

JOANNEUM
RESEARCH



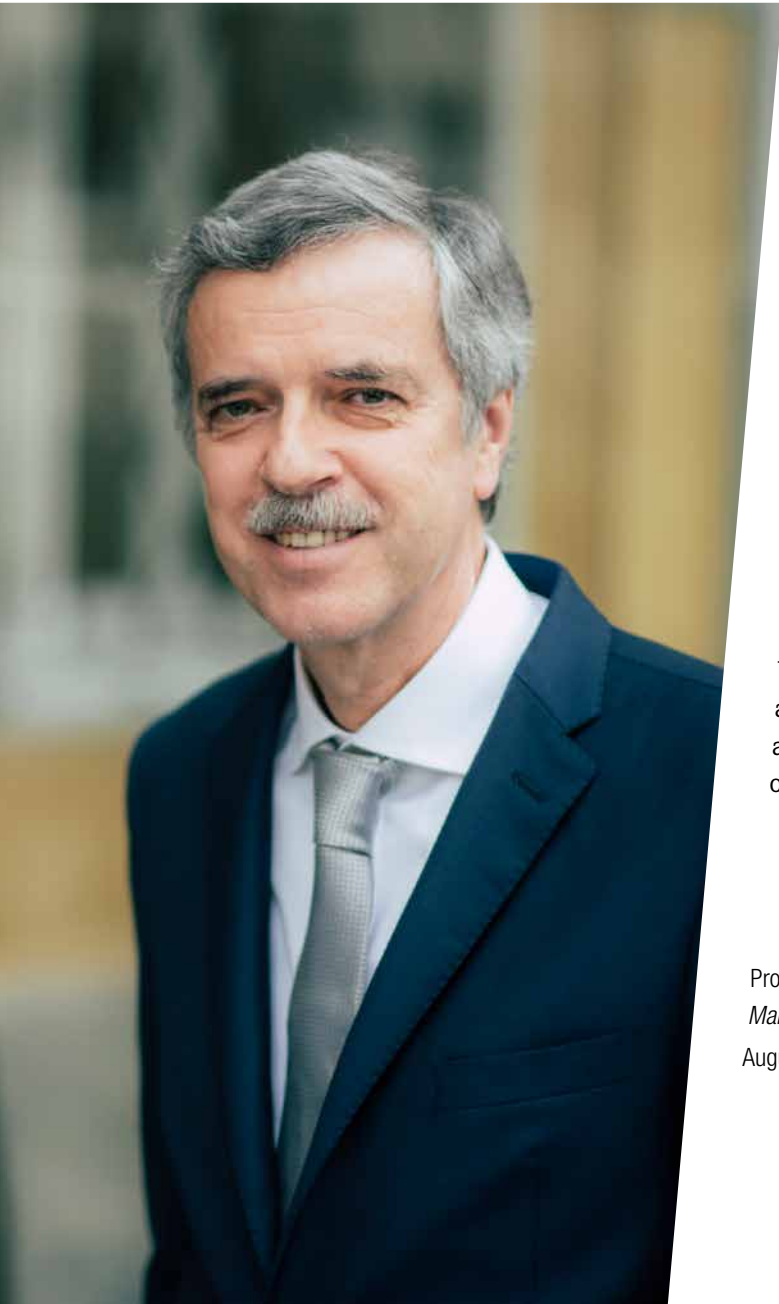
JOANNEUM RESEARCH

Forschungsgesellschaft mbH



THE INNOVATION COMPANY

Foreword



»With some 450 employees, JOANNEUM RESEARCH is one of Austria's largest independent research organisations and positioned at the highest international level in the areas of DIGITAL, MATERIALS, ROBOTICS, COREMED, HEALTH, LIFE and POLICIES. In close cooperation with the industry, science and the public sector, JOANNEUM RESEARCH generates innovation both domestically and internationally, thereby assuming a key role in the transfer of technology and expertise to industry. JOANNEUM RESEARCH always has its finger on the pulse and reacts to the latest research policy requirements and industrial needs.

As an application-oriented and independent research company, JOANNEUM RESEARCH provides an indispensable contribution to securing its leading position in research at various locations. This leading role in the innovation process and knowledge transfer is made possible by the broad integration of our dedicated researchers in domestic and international research networks, cooperative projects and, above all, by the support of our owners, the states of Styria, Carinthia and Burgenland.«

Prof. Dr Wolfgang Pribyl, MBA

Managing Director

August, 2019

The company

JOANNEUM RESEARCH Forschungsgesellschaft mbH develops solutions and technologies for a broad economic and industrial spectrum and conducts cutting-edge research at an international level.

Focussing on applied research and technology development, the INNOVATION COMPANY maintains a key role in technology and knowledge transfer.

■ Innovation

As an application-oriented research institute, JOANNEUM RESEARCH actively works to generate innovation and consistently pursues the transfer of expertise and technologies to the industry and the public sector.

■ Networking

JOANNEUM RESEARCH is an active organising network node for domestic and international research networks. As a professional problem solver for technically challenging research and innovation activities, JOANNEUM RESEARCH is traditionally a go-to-place for many companies and thus an important platform in the research and innovation system.

■ Knowledge transfer

With its R&D activities, JOANNEUM RESEARCH enables access to knowledge and findings. Its cooperation with clients and cooperation partners in the context of more than 500 annually performed research projects is an essential element of this knowledge transfer.

THE INNOVATION COMPANY...

... is owned by three states.

- 80.75 % State of Styria
- 14.25 % BABEG – Kärntner Betriebsansiedlungs- & Beteiligungsgesellschaft m.b.H
- 5 % Landesholding Burgenland GmbH

Certificates

- ISO 9001
- GLP
- ISO 14644
- ISO 13485

Facts and figures

Status: Business year 2018

7 research units

Approx. **450** employees

Approx. **9.4** million Euros
shareholder contribution

80% self-financing ratio

43.3 million Euros
research performance

JOANNEUM RESEARCH Forschungsgesellschaft mbH

Scientific Excellence

Status: Business year 2018

194 publications in scientific journals,
books and proceedings

299 scientific lectures

30 patents (12 granted, 18 pending)

14 prizes and awards
(5 international, 9 domestic)

80 scientific papers
(bachelor, master, dissertation)

Research Units

DIGITAL – Institute for Information and Communication Technologies:

Remote Sensing and Geoinformation
Machine Vision Applications
Space and Communication Technology
Connected Computing
Intelligent Acoustic Solutions
Cyber Security and Defence

MATERIALS – Institute for Surface Technologies and Photonics:

Hybrid Electronics and Patterning
Light and Optical Technologies
Laser and Plasma Processing
Sensors and Functional Printing
Smart Connected Lighting

ROBOTICS – Institute for Robotics and Mechatronics:

Cognitive Robotics
Mechatronic Systems
Robotic Systems
ROBOTICS Evaluation Lab

COREMED – Cooperative Centre for Regenerative Medicine:

Tissue Regeneration Technologies

HEALTH – Institute for Biomedicine and Health Sciences:

Biomedical Tissue Monitoring
Bioanalysis and Metabolomics
Clinical Decision Support
Medical Sensors

LIFE – Institute for Climate, Energy and Society:

Weather and Climate Risk Management
Future Energy Systems and Lifestyle
International Climate Policy and Economics
Urban Living Lab

POLICIES – Institute for Economic and Innovation Research:

Technology, Innovation and Policy Consulting
Data Analytics and Statistical Modelling
Regional Economics and Structural Policy



JOANNEUM
RESEARCH
media center

DIGITAL

Institute for Information and Communication Technologies

Director: Dr Heinz Mayer

DIGITAL is a reliable partner in the area of digital innovation and transformation and develops practice-oriented high-tech solutions for the markets of Mobility, Space, Industry, Security and Defence, Energy and Environment, AAL and Digital Care as well as Culture and Creative Industries. Information and communication technologies are the engine and driving force of the economic and social development of our society. The technological basis of our research work such as in the areas of Industry 4.0, highly automated driving and network systems, are formed by:

- ▶ Sensor technology, signal processing for image, video, acoustics, wearables and remote sensing
- ▶ Communication and navigation technologies
- ▶ Web, internet and modern information management technologies

Research services for customers and partners:

We are among the world's leading research partners and competence centres in the field of information and communication technology. Hand in hand with our partners from industry, we develop innovative solutions until they reach product status. Over the course of many years, we have built a well-founded technological expertise that fully meets future challenges.

As competent partners, our **research groups** deliver practice-oriented high-tech solutions for the economy and public institutions, excelling in the following technological fields of competence:

- ▶ Remote Sensing and Geoinformation
- ▶ Machine Vision Applications
- ▶ Space and Communication Technology
- ▶ Connected Computing
- ▶ Intelligent Acoustic Solutions
- ▶ Cyber Security and Defence



MATERIALS

Institute for Surface Technologies and Photonics

Director: Prof. Dr Paul Hartmann

Our staff provide interdisciplinary solutions across the entire value creation chain – from idea to prototype – using cutting-edge technologies and methods based on miniaturisation, integration and materials optimisation. Combined with state-of-the-art equipment and infrastructure, we offer pioneering solutions and services tailored to the needs of the economy and industry. More than 20 years of close cooperation with leading domestic and international research institutes ensure continuous renewal and further development of our competence portfolio. Our **research groups** represent technology and process development in the following fields:

- Hybrid Electronics and Patterning
- Light and Optical Technologies
- Laser and Plasma Processing
- Sensors and Functional Printing
- Smart Connected Lighting

● **Research services for customers and partners:**

● We make sure that our customers have access to the latest technologies for the implementation of innovative products and services in the fields of nano and surface technology as well as in photonics.

● Drawing on long-standing experience in managing various research cooperations, we enable our partners to successfully participate in funded projects at home and abroad.



ROBOTICS

Institute for Robotics and Mechatronics

Director: Dr Michael Hofbaur

In addition to classical industrial production, robotics in its varied and interdisciplinary forms will have short and medium-term effects on important areas of our business and daily lives.

Its economic use in production processes with small batch sizes yet high value creation, as found particularly in small and medium-sized enterprises, is reaching its limits due to the elaborate process configuration (robot programming) and the present incompatibility of robot-based and manual production.

This is why the institute's research and development efforts are aimed at overcoming these limitations through research and development in the fields of robotics as well as in safety and production technology.

The focal points of the ROBOTICS institute primarily comprise research topics for human-robot collaboration and interaction in innovative production processes as well as robot safety. Moreover, the institute processes topics for mobile robotics and mobile manipulation in the areas of industrial production and logistics. Our subject-specific orientation is reflected in the following **research groups**:

- Cognitive Robotics
- Mechatronic Systems
- Robotic Systems
- Competence Group ROBOTICS Evaluation Lab

Research services for customers and partners:

Due to the interdisciplinary mechatronic-related structure, the subject areas mechatronics and robotics in general as well as research in the area of human-robot coexistence in particular represent a promising addition to JOANNEUM RESEARCH's research portfolio. Thus, we are able to provide important assistance to our industry partners and comprehensive support with the development of production processes and thus raise their willingness to get on board with new, pioneering and research-intensive fields of technology.



COREMED

Cooperative Centre for Regenerative Medicine

Director: Prof. Dr Lars-Peter Kamolz, MSc

COREMED incorporates basic medical as well as preclinical and clinical research and offers complete interdisciplinary solutions through R&D services, especially for the pharmaceutical and med-tech industry. Regenerative medicine deals with the restoration of dysfunctional cells, tissues or organs by stimulating the body's own regenerative repair processes (induced auto-regeneration) or through biological replacement in the form of living cells or tissues specifically grown in the laboratory (tissue engineering). COREMED specialises in induced auto-regeneration. At its MED CAMPUS Graz location, the institute has access to a strong local network of life science players, above all the Medical University of Graz, the University of Graz, the Graz

University of Technology, the HEALTH and MATERIALS Institutes and CBmed GmbH.

In close collaboration with science, research and business partners, COREMED's current research focus is on the following fields:

- ▶ Tissue repair and scarring
- ▶ Ageing (including skin ageing) and Anti ageing/healthy ageing



Research services for customers and partners:

COREMED's goal is to better understand and support basic processes such as healing and ageing for the purpose of developing new products and therapies as well as verifying and identifying the precise effects of existing products.

We provide our services in selected projects in cooperation with top researchers. We consistently develop and expand our present excellence through basic research.

HEALTH

Institute for Biomedicine and Health Sciences

Directors: Prof. Dr Thomas Pieber, Dr Frank Sinner

Innovative solutions by HEALTH effectively contribute to an improved quality of life for people with medical needs. HEALTH acts as an interdisciplinary provider of complete solutions in the areas of medicine, pharmaceuticals, medical technology and healthcare research. Success is based on strategic cooperation with local and international partners from science and industry and a close connection to the Medical University of Graz.

HEALTH provides services for industry, scientific institutions and public healthcare facilities in the following fields:

- ▶ Tissue-specific pharmacokinetic, pharmacodynamic and bioequivalence studies for new drugs
- ▶ Analytics for medical research and pharmaceutical industry
- ▶ Metabolomics
- ▶ Clinical decision support and workflow management
- ▶ Medical sensors for home and point-of-care monitoring

We set high standards for the quality of our services and products and work according to the following international guidelines:

- ▶ ISO 13485
- ▶ GLP



Research services for customers and partners:

No other field of science depends on interdisciplinary cooperation more than medicine. Our teams' high level of interdisciplinarity, the staff's outstanding competence and motivation and our international quality standards ensure successful research and development activities.

LIFE – Institute for Climate, Energy and Society explores essential questions concerning climate change such as: How can society better deal with the risks of global warming and keep the economic damage to a minimum? Does climate change also yield economic opportunities? How can these opportunities be seized? What steps are required to steer society towards a path of development that reduces greenhouse gas emissions and thereby slows the process of climate change?

All these research questions are highly interrelated, require similar methodical approaches and are investigated by the following three **research groups** and one competence group:

- **Weather and Climate Risk Management**
- **Future Energy Systems and Lifestyle**
- **International Climate Policy and Economics**
- **Competence Group Urban Living Lab**



Research services for customers and partners:

WEDDA® 4 Smart Grids: The highly accurate consumption and production forecast system WEDDA®S (Weather Driven Demand Analysis and Supply) is the heart of the future electricity market. With it, we help our customers realise grid stability as well as new business models with calculated risk in a world with a consistently increasing share of renewable energy sources. Stakeholder-based risk analyses allow us to optimally integrate new technologies and players into smart grids and local energy communities.

LCA/Climate Lifestyles: Our standardised Life Cycle Analyses (LCA), which are recognised European-wide, list all environmental impacts of companies and their products and services in their entire production, usage and disposal processes. In order to prepare our customers perfectly for success in the upcoming low carbon economy, we furthermore analyse the emissions of the up- and downstream value creation chains. By means of effect-based lifestyle research, we provide answers to questions related to the climate-relevant behaviour of the population and individuals and, based on this, derive marketing strategies for products and services in preparation for climate change.

POLICIES

Institute for Economic and Innovation Research

Director: Wolfgang Polt

The Institute for Economic and Innovation research supports public sector customers and companies by providing consultation, planning and evaluation services for:

- Technology and innovation strategies,
- Funding programmes and policies,
- Regional location assessments and regional development and
- Data-supported innovation projects in companies.

In the context of such projects, POLICIES provides economic, socio-scientific and statistical support for the development of innovation strategies and policies as well as specific technologies and products. The institute, for instance, explores the innovation behaviour of companies, assesses the effects of policy measures, evaluates regional development potential or examines gender dimensions of scientific and technological developments.

Our research and services are offered through three **research groups**:

- **Technology, Innovation and Policy Consulting**
- **Data Analytics and Statistical Modelling**
- **Regional Economics and Structural Policy**

Research services for customers and partners:

We strive to maintain high ethical standards in research such as impartiality, objectivity and transparency. »Responsible Research and Innovation« is more than just our object of research; it is our guiding principle for research practice.

We can draw on a comprehensive portfolio of projects as well as long-standing successful work with regional, national and international customers and partners. Our customers include

international organisations such as the European Commission, the OECD as well as customers from countries like Germany, Switzerland and Scandinavia. We conduct research for important domestic players such as ministries, funding organisations and advisory bodies as well as many provinces and communities. Furthermore, we list a considerable range of highly innovative companies with among our clients and partners.





Corporate Social Responsibility

JOANNEUM RESEARCH relies on innovative and dedicated employees and targeted post-graduate measures for the development of their technical, social and entrepreneurial qualifications. The company regards its commitment to equal opportunities and the advancement of women as a corporate policy goal in the sense of raising operational quality and strengthening its economic position. When it

comes to ethics in research and technology, JOANNEUM RESEARCH occupies a clear pioneering role in Austria among independent research institutes and is aware of its status as a role model and its responsibility toward society.

International Positioning

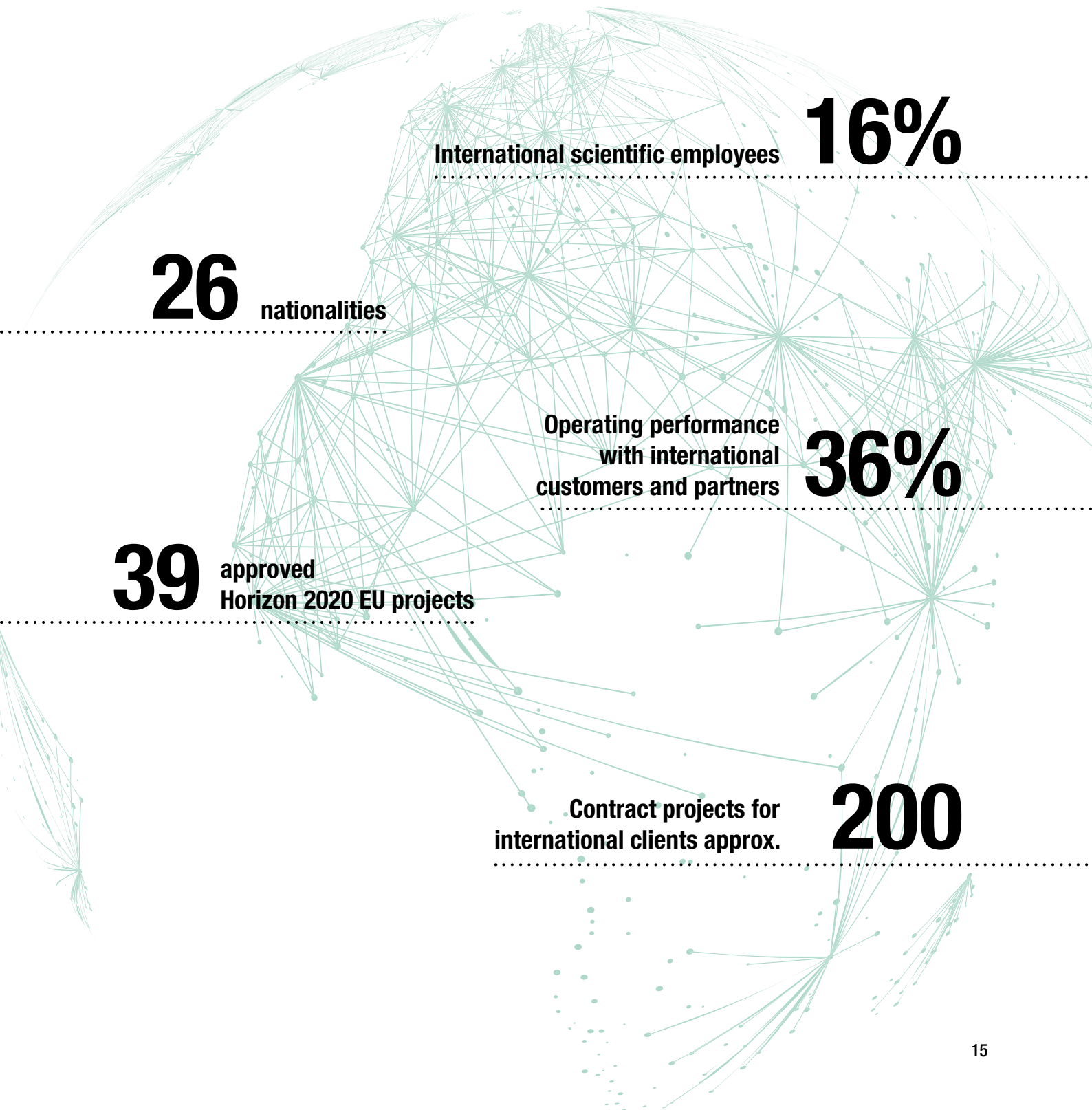
JOANNEUM RESEARCH is deeply embedded in the international and European research landscape. International cooperation and projects are more than just a competition factor with respect to location policy; they represent an important quality criterion. Experience has shown that the consistent internationalisation of research activities is closely linked to the pursuit of quality, excellence and innovation. Its international research and development projects and an excellent international network significantly contribute to JOANNEUM RESEARCH's content and business-related company development.

Important pillars in our international positioning are:

- Memberships in international organisations such as EARTO – the European Association of Research and Technology Organisations,
- Use of institutional and personal international networks such as JIIP – the Joint Institute for Innovation Policy, a joint institute of TNO (the Netherlands), VTT (Finland), Tecnalia (Spain) and JOANNEUM RESEARCH,
- Participation in programmes and projects of the European Space Agency as well as the European Defence Agency,
- Use of European Union programmes,
- Cooperation with export-oriented companies at the JOANNEUM RESEARCH locations,
- Cooperation with international companies,
- Cooperation with Austrian and international institutions, public authorities on specific problems

International Positioning in Numbers

Status: Business year 2018



International scientific employees

16%

26 nationalities

Operating performance
with international
customers and partners

36%

39 approved
Horizon 2020 EU projects

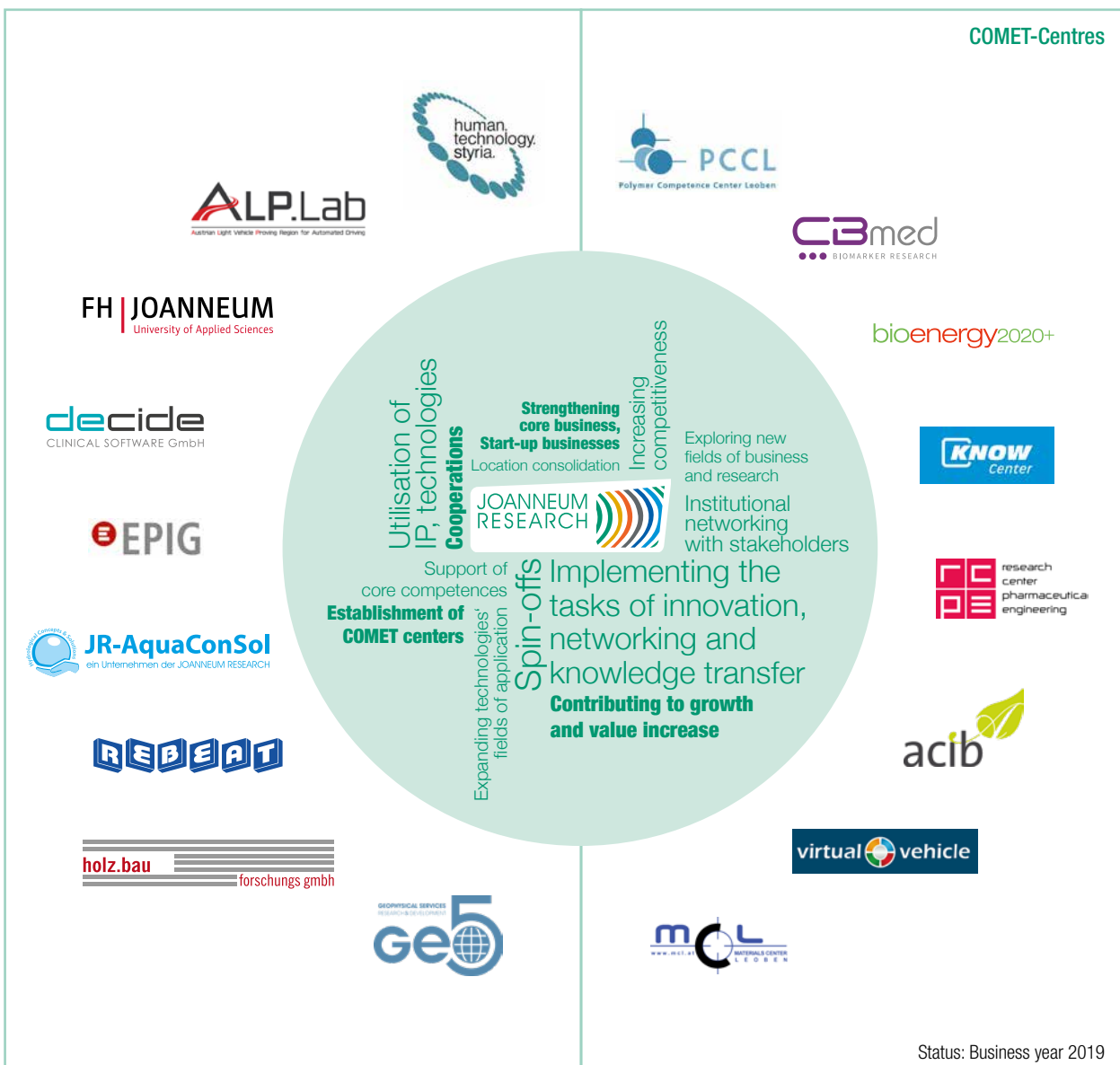
Contract projects for
international clients approx.

200

Corporate Shareholdings

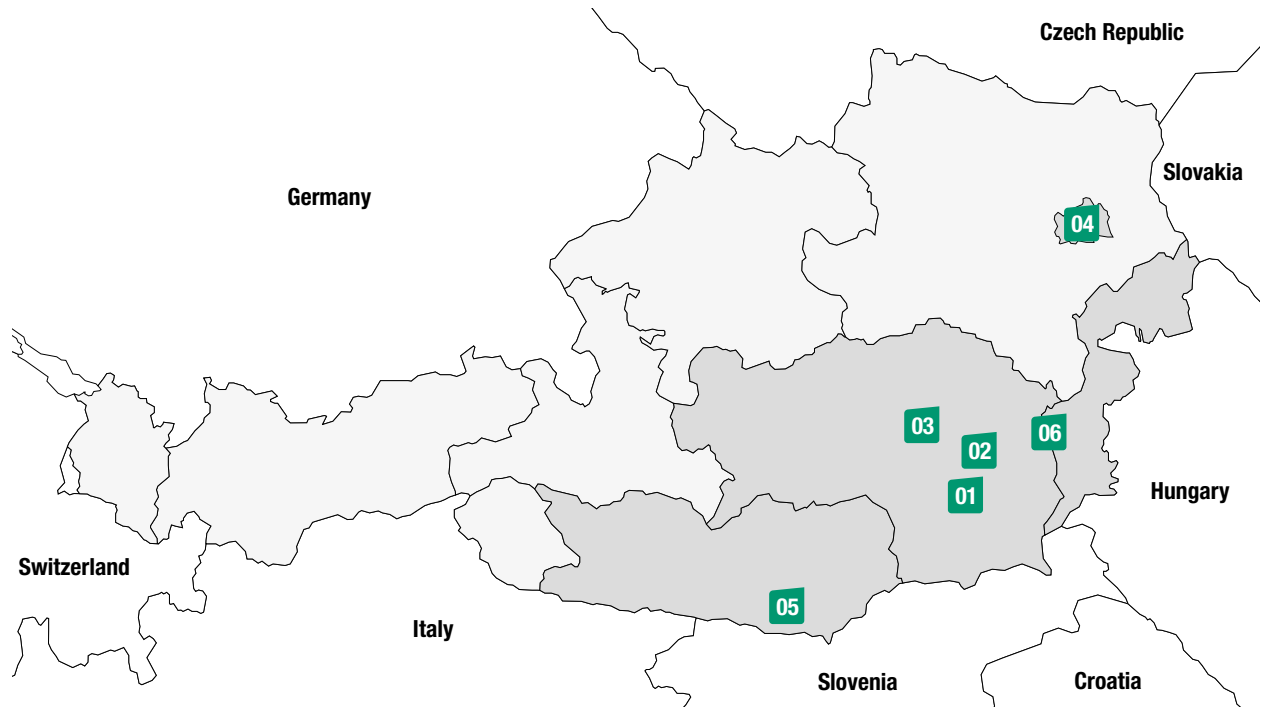
As an active network node within the national and international research and innovation system, JOANNEUM RESEARCH works closely with and for partners from the economy, science and research as well as the public sector. In the context of projects with partners from various industries and fields of activity, JOANNEUM RESEARCH as a distinctive »INNOVATION COMPANY« significantly contributes to sustainable, innovative solutions.

Moreover, JOANNEUM RESEARCH actively lives out cooperation via its shareholdings in companies – including spin-offs for utilising technologies and many companies within the context of the COMET Competence Centre for Excellent Technologies.



Business Locations

Status: August, 2019



01

GRAZ

Leonhardstraße 59
8010 Graz

- Management
- Corporate Stuff
- Corporate Departments
- POLICIES

ZWT
Neue Stiftingtalstraße 2
8010 Graz

- COREMED
- HEALTH

Steyrergasse 17
8010 Graz

- Computing Centre
- DIGITAL

Hilmwarte
Roseggerweg 31
8010 Graz

- DIGITAL

Science Tower
Waagner-Biro-Straße 100
8020 Graz

- LIFE

02

WEIZ

Franz-Pichler-Straße 30
8160 Weiz

- MATERIALS

04

WIEN

Haus der Forschung
Sensengasse 1
1090 Wien

- LIFE
- POLICIES

06

PINKAFELD

Technologiezentrum
Pinkafeld
Industriestraße 6
7423 Pinkafeld

- MATERIALS

03

NIKLASDORF

Leobner Straße 94
8712 Niklasdorf

- MATERIALS

05

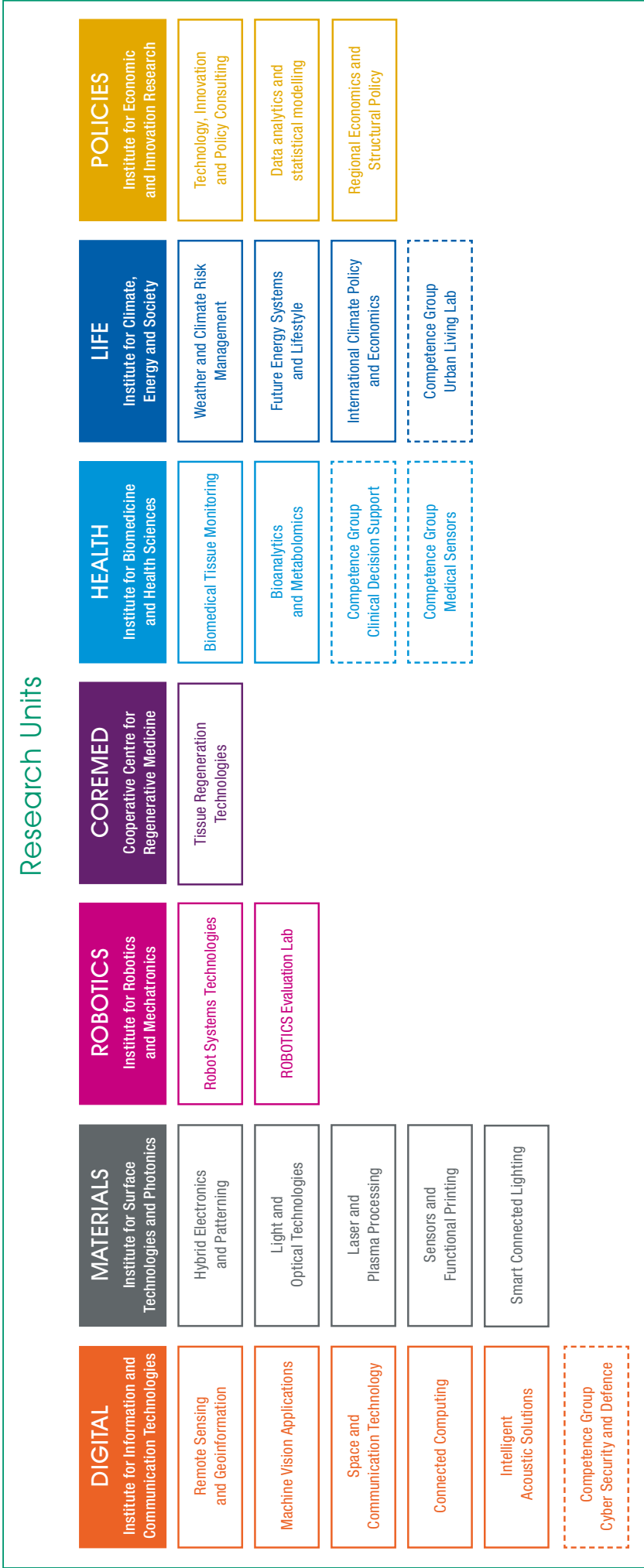
KLAGENFURT

Lakeside B13b
9020 Klagenfurt am
Wörthersee

- LIFE
- POLICIES
- ROBOTICS

JOANNEUM RESEARCH Forschungsgesellschaft mbH

Executive Board, Corporate Staff and Departments



Research Units and Contacts

MANAGEMENT

Leonhardstraße 59, 8010 Graz
Tel. +43 316 876-1190
gef@joanneum.at

DIGITAL

Institute for Information and Communication Technologies

- Remote Sensing and Geoinformation
- Machine Vision Applications
- Space and Communication Technology
- Connected Computing
- Intelligent Acoustic Solutions
- Competence Group Cyber Security and Defence

Steyrergasse 17, 8010 Graz
Phone +43 316 876-5000
digital@joanneum.at

MATERIALS

Institute for Surface Technologies and Photonics

- Hybrid Electronics and Patterning
- Light and Optical Technologies
- Laser and Plasma Processing
- Sensors and Functional Printing
- Smart Connected Lighting

Franz-Pichler-Straße 30, 8160 Weiz
Phone +43 316 876-3000
materials@joanneum.at

ROBOTICS

Institute for Robotics and Mechatronics

- Cognitive Robotics
- Mechatronic Systems
- Robotic Systems
- Competence Group ROBOTICS Evaluation Lab

Lakeside B13b
9020 Klagenfurt am Wörthersee
Phone +43 316 876-2000
robotics@joanneum.at

COREMED

Cooperative Centre for Regenerative Medicine

- Tissue Regeneration Technologies

ZWT
Neue Stiftingtalstraße 2, 8010 Graz
Phone +43 316 876-6000
coremed@joanneum.at

HEALTH

Institute for Biomedicine and Health Sciences

- Biomedical Tissue Monitoring
- Bioanalysis and Metabolomics
- Competence Group Clinical Decision Support
- Competence Group Medical Sensors

ZWT
Neue Stiftingtalstraße 2, 8010 Graz
Phone +43 316 876-4000
health@joanneum.at

LIFE

Institute for Climate, Energy and Society

- Weather and Climate Risk Management
- Future Energy Systems and Lifestyle
- International Climate Policy and Economics
- Competence Group Urban Living Lab

Science Tower
Waagner-Biro-Straße 100, 8020 Graz
Phone +43 316 876-7600
life@joanneum.at

POLICIES

Institute for Economic and Innovation Research

- Technology, Innovation and Policy Consulting
- Data Analytics and Statistical Modelling
- Regional Economics and Structural Policy

Leonhardstraße 59, 8010 Graz
Phone +43 316 876-1561
policies@joanneum.at

All information is also available online at
www.joanneum.at



JOANNEUM RESEARCH
Forschungsgesellschaft mbH

Leonhardstraße 59
8010 Graz

Phone +43 316 876-0
Fax +43 316 876-1130
prn@joanneum.at
www.joanneum.at



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