

AIT AUSTRIAN INSTITUTE OF TECHNOLOGY

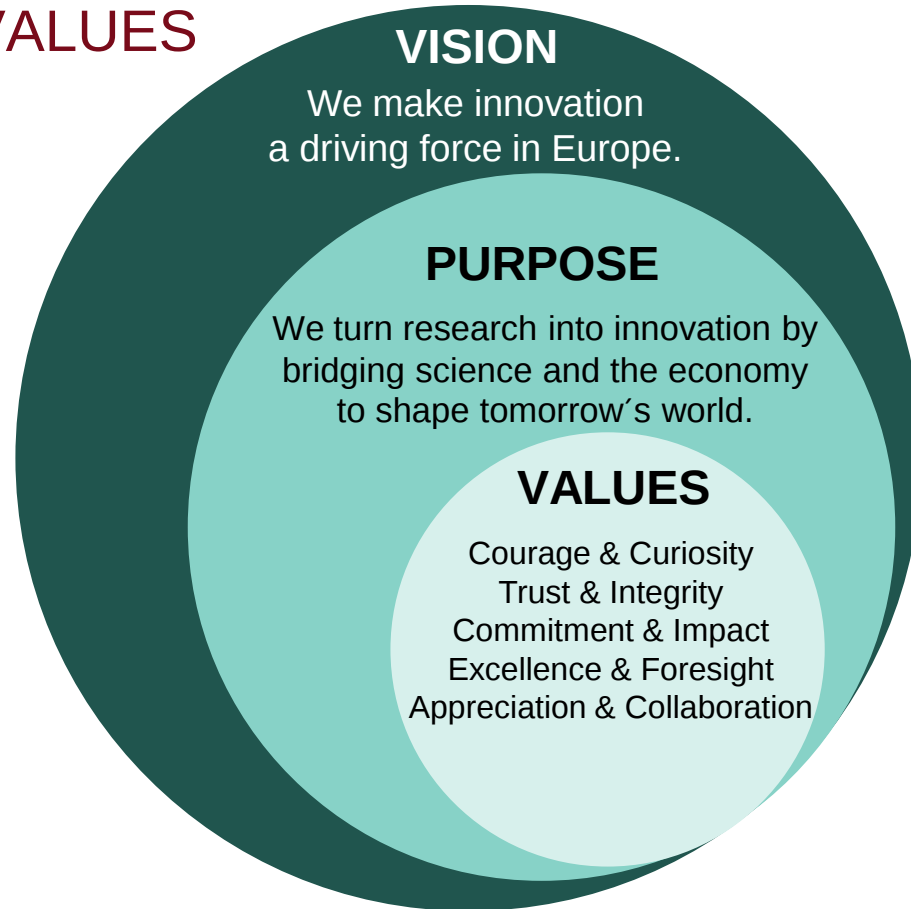
Visit of AIT at JSI premises

16.-17.10.2025

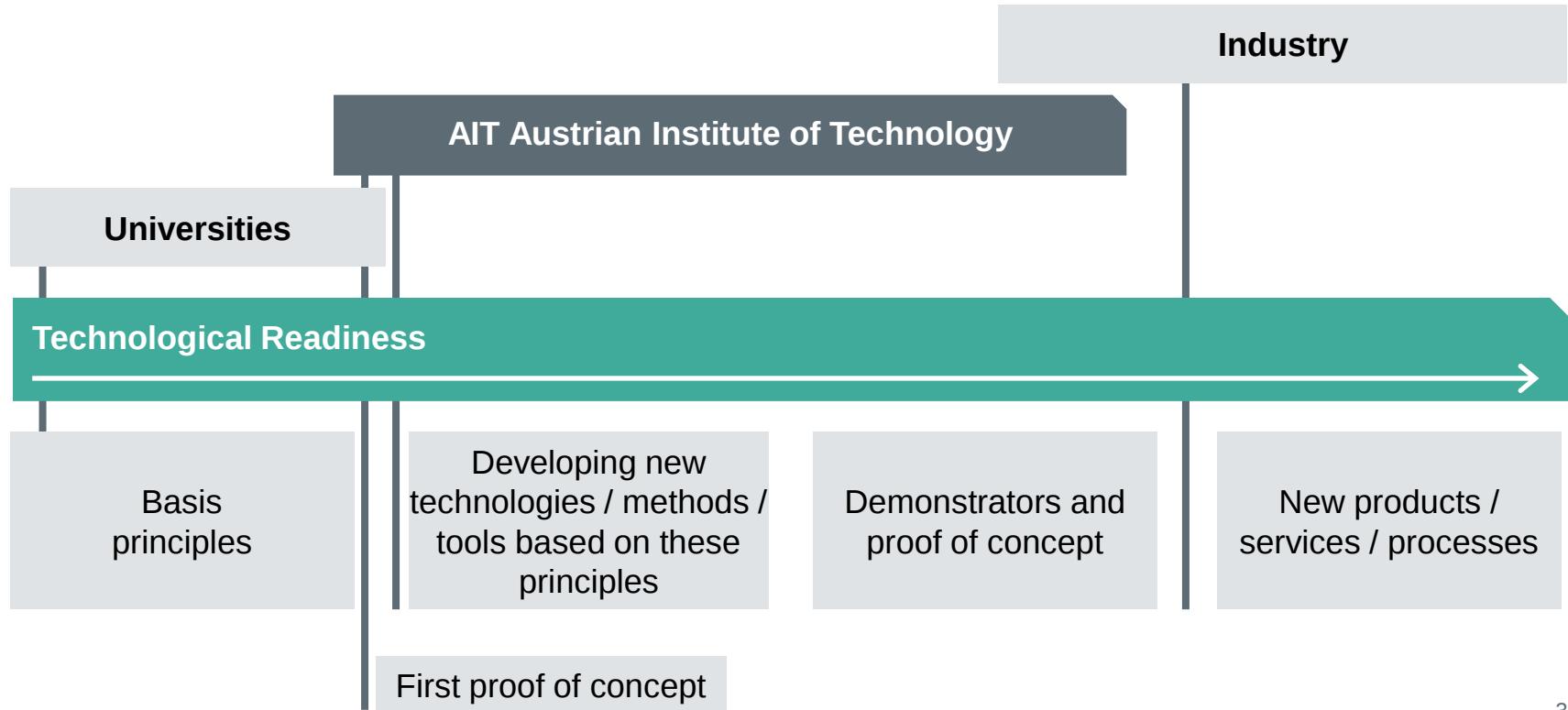
Dr. Brigitte Bach, Managing Director, Spokesperson of the Management Board



VISION, PURPOSE & VALUES



MAKING INNOVATIONS OUT OF SCIENCE



AIT – MAJOR FOCUS FIELDS IN RESEARCH

**development of methods, algorithms,
and technologies for**

sustainable and resilient infrastructures

- future energy systems, decarbonization of industry
- future transportation system
- selected topics in health systems

digital transformation – industry and society

- digital interconnection, cybersecurity, data privacy
- data analytics, AI, automation
- human-centered design

1.653

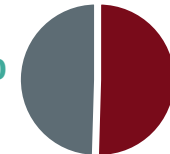
EMPLOYEES
as of 31. December 2024

218,0 m EUR

TOTAL REVENUES
as of year 2024

49,54%

FEDERATION OF
AUSTRIAN INDUSTRIES



50,46%

REPUBLIC OF
AUSTRIA

OWNERSHIP STRUCTURE

INVESTMENT IN FUTURE RESEARCH FOCAL POINTS

The AIT is **planning major investments** in several key topics and technologies

- Efficient and sustainable **industrial production processes** of the future
- Next generation **quantum communication**
- Task Force for **Artificial Intelligence (AI)**
- Platform for **research acceleration**
- **Excellence initiative** for selected key areas
 - e.g. power electronics, microbiome research, battery research

AIT Austrian Institute of Technology



**Innovation Systems
& Policy**

**Seibersdorf
Labor GmbH**



**Nuclear
Engineering
Seibersdorf GmbH**



Energy



**Transport
Technologies**



**Health &
Bioresources**



**Digital Safety &
Security**



**Vision, Automation
& Control**



**Technology
Experience**

KEY ALLIANCES AND POLICY DIALOGUES

Over the recent period of time, AIT has built on established/developed new channels for communication, central among them are:



EARTO - European Association of Research and Technology Organizations

- Strategic platform to align with leading European RTOs
- AIT is an active member in policy working group (FP10, Missions, Innovation)
- Contributor to joint position papers & consultations



EESC - European Economic and Social Committee (EU advisory body)

- Recent collaborations with key EU advisory body to promote strategic topics and provide feedback on EU policy frameworks
- Inputs on EESC Opinions on ERA-Act, Sodium-Ion Batteries, ...; enhancing AIT visibility



Shaping What's Next in Key Fields

- Involvement in key EU policy debates via position papers, expert dialogues and workshop participation (e.g., on new Framework Programme 10)
- Coalitions with key partners such as Fraunhofer

AIT - LEVER TOWARDS EUROPEAN RDI

- European innovation for European competitiveness is the focus
- AIT - a lever for industry and SMEs for RDI in the European top league
- AIT has been involved in the acquisition of 155 EU projects since the launch of Horizon Europe and out of them, 30 are being coordinated by AIT
- In HORIZON EUROPE AIT has attracted EU contributions of 105,5 Mio €
- AIT is among the Top-3 in Austria (together with the University of Vienna and TU Vienna) and nr. 25 among European RTOs
- EU projects are typically followed by a chain of projects – European and/or national research projects together with partners
- Innovation **and implementation success stories** last up to 10 years!

Source: EU HORIZON EUROPE Dashboard, 2.10.2025



TECHNOLOGY TALKS 2025

- The main theme was the role of research, technology and innovation in competitiveness
- **35 hours** of high-calibre programming
- **888 participants** over both days /
- **~400 visitors** at the Get2gether
- **>120 speakers**
- **2 keynotes** and **6 plenary sessions**
- **14 workshops & 6 side events**
- Exhibition with 10 exhibiting partner



TECHNOLOGY TALKS AUSTRIA

- 2024 – Technologies for Triple Transition
- 2025 – Boosting Competitiveness: The Power of Research & Innovation
- 2026 – Technology Sovereignty and Resilience – Role of RTI
 - 10.-11. September 2026



Henna Virkkunen

Executive Vice-President European Commission (technological sovereignty, democracy and security) and EU Commissioner for Digital and Frontier Technologies.

WHERE EXCELLENCE MEETS
IMPACT-DRIVEN RESEARCH.

How we work

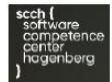
CENTER FOR INNOVATION SYSTEM POLICY



INNOVATION SYSTEMS AND POLICY

AIT portfolio

- modelling of innovation ecosystems (data, indicators, analytics)
- foresight on emerging technologies and societal change
- road mapping on industrial transformation
- design, impact assessment, and evaluation of innovation and transformation policies



CENTER FOR TECHNOLOGY EXPERIENCE



TECHNOLOGY EXPERIENCE

AIT portfolio

- multi-sensory human augmentation, extended reality, and XR solutions
- multi-level measurement approach to understand human experiences and behaviour
- design of human-centered automation (Industry 5.0)
- ensure the creation of ethical, user-centric, and socially responsible technological innovations to uphold human values, dignity, and well-being



CENTER FOR VISION, AUTOMATION & CONTROL



VISION, AUTOMATION, AND CONTROL

AIT portfolio

- autonomous operation of machines and intelligent assistance systems (large-scale mobile machines, trains and tramways, remote towers)
- environment perception, sensing, mapping and localisation, navigation
- inline inspection and real-time quality control for manufacturing
- advanced industrial process control and automation



CENTER FOR ENERGY

Stephan Abermann



STRATEGIC DOMAINS FOR A SUSTAINABLE FUTURE

Energy Supply Systems

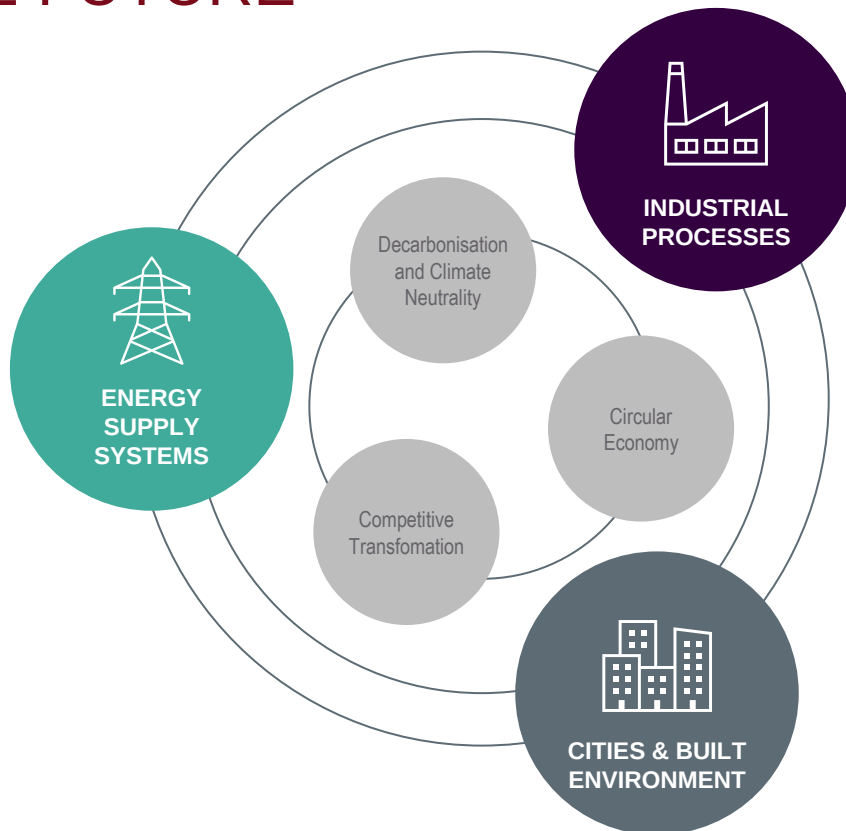
Development of sustainable and future oriented energy supply systems.

Industrial Processes

Improving the carbon-footprint and increasing the competitiveness of energy- and resource-intensive industries

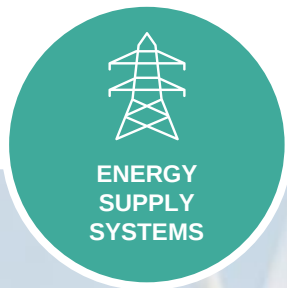
Cities & Built Environment

Transformation of cities and urban regions towards more sustainable and resilient environments



STRATEGIC DOMAINS

SYSTEM RESEARCH PORTFOLIO



Energy Scenarios & System Planning

Flexibility & Business Models

Power System Planning & Operation

Hybrid Power Plants

Electrification & Efficiency in
Industrial Processes & Systems

Large (Thermal) Energy Supply Infrastructure



Urban Development &
Mobility Transformation

Climate-resilient Pathways

Decarbonisation & Circularity in Built
Environment

STRATEGIC DOMAINS

TECHNOLOGICAL RESEARCH PORTFOLIO



Medium-voltage high-power technologies

Energy conversion & hydrogen
technologies

PV technologies

Thermal & electric energy storage

DC systems & components

CCUS & power-to-X technologies

Digitalisation, automation and AI-based technologies



Industrial heat pumps

High-temperature process heat
technologies



HVAC technologies for
buildings

AI for urban planning

Building Information Modelling

Refurbishment technologies

LABORATORY INFRASTRUCTURE



- City Intelligence Lab
- Virtual Industry Lab



- High voltage & high power laboratory
- Power electronics
- SmartEST (Smart Grids)
- DC Laboratory



- Heat pumps test rig
- District heating & cooling
- Thermal storage
- Thermophysics
- Heat pumps test rig up to 100kW*



- Thin-film & chemistry laboratory
- Opto-electronic- & material characterization labs
- PV modules & systems
- H2-Lab Seibersdorf

*NEW FACILITIES

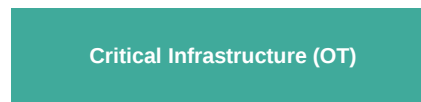
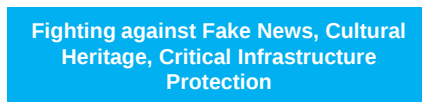
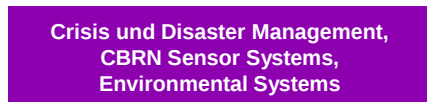
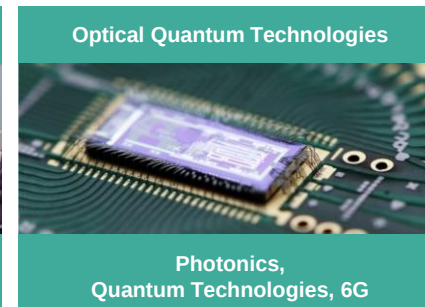
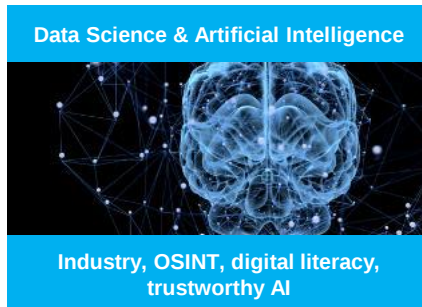
CENTER FOR DIGITAL SAFETY & SECURITY

Mario Drobics



CENTER FOR DIGITAL SAFETY & SECURITY

KEY DIGITAL TECHNOLOGY AREAS



- 220+ employees – Master, 1/3 PhD
– 51% Scientists, 39% Engineers, 10% Admin
- Strong EU industry eco-system and funding footprint:
- Solution competence: Software Systems, Electronic based digital systems



*Principle
Scientist*

45% KF funding / 120+ KF projects (2022)

Strategic partnerships:

Federal Ministry Interior
Federal Ministry Republic of Austria Defence

Federal Chancellery Republic of Austria
Cyber Sicherheit Plattform
Federal Ministry Republic of Austria European and International Affairs

Federal Ministry Republic of Austria Climate Action, Environment, Energy, Mobility, Innovation and Technology
Bundesministerium Finanzen



AI TASKFORCE

Becoming an AI-Enabled Organization

Leveraging Assistive AI Tools

- General purpose tools
- AI-assisted coding
- Automated literature search

Simplify Administrative Tasks

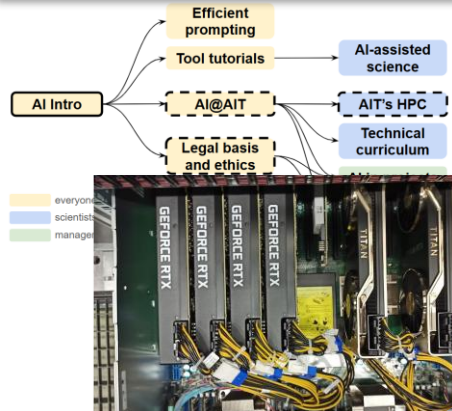
- Enhanced document management
- Support Accounting and Legal Departments

Accelerate Research

- Higher quality outcomes
- Faster innovation and problem-solving

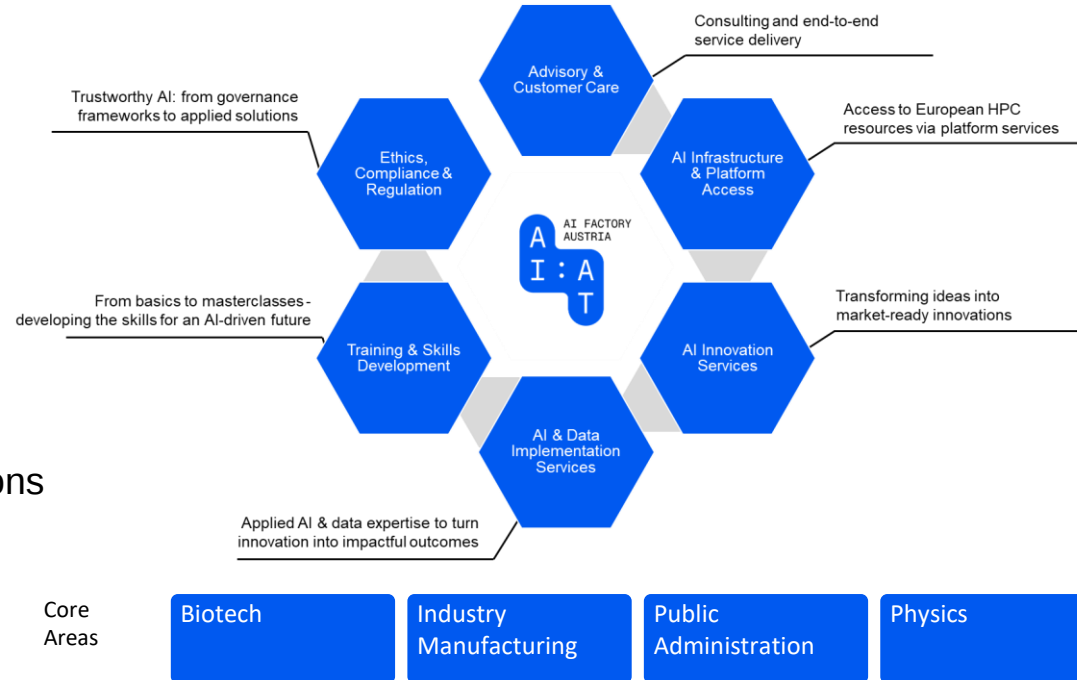
Progress Faster

- Streamlined workflows and enhanced capabilities, positioning the organization at the forefront of AI-driven transformation



AI:AT – AI FACTORY AUSTRIA

- One-stop shop for AI
- Bridge the AI resource and knowledge divide
- Promote ethical & trustworthy AI
- Launchpad for AI-driven innovation
- Collaboration of AIT with Austrian Universities and Research Institutions
- Overall budget 80 Mio€
- Started July 2025
- Located in Vienna



DATA SCIENCE & ARTIFICIAL INTELLIGENCE

THEMATIC AREAS

Visual Sensing

- Optical Sensing
- Virtual Reality
- Border Management
- Biometrics

Sustainable Transformation

- Digitalisation
- Environment
- Circular Economy
- Predictive Maintenance

Media Intelligence

- Disinformation Detection
- Open-Source Intelligence
- Hybrid Threats
- Consumer Protection

Knowledge Discovery

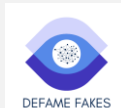
- Culturomics
- Electronic Archiving
- Large Language Models
- Neurosymbolic AI
- Trustworthy AI

AI BASED MEDIA & OSINT FORENSICS @ AIT

Image/Video Forensics

- Manipulation detection
- AI generation
- Deep fake recognition
- Explainable AI

Defame Fakes - Detection of DeepFakes and Manipulations in pictures and Videos



Victoria - Video analysis for Investigation of Criminal and Terrorist Activities:
<https://www.youtube.com/watch?v=5zpZDcOgyy0>



Radical Content Analysis

- Text sentiment analysis
- hate speech
- radical/aggressive content

Raidar – Rapid AI based Detection of aggressive or radical content on the web,
<https://www.raidar.at/en>



Trend Analysis

- EU ABCD framework – behaviour analyses
- Disinformation detection
 - Story clustering, story line, narrative
 - Near duplicate articles
 - Content relationships

DesinFact - Early identification of DESINformation content (Trend analyses)

Tool Development

HYBRIS - Hybrid Threat-resilience through inter disciplinary cooperation of security authorities,
<https://projekte.ffg.at/projekt/4489862>

STARLIGHT - Sustainable Autonomy and Resilience for LEAs using AI against High priority Threats
<https://www.starlight-h2020.eu/>



Pinpoint - National Risk management for CSDP Missions through use of OSINT Monitoring,



FAIR-AI Risk management for AI tool developments

Federal Chancellery
Republic of Austria

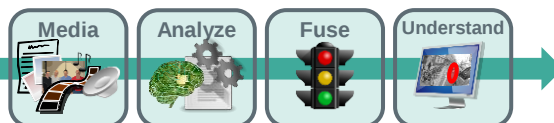
Federal Ministry
Republic of Austria
European and International
Affairs

Federal Ministry
Republic of Austria
Defence

Bundesministerium
Finanzen

Federal Ministry
Interior

Bundesministerium
Soziales, Gesundheit, Pflege
und Konsumentenschutz



Defalsif-AI - Modular Analyse platform for identification of manipulated content – Image/Video/Audio/Text,
<https://science.apa.at/project/defalsifai-en/>

COOPERATIVE DIGITAL TECHNOLOGIES

THEMATIC AREAS

Real-time Situational Awareness

- Multimodal Sensor Data Fusion
- Situational Awareness
- Decision Support
- System-of-Systems

Environmental and Infrastructure

- Distributed Acoustic Sensing for Maritim and Land Applications
- Data Management for Environmental Sensor Networks

Sustainable Digital Communities

- Emission Inventory & Planning
- Knowledge Management
- Decision Support

Crisis & Disaster Management

- Collaborative Crisis Management
- Situational Awareness
- Volunteer Management

Interoperability

Data Spaces

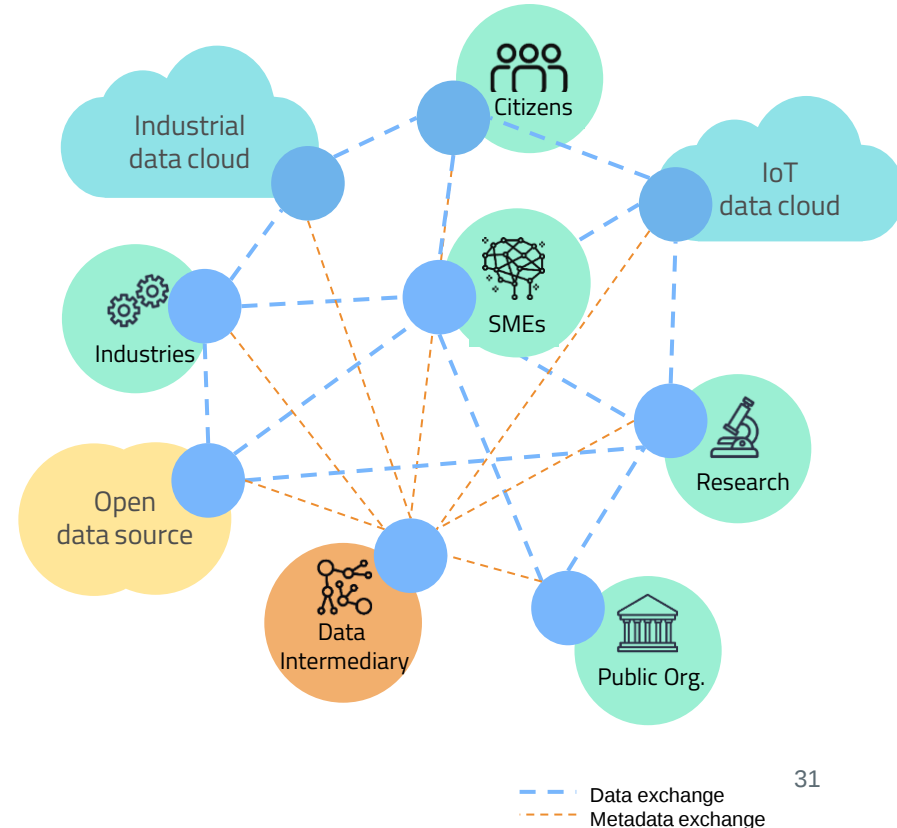
DATA ECOSYSTEMS

Support digital transformation by means of collaborative digitalization

- Faster decision making
- Efficiency of processes
- Exchange of knowledge

Applications

- Industry (e.g. DPP)
- Public Safety (e.g. COP)
- Communities (e.g. Climate Action)



AIT KEY TECHNOLOGIES FOR SECURE & SAFE SYSTEMS

Standards & Certification of Products, Processes & Systems

EN
501
28

ISO
270
01

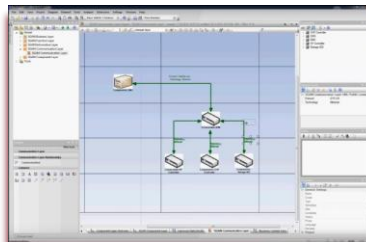
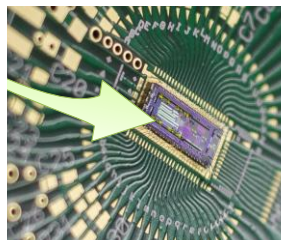
ISO
262
62

ISO
214
34

IEC
624
43

Table 10: Organizational issues related vulnerabilities and threats

ID	Description	Type	On	Off	Ref
OS-1	Malicious insiders in the cloud infrastructure provider	Th	CTA		[ANM11]
OS-2	Four information security processes operated by the cloud infrastructure provider	No	CTA		[MSE12] [LAP12]
OS-3	Information security management processes by the cloud infrastructure provider	No	CTA		[ANM11]
OS-4	Issues emerging because of poor S&A qualification	No	A		[MSE12] [LAP12]
OS-5	Corrective issues that emerge because of hardware and potential switching units	No	A		[ANM11]
OS-6	Failure of a subcomponent, which is used by the primary "objekt", i.e., a cloud infrastructure provider	No	A		[MSE12] [LAP12]
OS-7	Vulnerabilities emerging from a lack of control of off-site services and data	No	CTA		[ANM11]
OS-8	Reduction of in-house expertise causing out-sourcing services, resulting in loss of system resilience when challenges occur, such as attacks	No	A		[ANM11]
OS-9	Misuse of an organization's data, as specified in the terms of use, e.g., for advertising or sale	No	C		[ANM11]



**Threat Catalogues (AI based)
Threat Modelling
Standards for
information exchange**

**High-End Security
Solutions
QKD, Post-
Quantum
Encryption**

**Model based Engineering
(Low Code Development)
Safety&Security&Privacy
by Design
Life Cycle Management**

**Real-Time AI based
Tools for System
Monitoring**

**Tools &
Capabilities for
LEAs
Security Operation
Centers (SOC), ...**

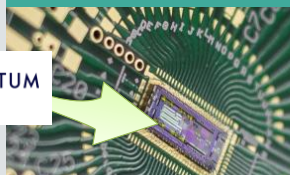
Services for SMEs, public

**Training & Capacity building – technology, processes & people - for
developers, operators and users!**



THE CENTER DSS AS A KEY DRIVER FOR THE EU QKD QUANTUM ECO-SYSTEM

R&D - HW & SW



QKD Miniaturization on the Chip

Consulting



Extensive Know-How for EU QKD Eco-System

Standardization



Key advisor for the EU Commission in industry standardisation strategy

Space



Technology supplier for the EU Industry

EU 27 SMEs & Industry

<https://quantum.ait.ac.at/>



**DEP eCAUSIS
DEP Quarter**

EU Industry & Market Support

- R&D
- Consulting for the EU industry
- Technology supply within EU
- EU Eco-System development

EU Satellite launch:
2025 Eagle in Orbit
2028 SAGA in Orbit



**AUSTRIAN INSTITUTE
OF TECHNOLOGY**

Test & validation of technology



EU Industry & Agency Support



Enablement of the Austrian Eco-System

**Federal Ministry
Republic of Austria**
Climate Action, Environment,
Energy, Mobility,
Innovation and Technology

**Bundesministerium
Bildung, Wissenschaft
und Forschung**

**Bundesministerium
Arbeit und Wirtschaft**



**Federal Chancellery
Republic of Austria**



**Federal Ministry
Republic of Austria
Interior**



**Federal Ministry
Republic of Austria
European and International
Affairs**

**Federal Ministry
Republic of Austria
Defence**

CENTER FOR HEALTH & BIORESOURCES

Andreas Weinhäusel



CENTER FOR HEALTH & BIORESOURCES



Innovative solutions for the essential challenges of the future, such as demographic change and the shortage of resources

ONE HEALTH APPROACH

HEALTH

From
bench to
bedside to
patient

- Healthy living and aging
- Prevention
- Diagnostics
- Monitoring
- Therapy Support
- Animal Health



BIORESOURCES

- Improvement of plant systems
- Interaction of plants and microorganisms
- Microbial solutions to improve crop production
- Improvement of food quality and health

From lab
to field
to food

CENTER FOR HEALTH & BIORESOURCES

Bioresources

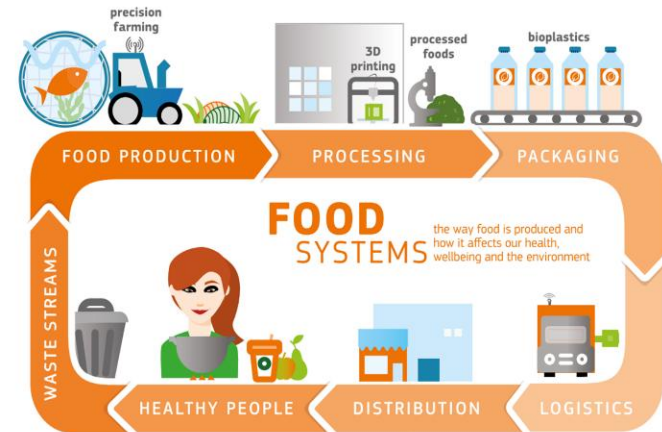
Bio-based methods and tools for a resource efficient and sustainable food production:

Growing population climate change, extreme weather conditions, loss of soil fertility, increased abundance of pathogens

- Microbial biofertilizers and plant protection
- Microorganisms for improving stress resilience of plants
- Microorganisms to increase food quality
- Microorganisms to bioremediate environmental contamination

Link: <https://www.ait.ac.at/en/research-topics/bioresources>

Introduction Video: <https://www.youtube.com/watch?v=mhiaJjg8498>



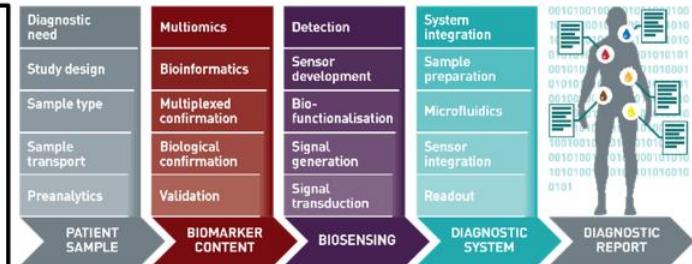
CENTER FOR HEALTH & BIORESOURCES

Molecular Diagnostics

Development of minimally invasive diagnostic solutions

- **Advanced diagnostic systems developer**
 - Multi-Omic Biomarkers
 - Biological barrier models
 - Biosensors & Point of Care
- **Personalised medicine / preclinical support**
 - Cancer and systemic diseases
 - Infectious diseases & antibiotic resistance
- **Health and resilience**
 - Monitoring of health and fitness
 - Resilient systems / infrastructure

**ENVESOME – Horizon Europe
EXPOSOME & HEALTH**
 JSI & AIT – project partners
<https://envesome.eu/>



Link: <https://www.ait.ac.at/en/research-topics/molecular-diagnostics>

Introduction Video: <https://youtu.be/lJeGRplaGTA?si=3ljJ20Kl3pfB8ysF>

CENTER FOR HEALTH & BIORESOURCES

Medical Signal Analysis

Analysis of biological signals and medical data for the optimisation of health care (prediction and prevention):

- Algorithms for the automated collection and analysis of big and highly complex data
- Monitoring and control of disease
- AI for prediction and prevention
- Focus areas: nervous system, cardiovascular diseases

Link: <https://www.ait.ac.at/en/research-topics/biosignal-processing>

Introduction Video: <https://www.youtube.com/watch?v=Ncwo0wxWiEE>



- Diagnosis of epilepsy
- Long-term monitoring (intensive care)
- Preterm birth monitoring
- Analysis of sleep
- Stroke analysis



CENTER FOR HEALTH & BIORESOURCES

Digital Health Information Systems

Digital technologies to support and realign healthcare

- Telehealth & remote monitoring systems for integrated healthcare (therapy management and rehabilitation programs)
- Interoperability of digital components/systems
- Data pseudonymization for healthcare data protection
- Use of artificial intelligence for data-based decision support

Link: <https://www.ait.ac.at/en/research-topics/digital-health>

Introduction Video: <https://www.youtube.com/watch?v=IUokftIIWCw>



CENTER FOR TRANSPORT TECHNOLOGIES

Christian Chimani



ELECTRIC VEHICLE TECHNOLOGIES



LIGHT METALS TECHNOLOGIES

BATTERY TECHNOLOGIES

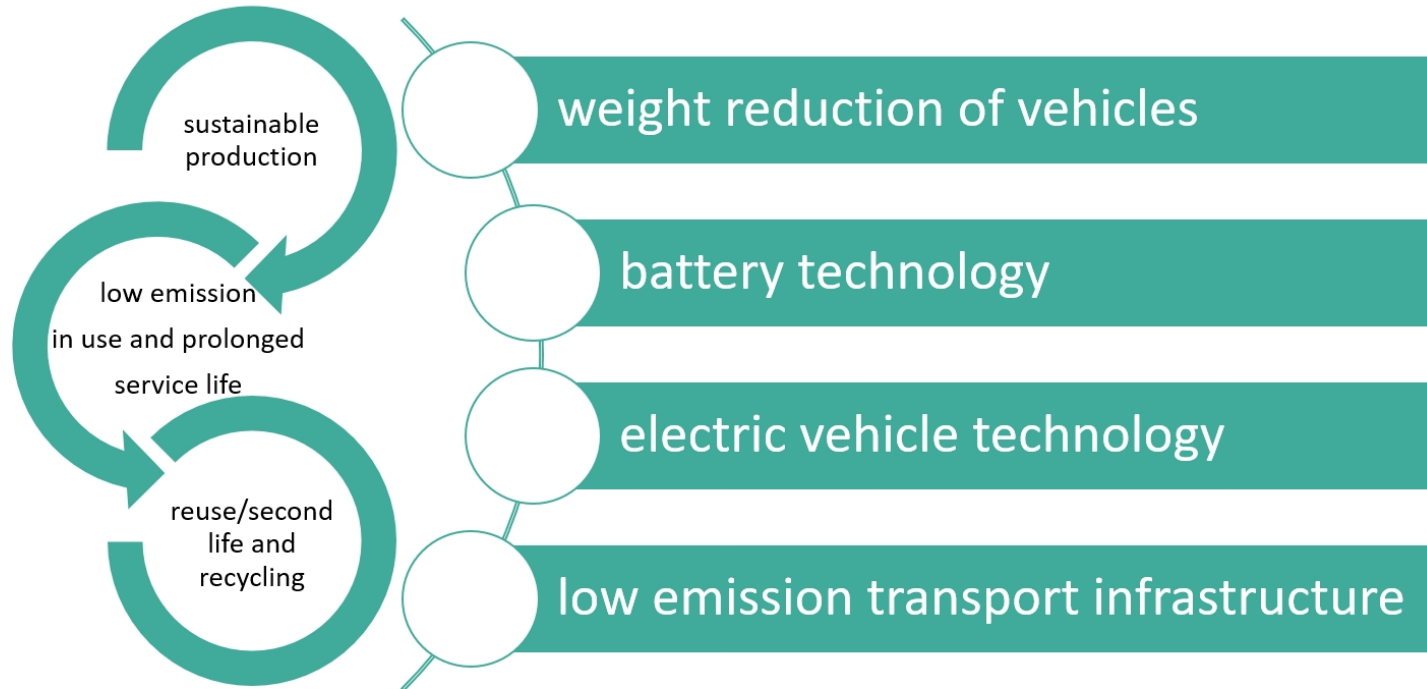
TRANSPORTATION INFRASTRUCTURE TECHNOLOGIES

CENTER FOR
TRANSPORT TECHNOLOGIES

AIT
AUSTRIAN INSTITUTE
OF TECHNOLOGY



FOCUS TOPICS OF THE CENTER



CENTER FOR TRANSPORT TECHNOLOGIES

189
employees

Electric Vehicle
Technologies

Battery
Technologies

Transportation
Infrastructure
Technologies

368 Projects per
year

23,8 M EUR revenue

12 Laboratories

Light Metals
Technologies



LABORATORIES / INFRASTRUCTURE



Battery materials
research laboratory



Battery testing
laboratory



Environmental testing
laboratory



Drive testing
laboratory



Road laboratory



Safety observation
laboratory



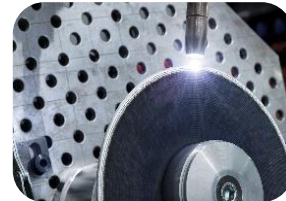
Material testing &
characterization
laboratories



Forming laboratory



Casting laboratory



Additive manufacturing
laboratory



Acoustic laboratory



Mobile seismic
simulator laboratory

Further laboratories / infrastructure planned:

- Solid-state battery research pilot line
- New road laboratory RoadSTAR NEW
- Expansion of the wire-based additive manufacturing lab

THANK YOU!

Dr. Brigitte Bach, 16.10.2025



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Markus Murtinger

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Nguyen Huu-Quynh-Huong

RF Social and Sustainable
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