedges on initial application of IFRS 9, so there was no significant accounting impact.

Trade accounts receivable that were classified as loans and receivables under IAS 39 are now classified at amortised cost. As a result of the transition to IFRS 9, an increase of EUR 132 thousand in impairment losses for these receivables was recognised in opening retained earnings as of 1 January 2018.

To enhance the presentation of the assets, financial position, and financial performance, some changes have been made to the presentation and the prior-year figures have been reclassified. The restatements were retrospective: the amounts reported in the previous year where allocated to the new line items. These are reclassifications that did not have a material effect on the Group's assets, financial position and financial performance

To improve the presentation of the asset position, current tax receivables are shown in a separate line item. In the previous year, they were included in other current assets. The amount reclassified for 2017 was EUR 1,014,531.26.

Accruals for holidays not yet taken and for time credits were presented in (current) provisions in the financial statements as at 31 December 2017. As at 31 December 2018 they are included in other current liabilities. The prior-year amount reclassified was EUR 4,026,949.90.

In the cash flow statement, dividends received in 2018 are included in the net cash flow from operating activities. The prior-year figure as part of the net cash flow from financing activities has been restated accordingly. The reclassification for 2017 was EUR 144,897.

Intangible assets, property, plant and equipment

Intangible assets, property, plant and equipment are measured at the cost of acquisition or production less accumulated amortisation, depreciation, and impairment losses. The cost of acquisition of intangible assets, property, plant and equipment comprises the purchase price including import duties and non-refundable taxes, and all directly allocable costs incurred to bring the asset to the intended location of use and make it ready for use. The cost of production of self-produced property, plant and equipment comprises material and production costs and appropriate direct material and production overheads.

The following useful lives are used:

Buildings on leased land	5 - 40 years
Technical plant and machinery	3 - 10 years
Other plant, factory and office equipment	2 - 20 years
Software and licences	3 - 10 years

The useful lives have not altered since the previous year.

The carrying amounts of intangible assets, property, plant and equipment are tested for impairment as soon as events or altered circumstances indicate that the carrying amount could exceed the recoverable amount. In this case, the carrying amount is compared to the higher of the fair value less costs of disposal and the present value of the estimated future cash flows from use of the asset. If the reason for the impairment no longer applies, the asset is written up.

Goodwill

IFRS 3 is applied to business combinations and the resulting goodwill. In accordance with this standard, goodwill is calculated as the difference between the cost of acquisition of the business and the fair value of the net assets, taking contingent liabilities into account. Any negative difference arising from comparing the cost of acquisition and the fair value of the net assets of the acquisition is recognised in the income statements after a further review of the valuation. Goodwill is not amortised; instead it is tested for impairment and allocated to cash-generating units in accordance with IFRS 3. The value of goodwill is reviewed every year.

Investments in associated companies

Associated companies are companies where the Group exercises a significant influence but does not control the company or have joint control of the financial and business policy. Associated companies are included in the consolidated financial statements using the equity method and are initially recognised at the cost of acquisition.

Financial instruments

A financial asset or financial liability is initially measured at fair value plus transaction costs. Financial assets classified at fair value through profit or loss form an exception to this rule. They are initially measured at fair value without taking transaction costs into account. Trade accounts receivable that do not contain significant financing components are initially measured at the transaction price.

Initial classification and measurement of financial assets comprises the following categories:

- At amortised cost
- At fair value through other comprehensive income (FVOCI)
- At fair value through profit or loss (FVTPL)

The classification is determined separately based on the type of instrument: financial derivatives, equity instruments, and debt instruments.

Subsequent measurement of all financial assets depends on the category to which they are assigned.

Financial assets are not reclassified after initial recognition unless the Group alters the business model used to manage its financial assets. In this case, all financial assets affected are reclassified on the first day of the reporting period in which the change in business model occurs.

A financial asset is measured at amortised cost if both of the following conditions are met and it is not designated at FVTPL:

- it is held within a business model whose objective is to hold financial assets in order to collect contractual cash flows and
- the contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

In the Frequentis Group, all trade accounts receivable, loans, and other receivables with fixed or determinable payments, that are not quoted on an active market, are allocated to this category. These assets are measured at amortised cost using the effective interest method. The cost of acquisition is reduced by impairment losses. Interest income, currency gains and losses, derecognition effects, and impairment losses are recognised in profit or loss.

A debt instrument is carried at FVOCI if both of the following conditions are met and it is not carried at FVTPL:

- it is held within a business model whose objective is to hold financial assets in order to collect contractual cash flows and also to sell financial assets and
- the contractual terms give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

In the reporting period, no instruments were allocated to this category in the Frequentis Group. These assets are subsequently measured at fair value. Interest income, which is calculated using the effective interest method, currency gains and losses, and impairment losses are recognised in profit or loss. Other net gains and losses are recognised in OCI. The accumulated gains and losses recognised in OCI are reclassified to the income statement when the assets are derecognised.

At the date of initial recognition of an equity investment that is not held for trading, the Group can elect irrevocably to present subsequent changes in the fair value of the investment in other comprehensive income. This option can be selected for each investment on a case-by-case basis.

All financial assets that are not measured at amortised cost or at FVOCI are measured at FVTPL. This comprises all assets that are financial derivatives. At the date of initial recognition, the Group can irrevocably elect to designate financial assets at FVTPL, even though they meet the criteria for measurement at amortised cost or at FVOCI, if this avoids or significantly reduces an accounting mismatch.

Financial liabilities are classified and measured at amortised cost or at fair value through profit or loss (FVTPL). A financial liability is classified at FVTPL if it is held for trading, is a derivative, or is designated at FVTPL at the date of initial recognition.

Financial liabilities at FVTPL are measured at fair value and any net gain or loss, including interest expense, is recognised in profit or loss.

Other financial liabilities are subsequently measured at amortised cost using the effective interest method. Interest expenses and foreign currency translation differences are recognised in profit or loss. Derecognition gains and losses are also recognised in profit or loss.

The Group holds financial derivatives in the form of forward exchange contracts to hedge currency risks.

At the date of initial recognition, derivatives are recognised at fair value. They are subsequently measured at fair value and any changes in value are recognised in profit or loss.

In connection with hedging of future cash flows ("cash flow hedges") relating to a recognised receivable or liability or a highly probable future transaction, the effective portion of the change in fair value is recognised in other comprehensive income and the ineffective portion is immediately recognised in profit or loss. The amounts accrued through other comprehensive income are transferred to the income statement (revenues, other operating income or other operating expenses) in the period in which the hedge item or future cash flow transaction effects the income statement.

At the start of the designated hedge, the Group documents the risk management objectives and strategies of the hedge. Further, it documents the economic relationship between the hedged item and the hedging instrument, and whether it expects changes in cash flows from the hedged item and the hedging instrument to offset each other.

A prospective effectiveness test is performed to make a quantitative assessment of the hedging relations. If the criteria for hedge accounting are met, the financial derivative is designated as a hedging instrument. The effectiveness of the hedge is tested annually using a retrospective effectiveness test based on a hypothetical derivative.

Under IFRS 9, a company may separate the forward and spot components of a forward transaction and designate only the changes in the value of the spot components as hedging instruments. Frequentis has made use of this option. Accordingly, it separated the forward component and credit risk relating to the derivatives and recognised them in the income statement. The change in the designated element (spot component) is recognised through other comprehensive income.

Insofar as documented allocation of financial derivatives that are used to hedge a foreign currency risk did not result in sufficiently substantiated future cash flows in the reporting period, the gain or loss on measurement was recognised in profit or loss.

Receivables are recognised at cost of acquisition or value on the reporting date, whichever is lower. Foreign currency receivables are valued using the average exchange rate on the reporting date.

On every reporting date, the Group examines whether there are objective signs of impairment. Objective signs of impairment include indications that a customer is in financial difficulty, an increased probability of insolvency or observable data that indicate a quantifiable reduction in estimated future cash flows from a group of financial assets. Such signs also include unfavourable changes in economic conditions that correlate with losses on the assets of the Frequentis Group.

The level of the impairment loss is derived from the difference between the carrying amount of the asset and the present value of the expected future cash flows. The impairment loss is recognised in profit or loss. If the impairment is reduced in a subsequent period as a result of circumstances that occur after initial recognition of the impairment loss, the write-up is recognised in profit or loss.

Provided that an asset is not a purchased or originated credit-impaired asset, it is initially measured using the 12-month expected credit losses concept. This assessment is maintained for subsequent reporting dates. If, on the reporting date, the credit risk of a financial asset has increased significantly compared with initial recognition, the lifetime expected credit losses method is applied. The lifetime expected credit losses concept must always be used for trade accounts receivable and for contract assets without a significant financing component. When establishing whether there has been a significant increase in the credit risk of a financial asset since initial recognition, and when estimating the expected credit loss, the Group takes account of appropriate, supportable evidence that is relevant and available without unreasonable effort. This comprises both quantitative and qualitative information and analyses based on the Group's historical experience, prospective information and a solid creditworthiness assessment.

Inventories

Raw materials, auxiliaries, and supplies are measured at cost of acquisition or production or the lower current value, based on the lowest value principle.

Work in progress and finished goods are measured at the cost of production or net realisable value, whichever is lower. The net realisable value is the price that could be obtained in the ordinary course of business less the estimated costs of completion and the estimated costs necessary to make a sale. The cost of production is calculated using all direct costs incurred, fixed and variable material costs, and general overheads. Interests on capital borrowed are not capitalised because the criteria set out in IAS 23 are not met. The cost is calculated using the moving average cost method.

IFRS 15 Revenue from Contracts with Customers

The 5-step model was applied to determine the possible impact of IFRS 15 on customer contracts already in effect. The first step in the model is identifying the contract with a customer. This is followed by identifying the distinct performance obligations. In this step, distinct goods and services and bundles of goods and services are identified. The third step is determining the transaction price. The transaction price is the amount of consideration the supplying company expects to be entitled to in exchange for transferring the goods or services. The transaction price is then allocated to the identified performance obligations. The final step is recognising revenue when the performance obligation is fulfilled. Revenue is recognised either at a point in time or over time.

For the vast majority of the Frequentis Group's contracts with customers, revenue is recognised over time using the cost-to-cost method to determine progress towards satisfaction of the performance obligation. In this method, revenues are recognised on the basis of the production costs actually incurred relative to expected total costs. The impact of changes in the estimated total cost is recognised in profit or loss in the period in which it occurs.

The contract assets from contracts with customers do not contain significant financing components.

IFRS 15 requires capitalisation of certain costs arising in the acquisition and performance of a contract to deliver goods and services to the customer. These contract costs (mainly sales commission) are capitalised and amortised analogously to the transfer of control over goods and services to the customer.

The contract liabilities comprise all obligations to transfer goods or services to a customer for which the Group has already received (or will receive) consideration. This applies, first and foremost, to advances from customers and services still to be performed for projects after final invoicing.

Employee benefit obligations

The provisions for severance payments were measured on the basis of an actuarial report using the projected unit credit method in accordance with IAS 19 ("Employee Benefits"). The retirement age was deemed to be the earliest possible age for (early) retirement under the 2018 pension reform.

The pension provisions were established on the basis of an actuarial report using the projected unit credit method, which complies with the provisions of IAS 19 ("Employee Benefits"). Since the pension insurance is pledged to the Executive Board, in accordance with IAS 19 the pension provisions are offset against the amount accrued in the pension insurance scheme.

The provisions for anniversary bonuses were measured using the project unit credit method in accordance with IAS 19 ("Employee Benefits").

The actuarial gains and losses relating to severance payments and pensions are presented in other comprehensive income in accordance with IAS 19. Any past service cost is recognised immediately in profit or loss.

Provisions

A provision is established if the company has a present (legal or substantive) obligation arising from a past event, an outflow of economic resources to meet this obligation is probable, and the level of the obligation can be estimated reliably. The provision is measured at the expected settlement amount. Provisions are reviewed at every reporting date and adjusted on the basis of the new assessment. If the interest rate effect is material, non-current provisions are recognised at the present value of the expected outflow to settle the obligation.

Research and development costs

Research projects generally have a time horizon of 3 - 10 years and the technical and commercial outcome is uncertain. All research expenditures are recognised as expenses. [IAS 38.54]

Development projects either meet the criteria for recognition as an asset pursuant to IAS 38.21 or the costs are recognised as expense as they are incurred. In the past financial year, the technical feasibility of hardware and software development projects either could not be estimated or could not be clearly separated due to the close meshing of the research and development phases. Moreover, confirmation of technological feasibility and commercial usability is normally only obtained shortly before market maturity through projects with the launching customers. Consequently, the criteria for recognition as an asset were not met in 2018.

Income taxes

Tax expense comprises current and deferred taxes. Current and deferred taxes are recognised in profit or loss, except if they relate to a business combination or to items recognised directly in equity or in other comprehensive income.

Current taxes are the expected tax liability or tax receivable on the taxable profit or loss for the financial year, based on the tax rates applicable on the reporting date or that will shortly become applicable, and all adjustments to the tax liability for previous years.

In accordance with IAS 12, temporary accounting and valuation differences between the tax valuations and the carrying amounts in the IFRS financial statements are included in deferred taxes. Deferred taxes are recognised for:

- taxable temporary differences on initial recognition of goodwill
- temporary differences on initial recognition of assets or liabilities for a business transaction that is not a business combination and that does not affect either the profit before tax or the taxable profit.
- temporary differences relating to investments in subsidiaries, associated companies and joint operations, provided that the Group is in a position to influence the timing of reversal of temporary differences and it is probable that they will not be reversed in the foreseeable future.

Deferred tax assets and liabilities are netted if they relate to an independent entity within the Group and to the same tax authority and the same maturity.

A deferred tax receivable is recognised for unused tax loss carryforwards to the extent that it is probable that future taxable profit will be available.

Significant estimates and exercise of discretion

Preparation of the consolidated financial statements in accordance with the generally accepted accounting and valuation principles of the IFRS involves estimates and assumptions that may influence the amount and presentation of the reported assets and liabilities, the disclosure of contingent assets and liabilities as at the reporting date, and the reported income and expenses during the reporting period. The actual values may ultimately differ from the estimates and assumptions. Estimates and assumptions are reviewed continuously and revised prospectively.

The consolidated financial statements include the following items whose valuation depends to a large extent on assumptions and estimates:

Useful life of non-current assets: Property, plant and equipment, and purchased intangible assets are recognised at the cost of acquisition or production and depreciated/amortised over their useful life using the straight-line method. Factors such as wear and tear, obsolescence, technical standards, and contract duration are taken into account when determining the useful life.

Estimated impairment of goodwill: The Frequentis Group tests goodwill for impairment once a year. The recoverable amount of cash-generating units is determined by calculating their value-in-use. This is based on corresponding planning calculations, which are naturally based on estimates and assumptions. For information on the assumptions and sensitivity analyses used to test goodwill for impairment, please see note 16.

Revenue recognition over a period in time is based on the progress of the performance obligation using the input-based method (cost-to-cost method). Invoicing of orders completed over time is based on an estimate of the costs, the consideration that can be obtained and the risks associated with the order. These estimates are regularly reviewed and revised. Although the estimates are made using all information available at the reporting date, changes may occur.

Evaluating whether two or more contracts entered into with a customer should be combined or whether a contract with a customer has to be split into a series of performance obligations involves estimates that can affect the recognition of revenue or the reported profit. Variable consideration is estimated at the highest probable amount to which there is a claim. These estimates are based, in particular, on expectations and on the historical, present, and forecast information available at the reporting date.

The recognition of provisions for anticipated losses is subject to an assessment of the expected costs and earnings from the order. These are forecast on the basis of historical experience and current information as at the reporting date.

Other estimates and assumptions: Other areas where estimates and assumptions are of material significance for the consolidated financial statements are deferred tax assets/liabilities and post-employment benefit obligations to employees. The sensitivity of post-employment benefit obligations is outlined in notes 31 and 32.

Notes to the consolidated income statement

3. Revenues

The effect of initial application of IFRS 15 on revenues from contracts with customers is outlined in the section “Changes in accounting policies”. As a result of the transition method applied for IFRS 15, the comparative information has not been restated to reflect the new requirements.

Revenues from customer-specific construction contracts and multi-component contracts meet the criteria for recognition of revenue over time based on the progress of the performance obligation because there is no alternative use and the Frequentis Group has an enforceable right to receive payment for the work performed (costs plus an appropriate margin).

Revenue is recognised using the input-based method (cost-to-cost method). Contract assets are only recognised if they exceed the associated advances from customers. In the reporting period, contract assets from contracts with customers increased by EUR 4,681 thousand. This comprises the net result of the commencement and invoicing of a large number of projects and invoicing of a major project in Asia, which impacted revenues.

In the case of maintenance contracts, the customer normally receives and consumes the benefits as the performance obligation is performed. Revenue is recognised over time. Exceptions from this rule are certain services (e.g. repairs) with a short lead time or performance period, and orders for replacement parts or small parts where the revenue is recognised at a point in time. However, such contracts account for less than 1% of revenues and are therefore negligible.

The revenue split between the strategic business segments is as follows (for a description of the segments, please refer to the segment report).

	2018 EUR	2017 EUR
Air Traffic Management	202,495,000	182,441,742
Public Safety & Transport	83,108,190	84,373,682
Other	160,434	111,582
	285,763,624	**266,927,006**

As at 31 December 2018, revenues relating to unfulfilled or partially fulfilled performance obligations, which will only be recognised in the future, amounted to around EUR 355.2 million and correspond to order backlog at the reporting date. It is expected that revenue of around EUR 196.7 million will be recognised in 2019 and revenue of EUR 158.5 million will be recognised in 2020 and subsequent years. The expected timing of revenue recognition is based on the expected progress towards satisfaction of the performance obligation or the associated costs, which are derived from internal, project-related planning.

4. Own work capitalised

In 2018, the Frequentis Group recognised expenses of EUR 21 thousand (2017: EUR 65 thousand) for self-produced cross-company demonstration and test systems.

5. Other operating income

	2018 EUR	2017 EUR
Grants and subsidies for research and development costs	3,760,894.05	3,916,403.79
Income from research premium	1,716,340.84	1,729,993.85
Exchange rate gains and currency differences	741,202.45	653,384.90
Income from the sale of assets	12,969.03	17,968.13
Miscellaneous other operating income	1,189,646.46	1,235,262.66
	7,421,052.83	**7,553,013.33**

6. Cost of materials and purchased services

	2018 EUR	2017 EUR
Cost of materials	35,166,436.88	37,295,761.48
Cost of purchased services	41,647,494.14	38,214,328.19
	76,813,931.02	**75,510,089.67**

The reduction in the cost of materials from EUR 37,296 thousand in 2017 to EUR 35,166 thousand in 2018 was due to a reduction in the material intensity of the projects invoiced.

7. Staff expenses

	2018 EUR	2017 EUR
Salaries	112,212,917.75	105,692,633.15
Expenses for severance payments	2,148,317.71	1,827,732.55
Expenses for pensions	856,203.33	840,049.06
Social security contributions	24,627,285.39	23,349,541.00
Other voluntary social expenses	3,101,242.53	2,799,084.84
	142,945,966.71	**134,509,040.60**

The headcount at the end of the financial year was 1,843 (2017: 1,741). The average number of employees was 1,763 (2017: 1,697).

8. Depreciation and amortisation

	2018 EUR	2017 EUR
Depreciation of property, plant and equipment and amortisation of intangible assets	5,587,658.69	5,291,148.02
Depreciation and amortisation of low-value assets	400,270.98	410,746.68
	5,987,929.67	**5,701,894.70**

Assets with an acquisition or production cost of up to EUR 800 (country-specific) are defined as low-value assets and are recognised immediately as expenses due to immateriality.

9. Other operating expenses

	2018 EUR	2017 EUR
Travel expenses	12,177,193.33	11,361,507.47
Rental expenses (buildings)	7,936,743.32	7,748,376.96
Legal and consulting expenses	5,649,503.40	4,837,681.15
External personnel	3,692,735.90	3,150,301.16
Change in project provisions	3,382,989.78	50,437.61
Advertising costs	2,737,253.98	2,572,105.48
Insurance expenses	2,205,364.73	1,476,977.00
Maintenance	1,938,039.59	1,800,187.19
Vehicle costs	1,571,750.84	1,536,931.70
Transport costs	1,306,380.54	1,118,835.44
Telephone and communications expenses	1,118,200.24	1,206,353.69
Energy costs	1,039,991.92	990,691.29
Cleaning costs	1,020,338.93	965,805.09
Staff recruitment costs	846,648.34	662,039.03
Claims for damages	795,639.81	199,137.74
Other taxes and levies	664,100.07	592,649.19
Bank charges and bank guarantee fees	515,604.36	635,114.35
Exchange rate losses and currency differences	461,895.13	836,344.67
License costs (terms of up to 1 year)	363,869.81	199,688.21
Devaluation of receivables	188,659.06	129,695.47
Losses from the disposal of assets	16,116.86	47,057.03
Bad debt losses	219.04	0.00
Miscellaneous	2,904,356.85	2,385,341.14
	52,533,595.83	**44,503,258.06**

The increase in project provisions mainly relates to two new projects in Europe and America and to a new project in Australia, where the outstanding revenues do not cover the outstanding costs.

10. Financial results

Financial income

	2018 EUR	2017 EUR
Interest and similar income	494,198.78	449,674.43
Income from securities (FVTPL)	8,320.01	14,612.78
Income from the disposal of securities	0.00	915.71
	502,518.79	**465,202.92**

Financial expenses

	2018 EUR	2017 EUR
Interest and similar expenses	428,904.63	512,335.04
Impairment of securities (FVTPL)	0.00	6,800.00
	428,904.63	**519,135.04**

Other financial results

	2018 EUR	2017 EUR
Expenses for the disposal of securities	0.00	-49,995.90
Write-ups of securities (FVTPL)	2,517.43	0.00
Losses from the disposal of assets	-2,681.72	0.00
Devaluation of time deposits, cash and cash equivalents under IFRS 9	-9,116.23	0.00
Other	1,494.00	-9,239.03
	-7,786.52	**-59,234.93**

11. Income from associated companies

	2018 EUR	2017 EUR
GroupEAD		
Attributable profit for 2016	0.00	78,256.95
Attributable profit for 2017	115,651.15	66,640.00
Attributable share of advance distribution of profit for 2018	56,000.00	0.00
Mission Embedded		
Attributable profit for 2017	0.00	34,676.19
Attributable profit for 2018	50,751.25	0.00
AIRNAV Technology Services		
Attributable profit for 2017	0.00	-2,498.63
Attributable profit for 2018	21,140.65	0.00
	243,543.05	**177,074.51**

12. Income taxes

	2018 EUR	2017 EUR
Current income taxes	2,105,649.28	2,817,800.35
Taxes relating to other periods	56,349.21	17,195.27
Non-deductible withholding tax	96,968.62	50,420.17
Change in deferred tax assets/liabilities	1,822,213.41	803,220.36
	4,081,180.52	**3,688,636.15**

The tax reconciliation is as follows:

	2018 EUR thousand	Tax rate in %	2017 EUR thousand	Tax rate in %
Profit before tax	15,912		14,385	
Theoretical tax expense based on a tax rate of 25%	3,978	25%	3,596	25%
Additional taxable amounts	339		223	
Tax deductions	-444		-444	
Foreign tax rate differential arising from foreign fiscal jurisdiction	167		247	
Taxes relating to other periods	-56		17	
Non-deductible withholding tax	97		50	
Unrecognised tax loss carryforward	0		0	
Effective tax expense	**4,081**	25%	**3,689**	25%

The additional taxable amounts comprise non-deductible expenses such as representational expenses. The tax deductions mainly comprise the research premium.

13. Earnings per share

Earnings per share are calculated by dividing the result for the period attributable to equity holders of Frequentis AG by the weighted average number of issued shares in the reporting period. In the financial year, the weighted average number of shares was 12,000,000 (2017: 12,000,000).

Since there were no events that could have led to dilution in the financial year, basic earnings per share therefore correspond to diluted earnings per share.

Notes to the consolidated balance sheet

14. Property, plant and equipment

	Buildings on leased land	Technical plant and machinery	Other plant, factory and office equipment	Advances and plants under construction	Total
Carrying amount as at 31 December 2016	**2,265,176**	**467,704**	**5,426,181**	**93,774**	**8,252,835**
Foreign currency translation difference	-18,486	-194	-37,245	-1,905	-57,830
Reclassification of advances	81,736	0	8,794	-90,530	0
Additions from the acquisition of companies	0	0	0	0	0
Addition	338,691	183,278	3,143,869	378,673	4,044,511
Disposal	0	0	-91,092	-11,943	-103,035
Depreciation	-333,893	-172,066	-2,931,402	0	-3,437,361
Carrying amount as at 31 December 2017	**2,333,224**	**478,722**	**5,519,105**	**368,069**	8,699,120
Cost of acquisition/production	4,797,909	3,616,190	20,373,912	368,069	29,156,080
Accumulated depreciation	-2,464,685	-3,137,468	-14,854,807	0	-20,456,960
Carrying amount as at 31 December 2017	**2,333,224**	**478,722**	**5,519,105**	**368,069**	**8,699,120**
Carrying amount as at 31 December 2017	**2,333,224**	**478,722**	**5,519,105**	**368,069**	**8,699,120**
Foreign currency translation difference	3,377	-24	-8,476	7,726	2,603
Reclassification of advances	161,597	152,023	62,175	-375,795	0
Additions from the acquisition of companies	0	0	0	0	0
Addition	541,659	130,793	3,448,928	42,730	4,164,110
Disposal	-2,729	0	-57,588	0	-60,317
Depreciation	-319,511	-182,782	-3,171,945	0	-3,674,238
Carrying amount as at 31 December 2018	**2,717,617**	**578,732**	**5,792,199**	**42,730**	**9,131,278**
Cost of acquisition/production	5,499,708	3,894,844	22,925,025	42,730	32,362,307
Accumulated depreciation	-2,782,091	-3,316,113	-17,132,825	0	-23,231,029
Carrying amount as at 31 December 2018	**2,717,617**	**578,731**	**5,792,200**	**42,730**	**9,131,278**

During 2018, the Frequentis Group concluded agreements for the purchase of property, plant and equipment totalling EUR 15 thousand, which will be delivered and invoiced in 2019. No amounts were pledged in the financial year.

15. Intangible assets

	Software and licences	Advances	Total
Carrying amount as at 31 December 2016	**9,697,970**	**0**	**9,697,970**
Foreign currency translation difference	-574	0	-574
Reclassification of advances from customers	0	0	0
Additions from the acquisition of companies	0	0	0
Additions	538,770	75,000	613,770
Disposal	0	0	0
Amortisation	-2,264,533	0	-2,264,533
Carrying amount as at 31 December 2017	**7,971,633**	**75,000**	**8,046,633**
Cost of acquisition/production	17,420,125	75,000	17,495,125
Accumulated amortisation	-9,448,492	0	-9,448,492
Carrying amount as at 31 December 2017	**7,971,633**	**75,000**	**8,046,633**
Carrying amount as at 31 December 2017	**7,971,633**	**75,000**	**8,046,633**
Foreign currency translation difference	-75	0	-75
Reclassification of advances	0	0	0
Additions from the acquisition of companies	0	0	0
Additions	760,545	7,560	768,105
Disposal	-1,855	0	-1,855
Amortisation	-2,313,692	0	-2,313,692
Carrying amount as at 31 December 2018	**6,416,556**	**82,560**	**6,499,116**
Cost of acquisition/production	17,744,664	82,560	17,827,224
Accumulated amortisation	-11,328,108	0	-11,328,108
Carrying amount as at 31 December 2018	**6,416,556**	**82,560**	**6,499,116**

In the reporting period, Frequentis spend EUR 19.4 million (2017: EUR 22.2 million) on research and development. Including work on customer-specific orders, research and development costs amounted to around 14% of revenues and were recognised in the income statement.

16. Goodwill

	Goodwill
Carrying amount as at 31 December 2016	**2,175,025**
Foreign currency translation difference	0
Additions from the acquisition of companies	0
Additions	52,958
Disposals	0
Amortisation	0
Carrying amount as at 31 December 2017	**2,227,983**
Cost of acquisition/production	2,227,984
Accumulated amortisation	0
Carrying amount as at 31 December 2017	**2,227,984**
Carrying amount as at 31 December 2017	**2,227,984**
Foreign currency translation difference	0
Additions from the acquisition of companies	0
Additions	0
Disposal	0
Amortisation	0
Carrying amount as at 31 December 2018	**2,227,984**
Cost of acquisition/production	2,227,984
Accumulated amortisation	0
Carrying amount as at 31 December 2018	**2,227,984**

For the purpose of impairment testing, goodwill has been allocated to the Group's cash-generating units as follows:

	31 Dec. 2018 EUR thousand	31 Dec. 2017 EUR thousand
Systems Interface Ltd.	1,266	1,266
Frequentis Comsoft GmbH	909	909
Team Communication Technology Management GmbH	53	53
	2,228	**2,228**

Goodwill was tested for impairment when preparing the consolidated financial statements by estimating the recoverable amount of the relevant companies using discounted cash flows for a three-year detailed planning period and a perpetual annuity derived from this.

The impairment test in accordance with IAS 36 was based on detailed earnings, balance sheet, and investment plans for all cash-generating units for the next three years. These are prepared annually as part of the group-wide budget planning process, taking the current business situation into account. For periods after the budget planning period, a long-term growth rate is determined and used to forecast future cash flows.

Forecast future cash flows were discounted using discount rates that take account of normal market and country-specific risks. Future increases in interest rates were taken into account by raising the discount rate used to value the perpetual annuity.

Impairment test 2018	Systems Interface Ltd.	Frequentis Comsoft GmbH	Team Communication Technology Management GmbH
Interest rate 2019-2021	7.65%	7.22%	7.22%
Interest rate perpetual annuity	8.55%	8.12%	8.12%
Present value of forecast cash flows in EUR thousand	4,561	24,578	6,511
Carrying amount of non-current assets and goodwill in EUR thousand	1,282	7,167	113

Impairment test 2017	Systems Interface Ltd.	Frequentis Comsoft GmbH
Interest rate 2018-2020	6.55%	6.35%
Interest rate perpetual annuity	7.45%	7.25%
Present value of forecast cash flows in EUR thousand	5,087	21,312
Carrying amount of non-current assets and goodwill in EUR thousand	1,280	8,148

Since the calculated present value of the forecast cash flows for the cash-generating units exceeds the goodwill allocated to them, no impairment losses had to be recognised in the reporting period.

In the sensitivity analyses for the groups of cash-generating units to which material goodwill is allocated, a 10% reduction in future cash flows or an increase of one percentage point in discount rates was assumed. On this basis, no impairment losses had to be recognised.

The Executive Board did not identify any realistic scenarios as at the reporting date that would result in impairment of capitalised goodwill.

17. Investments in associated companies

	31 Dec. 2018 EUR	31 Dec. 2017 EUR
Investments in associated companies	664,617.94	591,418.75

The investments in associated companies relate to the investments in GroupEAD Europe S.L., Madrid, Mission Embedded GmbH, Vienna, and AIRNAV Technology Services Inc., Iloilo, which are included in the consolidated financial statement at equity.

Frequentis has a 28% interest in GroupEAD Europe S.L., Madrid. The carrying amount of this investment is as follows (based on the most recent available financial statements (for 2017) and the dividends already received for 2018):

		EUR
31 December 2017	**Investment in GroupEAD**	**490,661.49**
	Attributable profit in 2017	115,651.15
	Less dividend distributed in 2017	-115,651.15
	Provisional attributable profit for 2018	56,000.00
	Less dividend distributed in 2018	-56,000.00
31 December 2018	**Investment in GroupEAD**	**490,661.49**

GroupEAD Europe S.L. acts as operational manager of the EAD system on behalf of EUROCONTROL. The system was developed by Frequentis, which is responsible for technical operation. The close relationship between the technical and operational managers has a positive impact on the quality of service and the customer relationship. In addition, Frequentis is able to use the experience and operational expertise of GroupEAD in the ongoing development of the EAD system and to develop other AIM systems for the international market.

The next table contains summarised financial information on this company as at the last reporting date (31 December 2017):

GroupEAD	31 Dec. 2017 EUR	31 Dec. 2016 EUR
Non-current assets	219,768.40	241,770.87
Current assets	3,076,036.65	2,796,678.61
of which cash and cash equivalents	2,393,927.48	2,305,569.92
Equity	2,165,402.34	2,031,851.60
Debt	1,130,402.71	1,006,597.88
Total operating performance	7,012,393.32	6,708,795.90
Depreciation and amortisation	49,231.47	56,245.77
Income taxes	183,231.81	112,083.59
Profit for the financial year	651,039.83	279,489.09

The Frequentis Group holds a 20% interest in Mission Embedded GmbH, Vienna. The development of this investment is presented below:

		EUR
31 December 2017	**Investment in Mission Embedded**	**97,242.29**
	Attributable profit in 2018	50,751.25
	Actuarial losses in accordance with IAS 19	-186.70
31 December 2018	**Investment in Mission Embedded**	**147,806.84**

Mission Embedded GmbH was formed by spinning off the "Mission Embedded" department in 2014 to drive forward the positive development of Frequentis' expertise in hardware and hardware-related software for safety-critical applications by giving it greater independence.

The next table contains summarised financial information on this company as at the last reporting date (31 December 2018):

Mission Embedded	31 Dec. 2018 EUR	31 Dec. 2017 EUR
Non-current assets	127,272.48	145,062.67
Current assets	1,445,487.08	1,372,174.55
of which cash and cash equivalents	20,771.69	688,174.34
Equity	739,034.18	500,680.31
Debt	833,725.38	1,016,556.91
Total operating performance	3,691,895.03	3,867,356.36
Depreciation and amortisation	96,160.17	75,220.96
Income taxes	42,894.64	41,026.01
Profit for the financial year	253,756.24	173,380.93

The Group holds 40% of the shares in AIRNAV Technology Services Inc., which is registered in the Philippines (Iloilo). The table shows the development of this investment:

		EUR
31 December 2017	**Investment in AIRNAV Technology Services**	3,514.97
	Goodwill due to capital increase	1,494.00
	Attributable profit in 2018	21,140.65
31 December 2018	**Investment in AIRNAV Technology Services**	**26,149.62**

This company was established in January 2017 and operates in the ATM domain. Its operations comprise testing, installation, maintenance services, and on-site training for international customer projects (especially in the Asian and Arab markets).

The next table contains summarised financial information on this company:

AIRNAV Technology Services	31 Dec. 2018 EUR	31 Dec. 2017 EUR
Non-current assets	19,429.77	10,161.67
Current assets	48,781.14	4,696.62
of which cash and cash equivalents	44,949.87	2,242.47
Equity	65,373.81	8,787.19
Debt	5,179.68	6,071.10
Total operating performance	297,635.63	103,400.06
Depreciation and amortisation	4,386.22	1,732.25
Income taxes	4,716.04	208.97
Profit for the financial year	52,851.62	-6,426.87

18. Securities and equity investments

The effect of initial application of IFRS 9 on the Group's financial instruments is outlined in the section "Changes in accounting policies". In line with the transition method selected, the comparative information has not been restated.

The securities and equity investments held in the reporting period were as follows:

	31 Dec. 2018 EUR	31 Dec. 2017 EUR
Equity investments	575,494.61	3,600.00
Securities	0.00	2,580,489.66
	575,494.61	**2,584,089.66**

All of the fixed-interest securities reported as at 31 December 2017 were sold in reporting period.

A 5.6% interest in the start-up company Altitude Angel Ltd. in Reading, UK, was acquired in 2018. On the basis of the due diligence and valuation, a transaction price of EUR 569 thousand was established for this investment. There has not been any material change in the situation of this company since then, so the fair value as at 31 December 2018 corresponds to the purchase price.

The equity investments also include a 10.29% stake in Viennasys Software Entwicklung GmbH, which is based in Vienna. The calculation of the fair value as at 31 December 2018 showed that it had increased from EUR 4 thousand to EUR 6 thousand.

19. Time deposits, cash and cash equivalents

	31 Dec. 2018 EUR	31 Dec. 2017 EUR
Long-term time deposits	8,000,000.00	0.00
Impairment loss pursuant to IFRS 9	-2,400.00	0.00
	7,997,600.00	**0.00**

	31 Dec. 2018 EUR	31 Dec. 2017 EUR
Short-term time deposits	10,000,000.00	0.00
Impairment loss pursuant to IFRS 9	-3,000.00	0.00
	9,997,000.00	**0.00**

	31 Dec. 2018 EUR	31 Dec. 2017 EUR
Cash and cash equivalents	45,546,720.38	76,033,527.18
Impairment loss pursuant to IFRS 9	-3,716.23	0.00
	45,543,004.15	**76,033,527.18**

The long-term time deposits expire at the latest at the end of 2020.

In accordance with IFRS 9, based on an expected credit loss (ECL) model, provisions were established at the date of investment on the basis of the expected potential credit losses. Since no official rating was available for one bank, an expected credit loss of 0.03% was derived by comparing its key figures with those of similar banks for which an official rating was available.

No impairment losses had to be recognised for the other bank balances.

20. Deferred tax assets

Deferred tax assets and liabilities are netted, taking into account their maturity, if there is a corresponding legally enforceable claim to offsetting and the deferred tax assets and liabilities refer to income taxes that are levied by the same tax authority for the same taxable entity.

	Asset 2018 EUR	Liability 2018 EUR	Asset 2017 EUR	Liability 2017 EUR
Provisions for severance payments	204,477		167,307	
Provisions for anniversary bonuses and phased early retirement obligations	93,037	-24,268		
Adjustment relating to provisions and contract costs	673,827	-62,248	276,866	-27,019
Rental/leasing	97,027		70,859	
Measurement of construction contracts	222,483	-429,033	80,289	-509,195
Property, plant and equipment, intangible assets and goodwill	352,096	-243,330	416,289	-87,288
Valuation of receivables/liabilities	19,338	-25,287	2,643	
Adjustment relating to securities		-629		
Tax credits due to grants and subsidies for research costs that have not yet been offset			242,027	
Deferred taxes on currency differences, debt consolidation	48,885			
Tax loss carryforwards	571,024		1,106,717	
Total	**2,282,194**	**-784,795**	**2,362,997**	**-623,502**
Net amount		**1,497,399**		**1,739,495**

Deferred tax liabilities are outlined in more detail in note 36.

21. Inventories

	31 Dec. 2018 EUR	31 Dec. 2017 EUR
Raw materials, auxiliaries and supplies	7,568,168.60	6,928,320.91
Work in progress	1,082,580.89	0.00
Finished goods	3,860,993.54	3,010,962.29
Advance payments made	602,509.89	273,870.39
	13,114,252.92	**10,213,153.59**

The finished goods are assemblies that are part of overall solutions for customers and can only be invoiced as distinct components of a customer contract in exceptional cases. The inventories result from optimisation of manufacturing batches (larger production batches reduce unit costs) and procurement lots, and from reserve inventories held to meet maintenance obligations and to reduce process times because some components involve a certain lead time.

Work in progress comprises assemblies that were still being processed at the reporting date.

The impairment loss on inventories was EUR 227 thousand in 2018 (2017: EUR 1,492 thousand).

22. Trade accounts receivable

	2018 EUR	2017 EUR
Trade accounts receivable, gross	45,220,719.12	39,715,813.67
Individual loss allowances	-721,861.38	-567,967.53
Impairment loss pursuant to IFRS 9	-133,187.76	0.00
Trade accounts receivable, net	**44,365,669.98**	**39,147,846.14**

Trade accounts receivable are not interest-bearing and are generally due within 30 days.

Since most of the Frequentis Group's customers are authorities, government-related businesses or, in the case of general contractors, large international companies, the credit risk is classified as low. One aspect of risk management at Frequentis is that business relationships are only entered into with third parties that are deemed to be creditworthy. The creditworthiness of customers is systematically evaluated and deliveries are only made if they have appropriate credit standing or if adequate steps are taken to address the risks identified.

If a higher risk is identified during the quotation process, credit insurance, advances by customers or letters of credit are used to reduce the credit risk.

All identifiable risks are taken into account by appropriate individual loss allowances. In the event of default, the receivables are derecognised. As at the reporting date, there were no indications that debtors of receivables that were neither overdue nor impaired would not meet their payment obligations.

The carrying amounts of financial assets are the maximum credit risk.

The company's trade accounts receivable mainly relate to customers that are authorities and government-related organisations with high creditworthiness. The expected credit loss calculations as at 31 December 2018 showed that the new impairment logic has not resulted in a material change in impairment requirements due to the low probability of default.

The table shows the development of impairments of trade accounts receivable:

	2018 EUR	2017 EUR
As at 31 December of the previous year	**567,967.53**	**851,925.95**
Changes due to accounting policies (IFRS 9)	132,252.55	0.00
As at 31 December of the previous year	**700,220.08**	**851,925.95**
Change in impairments pursuant to IFRS 9	935.21	0.00
Additions	187,723.85	129,695.47
Utilisation	0.00	-75,862.66
Reversal	-33,830.00	-337,791.23
As at 31 December of the financial year	**855,049.14**	**567,967.53**

The maturity structure of trade accounts receivable as at 31 December 2018 was as follows:

	2018 EUR thousand	2017 EUR thousand
Trade accounts receivable, net	44,366	39,148
of which: neither overdue nor impaired	35,126	27,743
of which, overdue but not impaired		
Up to 30 days	6,097	7,966
30-60 days	2,373	1,032
60-90 days	418	922
90-120 days	-5	261
120-180 days	52	221
180-210 days	42	251
> 210 days	262	752

The Frequentis Group's experience with public-sector customers shows that payment often deviates from the due date. This is frequently due to approval processes and budget procedures within the authorities (especially around the turn of the year). Experience indicates that such delays in payment do not in themselves point to a higher credit risk.

23. Contract assets from contracts with customers

	31 Dec. 2018 EUR	31 Dec. 2017 EUR
Receivables from construction contracts under IAS 11 that have not yet been invoiced	0.00	49,488,152.33
Contract liabilities from contracts with customers	54,168,674.21	0.00
Advances from customers	-13,318,666.97	-16,013,854.21
	40,850,007.24	**33,474,298.12**

The change in contract assets from contracts with customers compared with the receivables from construction contracts under IAS 11 that have not yet been invoiced as reported in the previous year comprises the net result of a large number of projects that were under way or invoiced and to invoicing of a major project in Asia.

The contract assets of EUR 32,996 thousand recognised as at 1 January 2018 include EUR 27,039 thousand invoiced in the reporting period.

Based on expected project progress and contractual clauses, EUR 37,658 thousand of the total contract assets of EUR 40,850 thousand recognised as at 31 December 2018, are scheduled for invoicing in 2019. Contract assets with a carrying amount of EUR 3,192 thousand will probably be invoiced after 2019.

It is assumed that there are no relevant default risks for capitalised contract assets from contracts with customers for which impairments would have to be recognised. The creditworthiness of customers where the Frequentis Group has to pre-finance costs is checked very carefully. These orders therefore mainly relate to work for public authorities or large international companies.

24. Contract costs

In the Frequentis Group, contract costs mainly comprise sales commission. These contract costs are capitalised and amortised analogously to the transfer of control over goods and services to the customer.

The development of capitalised contract costs is as follows:

	2018 EUR thousand
As at 1 January 2018	**3,885**
Contract costs capitalised in the reporting period	1,957
Amortisation in the reporting period	-4,145
Impairment losses	0
As at 31 December 2018	**1,697**

The amortisation expense for the capitalised contract costs is contained in the cost of materials and purchased services.

25. Receivables from affiliated and associated companies

This item contains trade accounts receivable from the following companies:

	31 Dec. 2018 EUR	31 Dec. 2017 EUR
Frequentis Group Holding GmbH	21,472.19	0.00
GroupEAD	4,220.68	6,992.75
Mission Embedded	4,885.32	2,414.01
of which current	30,578.19	9,406.76
of which non-current	0.00	0.00

26. Other current assets

	31 Dec. 2018 EUR	31 Dec. 2017 EUR
Prepaid expenses and deferred charges	3,807,048	3,844,874
Receivables from research premium	2,711,381	995,041
Receivables from research grants and subsidies	1,196,284	747,175
Receivables from the Austrian fiscal authorities (excluding income taxes)	1,110,201	1,986,118
Interest receivables from time deposits	186,757	0
Positive fair value of cash flow hedges and MTM valuation	173,164	370,942
Other assets	1,098,384	2,716,526
	10,283,219	**10,660,676**

27. Share capital and retained earnings

The change in equity can be seen from the consolidated statement of changes in equity.

The company's share capital is divided into 12,000,000 voting shares with no par value.

Dividends

The net profit of Frequentis AG stated in the annual financial statements as at 31 December 2018 is EUR 3,123,295.45 and the distributable profit is EUR 41,692,464.69.

At the Annual General Meeting, the Executive Board of Frequentis AG will propose payment of a dividend of EUR 0.10 per share.

In 2018, the issued shares received a dividend payment of EUR 14,400 thousand for 2017 (2017 for 2016: EUR 1,440 thousand). That corresponds to a payment of EUR 1.2 per share in 2018 (2017: EUR 0.12 per share).

28. Reserves

	31 Dec. 2018 EUR	31 Dec. 2017 EUR
Capital reserves	1,774,002.96	1,774,002.96
IAS 19 reserve	-4,512,274.09	-4,015,194.60
IAS 39 reserve	0.00	142,814.45
Cash flow hedge reserve	-29,895.74	0.00
	-2,768,166.87	**-2,098,377.19**

As at January 1, reserves pursuant to IAS 39 amounting to minus EUR 11 thousand were reclassified to profit carried forward and EUR 154 thousand was reclassified to the cash flow hedge reserve. Further details can be found in note 42 Financial instruments.

29. Non-controlling interests

The non-controlling interests relate to the following subsidiaries:

	31 Dec. 2018 EUR	31 Dec. 2017 EUR
Team Communication Technology Management GmbH, Vienna	925,169	971,595
ELARA Leitstellentechnik GmbH, Aachen	56,996	16,836
Systems Interface Ltd., Surrey	48,370	107,799
Secure Service Provision GmbH, Leipzig	300,560	157,968
Frequentis DFS Aerosense GmbH, Vienna	9,538	0
	1,340,633	**1,254,198**

Frequentis DFS Aerosense GmbH was founded in the reporting period. The purpose of this company, in which Deutsche Flugsicherung DFS holds a 30% stake through its subsidiary DFS Aviation Services, is to produce and erect turnkey remote (digital) tower solutions.

Team Communication Technology Management GmbH made a pro rata distribution of EUR 530 thousand to non-controlling interests in the reporting period.

The next table provides information on the balance sheets of consolidated subsidiaries with material non-controlling interests and the carrying amount of the non-controlling interests (amounts stated in EUR thousand, before intragroup eliminations):

Balance sheet data as at 31 December 2018	Non-current assets	Current assets	Non-current liabilities	Current liabilities	Net assets	Carrying amount of non-controlling interests
Team Communication Technology Management GmbH	80	2,935	144	983	1,888	925
ELARA Leitstellentechnik GmbH	195	127	0	206	116	57
Systems Interface Ltd.	47	2,597	448	2,075	121	48
Secure Service Provision GmbH	57	1,731	0	285	1,503	301
Frequentis DFS Aerosense GmbH	0	35	0	4	32	10
						1,341

Balance sheet data as at 31 December 2017	Non-current assets	Current assets	Non-current liabilities	Current liabilities	Net assets	Carrying amount of non-controlling interests
Team Communication Technology Management GmbH	57	3,235	133	1,177	1,982	971
ELARA Leitstellentechnik GmbH	239	87	0	292	34	17
Systems Interface Ltd.	14	2,437	734	1,475	242	108
Secure Service Provision GmbH	55	956	1	220	790	158
						1,254

The next table provides information on the income statement and statement of comprehensive income of the consolidated subsidiaries with significant non-controlling interests (in EUR thousand):

2018	Amounts before intragroup elimination				Earnings attributable to non-controlling interests		
	Total operating perfor-mance	Profit for the period	Other compre-hensive income	Total compre-hensive income	Profit for the period	Other compre-hensive income	Total compre-hensive income
Team Communication Technology Management GmbH	6,469	906	-1	905	444	0	444
ELARA Leitstellentechnik GmbH	1,992	82	0	82	40	0	40
Systems Interface Ltd.	5,618	-121	0	-121	-59	0	-59
Secure Service Provision GmbH	3,152	713	0	713	142	0	142
Frequentis DFS Aerosense GmbH	0	-3	0	-3	-1	0	-1
Total					**566**	**0**	**566**

2017	Amounts before intragroup elimination				Earnings attributable to non-controlling interests		
	Total operating perfor-mance	Profit for the period	Other compre-hensive income	Total compre-hensive income	Profit for the period	Other compre-hensive income	Total compre-hensive income
Team Communication Technology Management GmbH	6,609	1,049	53	1,102	514	10	524
ELARA Leitstellentechnik GmbH	1,631	30	0	30	15	0	15
Systems Interface Ltd.	6,336	532	0	532	261	0	261
Secure Service Provision GmbH	2,426	272	0	272	54	0	54
Total					**844**	**10**	**854**

30. Non-current provisions

	31 Dec. 2018 EUR	31 Dec. 2017 EUR
Provisions for severance payments	12,868,808.37	11,988,565.21
Provisions for pensions	2,646,496.00	5,019,153.00
Offsetting of pension insurance policy reserves	-2,433,907.67	-4,371,518.11
	212,588.33	**647,634.89**
Provisions for anniversary bonuses	301,284.00	300,803.00
Other provisions	808,225.75	1,897,022.84
Total non-current provisions	14,190,906.45	14,834,025.94

Since the life insurance policies are pledged to cover pension provisions, the corresponding policy reserves are offset against pension provisions. In the reporting period, pension provisions of EUR 2,508 thousand and reinsurance claims of EUR 2,024 thousand were transferred to Frequentis Group Holding GmbH.

EUR 1,784 thousand of the other non-current provisions as at 31 December 2017 were project provisions, which were reclassified to contract liabilities from contracts with customers in accordance with IFRS 15 as per 1 January 2018.

31. Provisions for severance payments

This item comprises claims by employees in Austria to one-off severance payments on the basis of statutory regulations and collective agreements. These payments may arise due to dismissal by the employer, termination of the employment contract by mutual consent, retirement or death of the employee. The level of the severance payment depends on the number of years' service with the company and the remuneration applicable when the employee leaves the company.

The corresponding severance payments will result in outflows between 2019 and 2047.

Obligations for severance payments were calculated using the following parameters:

	2018	2017
Interest rate	2.00%	1.85%
Wage and salary trend	3.00%	2.50%
Average term of the defined benefit obligation	12.2 years	11.6 years

The next table contains the reconciliation of the severance payment obligations at the start and end of the reporting period:

	2018 EUR	2017 EUR
Present value of severance payment obligations (DBO) as at 1 January = Provisions as at 1 January	**11,988,565.21**	**12,225,276.50**
Current service cost (CSC)	600,449.49	608,487.13
Interest cost (IC)	219,016.09	214,969.86
Actual payments made	-537,426.00	-1,253,312.92
Recognised actuarial loss (+)/gain(-)	598,203.58	193,144.64
Present value of severance payment obligations (DBO) as at 31 December = Provisions as at 31 December	**12,868,808.37**	**11,988,565.21**

The provisions for severance payments relate exclusively to employees who joined the Austrian companies in the Group before 31 December 2002 because there was a switch from defined benefit to defined contribution payments on 1 January 2002 due to a change in Austrian law. The new regulation applies to employees who joined the Group after 31 December 2002. For these employees, the company pays a monthly contribution to an external post-employment benefit plan which has to guarantee the severance payments, so the company has no severance payment obligations for these employees.

Breakdown of the recognised actuarial gains/losses for severance payment obligations:

	2018 EUR thousand	2017 EUR thousand
Changes in demographic assumptions	-68	0
Changes in financial assumptions	632	368
Other changes	35	-175
Total	**599**	**193**

In the following sensitivity analysis for severance payment obligations (amounts in EUR thousand), the effect of changes in key actuarial parameters were varied, while the remaining variables were held constant.

Interest rate	Salary increases	DBO 31 Dec. 2018
2.0%	3.5%	13,651
1.85%	3.0%	13,101
2.0%	3.0%	12,869
2.15%	3.0%	12,642
2.0%	2.5%	12,141

Interest rate	Salary increases	DBO 31 Dec. 2017
1.35%	2.5%	12,692
1.85%	3.0%	12,681
1.85%	2.5%	11,989
1.85%	2.0%	11,345
2.35%	2.5%	11,341

32. Provisions for pensions

The pension benefit obligations are defined benefit obligations arising from individual commitments to serving members of the Executive Board and one former member of the Executive Board. The plan assets comprise funded insurance which is assigned to the entitled beneficiaries

The pension benefit obligations were calculated using the following parameters:

	2018	2017
Interest rate	2.0%	1.85%
Retirement age	60/65 years	60/65 years
Average term of the defined benefit obligation	13.8 years	14.3 years

Development of pension provisions and plan assets:

	2018 EUR	2017 EUR
Present value of the pension benefit obligations (DBO) as at 1 January	5,019,153.00	4,923,747.00
Fair value of plan assets	-4,371,518.11	-4,309,218.34
+ Provisions/credit as at 1 January	**647,634.89**	**614,528.66**
Present value of the pension benefit obligations (DBO) as at 1 January	5,019,153.00	4,923,747.00
Service cost	97,151.00	163,727.00
Interest cost	91,326.00	89,738.00
Pension payments	-92,527.87	-88,701.20
Transfer of pension benefit obligations to Frequentis Group Holding GmbH	-2,508,274.00	0.00
Realised actuarial losses (+)/gains (-)	39,667.87	-69,357.80
Present value of the pension benefit obligations (DBO) as at 1 January	**2,646,496.00**	**5,019,153.00**
Fair value of plan assets as of 1 January	4,371,518.11	4,309,218.34
Return on plan assets	80,270.00	79,845.00
Payments made	150,083.33	100,000.00
Payments received from plan assets	-118,986.04	-202,269.35
Transfer of plan assets to Frequentis Group Holding GmbH	-2,023,856.04	0.00
Realised actuarial losses (+)/gains (-)	-25,121.69	84,724.00
Fair value of plan assets as of 31 December	**2,433,907.67**	**4,371,517.99**
Provisions as at 31 December		
Present value of the pension benefit obligation (DBO)	2,646,496.00	5,019,153.00
Fair value of plan assets	-2,433,907.67	-4,371,518.11
+ Provisions/credit as at 31 December	**212,588.33**	**647,634.89**

In the reporting period, the actuarial gains and losses were recognised in other comprehensive income in accordance with IAS 19.

The table shows a breakdown of the recognised actuarial gains/losses for pension provisions:

	2018 EUR thousand	2017 EUR thousand
Changes in demographic assumptions	64	0
Changes in financial assumptions	-52	0
Other changes	28	-69
Other changes to plan assets	25	-85
Total	**65**	**-154**

In the following sensitivity analysis for pension benefit obligations (amounts in EUR thousand), the effect of changes in key actuarial parameters were varied, while the remaining variables were held constant.

Interest rate	DBO 31 Dec. 2018
1.85%	2,701
2.0%	2,646
2.15%	2,594

Interest rate	DBO as at 31 Dec. 2017
1.35%	5,392
1.85%	5,019
2.35%	4,685

33. Provisions for anniversary bonuses

Provisions for obligations to pay anniversary bonuses relate to long-term claims by staff at Frequentis Comsoft GmbH based on company practice.

Obligations for anniversary bonuses were calculated using an interest rate of 2.0% (1.85%).

	2018 EUR	2017 EUR
Present value of anniversary bonus obligations (DBO) as at 1 January = Provisions as at 1 January	**300,803.00**	**325,359.00**
Current service cost (CSC)	35,626.00	37,348.00
Interest cost (IC)	5,271.00	5,644.00
Actual payments made	-32,004.00	-41,596.00
Recognised actuarial loss (+)/gain(-)	-8,412.00	-25,952.00
Present value of anniversary bonus obligations (DBO) as at 31 December = Provisions as at 31 December	**301,284.00**	**300,803.00**

In the following sensitivity analysis for anniversary bonus obligations (amounts in EUR thousand), the effect of changes in key actuarial parameters were varied, while the remaining variables were held constant.

Interest rate	DBO 31 Dec. 2018
1.85%	305
2.0%	301
2.15%	298

Interest rate	DBO as at 31 Dec. 2017
1.35%	313
1.85%	301
2.35%	290

34. Other non-current provisions

The other non-current provisions comprise:

	As at 31 Dec. 2017 EUR	Change pursuant to IFRS 15 EUR	Currency translation difference EUR	Change in consol. group EUR	Used EUR	Reversed EUR	Added EUR	As at 31 Dec. 2018 EUR
Provisions for leave based on period of service	33,723	0	-1,817	0	0	0	26,142	58,048
Provisions for projects	1,847,951	-1,784,185	0	0	0	0	666,978	730,744
Other	15,349		0	0	0	0	4,085	19,434
	1,897,023	**-1,784,185**	**-1,817**	**0**	**0**	**0**	**697,205**	**808,226**

The provisions for projects contain expenses not yet incurred for projects that have already been invoiced, which were allocated to contract costs pursuant to IFRS 15 as of 1 January 2018, and project costs for which provisioning is required as future expenses will exceed future revenue.

35. Deferred tax liabilities

Deferred tax assets and liabilities are netted, taking into account their maturity, if there is a corresponding legally enforceable claim to offsetting and the deferred tax assets and liabilities refer to income taxes that are levied by the same tax authority for the same taxable entity.

Deferred tax liabilities resulting from temporary differences in connection with investments in subsidiaries are not recognised if the date of reversal of the temporary differences can be determined by the Group and it is probable that the temporary differences will not be reversed in the near future on account of this influence. Such temporary differences for which no deferred tax liabilities are recognised amounted to EUR 2,042 thousand (2017: EUR 2,264 thousand).

	Asset 2018 EUR	Liability 2018 EUR	Asset 2017 EUR	Liability 2017 EUR
Provisions for severance payments	1,273,421		1,277,010	
Provisions for pensions	247,412		490,529	
Adjustment relating to provisions and contract costs	802,113	-1,903,407	36,948	-1,118,856
Rental/leasing	0		5,680	
Disposals and write-downs of equity investments (1/7 tax rule)	78,646		84,164	
Measurement of construction contracts		-4,537,837		-3,316,106
Property, plant and equipment, intangible assets	70,839	-220,051	78,500	-221,479
Valuation of receivables/liabilities	37,793	-75,094	14,694	-86,547
Adjustment relating to derivatives	211,092	-43,291		-101,391
Deferred taxes on currency translation differences, debt consolidation		-91,350		-3,118
Tax loss carryforwards	185,837			
Total	**2,907,153**	**-6,871,030**	**1,987,525**	**-4,847,497**
Net amount		**-3,963,877**		**-2,859,972**

36. Liabilities

2018	31 Dec. 2018 EUR	Less than 1 year EUR	1 to 5 years EUR	More than 5 years EUR
Liabilities to banks and other financial liabilities	8,151,440	1,651,440	0	6,500,000
Contract liabilities from contracts with customers	48,622,278	47,550,380	1,071,898	0
Trade accounts payable	13,775,087	13,026,746	748,341	0
Liabilities to affiliated and associated companies	226,249	226,249	0	0
Other liabilities	12,315,004	8,822,048	3,492,956	0
Tax liabilities	1,149,841	1,149,841	0	0
Total liabilities	**84,239,899**	**72,426,704**	**5,313,195**	**6,500,000**

2017	31 Dec. 2017 EUR	Less than 1 year EUR	1 to 5 years EUR	More than 5 years EUR
Liabilities to banks and other financial liabilities	7,704,415	204,415	0	7,500,000
Advances from customers	38,556,070	38,556,070	0	0
Trade accounts payable	10,647,539	10,284,654	362,885	0
Liabilities to associated companies	132,144	132,144	0	0
Other liabilities	15,034,521	11,829,894	3,204,627	0
Tax liabilities	550,181	550,181	0	0
Total liabilities	**72,624,870**	**61,557,358**	**3,567,512**	**7,500,000**

37. Contract liabilities from contracts with customers

Contract liabilities from contracts with customers comprise obligations to transfer goods and services to customers, for which consideration has already been received. This primarily relates to advance payments, some of which are secured by prepayment guarantees. In addition, in some cases performance is secured by bank guarantees. There was no physical collateral either on the reporting date or during the year.

The next table shows the structure of contract liabilities from contracts with customers:

	31 Dec. 2018 EUR
Advances for customer projects	39,695,139.25
Advances offset against contract assets from contracts with customers	-13,051,692.23
	26,643,447.02
Accrued revenue for maintenance contracts	5,694,719.21
Liabilities for outstanding performance obligations for customer orders after final invoicing (current)	5,354,442.46
Liabilities for outstanding performance obligations for customer orders after final invoicing (non-current)	1,071,898.06
Other contract liabilities	9,857,771.22
Total contract liabilities from contracts with customers	**48,622,277.97**

Other contract liabilities contain contractual claims to advances.

38. Payables to affiliated and associated companies

This item contains trade accounts payable to the following companies:

	31 Dec. 2018 EUR	31 Dec. 2017 EUR
Frequentis Group Holding GmbH	2,830.48	0.00
Mission Embedded	106,258.26	111,179.25
Group EAD	85,294.15	18,900.00
AIRNAV Technology Services	31,865.61	2,064.41
Total, current	**226,248.50**	**132,143.66**

39. Other liabilities

The other non-current liabilities contain loans in connection with grants and subsidies for research and development amounting to EUR 2,620 thousand (2017: EUR 2,370 thousand).

The other current liabilities comprise:

	31 Dec. 2018 EUR	31 Dec. 2017 EUR
Accruals for holidays not yet taken	3,369,561	2,983,250
Negative fair values of cash flow hedges and MTM valuation	1,009,329	412,132
Advances received in connection with grants and subsidies	572,071	1,314,574
Accruals for consultancy costs	457,536	698,252
Accruals for overtime	328,062	345,448
Accruals for maintenance contracts	0	2,638,241
Other liabilities	3,085,489	3,437,997
Total, current	**8,822,048**	**11,829,894**

The other liabilities mainly comprise liabilities to local fiscal authorities in connection with value-added tax and wage tax, liabilities to local social insurance companies, and liabilities to staff.

40. Other current provisions

The other current provisions comprise:

	As at 31 Dec. 2017 EUR	Change pursuant to IFRS 15 EUR	Currency translation difference EUR	Change in consol. group EUR	Used EUR	Reversed EUR	Added EUR	As at 31 Dec. 2018 EUR
Bonuses	6,861,407	0	5,878	0	-6,867,285	0	5,411,517	5,411,517
Provisions for projects	5,138,105	-4,014,791	0	0	-1,123,314	0	3,232,524	3,232,524
Other	2,191,272	0	337	0	-2,038,137	-153,472	1,288,657	1,288,657
	14,190,784	**-4,014,791**	**6,215**	**0**	**-10,028,736**	**-153,472**	**9,932,698**	**9,932,698**

The provisions for bonuses contain employee bonuses and variable salary components that are not yet due for payment.

The provisions for projects contain expenses not yet incurred for projects that have already been invoiced, which were allocated to contract costs pursuant to IFRS 15 as of 1 January 2018, and project costs for which provisioning is required as future expenses will exceed future revenue.

Segment report

Operating segments

- Air Traffic Management segment
- Public Safety & Transport segment

The main customer groups in the market served by Air Traffic Management (ATM) are civil and military air traffic control and homeland security organisations. Frequentis supports its customers in their central role of air traffic management and efficient and safe control and management of aviation. Product solutions for control centres in the ATM segment range from voice communication, networks, remote (digital) towers, ATC towers, surveillance, AIM (aeronautical information management), and AMHS (aeronautical message handling systems) to ATM/UTM (unmanned traffic management) integration. For the defence sector, the portfolio is supplemented by secure communications and situational awareness applications.

The market served by Public Safety & Transport (PST) comprises public safety (police, fire and emergency rescue services), public transport (railways), and maritime (coast guard, port operators and organisations that monitor shipping on inland waterways). Frequentis' PST segment delivers emergency management solutions for police, ambulance and fire service organisations, search and rescue, coastal surveillance, operations communications, and incident and crisis management.

Data on the operating segments

Earnings before interest and taxes (EBIT) are used for internal reporting and correspond to the segment result as defined in IFRS 8.23. There are no inter-segment revenues.

2018	Air Traffic Management 2018 EUR	Public Safety & Transport 2018 EUR	Reconciliation/ consolidation 2018 EUR	Total 2018 EUR
Revenues	202,495,000	83,108,190	160,434	**285,763,624**
Change in inventories of finished goods and work in progress	441,110	237,900	0	**679,010**
Other operating income	4,851,872	1,381,014	1,188,168	**7,421,054**
Own work capitalised	5,287	0	15,422	**20,709**
Total operating income (total operating performance)	**207,793,269**	**84,727,104**	**1,364,024**	**293,884,397**
EBIT	**11,849,946**	**3,435,535**	**317,492**	**15,602,973**

2017	Air Traffic Management 2017 EUR	Public Safety & Transport 2017 EUR	Reconciliation/ consolidation 2017 EUR	Total 2017 EUR
Revenues	182,441,742	84,373,682	111,582	**266,927,006**
Change in inventories of finished goods and work in progress	0	0	0	**0**
Other operating income	3,399,493	2,358,779	1,794,741	**7,553,013**
Own work capitalised	0	0	65,182	**65,182**
Total operating income (total operating performance)	**185,841,235**	**86,732,461**	**1,971,505**	**274,545,201**
EBIT	**7,351,096**	**6,796,476**	**173,346**	**14,320,918**

No data on segment assets and segment liabilities are given here because internal reporting does not differentiate between the assets of the two segments.

Details of company-wide data

Under IFRS 8.34, there is an obligation to provide information on major customers. These are customers with which the Group generates at least 10% of its total external revenues. There were no customers that exceeded this threshold, either in the reporting period or in the previous year.

In terms of revenue categories, 51% of the Group's revenues were generated with new products and/or new customers, 46% comprised IBB (installed base business, i.e. follow-on business for installed systems and solutions), and 3% came from other sources (mainly consulting). Around half of the installed base business comprised maintenance contracts.

The regional breakdown of order intake by end-users in 2018 was as follows: orders are still dominated by the established European market, which accounted for 55.2%, ahead of North and Latin America (16.9%) and Australia/Pacific (16.4%). They were followed by Asia (11.2%) and Africa (0.3%). Frequentis only tracks the geographical order split from sales management to order intake, but not in terms of revenue generated. Consequently, information on this is not available and the cost of obtaining it would be unreasonably high. However, it may be assumed that revenue recognition matches the breakdown of order intake, albeit with a time lag.

Order backlog as at 31 December 2018 totalled EUR 355,220 thousand (2017: EUR 335,324 thousand). The ATM segment accounted for EUR 215,722 thousand (2017: EUR 222,107 thousand) of this amount and the PST segment for EUR 139,498 thousand (2017: EUR 113,217 thousand).

Regional breakdown of non-current assets

	2018 EUR	2017 EUR
Austria	9,641,105.86	10,230,420.32
Europe (excluding Austria)	6,971,329.32	7,813,937.61
Americas	998,197.33	695,218.14
Australia	210,365.82	223,225.77
Asia	37,380.28	10,935.25
	17,858,378.61	**18,973,737.09**

Non-current assets comprise property, plant and equipment, intangible assets and goodwill.

Other information

41. Consolidated cash flow statement

In the consolidated cash flow statement, cash inflows and outflows for operating, investing and financing activities are reported separately. The cash flow from operating activities is derived indirectly, starting from profit before tax. Non-cash expenses (mainly depreciation and amortisation) and income are deducted from the profit before tax. Taking into account changes in net working capital, this gives the cash flow from operating activities.

The reduction in the cash flow from operating activities from EUR 16,692 thousand to EUR 4,559 thousand is mainly due to the reduction in advances from customers and the increase in contract assets from contracts with customers.

Investing activities mainly comprise cash inflows and outflows for intangible assets, property, plant and equipment, equity investments, securities, and additions of associated companies.

Financing activities comprise dividend payments, cash outflows for repayment of loans, and cash inflows from loans and from non-controlling interests. The cash inflows and outflows for loans include EUR 12,600 thousand (2017: EUR 5,000 thousand) for short-term cash advances. Their average value was EUR 1,575 thousand (2017: EUR 1,250 thousand).

The change in financial liabilities, where cash inflows and outflows are shown in the cash flow statement as cash flows from financing activities, is as follows (in EUR thousand):

	Carrying amount as at 1 Jan. 2018	Cash flow	Change in exchange rates	Change in fair value	Reclassification of maturities	Carrying amount as at 31 Dec. 2018
Non-current liabilities	9,870	250	0	0	-1,000	9,120
Current liabilities	204	449	-2	0	1,000	1,651
Total liabilities for financing activities	**10,074**	**699**	**-2**	**0**	**0**	**10,771**

The cash and cash equivalents presented in the cash flow statement comprise the balance sheet item cash and cash equivalents totalling EUR 45,543 thousand.

Cash and cash equivalents comprise cash on hand, cheques, bank deposits that are due daily, and fixed-term deposits at banks that can be called at short notice. The funds must be earmarked for project costs, where the amount and timing during the project is not yet known. As at 31 December 2017, the cash and cash equivalents also included current securities (carrying amount: EUR 1,700 thousand), which were repaid in 2018.

The non-cash change in cash and cash equivalents of EUR 18,000 thousand results from a change in the purpose of some fixed-term deposits. As at 31 December 2017, these were still earmarked for operational liquidity management and mainly originated from advances for a major project. During 2018, it became clear that the cash outflows for the performance of this project were far lower than had originally been calculated (the marginal income from this project increased massively) and a significant portion of the advances received were therefore no longer required to cover operational processes and were therefore available for investment. Consequently, these fixed-term deposits are no longer contained in cash and cash equivalents as at 31 December 2018.

42. Financial Instruments

The impact of first-time application of IFRS 9 on the consolidated financial statements is presented in the section "Changes in accounting policies". As a result of the transition method applied, the comparative amounts have not been restated.

Trade accounts receivable, other receivables, cash and cash equivalents, time deposits, trade accounts payable and other liabilities are measured at their carrying amount. Since they generally have short remaining terms, this is an appropriate approximation of their fair value. For the equity investments, there are no quoted prices on an active market. Therefore, they are measured using valuation parameters that are not observable on the market.

A functioning banking system is of fundamental importance for Frequentis and its customers. Frequentis requires access to debt to pre-finance upfront project services up to settlement of the invoice. Therefore, it continuously monitors, controls, and evaluates its financial and liquidity position in order to limit the associated risks. The Group manages liquidity risks through careful planning and management of its liquidity requirements. Suitable measures are defined on the basis of cash flow forecasts and the Group ensures that it has adequate financial reserves to cover operational requirements and monitors credit lines.

In addition, the risk of default by customers is reduced by mandatory credit assessments and measures to secure payment.

At present, only short-term cash advances could be exposed to changes in interest rates; fixed-interest loans are not affected. Changes in international interest rates versus the euro could adversely affect hedging costs and would make offers in foreign currencies more expensive for customers.

The following table shows the carrying amounts and fair values of financial assets and financial liabilities, including the categories to which they are allocated. It does not contain any information on the fair value of financial assets and financial liabilities that are not measured at fair value if the carrying amount is a reasonable approximation of the fair value (amounts in EUR thousand).

2018	Measured at fair value			Measured at amortised cost		Total carrying amount
	Hedge accounting	Mandatory recognition at fair value through profit or loss	Equity instruments – at fair value through profit or loss	Financial assets	Other financial liabilities	
Financial assets						
Equity investments			575			575
Time deposits				17,995		17,995
Trade accounts receivable				44,366		44,366
Receivables from affiliated and associated companies				31		31
Financial derivatives	173					173
Other current and non-current assets				1,540		1,540
Cash and cash equivalents				45,543		45,543
Total	**173**		**575**	**109,475**		**110,223**
Financial liabilities						
Liabilities to banks and other financial liabilities					8,151	8,151
Trade accounts payable					13,775	13,775
Payables to affiliated and associated companies					226	226
Financial derivatives	844	165				1,009
Other liabilities					2,838	2,838
Total	**844**	**165**			**24,990**	**25,999**

Based on the IAS 39 categories, the following reconciliation was applied in the prior year:

2017 **Reconciliation of assets**	Securities and equity investments EUR thousand	Trade accounts receivable EUR thousand	Other assets EUR thousand	Total EUR thousand
Receivables	0	39,157	2,075	41,232
Available-for-sale assets	884	0	0	884
Assets held for trading	0	0	6	6
Assets held to maturity	1,700	0	0	1,700
Hedge accounting	0	0	365	365
	2,584	**39,157**	**2,446**	**44,187**
Reconciliation of liabilities	Trade accounts payable EUR thousand	Liabilities to banks EUR thousand	Other liabilities EUR thousand	Total EUR thousand
Liabilities held for trading (derivatives)	0	0	252	252
Available-for-sale liabilities (derivatives)	0	0	0	0
Liabilities	10,780	7,704	2,614	21,098
Hedge accounting	0	0	160	160
	10,780	**7,704**	**3,026**	**21,510**

The following hierarchy was used to allocate all financial instruments measured at fair value to a valuation method:

Level	Financial instruments at fair value
Level 1: Valuation based on market prices	Securities
Level 2: Valuation based on market prices of similar assets	Financial derivatives
Level 3: Valuation based on models with significant valuation parameters that are not observable on the market	Equity investments

The equity investments measured at fair value include a 10.29% interest in the Austrian company Viennasys Software Entwicklung GmbH. The scope of this company's business activities is relatively small. On materiality grounds, the investment was based on the (pro rata) equity of the company.

There is no indication of a significant difference between the present fair value of the 5.6% interest acquired in the start-up company Altitude Angel Ltd. in 2018 and the purchase price paid. For subsequent measurement, the Frequentis Group will mainly use the transactions between the owners or any new owners who take an interest in the company as a reference base or measure the development of the company relative to the business plans when the interest was acquired.

A distinction is made between derivative and non-derivative financial instruments. The derivative financial instruments mainly comprise hedging transactions to hedge exchange rate fluctuations.

Net gains and losses are as follows (in EUR thousand):

2018	Financial derivatives	Other financial instruments measured at fair value through profit or loss	Financial instruments measured at fair value through profit or loss	Financial assets measured at amortised cost	Financial liabilities measured at amortised cost
Net interest income/expense		8		494	-429
Valuations	-405	2		-9	
Valuation pursuant to IFRS 9		1			
Currency gains/losses				524	86
Disposal gains/losses		-3			
Net gains/losses recognised in profit and loss	**-405**	**8**	**0**	**1,009**	**-343**
Net gains/losses recognised in other comprehensive income	-245				
NET GAINS/LOSSES	**-650**	**8**	**0**	**1,009**	**-343**

2017	Held for trading	Hedge accounting	Loans and receivables	Available-for-sale financial assets	Other financial liabilities
Net interest income/expense			-63	15	
Valuations		111		-7	
Currency gains/losses				616	543
Disposal gains/losses				-49	
Net gains/losses recognised in profit and loss		111	-63	575	543
Net gains/losses recognised in other comprehensive income		1,322		-25	
NET GAINS/LOSSES		**1,433**	**-63**	**550**	**543**

Financial derivatives

In international business, it is necessary to conclude contracts in foreign currencies. The Group's foreign currency risk results principally from future business transactions, insofar as they are performed in a currency other than the functional currency of the parent company or the respective subsidiary. Foreign exchange risks are managed with the aid of financial derivatives, unless a natural hedge can be used (e.g. contracts with suppliers in the same foreign currency). The biggest foreign exchange items are due to customer contracts in AUD, CAD, GBP, PLN, SGD, and USD.

Forward exchange contracts were concluded to hedge the risk of exchange rate fluctuations. Financial derivatives are not used for speculative purposes.

Frequentis aims to manage and monitor the foreign exchange risks for future payments under contracts with customers on a rolling basis throughout the entire project period through hedging with forward exchange contracts at the date of order intake (cash flow hedges). The hedging transactions (forwards, swaps) are concluded for a year and extended annually to reflect the level of the expected cash flows (prolongation at historical rates). Payments from hedged cash flows are expected between 2019 and 2023.

The carrying amount of financial derivatives is their present fair value, which was determined using the current market value as at 31 December 2018, with evidence provided by corresponding confirmation by a bank.

The next table shows the development of financial derivatives:

2018	Derivative		Cash flow hedge		For MTM valuation		Total
Put currency	Put amount	Call amount EUR	Currency	Fair value EUR	Currency	Fair value EUR	Fair value EUR
AUD	-2,880,182.00	1,783,104.35	-2,880,182	50,094.88	0.00	0.00	50,094.88
CAD	-297,254.00	194,613.47	-297,254.00	8,466.38	0.00	0.00	8,466.38
GBP	-7,983,374.00	8,879,909.38	-7,983,374.00	77,564.01	0.00	0.00	77,564.01
USD	-2,300,159.00	1,987,424.94	-2,300,159.00	37,039.17	0.00	0.00	37,039.17
		12,845,052.14		**173,164.44**		**0.00**	**173,164.44**
CHF	-503,535.00	445,082.70	-361,297.94	-2,714.12	-142,237.06	-1,578.00	-4,292.12
GBP	-2,729,540.00	2,973,953.33	-1,473,951.60	-35,595.05	-1,255,588.40	-16,378.04	-51,973.09
PLN	-12,398,000.00	2,752,969.91	-12,398,000.00	-70,093.59	0.00	0.00	-70,093.59
SGD	-1,747,116.30	1,091,894.15	-1,747,116.30	-6,205.64	0.00	0.00	-6,205.64
USD	-17,918,107.00	14,316,294.90	-16,552,683.6	-729,759.93	-1,365,423.40	-147,005.00	-876,764.93
		21,580,194.99		**-844,368.33**		**-164,961.04**	**-1,009,329.37**

2017	Derivative		Cash flow hedge		For MTM valuation		Total
Put currency	Put amount	Call amount EUR	Currency	Fair value EUR	Currency	Fair value EUR	Fair value EUR
AUD	-1,756,716.00	1,123,750.66	-648,914.04	1,229.51	-125,468.94	975.74	**2,205.25**
CAD	-879,834.00	592,800.29	-521,056.20	15,873.36	-358,777.80	3,796.32	**19,669.68**
CHF	-580,502.00	510,045.07	-494,517.37	9,933.92	-16,036.40	361.95	**10,295.87**
GBP	-5,501,954.00	6,198,444.86	-3,941,289.58	38,329.29	-16,897.00	819.47	**39,148.76**
USD	-15,162,033.00	12,748,688.70	-11,450,802.29	299,443.28	-7,711.60	179.48	**299,622.76**
		21,173,729.58		**364,809.36**		**6,132.96**	**370,942.32**
AUD	-1,820,808.00	1,153,859.64	-1,160,018.72	-4,256.85	-520.55	-1.95	**-4,258.8**
CAD	-61,577.00	39,630.13	-6,848.61	-92.67	-80.04	-0.39	**-93.05**
CHF	-752,618.00	800,383.38	-406,669.85	-16,170.83	-291,261.00	-22,900.72	**-39,071.55**
GBP	-12,398,000.00	2,818,816.36	-11,782,319.17	-84,573.50	0.00	0.00	**-84,573.50**
NOK	-2,319,610.00	1,413,189.96	-662,745.71	-2,660.08	0.00	0.00	**-2,660.09**
USD	-3,459,089.00	2,477,322.18	-854,406.95	-52,058.20	-1,131,880.10	-229,417.25	**-281,475.45**
		8,703,201.65		**-159,812.13**		**-252,320.31**	**-412,132.44**

For the carrying amount of the cash flow hedge and the carrying amount of the MTM valuation, a positive fair value of EUR 173 thousand (2017: EUR 371 thousand) was recognised in other receivables in 2018, while a negative fair value of EUR 1,009 thousand (2017: EUR 412 thousand) was recognised in other liabilities.

The table shows the development of the cash flow hedge reserve:

	2018 EUR thousand	2017 EUR thousand
As at 31 December of the previous year	**154**	**-838**
Result from changes in fair value	-136	887
Deferred taxes on this amount	34	-222
Reclassification to the income statement	-109	435
Deferred taxes on this amount	27	-108
As at 31 December of the financial year	**-30**	**154**

Based on the sensitivity analyses performed, an increase of 10% in exchange rates on the reporting date would have increased the fair value of the cash flow hedge by EUR 2,386 thousand and the fair value of the MTM valuation by EUR 230 thousand, while a 10% reduction in exchange rates would have reduced the fair value of the cash flow hedge by EUR 2,916 thousand and the fair value of the MTM valuation by EUR 281 thousand.

43. Leases

Leases as lessee

The Frequentis Group has concluded operating rental and IT leases with some contractual partners. The future minimum lease payments arising from these existing contracts are as follows:

Year/period	EUR thousand
2019	7,677
2020 - 2023	25,949
More than 5 years	10,711
	44,337

These amounts include an annual rental payment of EUR 3,595 thousand for the company's headquarters in Vienna.

Leases as lessor

Since several leases where Frequentis is the lessor are ending, there will be a reduction in lease revenues. These will be EUR 42 thousand in 2019 and EUR 59 thousand in the following two years.

44. Information on business relations with related parties

Parent company

Frequentis Group Holding GmbH acquired a majority of the shares in Frequentis AG in 2018.

In the reporting period, revenues from transactions with Frequentis Group Holding GmbH were as follows:

	2018 EUR	2017 EUR
Goods and services supplied and other income	71,186.90	0.00
Goods and services received and other expenses	335,170.17	0.00

In addition, a pension obligation of EUR 2,508 thousand and the associated plan assets of EUR 2,024 thousand were transferred to Frequentis Group Holding.

Associated companies

Frequentis has normal business relations with associated companies. Here, Frequentis buys and sells services on normal market terms.

In the reporting period, revenues from transactions with the associated companies were as follows:

	2018 EUR	2017 EUR
Goods and services supplied and other income	102,751.82	161,226.97
Goods and services received and other expenses	1,848,790.28	2,113,512.55

The receivables from/payables to affiliated and associated companies are stated separately on the balance sheet.

Related persons

Various members of the management who hold key positions and companies and persons related to them have positions in other companies that give them control or a significant influence over the financial and business policies of these companies.

The following transactions were undertaken with related parties in the reporting period:

	2018 EUR	2017 EUR
Expenses for consulting services	508,602.50	548,446.17
Expenses for project support services	266,420.73	357,871.88
Expenses for software development and engineering	486,001.89	417,694.18
Rental expenses	3,765,832.58	3,647,246.43
Revenues	361,545.55	1,419.00
Receivables as at December 31	56,410.19	1,702.80
Payables as at December 31	161,420.74	58,268.08

The transactions took place on customary market terms.

Austrian Research Promotion Agency (Österreichische Forschungsförderungsgesellschaft/FFG): Mr. Hannes Bardach is a member of the Supervisory Board of FFG. FFG's core business is granting subsidies and loans for research purposes. To ensure the necessary strategic focus of the Supervisory Board, in accordance with the FFG law, representatives of companies that receive funding from FFG are nominated as members of the Supervisory Board.

Research loans of EUR 2,620 thousand were granted to Frequentis AG in 2018 (2017: EUR 2,370 thousand). The research revenues received from FFG in the reporting period totalled EUR 720 thousand (2017: EUR 1,495 thousand).

Since the Supervisory Board FFG is not involved in granting the funding, in practice there are no conflicts of interest.

45. Significant events after the reporting date

Frequentis is preparing a stock market listing and examining a possible acquisition in the ATM segment.

46. Additional information

The Frequentis Group had an average of 1,763 employees in 2018 (2017: 1,697 employees).

The total remuneration of all managing directors and Executive Board members of the companies in the Frequentis Group in the reporting period was EUR 7,439 thousand (2017: EUR 6,539 thousand). EUR 2,731 thousand (2017: EUR 2,113 thousand) of this amount comprises fixed and profit-related remuneration of the Executive Board of Frequentis AG.

Expenses of EUR 339 thousand were incurred in the financial year (2017: EUR 353 thousand) for contributions to pension insurance and the establishment of pension provisions for members of the Executive Board. Contributions of EUR 150 thousand to pension insurance will also be incurred in 2019. In the event of termination of employment, there are claims for severance payments under Austrian law. Additions to the corresponding provisions for severance payments amounted to EUR 100 thousand in 2018 (2017: EUR 116 thousand).

The remuneration of the Supervisory Board was EUR 37 thousand in the reporting period (2017: EUR 58 thousand).

As in the previous year, no advances or loans were granted to members of the Executive Board or Supervisory Board and no contingent liabilities were assumed to their benefit.

Audit fees

In the reporting period, audit expenses of EUR 118 thousand (2017: EUR 188 thousand) were incurred for the audit of the consolidated financial statements and annual financial statements of the company and expenses of EUR 31 thousand were incurred for other services.

47. Capital management

In addition to a sustained increase in the value of the company, financial management of the Frequentis Group aims to maintain an appropriate capital structure in order to retain an excellent credit rating. The principal performance indicators used to manage the capital structure are the EBIT margin, the equity ratio, and net debt, which are compared with the respective planned amounts. Since Frequentis currently has a net cash position, it refers to net cash rather than net debt. The net cash position comprises bank deposits less financial liabilities to banks. All growth measures are designed to maintain or improve the target indicators. The key performance indicators developed as follows in the reporting period:

	2018	2017
EBIT margin	5.3%	5.2%
Equity ratio	43.3%	46.3%
Net cash in EUR thousand	55,386	70,029

Maintaining an optimum capital structure to ensure sustained growth is a key aim of capital management in the Frequentis Group. The company meets the minimum capital requirements defined by law and the articles of association. Frequentis AG is subject to the minimum capital requirements of the Austrian Companies Act. The articles of association do not set any minimum capital requirements. The capital managed comprises the equity reported in the consolidated balance sheet.

48. Risk management

The Frequentis Group has an internal control system (ICS) integrated into its accounting process. This includes controls on capital management. The reliability of the internal control system is monitored by the internal audit department. The Group has initiated several processes based on best practice standards to ensure that its risk management is effective. The fundamental aim is to identify opportunities and risks as soon as possible and take suitable measures to maintain profitability and secure the continued existence of the Group. Risk awareness, the vigilance of all staff and early identification of business and natural risks are well developed and are incorporated in a solid risk management policy.

All business risks are outlined in more detail in the Group Management Report.

Auditor's Report

Report on the consolidated financial statements

Audit opinion

We have audited the consolidated financial statements of FREQUENTIS AG, Vienna, and of its subsidiaries (the Group) comprising the consolidated balance sheet as of 31 December 2018, the consolidated income statement, the consolidated statement of changes in equity and the consolidated statement of cash flows for the fiscal year then ended and the notes to the consolidated financial statements.

Based on our audit the accompanying consolidated financial statements were prepared in accordance with the legal regulations and present fairly, in all material respects, the assets and the financial position of the Group as of 31 December 2018 and its financial performance for the year then ended in accordance with International Financial Reporting Standards (IFRS), as adopted by the EU and with Austrian Generally Accepted Accounting Principles and other legal or regulatory requirements.

Basis for opinion

We conducted our audit in accordance with Austrian Standards on Auditing. Those standards require that we comply with International Standards on Auditing (ISAs). Our responsibilities under those regulations and standards are further described in the "Auditor's Responsibilities for the Audit of the Financial Statements" section of our report. We are independent of the Company in accordance with the Austrian General Accepted Accounting Principles and professional requirements and in accordance with any other regulations or requirements agreed and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Other matter

The consolidated financial statements of the Group for the year ended 31 December 2017 were audited by another auditor who expressed an unmodified opinion on those statements on 19 March 2018.

Responsibilities of management and of the supervisory board / audit committee for the consolidated financial statements

Management is responsible for the preparation of the consolidated financial statements in accordance with Section 245a Austrian Company Code (UGB), for them to present a true and fair view of the assets, the financial position and the financial performance of the Group and for such internal controls as management determines are 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, management is responsible for assessing the Group's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Group or to cease operations, or has no realistic alternative but to do so.

The Audit Committee is responsible for overseeing the Group's financial reporting process.

Auditor´s responsibilities for the audit of the consolidated financial statements

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 to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Austrian Standards on Auditing will always detect a material misstatement when it exists. 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.

As part of an audit in accordance with Austrian Standards on Auditing, which require the application of ISAs, we exercise professional judgment and maintain professional scepticism throughout the audit.

We also:

- identify and assess the risks of material mis-statement of the consolidated financial statements, 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 opinion. 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 in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of ex-pressing an opinion on the effectiveness of the Group's internal control.
- evaluate the appropriateness of accounting policies used and the reasonableness of ac-counting estimates and related disclosures made by management.
- conclude on the appropriateness of management's use of the going concern basis of ac-counting 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 our auditor's report to the related disclosures in the consolidated financial statements or, if such disclosures are in-adequate, to modify our opinion. 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 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 represent the underlying transactions and events in a manner that achieves fair presentation.
- obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

We communicate with the Audit Committee, 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.

REPORT ON OTHER LEGAL AND REGULATORY REQUIREMENTS

Comments on the management report for the Group

Pursuant to Austrian Generally Accepted Accounting Principles, the Group management report is to be audited as to whether it is consistent with the consolidated financial statements and as to whether it was prepared in accordance with the applicable legal regulations.

Management is responsible for the preparation of the Group's management report in accordance with Austrian Generally Accepted Accounting Principles.

We conducted our audit in accordance with Austrian Standards on Auditing for the audit of the Group's management report.

Opinion

In our opinion, the management report for the group was prepared in accordance with the valid legal requirements and is consistent with the consolidated financial statements.

Statement

Based on the findings during the audit of the consolidated financial statements and due to the thus obtained understanding concerning the Group and its circumstances no material misstatements in the Group's management report came to our attention.

Other information

Management is responsible for the other information. The other information comprises the information included in the annual report, but does not include the consolidated financial statements, the Group's management report and the auditor's report thereon.

Our opinion on the consolidated financial statements does not cover the other information and we do not express any form of assurance conclusion thereon.

In connection with our audit of the consolidated financial statements, our responsibility is to read the other information and, in doing so, to consider whether the other information is materially inconsistent with the consolidated financial statements or our knowledge obtained in the audit, or other-wise 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.

Vienna, 25 March 2019

BDO Austria GmbH
Wirtschaftsprüfungs- und Steuerberatungsgesellschaft

Mag. Gerhard Posautz Auditor	Mag. Peter Bartos Auditor

We draw attention to the fact that the English translation of this long-form audit report according to Section 273 of the Austrian Company Code (UGB) is presented for the convenience of the reader only and that the German wording is the only legally binding version.

Declaration by the Executive Board on the conformance of the consolidated financial statement to the IFRSs

The Executive Board hereby declares that the consolidated financial statements as at 31 December 2018 provide a true and fair view of the assets, financial position, and results of operations of all companies consolidated in the Frequentis Group, in accordance with the IFRSs, and that the management report presents the business performance, results of operations, and situation of the Frequentis Group in such a way that it gives a true and fair view of the assets, financial position, and results of operations and that it describes the material risks and uncertainties.

Vienna, 22 March 2019

Norbert Haslacher
Chairman of the Executive Board

Sylvia Bardach

Hermann Mattanovich

Glossary

The glossary explains specialist financial terminology and terms relating to Frequentis' business to facilitate understanding of this annual report.

Frequentis business

Term	Explanation
3020 LifeX	Product name for the multimedia collaboration platform in the Public Safety business unit.
3GPP	3rd Generation Partnership Project
	Standardisation organisation that develops mobile communications protocols.
5G	New mobile communications standard that aims for high data rates, lower latency, energy savings, cost reductions, greater system capacity and massive connectivity of devices.
AIM	Aeronautical Information Management
	Aeronautical information services that provide pilots with all the information necessary for a flight.
AIT	Austrian Institute of Technology
	The AIT is Austria´s largest non-university research institute. Its Center for Digital Safety & Security develops state-of-the-art information and communication technologies.
AMHS; MHS	(Aeronautical) Message Handling System
	MHS: System for processing and transmission of aeronautical messages, based on an ICAO standard for air-ground-ground-communication; e.g. for the transmission of NOTAM (notice to airmen), flight plans or meteorological data.
ASGARD	Name of a communication solution developed specifically for fire brigades in Germany.
ATM	Air Traffic Management
	1) Air traffic management (ATM) – ensures the safe and efficient movement of aircraft during all phases of their operation.
	2) Name of a Frequentis business segment that comprises the Air Traffic Management Civil, Aeronautical Information Management, and Defence business units.
CMATS	Civil Military ATM System
	A module in Australia´s OneSky programme, which comprises modernising the air traffic management system for joint use by civil and military air traffic controllers in the future.
COTS	Commercial off the shelf
	Products that are commercially available and can be bought "as is".
DoD	US Department of Defense
EAD	European AIS (Aeronautical Information Services) Database
	The European AIS Database has been successfully operating since 2003. The EAD system was developed by Frequentis and is operated by GroupEAD. It ensures standardisation and harmonisation of the relevant aviation data and therefore greater safety, while reducing maintenance costs. It there represents an initial milestone for the concept of a "Single European Sky".
EASI	EAD AIM System Integration
	Name of a project to renew the flight plan management of Deutsche Flugsicherung (DFS).
EENA	European Emergency Number Association
	The "counterpart" of North America´s NENA – sets standards for improved international networking of emergency numbers and joint projects (Europe-wide emergency number 112).
ELKOS	Name of a project (dispatch and communications system) run by the Austrian Ministry of the Interior.
EUROCAE	European Organization for Civil Aviation Equipment
	EUROCAE is a non-profit organisation that deals with the standardisation of electronics for aviation.

FFG	Austrian Research Promotion Agency This organisation is responsible for promoting industry and applications-related research and innovation in Austria.
FPRSA	Flight Plan Reception Suite Automation Flight planning software used by the British air navigation service provider NATS.
GOF U-space	A project of the SESAR Joint Undertaking geared to safely integrating drones into air traffic. To this end, extensive tests and demonstrations are being performed in Estonia and Finland (Gulf of Finland, GOF) in 2019.
GSM-R	GSM for Railways A mobile radio system which is based on the dominant global mobile radio standard, which has been specifically adapted for use in the railway sector.
ICAO	International Civil Aviation Organization ICAO is a UN specialised agency based in Montreal, Canada. Its aim is to foster sustained growth in the global civil aviation system.
IFR	Instrument Flight Rules An instrument flight is a flight under conditions where the flight path is maintained with the aid of reference instruments such as navigation and control instruments on the flight deck, without outside visual reference.
IP networks	IP stands for "Internet Protocol" IP networks work with the internet protocol and packet switching. They consist of subnetworks that use routers or switches to connect to the actual backbone network, which constitutes the communication infrastructure.
IVSR	Interim Voice Switch Replacement Programme by the US air navigation service provider FAA for the modernisation of its voice communication systems.
KIRAS	The Austrian Security Research Programme KIRAS supports national research projects whose results contribute to the security of all members of society.
LTE	Long Term Evolution Standard for mobile phones and data devices that allows high-speed wireless communication.
MosaiX	Product name for a Frequentis-developed integrated voice and data platform.
NAVAIDS	Collective term for navigation aids in aviation.
NG911	Next Generation 9-1-1 Standard defined by the National Emergency Number Association (NENA) for the technical architecture and components for a future emergency call system in North America, including handling of VoIP emergency calls.
PST	Public Safety & Transport Name of the Frequentis business segment comprising the Public Safety, Public Transport (i.e. railways) and Maritime business units.
REM	Rail Emergency Management Implementation of an automation-based emergency workflow, alarm and communication system for operational incidents on railways.
RVT	Remote Virtual Tower Alternative designation for a remote (digital) tower.
SATCC	Shipboard Air Traffic Control Communications A major US program to equip aircraft carriers with communication systems.
SESAR; SESAR 2020	Single European Sky ATM Research Programme A pan-European initiative for the unification, harmonisation and synchronisation of services within the framework of European air traffic management, which was initiated by the European Commission and the European Organisation for the Safety of Air Navigation, EUROCONTROL. The current programme is named "SESAR 2020".
SOA	Service-oriented architecture An IT architecture from the area of distributed systems, which is used to structure and use the services provided by IT systems.

SWIM	System Wide Information Management The SWIM concept describes a paradigm shift in how information is managed along its full value-added chain, involving stakeholders from across the whole European ATM network. Simply put, it is a kind of intranet for ATM.
TETRA	TErrestrial Trunked Radio Open standard for digital trunked radio which enables the setup of universal networks.
UAV	Unmanned Aeronautical / Aerial Vehicle An unmanned aerial vehicle, commonly known as a drone, is an aircraft without a human pilot aboard, which can be operated and navigated via a computer or remote control.
UTG	Unified TETRA Gateway A modular, scalable analogue and/or digital radio gateway developed by Frequentis that connects networks, wireless communication devices and dispatcher terminals to ensure continuous communication.
UTM	Unmanned (Aircraft System) Traffic Management
VCX	Product name for Frequentis network nodes.
VFR	Visual Flight Rules A visual flight is when the pilot operates the aircraft on the basis of what he/she can see, i.e. on the basis of the applicable visual flight rules.
WAM	Wide Area Multilateration Wide area multilateration is a cooperative aircraft surveillance technology. The position of the aircraft is calculated by several sensors on the ground on the basis of the transponder signals transmitted. It is used as a substitute for radar for tracking aircraft over a wide area.
WAVE 1	Name for phase 1 of the SESAR 2020 programme.

Finance & economics

Term	Explaination
Brexit	The withdrawal of the United Kingdom (UK) from the European Union (EU).
Cash flow	• From investing activities: Outflow/inflow of liquid funds from investments/divestments • From operating activities: Outflow/inflow of liquid funds, unless they are affected by investments, divestments or financing • From financing activities: Outflow/inflow of liquid funds from capital payments and capital contributions
EBIT	Earnings before interest and taxes.
EBIT margin	EBIT as a percentage of total operating performance.
EBITDA	Earnings before interest, taxes, depreciation and amortisation.
ECL	Expected credit losses
Equity ratio	Equity/total equity and liabilities.
FN	Commercial register number, unique identifier of a legal entity in Austria.
Free cash flow	Net cash flow from operating activities – net cash flow from investing activities.
FTE	Full-time equivalent
	A full-time employee is equal to one FTE; part-time employees are included using a ratio corresponding to their working hours.
FVOCI	Fair value through other comprehensive income
FVTPL	Fair value through profit or losss
IAS	International Accounting Standards
IATA	International Air Transport Association
	The International Air Transport Association is the trade association for the world´s airlines.
IFRIC	International Financial Reporting Interpretations Committee
IFRS	International Financial Reporting Standards
	International accounting standards issued by the IASB to ensure internationally comparable accounting and disclosure by companies.
IMF	International Monetary Fund
OCI	Other comprehensive income
UGB	Austrian Commercial Code
WIFO	Austrian Institute of Economic Research Vienna.

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