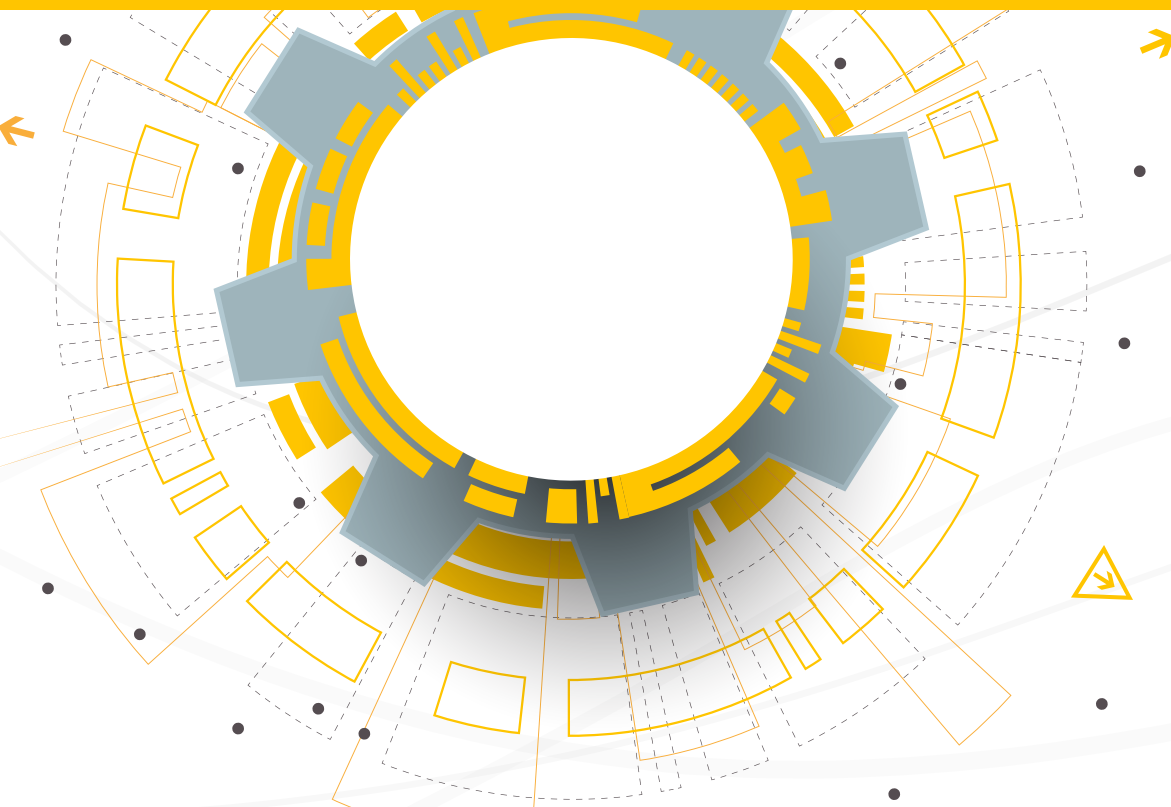


Research and Innovation Infrastructures in Europe



**INNO INFRA
SHARE**
Interreg Europe



European Union
European Regional
Development Fund

"Sharing Strategies for European Research
and Innovation Infrastructures"

Emilia-Romagna (Italy)



The Emilia-Romagna regional innovation system is well ranked within the national context and in the European landscape for several indicators. The Region has the highest number of R&D personnel and graduates in science and technology per inhabitant among the Italian regions. There is a high tendency to patent and to create innovative firms (second region in Italy as for number of innovative start ups, and fourth as for academic spin-off companies).

The regional S3 has identified 4 priorities

2 "vertical" ones that identify the reference production systems for research policies:

- Core production systems
 - Agri-food
 - Building and construction
 - Mechatronics and motoring
- Production systems with high growth potential
 - Health and well-being industries
 - Cultural and creative industries

2 "horizontal" ones on the ability of production systems to meet the new challenges of society:

- Orienting the innovation towards the socio-economic change directions
 - Sustainable development
 - Healthy and active life
 - Information society
- Strengthening the role of service innovation to enhance the companies' ability to manage the value chains

There are 116 R&IIs in Emilia-Romagna with very good performances despite the fact that many of them are small-sized.

CMR/CIDSTEM

CENTRE FOR REGENERATIVE MEDICINE "STEFANO FERRARI"/ INTERDEPARTMENTAL CENTER FOR STEM CELLS AND REGENERATIVE MEDICINE (CMR/CIDSTEM)

The mission of the CMR/CIDSTEM is to provide patients with effective therapeutic solutions for severe diseases for which regenerative medicine is either the only or the best therapeutic chance. The Centre has a 2000 sq meters GMP facility run by Holostem Terapie Avanzate devoted to the preparation of epithelial grafts, destined to clinical application in cell and gene therapy and to the development of phase I/II clinical trials based on different types of ATMPs, also on external commission.

<http://www.cmr.unimore.it/en/home.html>

Michele De Luca / cmr@unimore.it

Key infrastructures



- Plant room containing a 5.500-litres tank for liquid nitrogen and a dual ramp exchange control unit for carbon dioxide
- 5 fully equipped BL2 cell culture rooms and laboratories fully equipped for biochemistry, molecular biology, microscopy and a lot more
- GMP facility with 17 independent BL2 rooms
- Machinery for automated quantitative immunohistochemistry and in situ hybridization
- 15 HVAC (High Volume Air Conditioner) to feed sterile air to cell culture rooms

Services

- Collaborative Research
- Service for the implementation of Phase I/II clinical trials of stem cell-based advanced therapies

CINECA

CINECA - INTERUNIVERSITY CONSORTIUM

CINECA is a non-profit Consortium made up of 70 Italian Universities, 8 Italian Research Institutions, and the Ministry of Education University and Research. Today is the largest Italian computing centre, one of the most important worldwide. It operates in the excellence of science and technological transfer sectors through high performance scientific computing, the management and the development of cloud and web based services, and the development of complex information systems for management, treating and processing of large volume of big data.

www.hpc.cineca.it

Sanzio Bassini / s.bassini@cinca.it

Key infrastructures



- Tier0 Computing system MARCONI. Computational peak performance > 20 Petaflops. Ranked #18 the June 2018 TOP500
- Tier1 Computing system GALILEO. 500 server nodes are also connected with Mellanox Giga Bit Ethernet fabric for HPC Cloud services and high throughput computing services
- AI and ML Computing system DAVIDE. Peak Performance: ~1 PFlop/s
- Data storage, Visualization and Data Analysis PICO system

Services



- Open access peer reviewed computing service for excellence in science
- Mission critical computing service for complex work flow with committed SLA
- Data management, data processing repository and data visualisation service

SILAV

INTEGRATED SYSTEM OF ACOUSTICS AND VIBRATION LABORATORIES (SILAV)

SILAV is a RII of MechLAV, the Advanced Mechanics Lab of Ferrara Technopole, operating within Emilia-Romagna High Technology Network (HTN). In the field of noise and vibration control (NVH), SILAV carries out both high-level scientific activity, as well as industrial research and technological transfer activities in collaboration with companies (product innovation, analysis, testing, training). As a peculiarity, SILAV integrates, into a single RII, prominent vibro-acoustic equipments for research and consulting in both fields of mechanics and construction. SILAV's potential for industrial innovation could be further activated through the availability of public co-financing tools for NVH projects of enterprises (in particular SMEs).

www.unife.it/tecnopolo/lav

Giorgio Dalpiaz / giorgio.dalpiaz@unife.it

Key infrastructures



- Hemi-anechoic and Anechoic Chamber for measurements of sound power and directivity of noise and sound sources
- Reverberant room for measurements of sound absorption of materials
- Coupled rooms for sound insulation measurements for testing of building components, sound insulating multilayer systems, water drainage systems
- Measurements devices for physical, acoustical and mechanical properties of poro-elastic materials
- Tri-axis electro-dynamic vibration test system to realistically simulate the dynamic environment in practical use

Services



- Collaborative Research
- Commercial infrastructure, like renting equipment, commercial lab services and low rate manufacturing
- Testing and validation

CICLOPE

CENTRE FOR INTERNATIONAL COOPERATION IN LONG PIPE EXPERIMENTS (CICLOPE)

CICLOPE is a new single-site RII created to develop high Reynolds number experimental facilities for detailed turbulence, fluid dynamics and aerodynamics measurements. The infrastructure is open to university and industrial research groups that can benefit from the services offered by physically accessing the RII or by requiring ad hoc remote analysis. The main apparatus is the "Long Pipe" installed inside the tunnels of the "Ex Industrie Caproni" in Predappio. Designed for basic research, it has the potential for extensions with more direct impact on industrial applications.

<http://www.cidope.unibo.it>

Alessandro Talamelli / alessandro.talamelli@unibo.it

Key infrastructures



- The "Long Pipe": a closed loop wind tunnel, a "unique" facility, which gives the possibility to perform detailed measurements of the turbulence near a solid wall in a Reynolds number range
- Open loop wind tunnel for industrial application
- Coaxial aerodynamic tunnel
- Several apparatus developed for "ad-hoc" applications

Services



- Concept validation and prototyping
- Testing and validation
- Pre-competitive series production

Tartu (Estonia)

Tartu is Estonia's leading centre of education and research. Human capital has served as the driving force of Tartu's growth over the centuries. Our well-functioning education system and high standard of R&D institutes are widely recognized. Depending on the definition and the specification of the RIW's there are 5 (major) research and innovation infrastructures in Tartu.

Tartu is the centre of Estonia's medical and biotechnological landscape. The main areas of expertise in this emerging sector of the region lie in the fields of biochemistry, genetics and heredity, neuroscience and bioinformatics. This is also the reason why the most significant RIs are dealing with biotechnology or medicine.

Main growth areas of RIS3 in Estonia and Tartu (including South Estonia) are:



Information and communications technology and electronics



Health technologies and biomedicine



Wood (construction of wooden buildings)



Food (dairy industry and functional food)

The first two are directly taken from the Estonian RIS3 strategy, however, the wood and food are elaborated from the "More efficient value-added from the use of resources" growth area.

Tartu is Estonia's leading centre of education and research.

CTM

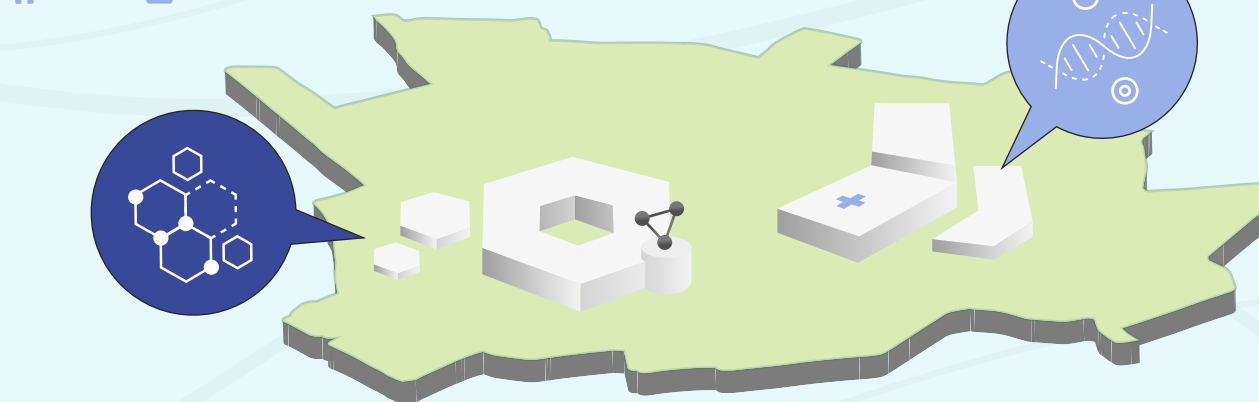
NATIONAL CENTRE FOR TRANSLATIONAL AND CLINICAL RESEARCH (CTM)

The aim of the CTM is to develop a modern research infrastructure and use it to improve the quality of medical research and provide the most modern environment and technologies for scientific research.

The established infrastructure involves functional units with three different goals:

- Fundamental research unit with aims to understand mechanisms of the causes of diseases
 - Disease models unit aims to develop new drugs and diagnostic strategies by using preclinical trials
 - Functional imaging unit works on the testing of new drugs and diagnostic methods.
- The mission of CTM is to ensure a high level medical research and efficient medical innovation

www.ctm.ee Katrin Kaarna / katrin.kaarna@ut.ee



NAMUR+

CENTRE OF NANOMATERIALS TECHNOLOGIES AND RESEARCH (NAMUR+)

NAMUR+ is a multidisciplinary, decentralized material research infrastructure in Estonia with the goal to develop a cutting-edge infrastructure for the fabrication, research and application of nanomaterials, and to joint different parts of infrastructure owned by project partners to a common attraction centre of nanomaterials and nanosafety.

The aim of the project is to establish infrastructure and excellence centre for research and development and safety assessment of nanomaterials (an object of Estonian Research Infrastructures Roadmap) by bringing together projects partners' high-technology equipment. The partners of NAMUR+ are the University of Tartu, Tallinn University of Technology and National Institute of Chemical Physics and Biophysics (Laboratory of Environmental Toxicology, the leading partner for safety assessment of nanomaterials).

www.namur.ut.ee Vambola Kisand / Vambola.Kisand@ut.ee

Key infrastructures



DNA sequencing with Next-Generation Sequencers for research and clinical purposes. This centre can sequence the human genome in about a week. The centre also includes storage facilities for biological samples which are kept in a temperature of minus 150 degrees.

9.4 Tesla magnetic resonance spectroscopy (MRI or MRS), which is made specifically for studies on small animals. This technology helps researchers to look at the inside of organs and can be used for in vivo imaging. This technology helps to reduce the number of experimental animals used for biomedical research.

35000 place Laboratory Animal Centre with laboratories of functional imaging and phenotypization and with transgenic technologies is prominent in Europe.

Services



- Collaborative Research
- Testing and validation
- Deployment and development of technologies of functional imaging

Key infrastructures



A Time of Flight Secondary Ion Mass Spectrometer (ToF-SIMS) is used for the high precision analysis of molecules and various complicated fractions in nanoscale amounts of substances.

A High Resolution Scanning Electron Microscope (HR-SEM) enables high resolution imaging of objects and materials down to nanometre resolution.

An Ultra-high Resolution Transmission Electron microscope (UHR-TEM) offers the possibility of studying the atomic structure of materials with both regular and irregular structure, and the direct atomic resolution imaging of atoms, molecules and their systems.

Services



- Collaborative Research
- Testing and validation
- Commercial infrastructure including low rate manufacturing and prototyping

Flanders (Belgium)



A recent (2017) European study showed that Flemish employability (95.2%) is amongst the highest in Europe. Only the regions Bavaria (Germany), Prague (Czech Republic) and Malta score higher. Especially the province of West Flanders has a very low unemployment rate of < 3.7% (157.091 people unemployed).

Flanders has the ambition to spend 3% of the GDP on Research and Innovation (in 2012: 2.14% and in 2013: 2.54%) and wants to be in the top 5 of European regions. The Flemish innovation landscape is currently still scattered. The policy is aimed at consolidation and cooperation between different actors in the innovation ecosystem. From a European perspective Flanders/Belgium is a strong innovator with innovative and collaborating SMEs and strong product innovations.

In March 2013 the Flemish government adopted a new Concept Paper "A Smart Specialisation Strategy for a Targeted Cluster policy". This policy document is the result of the policy evolution in the last ten years and a completion of the strategic convergence of different policy domains into a targeted approach with "spearhead clusters".

These spearhead clusters are a limited number of strategic cluster platforms composed by triple helix actors which are recognized by the Flemish government.

6 Thematic "spearhead" clusters have been defined:



Logis-tech (transport, logistics, services and supply management)



I-health-tech (ICT and new services in health)



Medi-tech (healthcare, food, prevention and treatment)



Nano-tech (new materials, nanotechnology, manufacturing industry)



Socia-tech (ICT for socio-economic innovation)



Eco-tech (energy and environment for services and industry)

From a European perspective Flanders is seen as a "strong innovator".

FLANDERS MAKE

The technological focus is mechatronics, product development methods and manufacturing technologies. The S3 focus of Flanders Make is on the manufacturing industry (Nano-tech). The TRL focus of Flanders Make is 3-6 (average). The infrastructure is located in the two sites (Lommel/Leuven).

The technological focus of Flanders Make is:

- Advanced manufacturing
 - Other advanced manufacturing
- ICT and digitization
 - Robotics and autonomous systems
 - Location based technologies
 - Interaction technologies
 - Augmented and virtual reality
 - Simulation and modelling

www.flandersmake.be

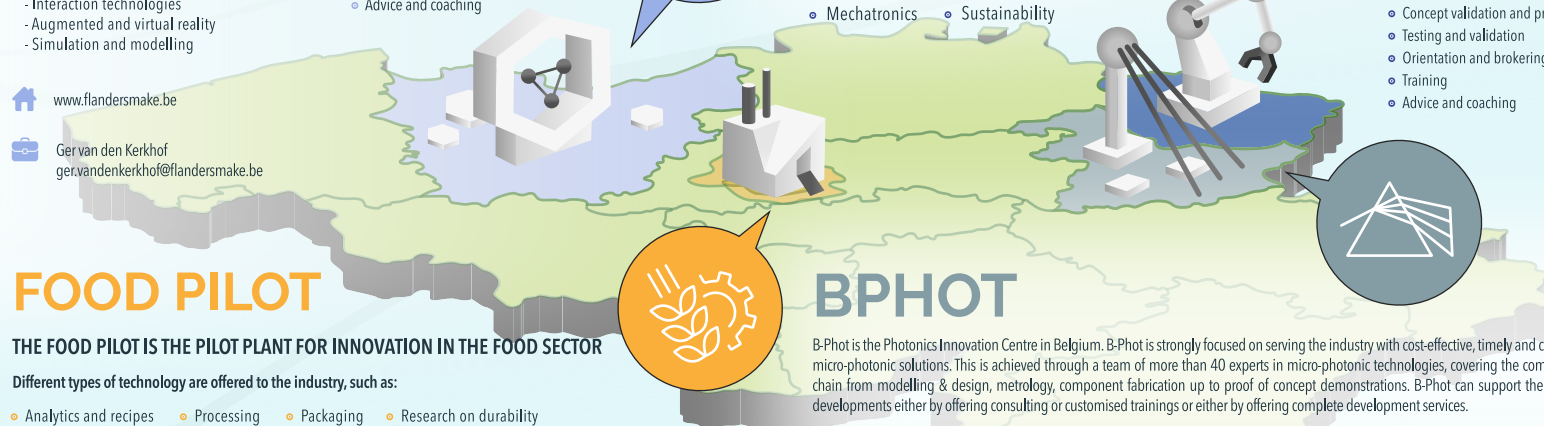
Gervan den Kerkhof
gervandenkerkhof@flandersmake.be

Key infrastructures

- Collaborative robotics lab
- Mobile AR/VR operator support lab
- Modular drive train for energy efficiency improvements
- 4 poster for durability testing of vehicles
- Development platforms for automated vehicles
- Joining and Materials lab
- Full vehicle shaker (climatized) for durability testing

Services

- Collaborative and applied Research
- Deep tech research
- Concept validation and prototyping
- Testing and validation
- Orientation and brokering
- Training
- Advice and coaching



FOOD PILOT

THE FOOD PILOT IS THE PILOT PLANT FOR INNOVATION IN THE FOOD SECTOR

Different types of technology are offered to the industry, such as:

- Analytics and recipes
- Processing
- Packaging
- Research on durability

The S3 is "industrial biotech" with subcategory "food and feed additives". The Food Pilot offers an integrated package of services ranging from the first innovative idea to a successful end-product. The customer can choose support for one, several or all of the steps in an innovation process, accompanied as desired by a project-specific package of testing, analysis and advice.

Services provided are:

- Awareness creation
- Collaborative research
- Concept validation and prototyping
- Commercial infrastructure (renting equipment)
- Incubator/accelerator support
- Voice of the customer. Support to customers in creating their product
- Education and skills development

www.foodpilot.be

Inge Arents / inge.arents@flandersfood.com

Key infrastructures

- UHT installation
- Multiproces horizontal autotave
- High pressure hogogenisator
- Cryogenic freezing equipment
- Drying equipment

Services

- Validation and testing of (new) recipes
- Piloting
- Development of innovative food products
- Lab analysis

SIRRIS

Sirris is the research and innovation institute for the technological industry in Flanders (cross sectorial). Both SME's and large companies are served with innovation support.

The technological focus areas of Sirris are:

- ICT
 - Robotics and autonomous systems
 - Augmented and virtual reality, visualization
 - Software as a service
- Advanced Manufacturing
 - AM on advances materials
 - Other advanced manufacturing
- Materials
 - Surface engineering and coating
 - Smart multifunctional materials, devices and structures
- Mechatronics
- Sustainability

www.sirris.be

Walter Auwers
walter.auwers@sirris.be

Key infrastructures

- Cobots in an industrial flexible workcell
- Highly accurate machining equipment
- Additive manufacturing machines
- Incremental sheet forming application lab
- Aerosol Jet Printing and hybrid PVD

Services

- Collaborative and applied Research
- Concept validation and prototyping
- Testing and validation
- Orientation and brokering
- Training
- Advice and coaching

B-PHOT

B-Phot is the Photonics Innovation Centre in Belgium. B-Phot is strongly focused on serving the industry with cost-effective, timely and cutting edge micro-photonics solutions. This is achieved through a team of more than 40 experts in micro-photonics technologies, covering the complete value chain from modelling & design, metrology, component fabrication up to proof of concept demonstrations. B-Phot can support the industry in developments either by offering consulting or customised trainings or either by offering complete development services.

The specific areas of technology are:

- Photonics based sensor technologies
- Display technologies
- Laser technologies
- Signal analyses, data processing and computer technologies

<http://www.b-phot.org/>

Nadia Cornand / ncornand@b-phot.org

Application domains are:

- ICT
- Aerospace
- Automotive
- Display illumination
- Food & Health

Key infrastructures

- Low speed laser line generator
- Optic parametric Oscillator for generation of pico second light pulses
- Ultra-precision diamond tooling equipment for prototyping micro-optical and micro-mechanical components
- 8 stylus contact profiler for contact stylus measurements of step heights, bows, planarities and roughnesses
- Cyclotron for producing quasi-monoenergetic beams in the energy range between 3 and 45 MeV

Services

- Service and consulting
- Applied and deep tech research
- Testing and validation
- Optical measurement and characterisation
- Optical modelling and photonic design

Skåne (Sweden)

Skåne's strategic innovation work is based on the region's International Innovation Strategy and the three smart specialisation areas: Smart Materials, Smart Sustainable Cities and Personal Health. There are several goals described in the strategy, among them, foster international collaboration and create the necessary conditions to promote innovation in companies and stimulate regional development. These goals can only be achieved through joint efforts for the greater benefit of the wider society. With two large-scale world-class research infrastructures under construction in the region, the Smart Specialisation Strategy of Skåne also aims to position the region as an international hub for materials science and create conditions for growth in highly innovative companies, including SME, from a wide range of sectors in the medical, energy and cultural heritage domains, to only name a few. The European Spallation Source (ESS), currently under construction and the MAX IV Laboratory are expected to be one of the leading materials science research hubs in the world. They will enable scientists to study materials that we use today and to develop new materials and diverse products such as medications with less side effects, nanoparticles for different areas of applications including paint, catalysis or computing, and lighter and stronger packaging materials.

The ESS, currently under construction and the MAX IV Laboratory are expected to be one of the leading materials science research hubs in the world.

PRONANO

ProNano shall be a globally leading pilot production plant for nanotechnology based products and the hub in an ecosystem that will revolutionize industries and markets with nanoscale engineered materials for a better tomorrow. ProNano facilitates commercialization and scale-up of nano-enabled products by providing start-ups, industry and research organizations in Northern Europe with access to a globally leading pilot production plant and expertise to help transfer nanoscience to the market.

 <http://pronano.se>  Michael Salter / michael.salter@rise.se

Key infrastructures

The vision for ProNano is to create a state-of-the-art nanoproduction facility and will include equipment for material growth and deposition, lithography, and metrology for manufacturing of nanoscale materials, components and products. The first phase of the ProNano facility will focus on advanced epitaxial growth and deposition.

Services

- Concept validation and prototyping
- Testing and validation
- Pre-competitive series production

MAX IV

MAX IV LABORATORY SECTOR

MAX IV Laboratory is the brightest synchrotron X-ray source of its kind. It is available to scientists from academia and industry in the whole world. The facility is used to understand, explain and improve the world around us. The core activity of MAX IV Laboratory is to produce and deliver X-ray beams to a portfolio of beamlines used by scientists in a wide variety of research fields such as biology, physics, chemistry, environment, geology, engineering and medicine. The facility enables the study of materials that we use today to improve them beyond the performance that we know.

 <https://www.maxiv.se/>

 Magnus Larsson / magnus.larsson@maxiv.lu.se

Key infrastructures

The MAX IV facility consists of a 3 GeV storage ring, a 1.5 GeV storage ring, and a linear accelerator that serves as a full-energy injector to the rings, but also as a driver for the Short Pulse Facility. 16 beamlines are funded (2018) and in different stages of completion. Seven of these will be receiving users (commissioning experts and regular) in 2019.



Services

The funded beamline portfolio offers X-rays in the energy range from 4 eV to 40 keV for imaging, spectroscopy and scattering techniques.

ESS

EUROPEAN SPALLATION SOURCE ERIC (EUROPEAN RESEARCH INFRASTRUCTURE CONSORTIUM) (ESS)

ESS, organised as a European Research Infrastructure Consortium (ERIC), is an international multi-disciplinary research facility based on the world's most powerful neutron source. The unique capabilities of this new facility will both greatly exceed and complement those of today's leading neutron sources, enabling new opportunities for researchers across the spectrum of scientific discovery, including life sciences, energy, environmental technology, cultural heritage and fundamental physics. It is one of the largest science and technology infrastructure projects being built today. The facility design and construction includes the most powerful linear proton accelerator ever built, a helium-cooled tungsten target wheel, 22 state-of-the-art neutron instruments, a suite of laboratories, and a supercomputing data management and software development center. It is a greenfield project, built from the ground up.

 <https://europeanspallationsource.se/>  Dusan Stric / Dusan.Stric@ess.se

Key infrastructures

According to ESS' plans, the first 8 instruments to open for research will be:

- ODIN—Multi-purpose Imaging
- LoKI—Broad band Small-Angle Neutron Scattering (SANS)
- DREAM—Bispectral Powder Diffractometer
- ESTIA—Focusing Reflectometer
- BEER—Materials and Engineering Diffractometer
- BIFROST—Extreme environment Spectrometer
- MAGiC—Magnetism Single Crystal Diffractometer
- C-SPEC—Cold Chopper Spectrometer

South Moravia (Czech Republic)




The South Moravian Region (SMR) is considered to be the crossroads of Europe for its advantageous position on the border with two EU countries and on the Mediterranean link with Central and Northern Europe. The SMR's foreign neighbors are Slovakia in the east and Austria in the south. The metropolitan city of the region is Brno. It is also the statutory city of SMR and the second largest city in the Czech Republic. The Regional Innovation Strategy for the SMR 2014-2020 (RIS SMR) is a fundamental strategic document for the SMR and Brno for the implementation of their policies in order to support competitiveness, in particular, on the basis of innovations, and to maximise economic benefits of public investment into research and education. RIS SMR contains of several main domains: Advanced production and engineering technologies (Power engineering, Engineering production tech., Investment units, Special manufacturing machines), Precision instruments (Scientific instruments, Precision measuring tools and sensors), Software and hardware development (IT security and cognitronics, SW dev.), Pharmaceuticals, medical care and diagnostics and Aircraft technology.

The South Moravian Region is after Prague the second most important region in the Czech Republic, which has due to the large number of situated universities and research centres, the most suitable conditions for the research, development and innovations.

ADVANCED COATING LABS

CENTRAL EUROPEAN INSTITUTE OF TECHNOLOGY / BRNO UNIVERSITY OF TECHNOLOGY,
ADVANCED COATING LABS

Advanced Coatings Labs are public/private – industry/research infrastructures to apply result of high-end scientific excellence into practice on one side and to provide top quality services, expertise and instrumentation for industry and contractual research. Main areas of interest are application of advanced coatings for mechanical engineering, automotive, space and aerospace, energy and biotech and analytical expertizes in field of material characterization and metallograph.

 <https://www.ceitec.cz/advanced-coatings/t1925>  Jan Proček / jan.procek@ceitec.vutbr.cz

Key infrastructures



- Lab on Spray Technologies for plasma processing
- Semi-Micro analytical balances DISCOVERY DV314C
- Heat treatment and Chemistry Lab

Services



- Organic connection between the science, application and Production
- Scientists working together with engineers and technicians online immediate feedback from the industry
- Local RIIs cooperate with local SMEs to produce global products and develop global applications

PLASTICS CLUSTER PARTNERSHIP

CENTRAL EUROPEAN INSTITUTE OF TECHNOLOGY / BRNO
UNIVERSITY OF TECHNOLOGY, PLASTICS CLUSTER PARTNERSHIPS

Central European Institute of Technology, Brno University of Technology (CEITEC BUT) and Plastics Cluster (Plastr) entered into the partnership in 2014 to support an interregionality and interdisciplinarity of their activities and to support the connections between regional research and innovation infrastructures (RIIs) and SMEs.

CEITEC BUT is an independent scientific institute at the Brno University of Technology, which was established within the framework of the CEITEC - Central European Institute of technology.

Plastr is a Zlín regional cluster with 4 priority sectors: education and human resources development and innovation, cooperation, common purchase and sale of services and promotion.

Plastr represents important institutions of the Zlín region: Tomáš Bata University in Zlín, the Zlín Region, Association for the Development of the Zlín Region and regional Technological Innovation Centre.

 <http://www.plastr.cz/>  Ing. Jaroslav Toufar / toufar@plastr.cz

Key infrastructures

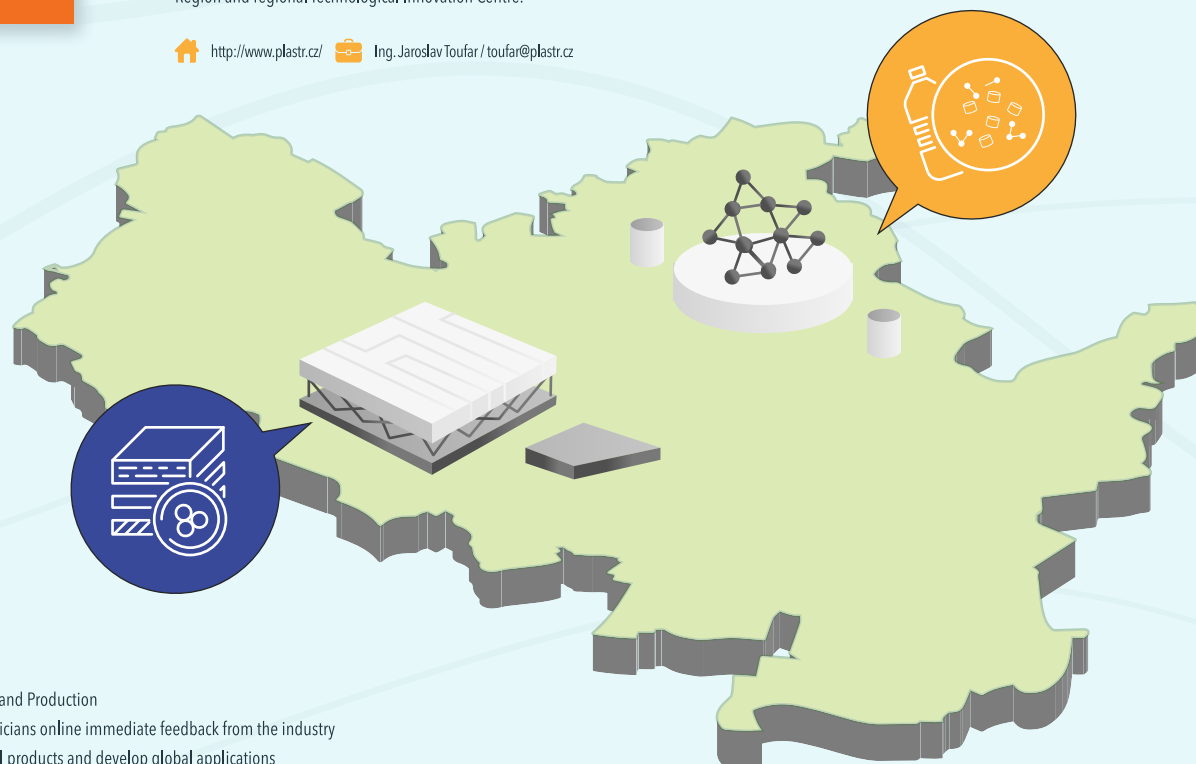


- Colour measurement (Spectrophotometer CM-2500c)
- Thermographic analysis of polymer fabrication processes (Infrared camera FLIRT 425)
- Off-line thickness measurement (Yamabun TOF-5R)

Services



- Support to companies in a wide range of R&D activities.
- Arranging of required measurement, testing, analysis etc. either in its Centre for Modelling Products Made of Plastics or in facilities of its partners including regional CPS – Centre of Polymer Systems - Research Centre at the University of Tomáš Bata Zlín or CEITEC BUT.



Brainport (The Netherlands)

Brainport Eindhoven is a world-class top technology region. In 2017 Brainport Eindhoven is the economically fastest growing region in the Netherlands, with an economic growth of 4,9. High tech and design are combined with an advanced high-end manufacturing industry, strong creative and design competences and entrepreneurship. Close collaboration and sharing knowledge are part of the region's DNA and characterize the open innovation culture which makes Brainport smart and strong. Situated in the South of the Netherlands (Southeast Brabant), Brainport Eindhoven has a population of 760,000 and a workforce of 400,000 people. The economic success of Brainport can be attributed to the culture of trust and understanding that the future lies in co-creation, expressed in the Triple Helix cooperation between industry, knowledge institutions and public authorities. One of the unique qualities of the Brainport ecosystem is the presence of several innovation campuses that function as a breeding ground and magnet for innovation, new activity and talent.


RIS3:  High Tech Systems and Materials  Life sciences and health  Chemistry and materials

The Brainport Region is an international example of a well functioning open innovation system.

HOLST CENTRE

Holst Centre is an independent R&D centre that develops technologies for wireless autonomous sensor technologies and flexible electronics, in an open innovation setting and in dedicated research trajectories. A key feature of Holst Centre is its partnership model with industry and academia based around roadmaps and programs. It is this kind of cross-fertilization that enables Holst Centre to tune its scientific strategy to industrial needs. Holst Centre was set up in 2005 by Imec (Flanders, Belgium) and TNO (the Netherlands) and is supported by local, regional and national governments.

 www.holstcentre.com  Mr. Ton van Mol / Ton.vanmol@tno.nl

 Mr. John Baekelmans / john.baekelmans@imec.nl



Services

- Bridge the gap from prototype to product
- Shared R&D
- Creation of an ecosystem with a safe environment for companies to collaborate

Key infrastructures

State-of-the-art facilities for processing on foil, divided into several categories:

- A cleanroom dedicated for Sheet to Sheet (S2S) process development of large area devices such as OLED, PV and batteries
- Cleanroom dedicated to S2S process development of various printing technologies, electromagnetic curing technologies, integration of discrete components on film, and vacuum lamination
- A cleanroom dedicated to S2S development of thin film transistor technology consisting of a film laminator to allow for film on glass processing, reactive ion etching (RIE) and wet etching equipment etc.
- Various tools for Roll to roll (R2R) processing, including a vacuum tool for R2R deposition of thin film barrier etc.
- Extensive optical and mechanical analysis facilities to resp. determine the electro-optical properties of OLEDs and solar cells, and to determine bend and stretch capabilities of flexible electronics

PHOTONDELTA

PhotonDelta is one of Europe's leading innovation hubs, amplifying existing initiatives and kick-starting new ones regarding the Photonics business

Three pillars exist under PhotonDelta:

- 1 The Institute of Photonic Integration, building on 40 years of optics research at Eindhoven University of Technology - in cooperation with other nanotechnology centres like Mesa+ at the University of Twente and Saxion University of Applied Sciences
- 2 The Cooperative: a consortium of scale-ups, manufacturers and investors. The goal is to build win-win situations for members, including early access to Research IP
- 3 The Photonic Integration Technology Center (PITC), branching out on Europe-wide work done in circuits and components by the JePPiX consortium. The PITC provides the equipment and expertise to prepare a technological innovation in the area of photonic integration for industrial use and integration

 www.photondelta.eu  EwitRoos@ewit@photondelta.eu

Key infrastructures

PITC is a custom-built state of the art shared facility geared towards new product production, prototyping and manufacturing. It possesses a large cleanroom (800 m2) optimized for photonics R&D.

Services


- Ecosystem building
- Fundamental scientific research
- Development of prototypes that are taken on to the product stage by industry

AUTOMOTIVE CAMPUS

Automotive Campus is a strong collaboration between business, education and government. The campus is a crystallisation point: an inspiring business location with top international education, quality facilities and a strong business proposition. In a Public Private Partnership, with two public and two private investors, the realisation of the campus started in 2009.

Nowadays Automotive Campus in Helmond offers a one-stop-shop for automotive companies and institutes. It has a large concentration of R&D, engineering, education, and world-class test-facilities. A lot of effort is put in active community building and stimulating (open) innovation.

 www.automotivecampus.com

 Daniel de Klein / d.de.klein@helmond.nl

Key infrastructures

The Automotive Campus Shared Facilities provide high-tech automotive testing facilities and spaces for research, offices and workspace for a wide range - including SME's, knowledge institute and educational institutions - to make use of, such as:

- Prototype building facilities and Component & System Testing facilities
- Test facilities for passive safety
- Test facilities for active safety systems / cooperative systems
- Power train centre and Climatic Altitude Chamber
- Rolling road test bench

Services

- Ecosystem building
- Collaborative Research
- Concept validation and prototyping
- Testing and validation

Vidzeme (Latvia)



Vidzeme Planning Region is one of the five NUTS3 planning regions in Latvia. Vidzeme is predominantly rural region with more than 55% of the area covered by forest and 34% with agricultural land. The regional development strategy for 2030 emphasizes the cooperation and triple helix network and cluster development in RIS3 areas among key actions to improve innovation environment in the region. While most of the research and innovation infrastructures (RIIs) in Latvia are in the capital city, there are several key RIIs operating in the region, working in the areas of bio-economy, remote sensing, mechatronics, ICT, cyber security, RFID, multimedia, electronics, automatization and sustainable energy. Modern technology infrastructure (in areas of food technology, forestry, wood processing, mechatronics, electronics, ICT, agriculture, engineering) is also available in several technical schools in the region.

RIS3

Five RIS3 smart specialization areas are defined on the national level in Latvia:

- Smart energy
- Biomedicine, medical technologies and biotechnology
- Smart materials, technology and engineering
- Advanced ICT
- Knowledge intensive bio-economy

Vidzeme Planning Region in its development strategy 2030 has defined regional RIS3 specialization areas, that are corresponding to national RIS3 areas.

Bridging knowledge-based bio economy with digitalization is becoming a focus point in the regional innovation eco-system development in the Vidzeme region.

RTU CĒSIS AFFILIATE

RIGA TECHNICAL UNIVERSITY (RTU) CĒSIS AFFILIATE

RTU Cēsis Affiliate provides Vidzeme region with high quality scientific research, higher education, valorization and innovations in the field of electronics and electrical engineering, sustainable energy, industry modernization and automation and application development.

<http://cf.rtu.lv>

[Alvis Sokolovs / Alvis.sokolovs@rtu.lv](mailto:Alvis.Sokolovs@rtu.lv)

Key infrastructures



- Prototyping and design lab – 3D and electronics prototyping equipment and tools
- Simulation and Modeling software – Mathworks MATLAB, COMSOL, Solidworks, Altium Designer, OriginPro, IBM SPSS Statistics
- Variety of data loggers – urban activity and environment, facility electrical energy consumption monitoring

Services



- Concept validation, design and product prototyping and testing
- Process monitoring, data gathering and process optimization solutions
- Problem identification and providing access to specific facilities in RTU labs

IES

INSTITUTE FOR ENVIRONMENTAL SOLUTIONS (IES)

IES is a multidisciplinary environmental research institute. It has built and operates an airborne hyperspectral remote sensing laboratory named ARSENAL. The system integrates eight mutually operable sensors which provide high quality data on the terrestrial, marine and freshwater ecosystems, their structure, chemical composition and spatial characteristics.

www.videsinstituts.lv

[Inese Suija-Markova / inese.suija@videsinstituts.lv](mailto:Inese.Suija-Markova@inese.suija@videsinstituts.lv)

Key infrastructures



Airborne Surveillance and Environmental Monitoring System (ARSANAL) consisting of 8 mutually operable sensors that can acquire 454 spectral bands in a spectral wavelength from 280 to 12000 nm.

Research aircraft BN-2T-4S Defender - can cover 100 km² in one flying hour and has a maximum endurance of around 8 hours. Can take off from short, unprepared runways.

Services



- Remote sensing/Earth observation
- Evidence-based natural resource management
- Concept validation and prototyping

VIA

VIDZEME UNIVERSITY OF APPLIED SCIENCES (VIA)

Vidzeme University of Applied Sciences offers 17 study programs at the Faculty of Society and Science and the Faculty of Engineering. VIA's research strategy is a reaction to the challenges created by the transition to the knowledge society and globalization. The common research direction of VIA is Digital Solutions for Social Challenges. VIA is strategically developing R&D capacities in such areas as virtual and augmented reality technologies and visualization; cyber security and engineering, multi-media (i.e. strategic communication and media literacy), mechatronics.

www.va.lv

[Kaspars Osis / kaspars.osis@va.lv](mailto:Kaspars.Osis@kaspars.osis@va.lv)

Key infrastructures



- Virtual and Augmented reality Laboratory
- Computer network laboratory
- Mechatronics and RFID laboratory
- Data security laboratory
- Mobile technology solutions laboratory

Services



- Collaborative research
- Concept validation and prototyping
- VIA Smart Labs

AREI

INSTITUTE OF AGRICULTURAL RESOURCES AND ECONOMICS (AREI)

AREI is the only research institute in Latvia engaged in breeding of field crops. The main research directions of the institute:

- field crop genetics and breeding for integrated and organic farming systems
- development of sustainable crop growing technologies for various farming systems
- evaluation of crop quality for effective use in feed and food
- production of feed
- economics of sustainable development of bioresource industries
- efficiency of production processes and company competitiveness

www.arei.lv

[Viktorija Zaremba / viktorija.zaremba@arei.lv](mailto:Viktorija.Zaremba@viktorija.zaremba@arei.lv)

Key infrastructures



- Tissue culture laboratory
- Facilities and machinery for conducting different kinds of field trials with crops under organic and conventional conditions
- Near infrared reflectance (NIR) spectroscopy techniques which allow an easy and fast evaluation of different quality parameters (plant material, food, feed, including substances of low concentrations)
- Equipment for assessment of yield parameters: TGW, germination rate, grading, detection of starch content in potato etc.
- Molecular laboratory, DNA evaluation

Services



- Field trials under different agroclimatic conditions and in organic and conventional farming systems
- Evaluation of the adaptability of plants to climate changes (by evaluation of such traits as winter hardiness, yield stability, response to biotic and abiotic stresses)
- Detection of genes providing important traits, as well as varieties fingerprinting
- Evaluation of different substances in plants, feed, food or other biomaterial
- Micropropagation facilities for microplants of different species

Saxony (Germany)



Saxony is an industrial European region with longstanding innovation traditions. It is well known for its inventions and innovations in such fields as automotive industry, mechanical engineering, textile industry and ICT and for its top-class research institutions and innovation infrastructures.

With its Smart Specialisation Strategy Saxony aims at synergising these traditional fields of activities with Key Enabling Technologies, in which the region can present particular future-oriented strengths: the microelectronics, nanotechnologies, advanced materials and advanced manufacturing systems, high performance computing systems.

They are examples for the successful implementation of that strategic approach in Saxony. The presented below research infrastructures give examples for public and private investments into research and innovation, which contribute to the synergic linkages of innovation tradition and Key Enabling Technologies for the Industry of the future.

Saxony has developed a powerful science landscape, which drives on people, who tackle future questions and social challenges with curiosity and endurance.

LASERINSTITUTE MITTWEIDA

The Laser Institute at Mittweida University provides of the best and latest equipment, especially for laser micro- and nanostructuring. Several ultra-short laser sources of high power and high repetition rate are being used. The institute has many years experiences with fast laser microstructuring processes, e.g. using polygon mirror scanners as well as in the achievement of high area rates greater than 1 m²/min.

<http://www.laser.hs-mittweida.de/institut.html>

Dr. Katrin Fritzsche / katrin.fritzsche@hs-mittweida.de

Key infrastructures

- Comprehensive laser-equipment for fine, micro and submicrostructuring, cutting, welding, hardening, modifying, cladding, Selective Laser Melting (SLM) Laser pulse deposition of thin films (PLD) Fiber laser (self-made, up to 500 W) for the flexible investigation of beam injection and pumping process, CO₂ laser, Nd: YAG laser

- Top class equipment for analysis, measuring and preparation technology

Services

- Collaborative Research
- Testing and validation
- Innovation project development and management

POWER STATION LAB

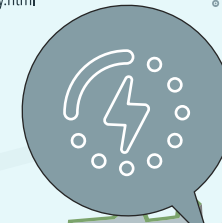
Key infrastructures



"Zittau power plant laboratory" is an interdisciplinary lab for the study of power plant processes. The focus is set on the energy efficiency and the use of renewable energy. It consists of three large pilot plants and several smaller pilot plants. The lab is being used for research and education purposes. The project "Zittau power plant laboratory" is funded by the European Regional Development Fund (ERDF) and the Free State of Saxony.

<http://ipm.hszzg.de/en/labs/zittau-power-plant-laboratory.html>

Prof. Dr.-Ing. Alexander Kratzsch / a.kratzsch@hszzg.de



- Thermal energy storage test system. Simulation and analysis of the thermal cycling processes, flexibilisation of thermal energy plants, safety-related investigations for components from thermal industrial plants

- Magnetic and back-up bearing test stand

- Thermochemical test area

Services



- Innovation project development
- Collaborative Research
- Testing and validation

Services



- Collaborative Research
- Innovation project development and management
- Testing and validation

Key infrastructures



MERGE

MERGE TECHNOLOGY CENTRE

The MERGE Technology Centre (MTC) is home of the Cluster "MERGE - Technologies for Multifunctional Lightweight Structures". It promotes the vision of merging basic technologies suitable for mass production in order to produce high performant multifunctional lightweight structures resource efficiently. Active components such as sensors, actuators and generators can be integrated through in-line or in-situ processes. MTC offers versatile facilities with user-specific equipment and interlinked manufacturing cells, processing areas and modular system concepts.

https://www.tu-chemnitz.de/MERGE/merge_technologies.php

Dr. Katharina Schöps / katharina.schoeps@mb.tu-chemnitz.de



- Unique integrative MERGE manufacturing complex** allows the combined processing of plastic and metal materials, based on a multi-component swivel-platen injection moulding machine KM 2500-24500-8100 with a clamping force of 25,000 kN and three injection units in 0°, 90° and 180°. Individually adjustable machine, combining hydroforming and injection moulding, can also be used to produce foamed structures on a microcellular level as well as a combination of injection moulding with thermoplastics and thermosets

- Orbital wrapping machine** for the fabrication of closed, endless fiber-reinforced profiles, such as structural shapes with varying forms, not rotation-symmetric components can now be produced continuously

- 3D-Printing Efficiency Lab.** Availability of printers and process equipment for all currently printable materials and manufacturing processes. Open and suitable for SMEs which intend to integrate 3D-Printing into their manufacturing processes (development, testing, integration, optimisation)



About INNO INFRA SHARE

INNO INFRA SHARE, led by ASTER (Emilia-Romagna Region, Italy) is an Interreg Europe programme 2014-2020 project set up in response to the increasing demand of the SME sector of setting up an easier and more effective collaboration framework with Research and Innovation Infrastructures (RIIs). Companies would like to use the RIIs, because expensive research facilities (such as equipment and laboratories) are often not affordable. Innovation is essential for the progress of these companies and the progress of the regional economy. The mutual learning will contribute to the design and implementation of action plans for each participating region to improve regional policy instruments performances and results.



www.interregeurope.eu/innoinfra/share/

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