

# ANNUAL FINANCIAL STATEMENT

2018





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## SHAREHOLDERS

- **REPUBLIC OF AUSTRIA**  
(Austrian Federal Ministry of Transport, Innovation and Technology)  
with 50.46%
- **ASSOCIATION FOR THE PROMOTION OF RESEARCH AND INNOVATION**  
(Federation of Austrian Industries) with 49.54%

## CORPORATE BODIES

### MANAGEMENT

DI Anton PLIMON  
Prof. Dr. Wolfgang KNOLL

#### Authorized Officers

Dr.in Brigitte BACH until 26 July 2018  
Prof.in Dr.in Elke GUENTHER  
DI Dr. Christian CHIMANI  
DI Dr. Wolfgang HRIBERNIK since 11 August 2018  
DI Arno KLAMMINGER  
DI Helmut LEOPOLD  
Mag. Christian MEIXNER  
Mag. Alexander SVEJKOVSKY  
Univ.-Prof. Dr. Manfred TSCHELIGI  
DI Andreas VRABL  
DI Dr. Matthias WEBER, MA

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## STRUCTURE REPORT AND ORGANIZATION CHART

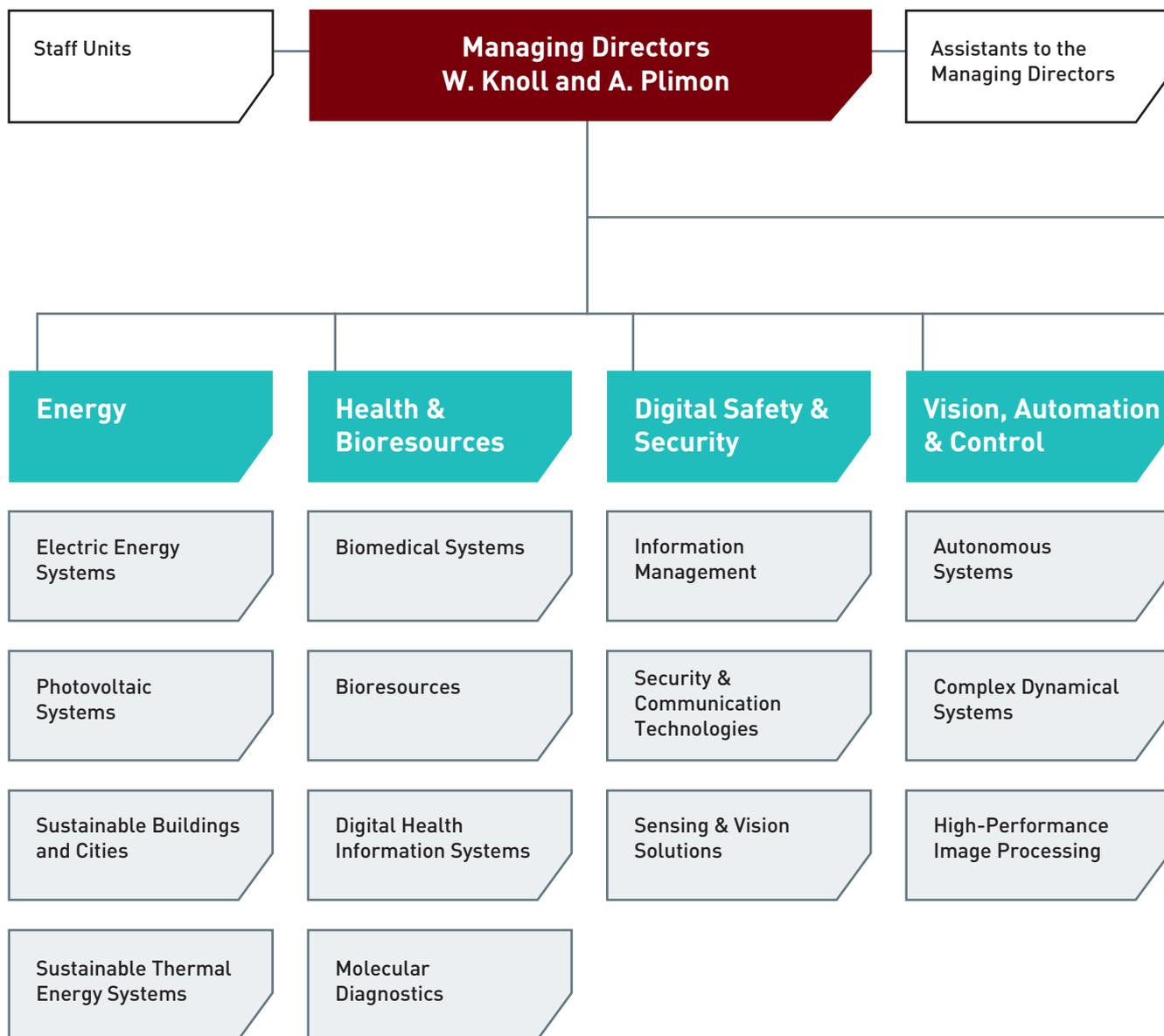
On 1 January 2018 started the implementation of the AIT strategy period 2018 to 2021. In preparation for the implementation of the strategy, the Center structure was already implemented in 2017 and was continued in 2018 in a strategically consistent manner.

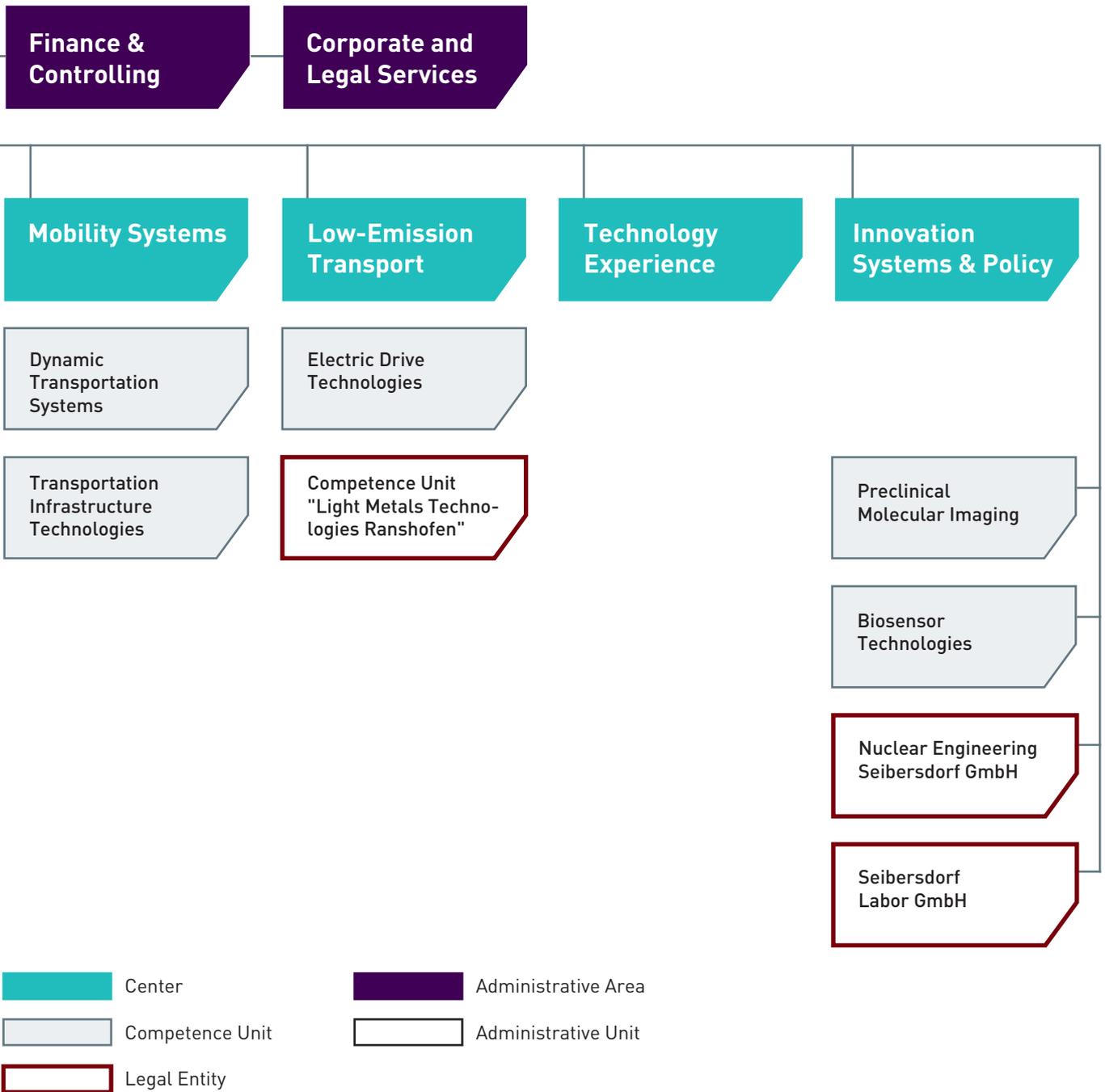
Individual Competence Units are continuously monitored during the strategy period as well. For example, the Preclinical Molecular Imaging Competence Unit was docked directly to Management at the end of 2018 in order to evaluate any new opportunities for cooperation.

The Business Cases have served as control instruments for utilisation activities since 1 January 2018. AIT's increased focus on application areas and the appointment of Business Managers were prepared in 2017 and implemented in 2018. To implement the new role of Business Managers, an internal coaching based on industrial R&D experience has been established.

2018 also saw several personnel changes, including the appointment of the chair of the Center for Energy with DI Dr. Wolfgang Hribernik as successor of Prof.in Dr.in Brigitte Bach, who switched to industry.

## AIT ORGANIZATION CHART JANUARY 2019





## REPORTS FROM THE CENTERS ENERGY

In 2018, the AIT Center for Energy was able to continue its positive development trend and set important impulses for the implementation of the strategy in the three centrally addressed systems (energy infrastructure, industrial energy systems, cities and regions). In the area of energy infrastructure, electricity, heat and relevant storage infrastructure (e.g. for electromobility) are considered as a whole in order to be able to optimally exploit flexibilities and synergies in accordance with the principle of sector coupling. Here mention should be made of the expansion of the laboratory infrastructure for the inspection of district heating transfer stations, where promising new contract research potential is to be expected due to new European certification (CEN-WS 73 "Eco-efficient Substation"). In the subject area of sustainable and resilient cities and regions, the development of methods was significantly driven forward by the research group of Principal Scientist Prof. Reinhard König in the field of Cognitive Urban Design Computing (CODEC) in cooperation with academic partners ((Bauhaus Universität, Weimar). The newly designed "City Intelligence Lab" which will be available to urban stakeholders as an innovative research infrastructure in the future plays an important role in this as well. In mid-2018, DI Dr. Ing. Wolfgang Hribernik success-

fully took over the chair of the Center. Building on his sound knowledge of the energy sector, Dr. Hribernik managed to effectively increase the visibility of the Center at the national and international level (e.g. CIGRE – International Council for Electrical Systems). Austria's accession to Mission Innovation in May 2018, the global research alliance of the leading energy technology countries, will enable the Center to proactively shape research agendas at the national and global level on behalf of the bmvit and to advance strategic collaborations with the private sector. The flagship region NEFI – New Energy for Industry, coordinated by Dr. Ing. Wolfgang Hribernik, is an integral part of national activities in the context of Mission Innovation to achieve the goals of the Energy Research Initiative. Furthermore, the commercial exploitation of research activities was substantially strengthened in strategically selected areas of the Center through the appointment of additional Business Managers. This ensures that the needs of the Austrian and European industries are specifically targeted and innovative solutions are provided.

## PORTFOLIO DEVELOPMENT HIGHLIGHTS 2018

As part of the new Center strategy, the decarbonisation of industrial processes and systems using renewable energy is a key topic of high scientific relevance. This aims at helping energy-intensive industries reduce their CO<sub>2</sub> emissions while at the same time improving their competitiveness. In this context, a cooperation doctoral college was launched in cooperation with the Vienna University of Technology and the Montanuniversität Leoben in 2018 under the direction of Prof. Rene Hofmann, thematic coordinator of the Efficiency in Industrial Processes and Systems research field at the AIT Center for Energy. The overall objective of the Smart Industrial Concept! strategic programme is the development of methods for the energy-optimized operation of industrial plants, their energy conversion, distribution and storage, as well as their interaction with the framework conditions of the energy industry. It uses data-driven modeling and automation, and the field of Artificial Intelligence forms a key part of decision-making processes in order to create more favourable, more efficient, and more sustainable processes. In addition to this, we should mention the successful habilitations of Dr. Thomas Strasser (Competence Unit Electric Energy Systems) and Dr. Christoph Reichl (Competence Unit Thermal Energy Systems) which emphasize the strong academic connection to the Vienna University of Technology.

In the field of energy storage (electrical and thermal), the AIT Center for Energy was able to further consolidate its strong position in the industrial environment in various implementation projects. The LEAFS project, for example, evaluates

the impact of consumer-driven and market-led deployment of decentralised storage and load flexibility on distribution grids. For selected grid operators, technologies and operating strategies are developed which minimize the required grid reinforcements as a result of the integration of renewable energy resources and market-driven dynamics. It also answers the question as to whether storage support rather than load activation for system-related services (market, grid) seems sensible. In the field of thermal storage, the HYSTEMS project (starting in September 2018) develops and tests innovative concepts for hybrid storage consisting of steam and latent heat storage on the basis of two AIT patents, thus yielding relevant insights for future hybrid storage prototypes. The developed state of charge measurement allows the regulation of future prototypes. Specific statements concerning the industrial demand in several energy-intensive industries as well as the economics of the storage concept in relation to storage capacity, performance, process dynamics and temperatures are expected in this context. At the systemic level, a project for a national storage roadmap as a strategic decision-making instrument for energy technology policy and the energy industry was successfully completed in 2018 under the leadership of the AIT Center for Energy and on behalf of the Climate and Energy Fund. The technical possibilities, economic potentials and barriers to electricity and heat storage were assessed, taking into account synergies, interactions and usage competitions between the sectors of electricity, heat and transport.

## REPORTS FROM THE CENTERS HEALTH & BIORESOURCES

The Center for Health & Bioresources directs its research and the development of innovative solutions towards the health care system with a focus on prevention, diagnostics and therapy support, including also animal health and the lifestyle market. The Center furthermore focuses on the bioeconomy with the aim of improving crops and microbial production systems. The Center now has core competencies in the fields of Omics technologies, Big Data and imaging procedures, biomaterial, nano and sensor technologies, modelling and simulation, as well as in-depth knowledge of regulatory markets. The research and development competencies of the four Competence Units Bioresources, Molecular Diagnostics, Biomedical Systems and Digital Health Information Systems are tailored to market segments and customer needs in a targeted manner and competencies are further developed along the value chain so as to create added value for our customers and partners. Research and commercial exploitation are closely linked in Health & Bioresources, so that the Center's excellent scientific output has proven to be a strategic guarantee for innovative and impact-oriented solutions. In 2018, the Center's methodological and scientific excellence manifests itself, among other things, in more than ten issued patents and a nearly equal number of patents filed, in more than 70 publications in peer-reviewed journals, and over 60 peer-reviewed conference publications. With over 60 lectures, the number of invited lectures and keynote speeches remains high. As a result, the Center is on track to reach its strategic goals by 2021. Building on a competitive technology portfolio with a focus on the respective core topics and customer groups of the individual Competence Units, the Center has a solid knowledge base, competitive know-how at the highest level, as well as a strong patent portfolio.

### PORTFOLIO DEVELOPMENT HIGHLIGHTS 2018

Pulse wave analysis landed on the International Space Station (ISS) in April and December 2018 so as to deepen the understanding of the effects of microgravity on the human cardiovascular system. In manned space flight, weightlessness causes a change in the cardiovascular system. According to initial studies, this new situation burdens the vessels with an aging of 10 to 20 years and can lead to an increased mortality rate in astronauts. The Canadian and Russian space agencies along with the German Aerospace Center (DLR) are using the proven 24-hour blood pressure monitor Mobil-O-Graph® with the algorithm ARCSolver® that was developed and patented by AIT.

On Earth, cardiovascular diseases have been the major cause of deaths for decades. However, only half of current deaths can be explained by traditional risk factors. This is where the AIT ARCSolver® technology comes in, to not only detect blood pressure but also to analyze its causes. In the case of pathological vascular wall alterations, the use of pulse wave analysis improves the diagnosis of cardiovascular diseases. The ARCSolver®-based technology is already being used in clinics and studies worldwide. In the future, the pulse wave analysis technology is to be extended to also cover personalised therapy support via telemonitoring. This "feedback loop" allows visualising the therapy progress, so as to motivate the patient on the one hand, and to allow the doctor to define possible treatment options more easily on the other hand.

Chronic diseases are among the major common diseases and will continue to increase in the future as a result of the demographic change in Austria. An individually coordinated and consistent therapy may significantly improve the patients' health and return the quality of life to those affected. For almost 20 years, the AIT has been working in the field of care for patients with chronic diseases using telemonitoring technology. Based on a large number of contracted and subsidized projects as well as research with own resources, the KIT telehealth platform was developed according to the concept of "closed-loop healthcare" which significantly facilitates and accelerates the communication between patients and supervising health experts. Already in 2009, MOBITEL's study conducted with clinical partners showed that, through care through the KIT telehealth platform, patients with heart failure not only had fewer and shorter hospital stays, but that it also improved the quality of life of those affected. A German study with about 1,000 patients with cardiac insufficiency published in 2018 showed similar results.

Reference projects for the indications diabetes mellitus and cardiac insufficiency in which the therapy management was carried out with AIT technology were named by the Austrian Commission for telehealth Services. The use of such telesurgery services is expected to lead to cost containment for the future care of patients with chronic diseases. KIT telemonitoring technology has already arrived in standard care (of cardiac insufficiency patients in Tyrol) with well-known partners such as the VAEB (Insurance Institution for Railway & Mining), the states of Tyrol and Styria. In September 2017, the AIT spin-off telbiomed Medizintechnik and IT Service GmbH were founded to expand the business portfolio for the professional provision of the KIT TeleHealth platform. The challenges of connecting and networking existing IT infrastructures with telehealth services must be resolved in a sustainable and efficient manner in order to systematically expand standard care, in particular for chronic diseases.

## REPORTS FROM THE CENTERS DIGITAL SAFETY & SECURITY

In line with its strategic plan, the Center for Digital Safety & Security managed to successfully implement the growth targets set in the aforementioned research areas, while at the same time establishing several new research fields in response to the dynamics of the global market and the technology landscape in the area of digitisation, such as

- 5G in the area of Car2Car-Communication, V2X (Vehicle-to-everything) or URLLC (Ultra-Reliable Low-Latency Communication),
- Phonetic Communication,
- AI in several markets (digitisation, telecommunication),
- Blockchain (virtual currencies and other applications) and
- Safety & Security Co-Design.

The record of scientific success and the existing network with universities and scientific institutions prove the Center's high scientific competence level. The impact factor of the scientific publications increased again compared to the previous year.

The Center demonstrated its important role for the Austrian economy as a driving force and trendsetter for the development and steering of European research programmes as well as the implementation of numerous funded European research projects, thereby contributing significantly to EU-co-financed innovations "Made in Austria".

Thanks to its technological core competencies and a targeted marketing policy, the Center once again received more industrial orders than in the previous year.

In addition, the Center was able to position itself as a trendsetter not only in important new areas of technology, but also as a leading competence center in Austria, Europe and worldwide.

In the field of physical layer security, AIT has positioned itself as the most important 5G competence center. This resulted in leading collaborative initiatives with the international industry for a variety of use cases, such as autonomous systems (transportation) and next-generation wireless campus systems. AIT has been able to consolidate its technological leadership role through sound scientific and technological results. Furthermore, AIT has demonstrated its leadership in the field of quantum technology research and was able to obtain an ERC Grant for AIT on this topic, being one of the most successful players in the European Quantum Flagship Initiative when compared to all other Austrian players.

In Crisis & Disaster Management, AIT is optimizing next-generation digital systems for advanced crisis management and disaster prevention systems. The focus here lies on interoperable and modular IT architectures to support a wide range of requirements in complex ecosystems of different stakeholders (federal, state, city, defense, etc.).

In the research field of Data Science, AIT successfully established a well-founded solution portfolio in the context of applied artificial intelligence (AI) and focused on well-defined markets such as public safety, predictive maintenance in the industry or cybersecurity. AIT furthermore has an international leadership role in forensics in the field of blockchain technology-based virtual currencies.

The use of AI-supported algorithms also allowed the established position in Europe to be consolidated in the field of digital identity management and border control of the research field of Surveillance & Protection Research (contactless biometric fingerprint recording, event detection).

In the research field of Cyber Security, the AIT received a contract from the IAEA for the worldwide implementation of a cybersecurity training programme for nuclear power plants based on its recognized expertise.

Last year, AIT's position as primary point of contact for verification and secure system design (Dependable Systems Engineering) was further consolidated. This is underpinned by national and international (e.g. US) assignments, invitations to projects, first industry tool licensing efforts, industry-leading work in automotive cybersecurity standardization, and excellent publications. In particular, the expertise in the Smart Farming area could be expanded.

In the field of New Sensor Technologies, AIT successfully demonstrated the semi-autonomous unmanned Aerial Search system for radioactive sources (SecuRescue), which was developed in close cooperation with the Austrian Federal Ministry of Defense (BMLV), at several international conferences and trade fairs. This novel system provides online situational awareness for suspected radioactive contamination, thus reducing the risks to ground personnel of first responders.

These new future-oriented scientific and technological achievements were also presented at the RTO Innovation Summit held in Brussels at the end of 2018 where European Research & Technology Organizations (RTOs) demonstrated their skills and achievements for science as well as for the European market.

## REPORTS FROM THE CENTERS VISION, AUTOMATION & CONTROL

The Center for Vision, Automation & Control covers the entire chain from capturing information through (vision) sensor systems via sensor fusion, the combination of physically based models with machine learning and data analysis concepts, the use of this information in error detection and fault isolation, optimization and control, all the way to cognitive decisions for industrial processes, systems and components.

In the three research fields of High Performance Vision, 3D Vision and Modeling, and Complex Dynamical Systems, the scientific foundations are researched and implemented as prototypes for this purpose. The latter topic is being developed in close cooperation with the Automation and Control Institute (ACIN) of the Vienna University of Technology. Through AIT's participation in the PROFACTOR GmbH, the portfolio of the Center is significantly expanded for our customers and partners, especially in the field of assistance robotics.

### PORTFOLIO DEVELOPMENT HIGHLIGHTS 2018

In the High Performance Vision research field, the Center holds a leading global position when it comes to the print inspection of security documents (in particular of banknotes). On behalf of international central and national banks, the Center has played a key role in designing the CDI2 standard for an open interface between high-performance sorting machines and the corresponding quality and authenticity sensors and, in a follow-up order, successfully developed simulators for the verification of the conformity of sorting machines and sensors with the CDI2 standard.

In addition to the world's fastest and most flexible line scan camera (xposure:cam) developed in the Center, the fastest LED flash technology (xposure:flash, maximum 600kHz) was developed for the lighting of a scene. Different lighting spectra and/or illumination directions in a flash sequence allow simultaneous recording of several very specific images of an object with a single camera. By means of the algorithms patented by AIT (Inline Computational Imaging), robust and reliable important object properties (e.g. surface condition, 3D structure) are detected and inspected. New innovative approaches to inspection tasks can now be explored based on this and expand our competence in surface inspection. The focus here lies on challenging assignments from industry in different scales all the way down to the micrometer range. Presentations regarding this new technology at conferences and trade fairs as well as prizes and awards from key players in the vision market contributed to a significant increase in visibility and demand in 2018.

Assistive and autonomous systems are also becoming more and more important for trucks and tractors, mobile work machines, off-road vehicles, in the field of aviation, in trains and trams, as well as for robotic applications and machines in production systems. In the research field of 3D Vision and Modeling, the Center is developing significant expert knowledge in the areas of 3D sensor technology, environment detection, mapping, localization, navigation and machine learning for assistance and autonomous systems for this environment. Together with industrial partners, prototype systems are implemented in practice. The latest research results help, for example, to continue the long-standing cooperation in the field of (semi-)autonomous trams and to equip the tramway assistants developed at the Center with new functionalities. The experiences in real operation with currently more than 100 trams yield new conclusions and requirements as to how the safety of tram operation can be further increased.

In addition to rail vehicles, the logistics sector is of great interest as well. Therefore, AIT's involvement in DigiTrans GmbH, a test center for modern, integrated multimodal freight mobility, has been finalized and the first projects got started. In a similar environment with partial automation of loading and unloading by harbor cranes, the use of 3D vision and modeling technology is already showing promising progress. In general, (semi-)autonomous work machines are evolving into a very interesting field of application for the Center in which many open and challenging research questions need to be resolved.

The development of the research field Complex Dynamical Systems was successfully continued. The main competen-

cies are physical modelling, path planning, control, sensor fusion, real time optimization and the analysis and design of complex dynamic systems. In a large number of customer projects, these competences were successfully used industrially. Through the combination of scientific expertise in the field of image processing and machine learning of the other research fields of the Center, the first cross-center autonomous systems are being developed in a holistic manner. The focus in the applications lies in the area of handling systems and construction machines. Among other things, new concepts for the automated handling of pliable materials (textiles, leather, etc.) are being worked on together with key industrial customers. The industrial processing of these materials is largely done by hand and opens up a huge future potential for automation. In addition, the excellent market position in the process automation of industrial furnaces in the metal industry was able to be further consolidated. The mathematical models and algorithms for estimation, optimization and control were further improved and successfully integrated as prototypes in customer systems. In the future, these competencies will also be able to be extended to other industries and processes (e.g. cooling systems, plastics processing).

The targeted growth strategy was continued to be successfully implemented in the Center. Important here is the attractiveness of the research topics and the renowned cooperation partners. In a time of extreme competition for the best minds, the close cooperation with the Vienna University of Technology has made it possible to attract a number of highly trained researchers for the Center.

## REPORTS FROM THE CENTERS MOBILITY SYSTEMS

Trends such as the sharing economy and the desire for a socially just, secure and barrier-free mobility for everyone are gaining in importance. The parallel existence of the mobility of persons, goods transport and its associated transport infrastructure is increasingly being replaced by an interaction between existing and future technologies and stakeholders. At the same time, the mobility system must meet the needs of the people. Developments such as Mobility as a Service, synchromodality, automated driving, the Physical Internet or an intelligent infrastructure are great challenges. The development of economically and socially viable solutions thus requires a holistic approach and a close cooperation between all involved.

Thanks to its interdisciplinary team of experts, the AIT Center for Mobility Systems has such a holistic view with regard to the mobility ecosystem and every single development as well as every single project. In the research work, the thematic and content continuity, from the activities in the individual research and development teams all the way through to the exploitation strategies of the solutions on the market, is key.

The positioning of research topics is intensively co-designed through the integration into national and international networks as well as bilateral cooperation agreements, and it represents a continuous strategic focus for the networking with other research organizations, universities and industry partners for long-term partnerships in the transport sector.

### PORTFOLIO DEVELOPMENT HIGHLIGHTS 2018

#### Visitor Management Schönbrunn Palace

Boasting over 2.7 million visitors a year, Schönbrunn Palace is one of the most popular tourist attractions in Austria. Where the palace was once intended to house the imperial family and its court, today the 40 magnificent rooms dating back to the Habsburg era draw up to 10,000 visitors a day. As it may be assumed that the interest of visitors is bound to rise, it is of key importance to expand the existing system and to implement an intelligent, targeted and sustainable visitor management system now, in order to ensure the future satisfaction and security of guests. For this purpose, AIT has developed a solution for simulating visitor movements, which makes it possible to identify the right measures to optimize visitor flows at Schönbrunn Palace. The reduction of queues and waiting times creates added value for the visitors and ultimately results in higher customer satisfaction in combination with already implemented measures. Furthermore, the historical structure of the building is protected by reducing the number of touches in the crowd and increasing the safety of the visitors.

The solution "Sense-Plan-Act-Paradigms" developed by the researchers at the AIT Center for Mobility Systems provides an ideal tool for sustainably boosting efficiency and visitor satisfaction. The solution is based on AIT's many years of expertise in the analysis, prediction and optimization of flows of people in infrastructures and urban areas. The research results in this research field come from a balanced project portfolio (e.g. mPed, AVISO, EN-MASSE) conducted in intensive collaboration with numerous scientific and industrial partners. Thus were designed tailor-made scalable solutions for the simulation, analysis and planning of complex pedestrian flows in railway stations, public transport, airports, shopping malls, stadiums, museums, or event venues.

## REPORTS FROM THE CENTERS LOW-EMISSION TRANSPORT

The Center for Low-Emission Transport (LET) researches and develops sustainable, low-emission vehicle components and their production methods. In order to best serve the key technologies of drivetrain electrification and weight reduction through material-based lightweight construction, research from five research fields is interlinked.

In the research field of Battery Technologies with the corresponding business case of the same name, the batteries of the next generation are researched. Solutions for efficient powertrain electrification are being developed in the research field of Propulsion Technologies. The research field of Casting Processes for High Performance Materials continues to develop the properties of new light metals and their production processes. Developments in the processing and forming behaviour of these light metals are made in the research field of Advanced Forming Processes and Components. In addition, simulations are carried out in the research field of Numerical Simulations of Processes and Components in order to develop and further optimize energy- and resource-efficient casting/forming processes as well as the material properties of the components.

The LET Center cooperates intensively and closely with national and international partners from science and industry as well as stakeholders and was able to achieve significant research results and increased visibility last year. Dr.<sup>in</sup> Katja Fröhlich, Head of the Battery Materials Laboratory, was named FEMtech Expert of the month in November 2018 based on her work. Dr.<sup>in</sup> Evgeniya Kabliman received an award for her work in the field of "Automatic analysis and numerical prediction of flow stress curves for aluminum alloys" at the "9<sup>th</sup> International Conference on Multiscale Materials Modeling" in Osaka, Japan. The LET Center and the Center for Mobility Systems as well as the bmvit organized the TRA (Transport Research Arena) 2018, the largest European transport research and technology conference, which also increased the visibility of AIT and the involved Centers. Two highlights from last year are presented in more detail in the following paragraphs.

### PORTFOLIO DEVELOPMENT HIGHLIGHTS 2018

#### **Development of close-to-market lithium-ion batteries of the next generation:**

The market for electric vehicles is currently experiencing strong growth. The battery as energy storage and heart of an e-vehicle has a significant impact on its range and cost. In this context, European and international automobile manufacturers are buying battery cells worth billions of euros, mainly from Asian manufacturers, since Europe's current production of batteries for electromobility barely reaches any significant level. The European Commission has recognized the opportunities for innovation and competitiveness arising from European battery cell production and has therefore launched the European Battery Alliance in order to accelerate a European value chain for batteries. The reduced use or total abandonment of critical raw materials such as cobalt which are not found in Europe and are degraded under problematic environmental and social conditions elsewhere is one of the critical parameters to manufacturing in Europe. In this context and in cooperation with partners from eight European countries, the AIT LET Center has developed a completely cobalt-free cell with high energy density based on a promising but not yet commercially available cell chemistry which can be manufactured in Europe and meets end-user requirements. The focus of development was on the active components of the cell: cathode, anode and electrolyte. The scope of the project covered the entire value chain of cell and module production, starting with the synthesis of the active materials, fabrication of the electrodes, assembly of the cells as well as their integration into a module. The leap from laboratory to pilot scale in production was successfully demonstrated which is why it is estimated that the market maturity for such high-voltage cells will be reached by about 2025.

**Structure of the strategic topic field  
“Wire-based Additive Manufacturing”**

In the last few years, a smart, fast production route has been set up at the LKR in Ranshofen for the production of special wires made of aluminium and magnesium in small-volume format by means of national and international funded projects. The combination of expertise development, hardware procurement (horizontal continuous casting plant, robots, turn-tilt table, welding power sources and welding guns) and spatial adaptation (transfer and conversion of the bunks) in recent years forms the basis for the development of a potential, new research field: Wire-based Additive Manufacturing for Light Metal Components. The wire-based additive manufacturing (AM) process allows large-scale components (> 30 x 30 x 30 cm<sup>3</sup>) to be produced efficiently and economically with a minimum of material waste. In the area of titanium and steel alloys, European research has already shown that this manufacturing process has application relevance for lot sizes 1, very small and medium quantities and that it is being prepared for industrial use. In the field of aluminium and magnesium alloys, much research is still required in that regard. There is a lack of innovative materials that fulfill better mechanical properties. Furthermore, additional options, such as functional integration in Wire Arc Additive Manufacturing (WAAM), are to expand the field of application. Thanks to the development work of recent

years, the LKR competences from the other research fields and the first process research in 2018, the LKR already has scientific expertise and high-tech facilities along the entire value chain for wire-based AM of light metal alloys: Alloy development, primary material production, filler material production, welding process management, CAD-CAM derivation for slicing, weld path derivation and characteristic curve tuning, material characterization, prototype construction and component testing. In addition to the aforementioned research questions, there will be further research topics in the future, such as sensing, online monitoring and process control, etc., which have already been integrated in research applications and will continue to be integrated in the coming years. The medium and long-term goal is to position the LKR nationally and Europe-wide as the center and No. 1 expert hub for wire-based AM of light metal alloys. Last year, the production route for special wires in small quantities has already been able to be successfully implemented in cooperation and contract projects. The logical extension to process these self-made custom wires, which can be optimized in terms of their properties, in a further step using AM, thus combining the potential of lightweight materials with that of additive manufacturing, represents a great future potential which is already taken up and pursued by the LKR by means of several project ideas.

## REPORTS FROM THE CENTERS TECHNOLOGY EXPERIENCE

The year 2018 was characterized by the consolidation of topics in the research fields. This took place in line with the strategy for the strategy period 2018 to 2021. The iterations and focusing of the respective subareas were made based on feedback or positioning on the market.

In the Experience Measurement research field, the topics of Quality of Experience and Technology Acceptance were specifically further developed and positioned. A series of field and laboratory studies improved the maturity level of the respective models or quality frameworks (e.g. as part of manufacturing assistance projects or acceptance studies for mobile applications). As part of the project series "QoEStream", a high-performance data acquisition and analysis platform is being developed which allows real-time collection, evaluation and representation of experience-relevant data of media streaming services with >1 million users in real time. The system allows the early detection and diagnosis of experience-relevant user issues and leverages the benefits (flexibility, scalability, robustness) of modern virtualization and Big Data technologies.

In the research field Capturing Experience, progress has been made in understanding the interaction with complex technologies in everyday environments. Where diversity traits are concerned, progress has been made towards a deeper understanding of user needs taking into account the diversity of users. Furthermore, the development of diversity-sensitive design strategies as a crucial basis for a successful product and service development took place. In the field of Future Interfaces, progress was made on select aspects of future interaction approaches in general and

in particular on the topics of Persuasive and Playful Interaction. Based on the field of Virtual Reality of 2017, a stronger focus was placed the topic of Mixed Reality in 2018 (Augmented Reality and Augmented Virtuality). The area of Playful Interaction saw the systematic development of playful approaches which were used in the areas of Security Training and movement promotion for visually impaired people.

In the field of scientific publications, papers were able to be presented at major conferences. These include the QoMEX 2018 conference with contributions on "Interfaces for the Collection of Experience and User Feedback in Virtual Environments," "The Evaluation of Different Rendering Qualities in VR Training," and the topic of "Quality of Experience & User Experience Evaluation of Web Browsing". A contribution to "Location Based Games for Blind School Children" was presented at the MobileHCI 2018. The Center was also very visible at the AutomotiveUI 2018 conference (two contributions to the topic of Automation Experience, organizing of a workshop, publishing the proceedings in the ACM Digital Library, and initiating a Special Issue in the International Journal for Mobile Human Computer Interaction). Major journal publications include contributions to the Sustainability Journal, the Journal of Intelligent Information Systems, and the Universal Access in the Information Society journal. The book "Digitale Transformation der Arbeitswelt: Psychologische Erkenntnisse zur Gestaltung von aktuellen und zukünftigen Arbeitswelten" [Digital Transformation of the Working World: Psychological Insights into the Formation of Current and Future Working Worlds] deals with the changes in knowledge work and the production context triggered by digitisation.

## PORTFOLIO DEVELOPMENT HIGHLIGHTS 2018

2018 also saw the research field of Capturing Experience develop skills, partnerships and design approaches for the interaction with blockchain technologies. As a case in point, the exploratory study ProChain was launched in an international consortium in order to gain scientific insight into how to develop blockchain-based applications for end-users. Based on the evaluation of a self-developed blockchain UI demonstrator for proof of energy origin, it was determined that blockchain aspects (such as the confirmation or the number of participating block hashes) do not necessarily have to be hidden from users and that they even prefer having such information available. Additionally, the "Peer-to-Peer im Quartier" ["Peer-to-Peer in the neighbourhood"] research project, which examines options for how users can use blockchain technology to exchange energy directly with each other, was launched. On the one hand, it examines how trust can be built and strengthened between the players and the system. On the other hand, mechanisms are being developed and evaluated that allow an optimal balance of automation and user control so as to minimize the direct interaction effort for the user.

The kURAGE service project consisted of examining hitherto barely considered discretionary and situational influencing factors with regards to moral courage in order to develop an innovative concept for playful moral courage training. The development work was done in close coordination with the Federal Ministry of the Interior. In addition, we were able to draw on the expertise of the Security Academy of the Federal Ministry of the Interior, which was supporting the project in an advisory role. A meta-analysis was carried out in order to achieve a holistic understanding of moral courage. Subsequent covert field experiments aimed at obtaining empirical results regarding previously inadequately studied factors in a 2x2 design. Attacks (classism, discrimination against the unemployed) were simulated in Vienna's public sphere and the reactions of those present were observed. Evidence-based persuasive strategies were generated, summarized, iterated and a game concept developed in a design workshop based on this. A technological implementation of the use of persuasive strategies in moral courage training lead us to expect more effective measures to promote moral courage.

## REPORTS FROM THE CENTERS INNOVATION SYSTEMS & POLICY

In 2018, the Center for Innovation Systems and Policies (ISP) was able to maintain its economic and scientific position. Following the expiry of several major subsidy projects at the end of 2017, an above-average number of national and European funding projects were won in the past year, ensuring a medium-term high level of capacity utilization at the Center. It is worth noting in particular that in several cases consortia with participation or leadership of the Center were able to prevail in follow-up applications regarding recently expired projects; an indicator of the sustainability of the research activities.

At the same time, contract research was able to be maintained at the same level as in previous years, with several projects for European institutions and EU member states completed in 2018 in addition to contracts from Austria. Framework contracts for the European Commission and for the European and Austrian Parliaments also ensure a high order level in the medium term.

The positive economic and scientific results were made possible not least by the reorientation or filling of key support functions (Research Funding, Business Development).

### PORTFOLIO DEVELOPMENT HIGHLIGHTS 2018

Over the past year, the Center has been working intensively to address the challenges of a transformative research, technology and innovation policy, and was involved in numerous preparatory projects for the next European Research and Innovation Framework Programme "Horizon Europe". A key component was the conclusion of the European foresight project BOHEMIA (Beyond the Horizon. Foresight in Support of the EU's Future Policies for Research and Innovation), which not only included numerous publications and lectures, but also resulted in a series of follow-up contracts at national and European level. For example, the Center supported the Austrian ministries and agencies as well as institutions in other Member States in their preparations for the forthcoming European Framework Programme, e.g. in the course of the evaluation of the Austrian support structures for the ongoing Horizon 2020 programme, through several orders for the conception of mission-oriented RTI policy in the Austrian and European context as well as the further development of tools for strategic partnerships.

Another focus was on broadening the knowledge and database regarding digitisation issues of the Austrian industry. In addition to the European Manufacturing Survey (EMS), which placed particular emphasis on digitisation issues in 2018, the first-time implementation of the Austrian Start-up Monitor was an important contribution to a better understanding of the current transformation of the corporate landscape. In addition, addressing the economic and social impact of methods for Artificial Intelligence in various fields of application increasingly came to the fore in 2018, as reflected in the commissioning of projects for ministries, associations, agencies, and the Austrian Parliament, as well as in a number of invited lectures.

In order to consolidate the Center's strong position in the area of quantitative analysis of innovation systems and networks for the future, investments were made in the further bundling and integration of the data infrastructure at the Center. This path will be promoted as part of the European Advanced Community RISIS II (Research Infrastructure for Science and Innovation Studies) in the next four years. The growing interest of our customers in these new developments in the area of data analytics and indicators is evident in the leadership and participation in a number of sophisticated system analyses and evaluations (e.g. the evaluation of Austrian Science Fund (FWF) Special Research Areas).

The further development of experimental policy strategies with a focus on multi-stakeholder participation processes has also gained in importance. For instance, the first pilot applications of the procedures developed at the Center could be realized in projects for the EU Commission (e.g. Future-Proofing the European Food System through Research and Innovation) as well as in demo projects for Austrian cities. The Center will also benefit from the experience of ongoing European projects for transferring and adapting experimental approaches in innovation policy to new regional and national contexts.

## SEIBERSDORF LABOR GmbH

The business activities of the Seibersdorf Labor GmbH in 2018 continued to focus on services as well as the applied research and experimental development in the following areas:

- Detection of doping substances and disease markers
- Development of methods for the characterisation of chemicals
- Safety in electromagnetic fields, with a focus on NFC applications, safety of laser radiation
- Development of new methods for the production and quality control of PET drugs
- Development of measurement methods and measuring instruments for radioactivity and ionising radiation radiochemical developments

The timely implementation of legal and normative changes in accredited procedures is one of the areas of strength of the company. The participation of experts from the Seibersdorf Laboratory GmbH in the relevant standardisation bodies is a prerequisite for this.

The use of the new property in Seibersdorf and the significantly improved and expanded laboratory infrastructure made it possible for the company to achieve a substantial increase in sales of around 13% in 2018 compared to the previous year.

## NUCLEAR ENGINEERING SEIBERSDORF

In line with its corporate purpose, the focus of Nuclear Engineering Seibersdorf is on the decommissioning and decontamination of facilities, equipment and materials from 45 years of R&D activity at AIT (predecessor organizations) as well as the treatment and temporary storage of radioactive waste. Long-term contracts with the Austrian Federal Ministry of Transport, Innovation and Technology (BMVIT) and the Federal Ministry for Sustainability and Tourism (BMNT) which also regulate the financing of service contracts exist for this purpose.

## SI.A. ERRICHTUNGS-GMBH

The activities of Si.A. Errichtungs-GmbH included the preparation of the foundation of the SAL – Silicon Austria Labs in implementation of the initiative by the Federal Ministry of Transport, Innovation and Technology (BMVIT) to strengthen research activities in the field of electronic-based systems (EBS) in Austria. The company shares in Si.A. Errichtungs GmbH were transferred to bmvit as planned in the year under review, and the subsidiary was deconsolidated from the consolidated financial statements of the AIT Group.

## BUSINESS PERFORMANCE 2018

### EARNINGS POSITION

The financial year 2018 was very successful for the AIT Group. Significant revenue increases, particularly in the field of contract research, personnel growth, and a stable earnings development characterized the year under review.

The state of contract research showed a significant positive evolution in the past financial year, with a growth of 14.8% compared to the previous year. Despite a competitive support market, the cofinanced revenues also showed a growth of around 4% compared to the previous year.

The contributions of the shareholders, the third major source of funding for the research work of the AIT Group, showed an increase of around EUR 3 million compared to the previous year, which is, however, partly attributable to the use of funds in the subsidiary Si.A. Errichtungs-GmbH. This subsidiary was transferred to the Federal Ministry of Transport, Innovation and Technology (bmvit) as planned and was deconsolidated as of 30 September 2018. When adjusted for the use of funds in the Si.A. Errichtungs-GmbH (reporting year: 1.6 million EUR, previous year: 0.5 million EUR), the growth in the use of funds from the shareholders for AIT compared to 2017 was around 4.2%. AIT uses the resources of the Federal Ministry of Transport, Innovation and Tech-

nology (bmvit) to expand research focus areas and thus the scientific and technological competence of the company. Other operating income / other revenues of 14.8 million EUR include the income from the reversal of provisions in the amount of approx. 1.3 million EUR, revenue from expenses charged in the amount of approx. 0.3 million EUR, the reversal of investment grants in the amount of 9.6 million EUR, the proceeds from recharged rents of 1.6 million EUR as well as other operating income / other revenues in the amount of approx. 2 million EUR.

In contrast to the presentation of the P&L structure of the annual financial statement, the presentation for the management report was maintained unchanged in order to present the proceeds from research contracts without confusion with the proceeds from expenses charged in the amount of 0.3 million EUR (previous year: 0.5 million EUR) and the other revenues in the amount of 2 million EUR (previous year: 1.8 million EUR).

In the presentation for the management report, an additional 3 million EUR (previous year: 3.6 million EUR) was reclassified to the line Nuclear BMNT in order to achieve a better presentation of the overall "nuclear financing".

Designation in kEUR	actual 2018	actual 2017
Revenues R&D	52,069	45,001
Inventory changes	67	429
<b>Revenues R&amp;D including inventory changes</b>	<b>52,136</b>	<b>45,430</b>
Funding R&D	33,013	34,761
Inventory changes	1,923	- 1,172
<b>Revenues R&amp;D including inventory changes</b>	<b>34,937</b>	<b>33,589</b>
<b>Total Revenues from Research Contracts</b>	<b>87,073</b>	<b>79,019</b>
Income from bmvit – Independent research	50,373	47,351
<b>Total Payments of the Shareholders (Research)</b>	<b>50,373</b>	<b>47,351</b>
Nuclear bmvit	3,475	3,772
Nuclear BMNT	3,059	3,614
<b>Total Financing Nuclear</b>	<b>6533</b>	<b>7386</b>
<b>Other operating income / Other revenue</b>	<b>14,774</b>	<b>12,266</b>
<b>TOTAL OPERATING INCOM</b>	<b>158,753</b>	<b>146,022</b>

## EXPENSE STRUCTURE

The company's expense structure for the reporting year 2018 shows changes of 3.1 million EUR compared to the previous year for project-related material costs and related services (reporting year: 17.9 million EUR, previous year: 14.8 million EUR).

As a result of higher staff numbers as well as of the collective agreement related salary indexing, personnel expenses rose by approx. 4.7 million EUR (reporting year: 93.2 million EUR, previous year: 88.5 million EUR).

Compared with the previous year, other operating expenses showed an increase of approx. 3 million EUR and include the

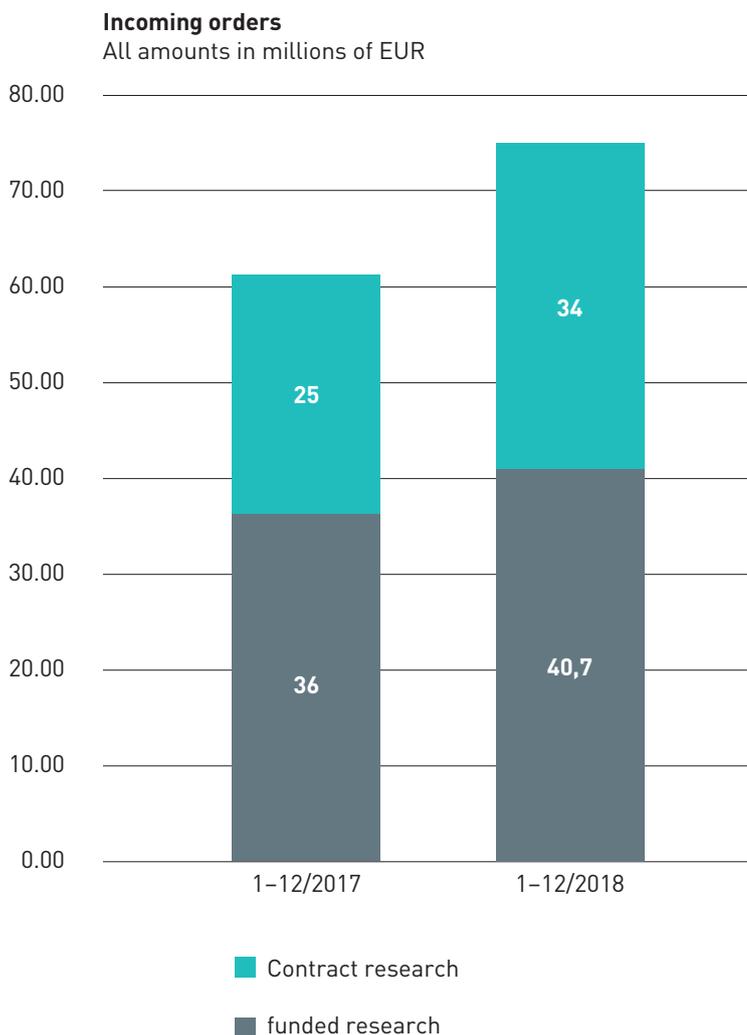
allocation of provisions for renovation and demolition costs (Seibersdorf site) in the amount of around 1.8 million EUR. The negative financial result in the reporting year is attributable to the difficult interest and investment situation in the financial year 2018 (around –0.2 million EUR). As a positive effect, the investment in PROFACTOR GmbH generated an investment result of around 0.1 million EUR. The financial result furthermore results from other smaller positions.

The annual result is 3.2 million EUR and shows a stable development of the AIT Group.

Designation in kEUR	ACTUAL 2018	ACTUAL 2017
<b>TOTAL OPERATING INCOME</b>	<b>158,753</b>	<b>146,022</b>
Material costs	– 7,666	– 5,350
Services rendered by third parties	– 10,225	– 9,442
<b>Material costs and purchased services</b>	<b>– 17,890</b>	<b>– 14,792</b>
<b>Personnel expenses</b>	<b>– 93,206</b>	<b>– 88,530</b>
<b>Amortizations</b>	<b>– 11,451</b>	<b>– 10,621</b>
<b>Other operating expenses</b>	<b>– 32,498</b>	<b>– 29,368</b>
<b>TOTAL OPERATING EXPENSES</b>	<b>– 155,045</b>	<b>– 143,311</b>
<b>OPERATING PROFIT</b>	<b>3,709</b>	<b>2,711</b>
<b>Financial profit</b>	<b>– 86</b>	<b>324</b>
<b>EGT</b>	<b>3,623</b>	<b>3,035</b>
<b>Taxes on income and earnings</b>	<b>– 393</b>	<b>– 190</b>
<b>ANNUAL RESULT/PERIOD RESULT</b>	<b>3,229</b>	<b>2,845</b>
<b>Result carried forward</b>	<b>23,633</b>	<b>20,788</b>
<b>NET PROFIT/LOSS</b>	<b>26,862</b>	<b>23,633</b>

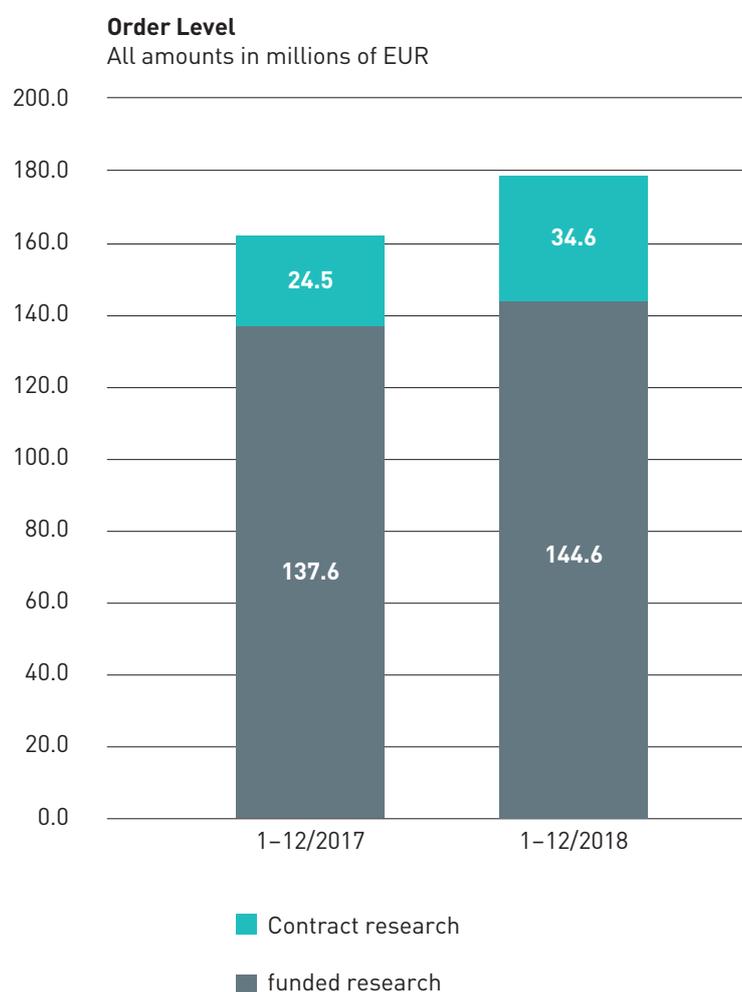
## INCOMING ORDERS

Incoming orders of the AIT Group were able to be increased by 22.4% over the previous year and amounted to 74.7 million EUR in the year under review (previous year: 61.1 million EUR). The financial year 2018 was successful both in the areas of acquisition of contract research projects and in the acquisition of co-financed projects. In contract research, it was possible to gain order volumes of 34.0 million EUR (+ 35.9% compared to the previous year's value of 25 million EUR) and to increase incoming orders for co-financed projects to 40.7 million EUR (+ 13% over the previous year's figure of 36 million EUR).



## ORDER LEVEL

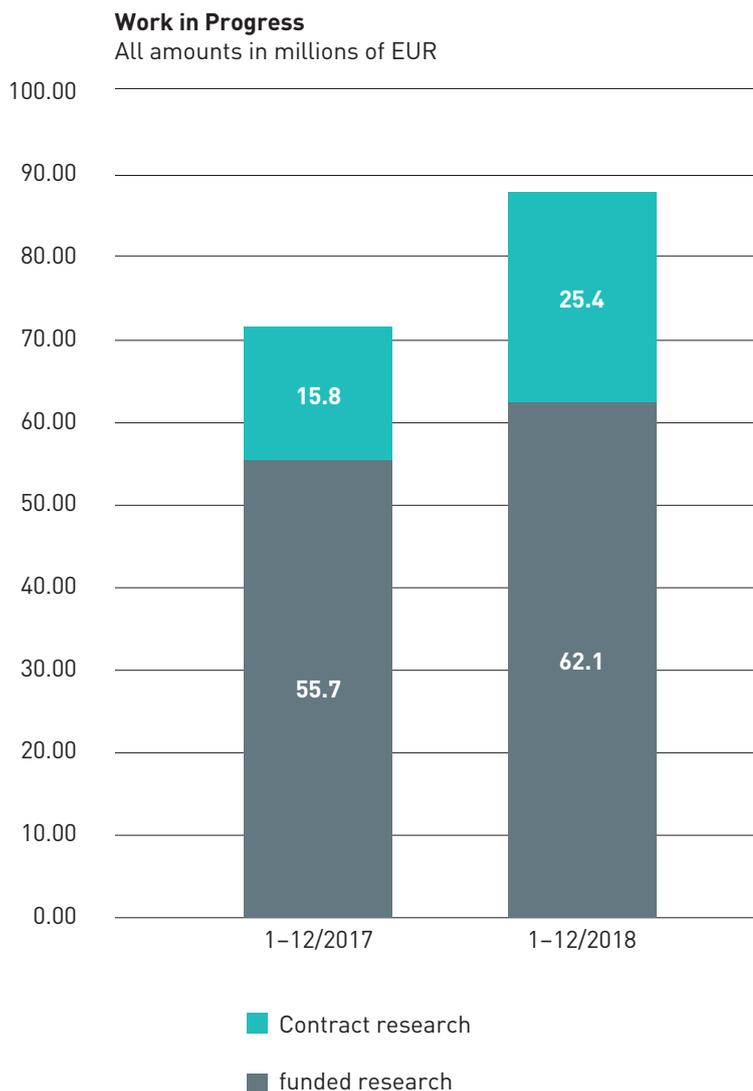
The good successes in the acquisition of projects are reflected in the order levels. In the year under review 2018, the order level was increased in total by approx. 10.6% to an overall volume of 179.2 million EUR (previous year: 162.1 million EUR). Particularly in contract research, the order level increased significantly to 34.6 million EUR (+ 41.1% compared to the previous year's figure of 24.5 million EUR). Co-financed research also saw an increase in the order level. In the year under review, it amounted to 144.6 million EUR and was thus 5.1% higher than the previous year's figure (137.6 million EUR).



## WORK IN PROGRESS (UNFINISHED PROJECTS)

Work in Progress does not only take account of the invoiced revenues (as in the case of the order level), but also the deferred project revenues due to the project work progress. The good acquisition successes contributed to the significant increase of the work in progress in the year under review. In the year under review, it amounted to 87.4 million EUR and was thus 22.4% higher than the previous year's figure (71.5 million EUR).

As with the order backlog, contract research also shows a particularly strong growth in the work in progress. The reporting year shows an increase in the work in progress volume in contract research from 60.9% to 25.4 million EUR compared to the previous year's figure of 15.8 million EUR. The work in progress for co-financed projects increased to 62.1 million EUR, an increase of 11.5% compared to the previous year's figure of 55.7 million EUR.



## INVESTMENTS

Total investments in intangible assets and property, plants and equipment in 2018 amounted to 15.4 million EUR and are 1.3 million EUR above the corresponding previous year's figure of 14.1 million EUR.

The investment in intangible assets (primarily rights) amounted to 0.2 million EUR (previous year: 0.5 million EUR). The acquisition of assets for land and buildings amounted to 3.1 million EUR (previous year: 0.1 million EUR). The investment in technical facilities amounted to 6.6 million EUR (previous year: 8.1 million EUR). 2.6 million EUR were spent for facility and office equipment (previous year: 3 million EUR) and 2.7 million EUR were received for advance payments and plants under construction (previous year: 5.1 million EUR). Of this, 1.7 million EUR related to the ongoing investment projects of the NES (incineration plant, warehouse 15 and buffer storage halls).

## LIQUIDITY AND FINANCIAL POSITION

As of 31 December 2018, cash and cash equivalents amounted to 85.2 million EUR (previous year: 70.6 million EUR). The liquidity level as of 31 December 2018 also includes funds for investment projects already ordered but not yet delivered.

Cash and cash equivalents are offset by liabilities from fiduciary project coordination funds in the amount of 26.7 million EUR (previous year: 14.7 million EUR).

As of 31 December 2018, there were securities deposits with a book value of 13.3 million EUR (previous year: 13.7 million EUR).

As of 31 December 2018, liabilities to credit institutions amounted to 1.2 million EUR (previous year: 1.4 million EUR).

As of 31 December 2018, equity amounted to 42.5 million EUR (previous year: 39.2 million EUR). After considering the investment grants in the amount of 74.2 million EUR (previous year: 67.9 million EUR), the sum of expanded capital resources for the reporting year 2018 amounts to 116.7 million EUR (previous year: 107.1 million EUR).

## PERSONNEL

As of 31 December 2018, the company employed a total of 1,096.1 FTEs or an average of 1,092.9 FTEs during the financial year. These figures also include apprentices, apprentices in the retention period and HF/EU scholarship holders. Compared to the previous year reporting date (1070.9 full-time equivalents and 1052 average full-time equivalents), this corresponds to a total increase of the workforce of 25.2 full-time equivalents and 40.9 average full-time equivalents. The highest increases stem from the AIT Austrian Institute of Technology GmbH as well as the Seibersdorf Labor GmbH.

## REPORT ON THE PRINCIPAL RISKS AND UNCERTAINTIES

### RISK MANAGEMENT AND INTERNAL CONTROL SYSTEM

In order to implement the company strategy and the associated opportunities, AIT deliberately takes manageable risks in research and service projects. In addition, AIT is exposed to a variety of potential risks that could negatively impact business. The risks are divided by management into strategic, operational, financial and legal risks.

At AIT, risks are defined as possible developments or events that may lead to a negative deviation from projections, while opportunities for future developments or events may lead to a positive deviation from projections.

The implemented risk management system, which was further developed and optimized in the past financial year, is used for recording and controlling. The business opportunities are determined in the course of regular quarterly meetings and strategy meetings.

At AIT, risk management is understood as an independent process which is devoted to dealing with results- and event-oriented risks and opportunities at the corporate (organizational) level. The risk management system is implemented throughout the Group as an integral part of our business, support, and management processes and is integrated into the planning, control, monitoring, and reporting processes. It represents these in a transparent and understandable manner through a structured process of identification, assessment, determining countermeasures, regular reporting, and tracking of risks of all company activities.

AIT understands an internal control system to encompass the totality of all the policies, process descriptions, work instructions and control measures ordered by management which serve to ensure the proper running of business operations at process level. AIT regards the internal control system as a subsystem of risk management with strong mutual interactions. As a rule, optimizations in the internal control system will have a positive effect on risk management since every improvement of the control system at process level tends to contribute to the reduction of the effort required for the dealing with risks.

The structure of the control framework "COSO" (Committee of Sponsoring Organizations of the Treadway Commission) is used to describe the essential features. The COSO framework consists of five related components which are control environment, risk identification and assessment, control activities, information and communication, as well as monitoring.

## CONTROL ENVIRONMENT

The corporate management of the AIT Group is based on the group strategy adopted jointly between management and the Supervisory Board. It comprises the strategic positioning of the Group and its portfolio as well as its concrete performance and earnings expectations. The Group directions and annual targets for the companies, Centers and divisions are derived from the strategic objectives.

AIT has a clear organizational structure with clear allocation of competencies and responsibilities across all organizational units. The responsibilities are defined in the individual processes. Detailed job descriptions and role descriptions which regulate the duties to be performed, the competencies and associated responsibilities and any representations are available for each. The traditional ICS measures such as the four eyes principle, the separation of functions, signature authorization with set value limits are generally taken into account in all company-wide processes.

The internal personnel management is comprehensively regulated by policies, process descriptions, manuals, company agreements, job profiles, career paths as well as training and qualification measures. The Code of Conduct and a policy on the prevention of corruption assist employees in carrying out their tasks.

Furthermore, the maturity and efficiency of the internal control and risk management system was able to be further increased by means of the systematic implementation of new processes and technical audits for hazardous materials, such as general laboratory regulations, poison regulations, pinprick regulation [NastV] etc.

## RISK IDENTIFICATION AND RISK ASSESSMENT

The risk management system with its structure and process organization is described and defined in a group-wide policy. It includes a comprehensive information, documentation and reporting system. In addition to the quarterly reports, which cover the entire range of risks and potential opportunities, a major internal ad-hoc reporting takes place in the event of material changes and new findings. In regular review meetings with management, all risk and opportunity-relevant topics are analysed, assessed, controlled and monitored using standardized risk assessment sheets.

A group-wide control system supports the risk identification and early warning system. Standardized processes with appropriate control mechanisms make possible risk potentials more transparent and enable early identification of these at process level.

## CONTROL ACTIVITIES

In the course of the results-oriented control measures, the focus of AIT is on target achievement. The control of the compliance with the budget takes the form of ongoing target-performance comparisons, in order to take corrective action in case of any deviations.

Process-oriented controls essentially consist of systematic control measures to ensure the proper performance of the activities in the operational processes. The responsibilities for the performance of the process-related control activities to ensure a proper functioning of the various organizational units are laid down in the policies, process descriptions, work instructions and implementing regulations, which include, inter alia, provisions regarding the observance of the four eyes principle, the separation of functions and the specification of hierarchically graded approval competencies with a consideration of appropriate value limits.

## INFORMATION AND COMMUNICATION

The AIT management information system has the task of providing the users with relevant information in a timely manner. It is used for in-house information transmission, where the primary focus is on transmitting relevant management information. Furthermore, a reporting set with compressed and meaningful metrics / key performance indicators complements the reporting system.

In quarterly review meetings, the subsidiaries, Centers and divisions of the management report on the current economic situation in comparison with business planning, the previous year and the forecast. As part of these quarterly meetings, information is provided on project-relevant, scientific, financial, legal and administrative matters, opportunities, risks, and newsworthy highlights. This ensures that management has access to relevant information in a timely fashion and is able to take immediate and appropriate measures in case of target deviations.

Relevant information for employees is made available via the AIT intranet platform. The AIT employees are regularly informed about important events and projects by the Corporate and Marketing Communications department.

In accordance with legal and company law provisions, the Supervisory Board receives regular quarterly reports and detailed information on current topics.

## MONITORING

The ongoing monitoring is constantly carried out by management and the authorities responsible for monitoring (Management, Head of Finance & Controlling, central Controlling, and Center Controlling) in a timely manner as well as through the employees as part of their service provision.

The internal audit department monitors the operating and business processes as well as the internal control and risk management system. In particular, the functionality and effectiveness of the internal control system and the risk management system are to be examined and assessed in doing so.

The Audit Committee of the Supervisory Board of AIT supervises the annual financial statements as part of its legal obligations. Its responsibilities include monitoring the accounting process, the effectiveness of the internal control system, the internal audit system and the risk management system.

Furthermore, the corporate bodies of AIT – the General Assembly and the Supervisory Board, as well as the Research Strategic Advisory Board – deal with monitoring ongoing business activities, including the associated risks, within the scope of their duties.

The AIT Group is 50.46% owned by the federal government. This results in the constitutional mandate for review and inspection by the Court of Auditors.

## RISK AREAS

The following is a description of the key corporate risk areas that may have a negative effect on the assets, financial and profit position of AIT.

### FINANCIAL RISK, INFORMATION ON FINANCIAL INSTRUMENTS ACCORDING TO § 243 UGB [AUSTRIAN COMMERCIAL CODE] PARA 3(5)

The company currently does not use any derivative financial instruments. Due to the nature of its business operations, the use of derivative financial instruments is not planned in the future either.

The value of the receivables is continuously assessed and monitored by the receivables management. A review of compliance with payment deadlines, limiting of credit limits and obtaining creditworthiness assessments from our customers limit the impact of potential payment defaults on the company's assets, financial and profit position.

### MARKET RISK

AIT acts according to the strategic objectives in the European and international markets. Both the acquisition of customers and projects in the field of contract research as well as the acquisition of third-party funding in the national and international subsidy markets happen in a competitive environment.

Against this background, a risk in terms of attainability of projected figures, the development of customer groups and partner networks as well as the implementation of business models is an intrinsic part of business. The service portfolio of the AIT Group is diversified and addresses various sectors in different markets. The continuous monitoring of the order situation as well as recognising trends in the relevant markets at an early stage as well as taking measures that are quickly derived from these trends remain important tasks for AIT.

## PROJECT FUNDING RISK

A public project funding scheme deviating from the full reimbursement principle as well as changing interpretations of funding guidelines may lead to a deterioration of the funding rate. Changes in the terms of funding project accounting require a system adjustment of the cost accounting and project accounting system. In order to maintain a sound project assessment base, it is necessary to monitor the relevant environment and assess it with regard to possible commercial effects.

## INFORMATION TECHNOLOGY RISKS

The company has a central IT system environment, enabling the joint use of high-quality system components at the various locations. This includes, among other things, a modern security environment with a firewall, virus detection and remote access points with multiple protection for the detection of and defence against attacks. The data is centrally stored, automatically backed up at regular intervals, and copies are kept off-premises. All our projects are based on the generally accepted standards of the Baseline Protection Manual of the Federal Office for Information Security (BSI) and ISO standard 17799 and are supplemented by empirical values reflecting the current state of the art. AIT intensively deals with the protection of the IT infrastructure from unauthorized access or from attacks, both from within and from outside. Required IT security measures, broken down into the categories "Technical", "Organizational" and "Behaviour and Awareness", are planned, implemented and monitored on a continual basis.

## LEGAL RISKS

AIT counters the legal risks through constant communication between the central legal department and the local attorneys, as well as through the implemented reporting system which encompasses ongoing procedures and potential risks. Possible risks were taken into account by means of balance sheet risk provisions in the annual financial statement.

## PERSONNEL RISKS

The performance of our employees is essential for the development of our knowledge-based company. The company is competing with other companies for highly qualified specialists and executives. The further development of the AIT management culture, measures for training and further education in connection with the implementation of specific technical and scientific as well as management and support role models will position AIT more strongly as a top employer internationally. Within the framework of international and domestic cooperation projects with universities and scientific institution, AIT increases its access to well-qualified employees in the course of concrete project work. Newly implemented in the reporting year 2018, The "Recruiting" department supports the entire AIT recruiting process, from requirement definition all the way to professional search. New IT tools increase transparency and effectiveness throughout the process and complement the contribution of recruiting to strengthening the AIT employer brand.

### PRODUCT AND ENVIRONMENTAL RISKS

Product and environmental risks may arise in the course of laboratory operation with hazardous materials during storage, handling and disposal. Possible effects obtain in associated incidents with immediate effect on individuals and the environment. AIT is therefore taking into account high (safety) technical standards for the use of hazardous materials, and these are subject to consistent monitoring of quality requirements and standards.

### INFRASTRUCTURE AND LOCATION REHABILITATION RISKS

In recent years, intensive measures have been taken to implement the location and space concept of AIT and its subsidiaries. This applies both to the main location in Vienna and to the Seibersdorf location, where a significant improvement in the surface structures – both technically and in terms of the usability of the surfaces – was achieved through new construction. Nevertheless, additional measures are necessary at the Seibersdorf location to improve the structural condition of the buildings and the general infrastructure. In addition, extensive demolition measures will now follow to clean up the old building structure after the construction of new buildings at the Seibersdorf site. Overall, these measures effectively counteract the risks of plant shutdowns and risks in the safety of the site.

### OVERALL RISK

When analyzing the risks, no situations that would jeopardize the continued existence of the company at present and in the foreseeable future could be identified.

## DESCRIPTION OF KEY FEATURES OF THE INTERNAL CONTROL AND RISK MANAGEMENT SYSTEM ACCOUNTING PROCESS

A clear management and corporate structure obtains in the Centers, the divisions, the company and the Group. Cross-departmental key functions are managed centrally by the company, with the individual companies of the Group having a high degree of autonomy at the same time, in particular with regard to operation-related processes.

The accounting regulations-related internal control system of AIT ensures that accounting records are checked for mathematical and factual correctness.

The material check for the release of bills and receipts takes place in the respective organizational units or subsidiaries and the financial and accounting procedures for all organizational units are then centrally managed at AIT – intensively supported by digitized processes and systems. This IT-supported, centralized management of financial and asset accounting at AIT, with creditor and debtor management and the complete management of all incoming payments and outgoing payments, ensures a comprehensive functional separation of operational and financial processes across the Group.

The functions of the departments which are significantly involved in the accounting process, i.e. accounting and treasury, controlling and business administration, IT, as well as HR, legal, and procurement, are clearly separated. The areas of responsibility are clearly assigned.

The financial systems used are protected against unauthorized access by corresponding IT systems. Standard software is used in the area of financial and management systems. An adequate policy and process management (e.g. for management, business, controlling, resources and support processes) has been established and is constantly being updated and further developed. The electronic incoming invoice recording with electronic release workflow is comprehensively used throughout the AIT group. The electronic processing of invoices as well as the complete release of invoices for payment in the system ensure a high transparency and reliability as well as the maintenance of the process discipline (e.g. four eyes principle).

The ICS, in particular accounting-relevant processes, is regularly checked by the process-independent internal audit team.

The internal control and risk management system as regards the accounting process, whose essential features have been described above, guarantees with sufficient certainty that business events are accurately recorded in the books, processed and thus properly incorporated into the external accounting.

## INTERNAL AUDIT DEPARTMENT

The internal audit department which is directly responsible to the management of the company supervises the operational and business processes as well as the internal control and risk management system. In particular, the functionality and effectiveness of the internal control system and the risk management system, the compliance with applicable legal and operational policies, the regularity of all operational processes as well as measures for the protection of company assets are to be examined and assessed in this context. The organizational unit also includes the functions Data Protection (data protection, measures pursuant to the GDPR) and Technical Audit.

The audits are carried out according to the annual audit plan approved by AIT management and supplemented by short and special audits. The audit reports make recommendations and propose measures which are subject to an ongoing follow-up following the implementation instruction by management.

## FORECAST REPORT / PERFORMANCE INDICATORS STRATEGIC DEVELOPMENT

The financing agreement with the Federal Ministry of Transport, Innovation and Technology (BMVIT) forms the basis for the strategic development of the AIT Group. For the reporting year 2018, financing was continued on the basis of the 2017 agreement. In the reporting year, a new financing agreement was also negotiated and concluded with the Federal Ministry of Transport, Innovation and Technology (BMVIT) for the period from 2019 through 2021 based on the updated corporate strategy. Thus, the financing by the Federal Ministry of Transport, Innovation and Technology (BMVIT) could be secured for the next years as well. The financing agreement contains both financial and non-financial target indicators for the company which are regularly reported on and tracked as part of the work of the Monitoring Committee of the Supervisory Board. A selection of non-financial indicators is presented below.

## INDICATORS FOR SCIENTIFIC SUCCESS MEASUREMENT

The following table shows a selection of indicators for the scientific success measurement of the AIT Group. These indicators have been developed in the context of the bmvit financing framework agreement.

<b>Scientific &amp; Performance Indicators</b>	<b>AIT 2018</b>	<b>AIT 2017</b>
Patents granted (patent families)	45 (36)	37(32)
Publications in scientific peer review journals with impact factor	213	243
Impact Factor	770.2	802.4
Publications in scientific peer review journals without impact factor	67	70
Publications as part of conferences (with review process)	335	378
Publications as part of conferences (without review process)	134	100
Invited Lectures	293	298
Lectures	139	142
Number of PhD students	213	229
Number of PhD students from the international arena	93	78
Proportion of PhD students from the international arena (%)	44	34
Completed dissertations	28	39
Completed diploma theses	64	63
Number of habilitated employees	28	28

## EVENTS AFTER THE BALANCE SHEET DATE

No events of special significance have occurred after the balance sheet date that would have led to a different presentation of the asset, financial and earnings position.

Management:



DI Anton PLIMON e. h.



Prof. Dr. Wolfgang KNOLL e. h.

Vienna, 5 April 2019



## BALANCE SHEETS

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**CONSOLIDATED BALANCE SHEET**

Status as of 31 December 2018

	EUR	EUR	Status as of 31 December 2018 EUR	Status as of 31 December 2017 kEUR
<b>A. FIXED ASSETS</b>				
I. Intangible assets				
1. Concessions, rights		1,388,371.97		1,720
II. Property, plant and equipment				
1. Land, rights to land and buildings, including buildings on land owned by third parties	32,985,126.60			30,560
2. Technical equipment and machinery	26,404,626.68			25,499
3. Other equipment, plant and office equipment	11,451,232.51			10,100
4. Advance payments made and plants under construction	6,373,442.64			7,060
		77,214,428.43		73,220
III. Financial assets				
1. Holdings	633,167.72			144
2. Securities (book-entry securities) of fixed assets	13,539,289.90			13,831
		14,172,457.62		13,975
			92,775,258.02	88,914
<b>B. CURRENT ASSETS</b>				
I. Inventories				
1. Raw materials, auxiliary materials and supplies		360,311.29		4
2. Finished products		211,984.70		433
3. Not yet billable services				
Non-funded customer projects	8,412,673.04			9,741
less advance payments received	- 5,596,260.88			- 5,741
Funded research projects	81,846,325.52			79,930
less advance payments received	- 70,389,704.80			- 66,589
		14,273,032.88		17,341
		14,845,328.87		17,778
II. Receivables and other assets				
1. Receivables from deliveries and services	9,904,269.13			11,813
2. Receivables from associated companies	131,958.71			165
3. Other receivables and assets	1,445,246.62			959
<i>of which with a residual term of more than one year</i>	1,650.00			4
		11,481,474.46		12,937
III. Cash on hand, credit balances with credit institutions		85,234,100.79		70,621
			111,560,904.12	101,336
<b>C. DEFERRED ITEMS</b>				
1. Other			2,185,508.35	2,311
<b>D. DEFERRED TAX ASSETS</b>				
			522,889.49	516
			<b>207,044,559.98</b>	<b>193,077</b>

**CONSOLIDATED BALANCE SHEET**

Status as of 31 December 2018

	Status as of	Status as of
	31 December 2018	31 December 2017
	EUR	kEUR

	EUR	EUR	kEUR
<b>A. EQUITY</b>			
I. Called and paid-in share capital	470,920.12		471
II. Capital reserves (unappropriated)	13,656,321.07		13,656
III. Retained earnings			
1. Legal reserve	47,092.01		47
2. Other reserves (free reserves)	1,466,518.51		1,467
IV. Net profit	26,862,500.03		23,633
<i>thereof profit carried forward 23,633 kEUR (2017: 20,789 kEUR)</i>		42,503,351.74	39,274
<b>B. INVESTMENT GRANTS</b>			
I. Investment grants by the owner	73,448,375.35		66,509
II. Investment grants by the public sector	274,145.71		456
III. Other investment grants	517,670.86		909
		74,240,191.92	67,874
<b>C. PROVISIONS</b>			
1. Provisions for severance payments	5,817,694.00		5,706
2. Provisions for pensions	206,737.44		122
3. Provisions for taxes	281,728.28		320
4. Other provisions	20,582,239.36		20,543
		26,888,399.08	26,690
<b>D. LIABILITIES</b>			
1. Liabilities towards credit institutions	1,278,921.65		1,413
<i>of which with a residual term of up to one year</i>	1,278,921.65		0
<i>of which with a residual term of more than one year</i>	0.00		1,413
2. Advance payments received on orders	11,498,097.88		12,456
<i>of which with a residual term of up to one year</i>	2,018,162.06		2,332
<i>of which with a residual term of more than one year</i>	9,479,935.82		10,124
3. Liabilities from deliveries and services	6,490,214.55		7,437
<i>of which with a residual term of up to one year</i>	6,441,359.27		7,358
<i>of which with a residual term of more than one year</i>	48,855.28		79
4. Liabilities to affiliated companies	0.00		49
<i>of which with a residual term of up to one year</i>	0.00		49
5. Other liabilities	31,116,154.25		18,586
<i>of which with a residual term of up to one year</i>	7,485,822.66		3,985
<i>of which with a residual term of more than one year</i>	23,630,331.59		14,600
<i>of which from taxes</i>	1,082,493.91		475
<i>of which with a residual term of up to one year</i>	1,082,493.91		475
<i>of which for social security</i>	1,929,379.72		1,852
<i>of which with a residual term of up to one year</i>	1,929,379.72		1,852
		50,383,388.33	39,941
<i>of which with a residual term of up to one year</i>		17,224,265.64	13,725
<i>of which with a residual term of more than one year</i>		33,159,122.69	26,216
<b>E. DEFERRED ITEMS</b>			
1. Other		13,029,228.91	19,297
		<b>207,044,559.98</b>	<b>193,077</b>

# GROUP CONSOLIDATED PROFIT AND LOSS STATEMENT

1 January 2018 through 31 December 2018

	Consolidations according to detail	2018 EUR		2017 kEUR	
1. Revenues	- 7,440,101.18	57,789,645.98		50,975	
2. Funding, research grants					
a) Funding		33,013,442.28		34,761	
b) Research grants		50,373,127.76		47,351	
c) Financing Nuclear Engineering		3,474,714.00	86,861,284.04	3,772	85,884
3. Change in the stock of finished products and not yet billable services	0.00	19,900,37.46		-743	
4. Other operating income					
a) Income from the disposal of fixed assets with the exception of financial investments		133,610.78		25	
b) Income from the reversal of provisions		1,278,783.36		472	
c) Other	- 5,073.23	10,713,317.07	12,125,711.21	9,408	9,905
5. Expenses for material and other purchased manufacturing services					
a) Material expenses	0.00	- 7,662,659.46		- 5,350	
b) Expenses for purchased services	7,654,488.32	- 10,224,949.93	- 17,887,609.39	- 9,442	- 14,793
6. Personnel expenses					
a) Wages and salaries					
aa) Wages		- 59,544.37		- 43	
bb) Salaries		- 70,652,258.90		- 66,924	
b) Social expenses					
aa) Expenses for pensions		- 1,283,437.62		- 1,396	
bb) Expenses for severance payments and company pension funds		- 1,699,374.76		- 1,487	
cc) statutory social security contributions		- 18,584,353.97		- 17,515	
dd) Other social expenditures		- 926,890.89	- 93,205,860.51	- 1,165	- 88,530
7. Amortization of intangible assets of fixed assets and property, plant and equipment	- 1,049.78	- 11,450,590.48		- 10,621	
<i>of which extraordinary depreciation 653,188.97 EUR (2017: 299 kEUR)</i>					
8. Other operating expenses					
a) Taxes, other than under item 18		- 57,657.27		- 58	
c) Other	- 194,837.45	- 32,456,459.56	- 32,514,116.83	- 29,309	- 29,367
<b>9. Subtotal of items 1 to 8 (operating result)</b>		<b>3,708,501.48</b>		<b>2,710</b>	

# GROUP CONSOLIDATED PROFIT AND LOSS STATEMENT

1 January 2018 through 31 December 2018

	Consolidations according to detail	2018 EUR	2017 kEUR
10. Income from investments	117,300.00	117,300.00	0
11. Income from other securities in financial assets		212,920.85	144
12. Other interest and similar income	- 37,863.03	68,596.80	226
13. Income from the disposal and amortization of financial investments and securities in financial assets	0.00	23,374.52	218
14. Expenses from financial investments	83.30	- 436,025.85	- 42
<i>of which amortizations - 429,111.09 EUR (2017 - 42 kEUR)</i>			
15. Interest and similar expenses	37,863.03	- 72,237.77	- 222
<b>16. Subtotal of items 10 to 15 (financial result)</b>		<b>- 86,071.45</b>	<b>325</b>
<b>17. Result before taxes</b>		<b>3,622,430.03</b>	<b>3,034</b>
18. Taxes on income and earnings <i>of which deferred taxes 4,364.64 EUR (2017: 55 kEUR)</i>		- 393,274.70	- 190
<b>19. Result after taxes; annual net profit</b>		<b>3,229,155.33</b>	<b>2,845</b>
20. Profit carried forward from previous year		23,633,344.70	20,789
<b>21. Net Profit</b>		<b>26,862,500.03</b>	<b>23,633</b>

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