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CZECH REPUBLIC
23 · 24
OCTOBER 2023
CZECH CLUSTERS AS LEADERS OF GLOBAL DIGITAL AND GREEN ECOSYSTEMS
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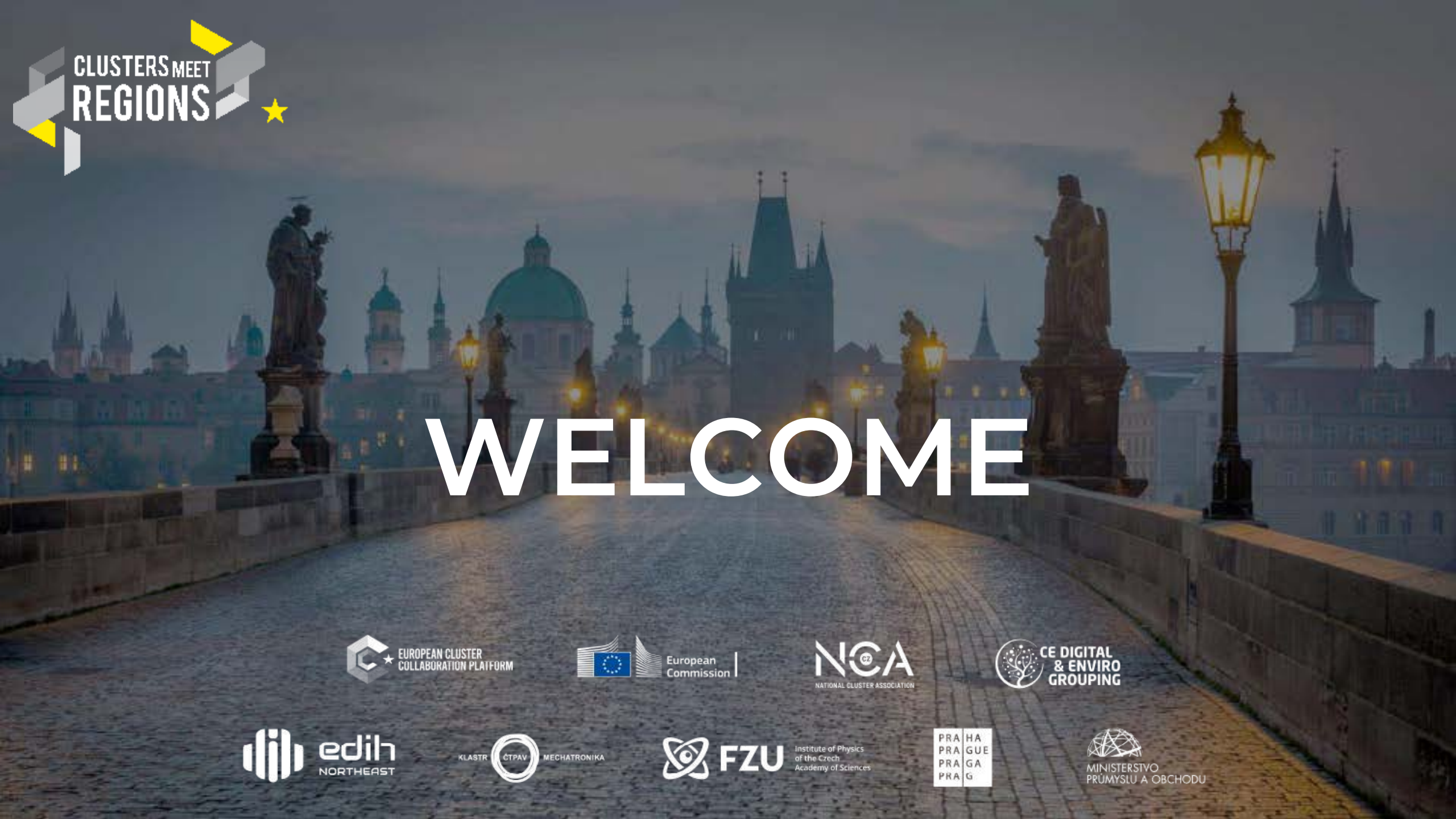
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Welcoming address and setting the scene: Introduction by the organisers

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Welcoming address and setting the scene: Introduction by the organisers

Renata Pfefferova

European Cluster Collaboration Platform / National Cluster Association (NCA)

EUROPEAN CLUSTER COLLABORATION PLATFORM

Our mission is to be the European online hub for cluster stakeholders (cluster organisations, policymakers and other related stakeholders from the cluster ecosystem) and the reference one-stop-shop for stakeholders in third countries aiming to set up partnerships with European counterparts.

www.clustercollaboration.eu

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European Cluster Collaboration Platform

#ECCP #ECCPMatchmaking #ClustersMeetRegions

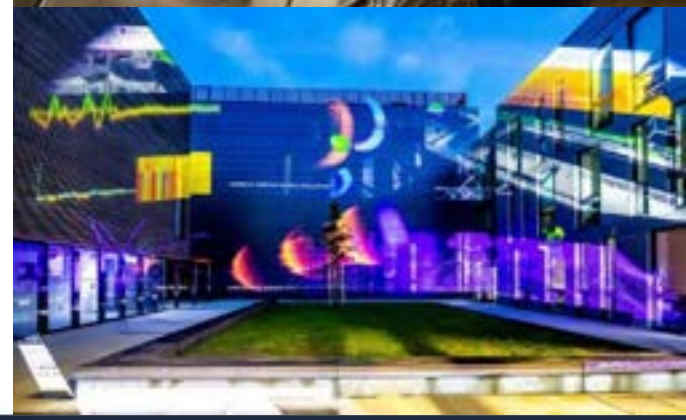
Welcoming address and setting the scene: Introduction by the organisers

MICHAEL PROUZA

Director of the Institute of Physics of the Academy of Sciences

FZU – Institute of Physics of the Czech Academy of Sciences

- Part of the Czech Academy of Sciences
- FZU is the largest institute of the Academy – over 1100 employees (~ 900 FTEs)
- 70 years of history (celebrating the anniversary!)
- World-leading and internationally excellent scientific results

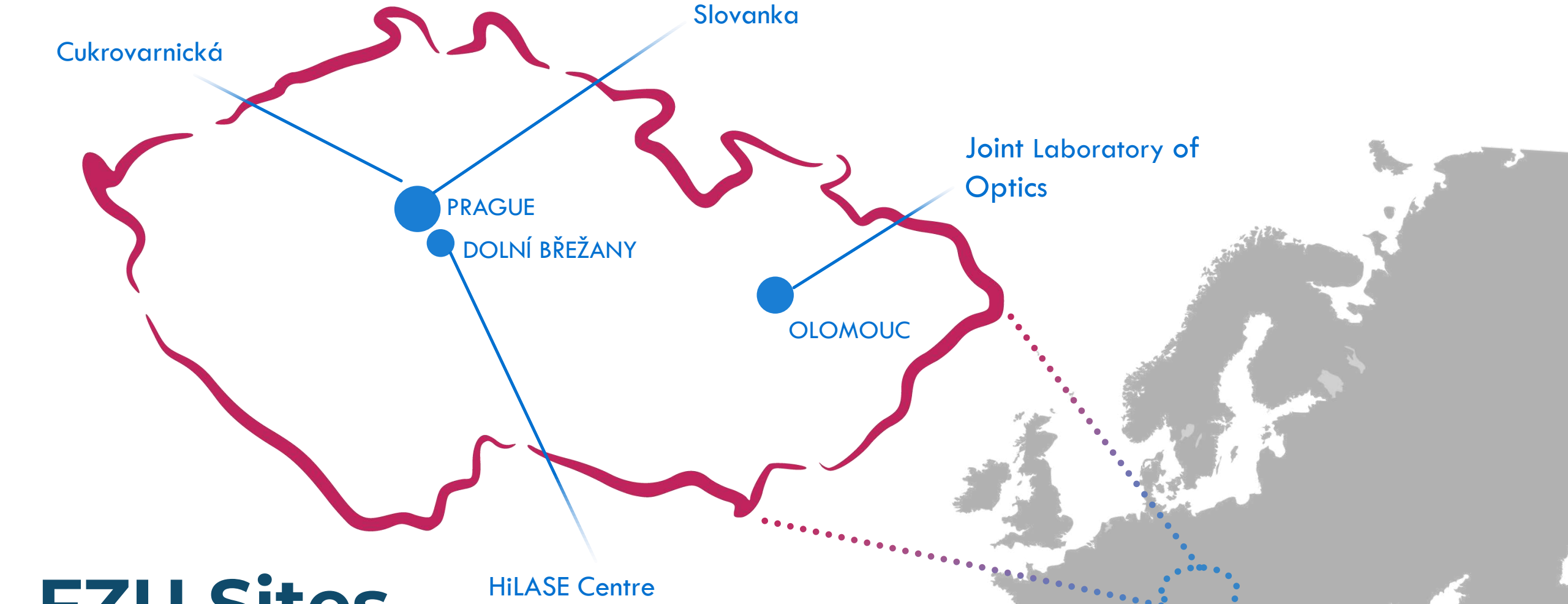


Czech Academy of Sciences

- Largest research body in the Czech Republic, connecting the public research institutions
- 54 institutes covering all science fields
- More than 10 000 employees
- 15% of researchers in the Czech Republic, 37% of outputs in international journals

FZU – Institute of Physics of the Czech Academy of Sciences

- One out of more than 50 institutes of the Czech Academy of Sciences (CAS)
- The largest institute of CAS
- About 9 % of whole CAS (in 2023: 891 FTE FZU / 10107 FTE CAS)
- Operational budget: 2.7 billion Kč (110 million EUR) in year 2022
- Investment budget: 0.5 billion Kč (20 million EUR) in year 2022
- Year 2022 still including ELI Beamlines (~ 300 FTE, now ELI ERIC)



FZU Sites

FZU Facilities

FZU Cukrovarnická

FZU – HiLASE Laser Center in Dolní Břežany

FZU Slovanka

Joint Laboratory of Optics – FZU & UPOL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MODERATORS OF THE EVENT

JIRI HERINEK, President, NCA

&

LUBOS KOMAREK, Vice-chairman, CEDEG

CLUSTERS MEET REGIONS

SESSION 1: Czech Clusters as Leaders of Global Digital and Green Ecosystems

Welcome to the Czech Republic

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SESSION 1: Czech Clusters as Leaders of Global Digital and Green Ecosystems

Welcome to the Czech Republic

PETR FILIPI

Director of the Digitalisation and Internet Department
EU Funds Section, Ministry of Industry and Trade

SESSION 1: Czech Clusters as Leaders of Global Digital and Green Ecosystems
Welcome to the Czech Republic

Developing Prague's RIS3 Strategy and Supporting the Advancement of Local Business Clusters

JAROMIR BERANEK

Chairman of the International Relations and EU Funds Committee, City of Prague

RIS3 Strategy of the City of Prague

- RIS3 = Research and Innovation Strategy
- S3 concept = Smart / Specialized /Strategic
- Key objectives:
  - Identify our comparative advantages
  - Intensify investment into R&D in strong domains
  - Define a clear vision of innovation development
  - …by the means of partnership building and focus on the bottom-up approach
  - …and using it as a guidance for smart and sustainable funding of regional development

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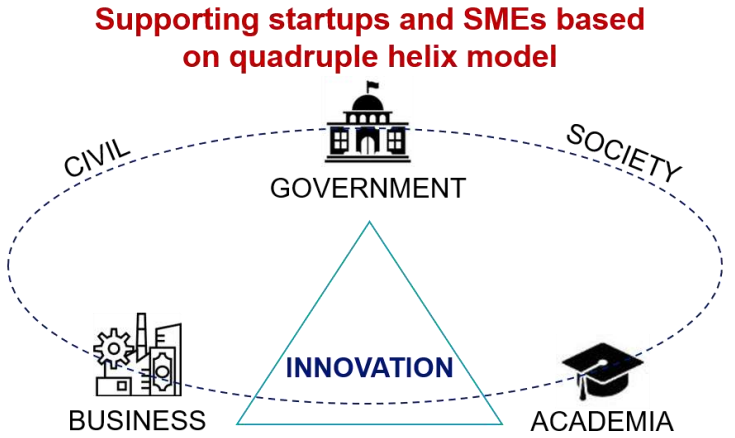
Domains of Specialization according to the existing RIS3 Strategy

- **Life Sciences** – biotechnologies, biomedicine, pharma
- **Creative industries** – digital media, artisitc and industrial design, gaming, film
- **New technologies** – space and air industry, AI, robotics, laser
- **Knowledge-based services** – informational services and analyses, specialized IT services
- Business **consulting**, coaching and mentoring
- Reflection of **new social challenges** in highly urbanized environment

Business Support in Prague

- Prague is focusing on tech startups and businesses with high value added
- Entrepreneurial ecosystem being shaped by the Prague Innovation Advisory Board
- New small innovation grant scheme to be launched in 2023
- Project Management Department → Strategy and Business Support Unit

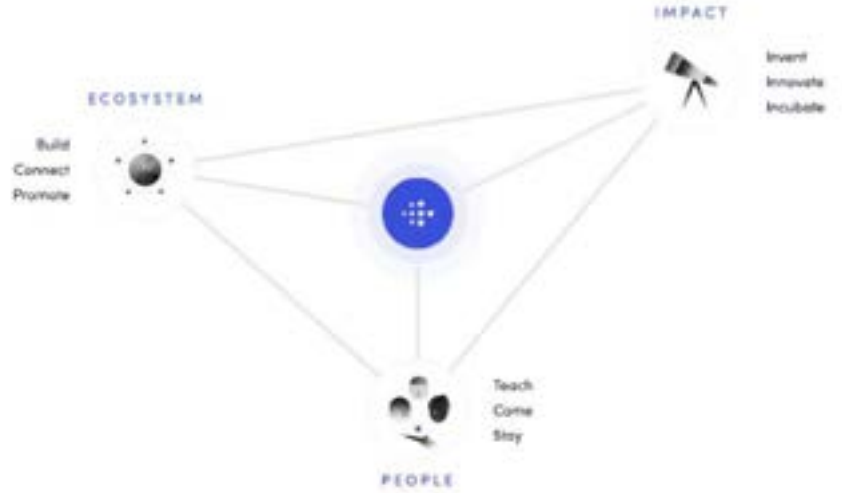
- **Focus areas:**
  - Space
  - AI and machine learning
  - Biotechnologies
  - Creative industries (gaming…)
  - Blockchain
  - Cybersecurity



prg.ai: Turning Prague into an AI Superhub

- AI business cluster founded as an NGO in 2019 by academics from the Czech Technical University, Charles University, the Czech Academy of Sciences, and by the City of Prague
- Driven by the ambition to make full use of local potential and transform Prague into a European center of artificial intelligence

- **Focusing on:**
  - Educational programs
  - Talent attraction
  - New technologies for the city
  - Attracting foreign investments
  - Supporting top level research



Newly launched Prague.bio Cluster

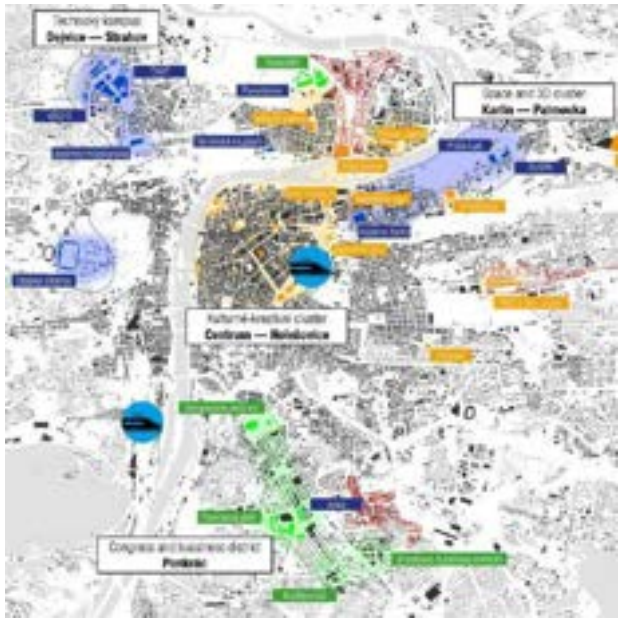
- Prague.bio Cluster integrates current R&D, innovation, business, and policy-making activities:
  - Fosters position of the biotech industry in the Czech Republic
  - Supports tech transfer and commercial use of R&D results
  - Platform for industry-academia cooperation
  - Consultations on access to R&D funding
  - Enhances international visibility of the Czech biotech
- Established and led by the Institute of Organic Chemistry and Biochemistry of the Czech Academy of Sciences with the support of Prague

Prague is Home to EUSPA, Prusa, and Maybe More?

- Long history of space research and exploration
- Prague is home to the EU Agency for the Space Programme (EUSPA)
- Prague is a partner to the Czech ESA BIC Branch
- We are looking forward to co-founding a new space business cluster soon

What Comes Next?

- Constantly looking for new opportunities
- Comparative advantages of Prague:
  - Prague is an attractive city to live in
  - Prague is well connected
  - Prague has a reputation for quality education
  - Prague is a great startup destination
- Weak points:
  - Lack of public English-teaching schools
  - High home rental costs
  - Language barrier outside of Prague
- **The next big thing:** Prague is planning to establish it’s own science and technological park to bring together researchers, students and business



“We have been treading water for way too long. It’s about time we moved on.”

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SESSION 1: Czech Clusters as Leaders of Global Digital and Green Ecosystems

Welcome to the Czech Republic

JITKA VOCASKOVA

DG GROW – Industrial Forum, Alliances, Clusters

Czech Clusters as Leaders of Global Digital and Green Ecosystems

Why re-industrialisation matters for the EU

1. Navigating a new geopolitical reality

React to the era of permacrisis, intense global competition and trade conflicts

2. Addressing strategic dependencies

Decrease supply and technological exposure

3. Defending our strengths

Preserve and build on EU capacities

4. Ensuring EU long-term prosperity

Keep industry as a driver of innovation, jobs and growth

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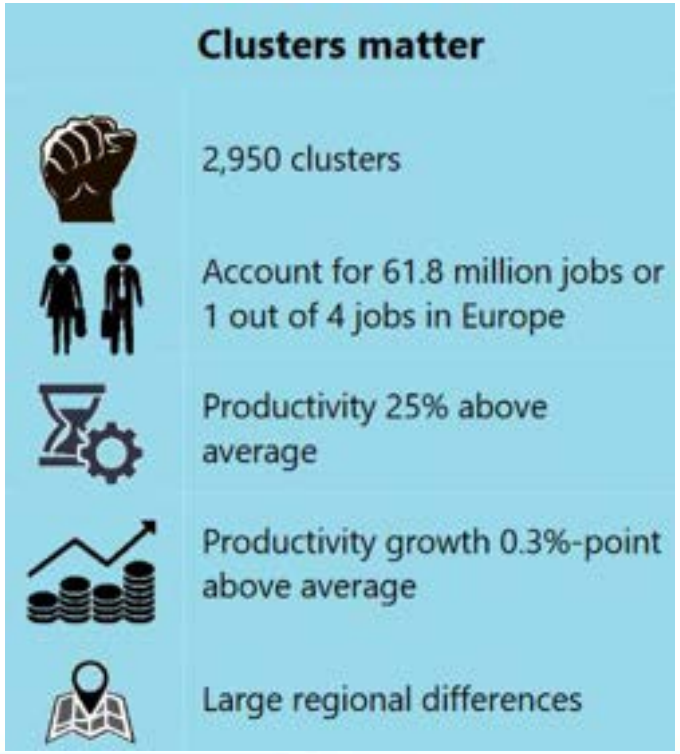
Czech Clusters as Leaders of Global Digital and Green Ecosystems

The EU's Updated Industrial Strategy

1. Strengthen Single Market resilience
2. Accelerate the twin green and digital transitions
3. Analyse and address strategic dependencies
4. Boost clean tech, chips production, CRM

Leverage clusters to achieve these policy objectives

Czech Clusters as Leaders of Global Digital and Green Ecosystems



Why clusters?

Clusters capture important linkages in terms of

- uptake of technologies,
- skills,
- infrastructure,
- business development and
- research
- cutting across different firm sizes and industries

Czech Clusters as Leaders of Global Digital and Green Ecosystems

Why Czech clusters?

- Well-developed and performing industrial sector
- Clusters particularly strong around Industry 4.0 (digital, mobility-transport-automotive, electronics) and energy
- Strong export links to the EU
- Improving academia-business linkages
- Opportunities for international cooperation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The Cluster Landscape in the Czech Republic: Nurturing Collaboration and Innovation

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The Cluster Landscape in the Czech Republic: Nurturing Collaboration and Innovation

NATIONAL CLUSTER ASSOCIATION

Czech Golden Cluster and the Best Projects of the Year announcement

National Cluster Association
The Cluster Landscape in the Czech Republic

Jiri Herinek

president

NATIONAL CLUSTER ASSOCIATION

We connect cluster organizations and technology platforms defend their needs and develop cluster policy in the Czech Republic.

The National Cluster Association (NCA) is a non-governmental non-profit organization that brings together entities and individuals with the goal of coordinated and sustainable development of cluster initiatives and cluster policy development in the Czech Republic based on concentration of knowledge, experience and expertise to strengthen the Czech competitiveness.

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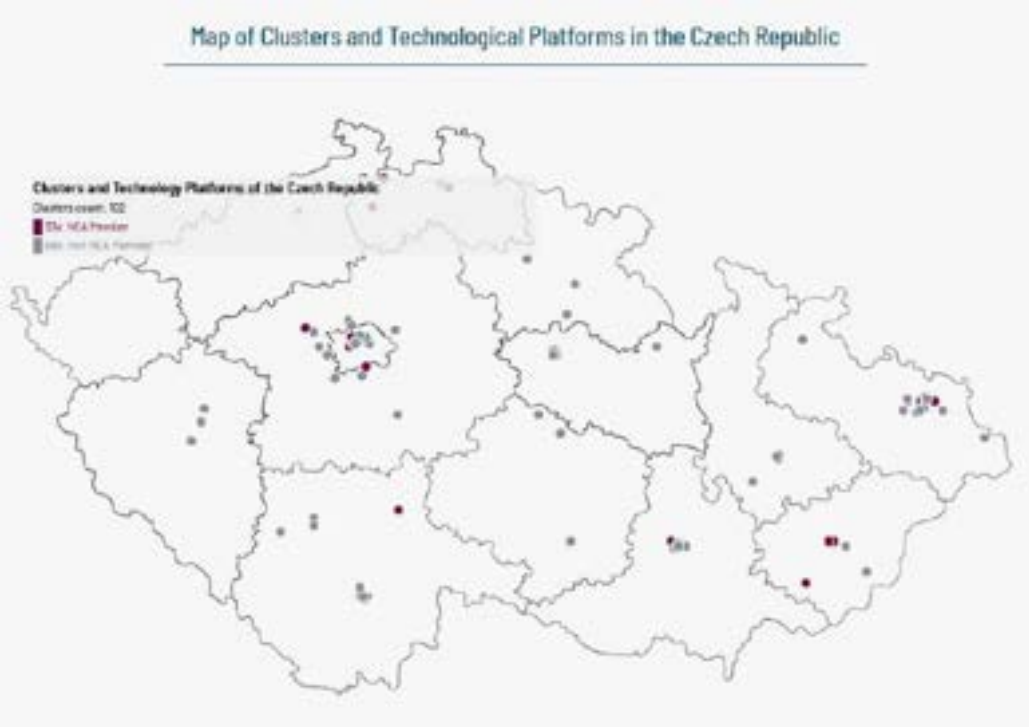
Czech Republic: A small country in the heart of Europe where clusters play an essential role in the innovation ecosystem



NCA sdružuje / NCA brings together

32/5 klastrových / výzkumných a podpůrných organizací
cluster / research and support organisations

884/207 firem / ostatních členů
companies / other members

275 tis Celkový počet zaměstnanců v členských organizacích
Total number of employees in member organisations

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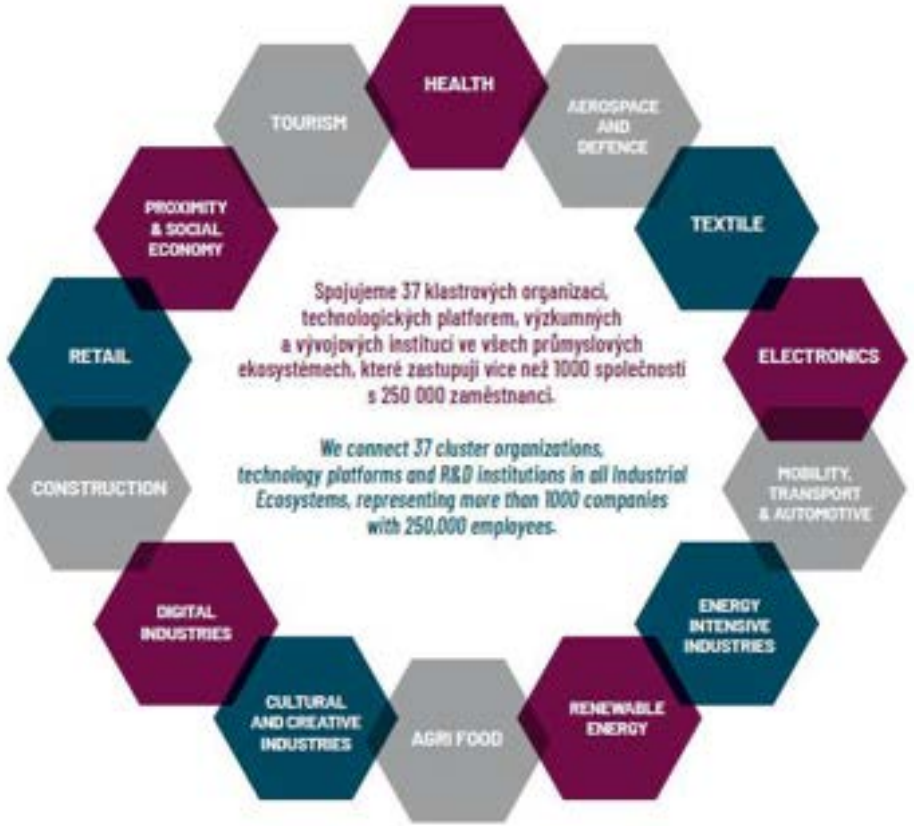
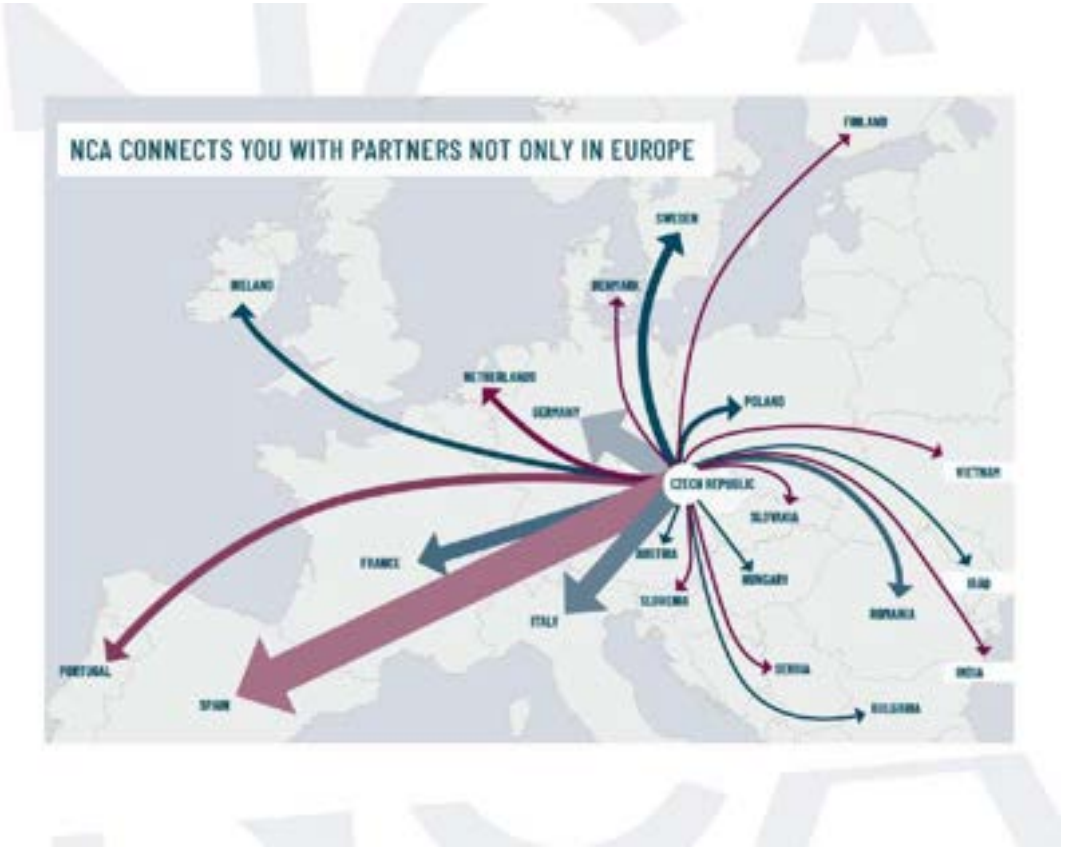
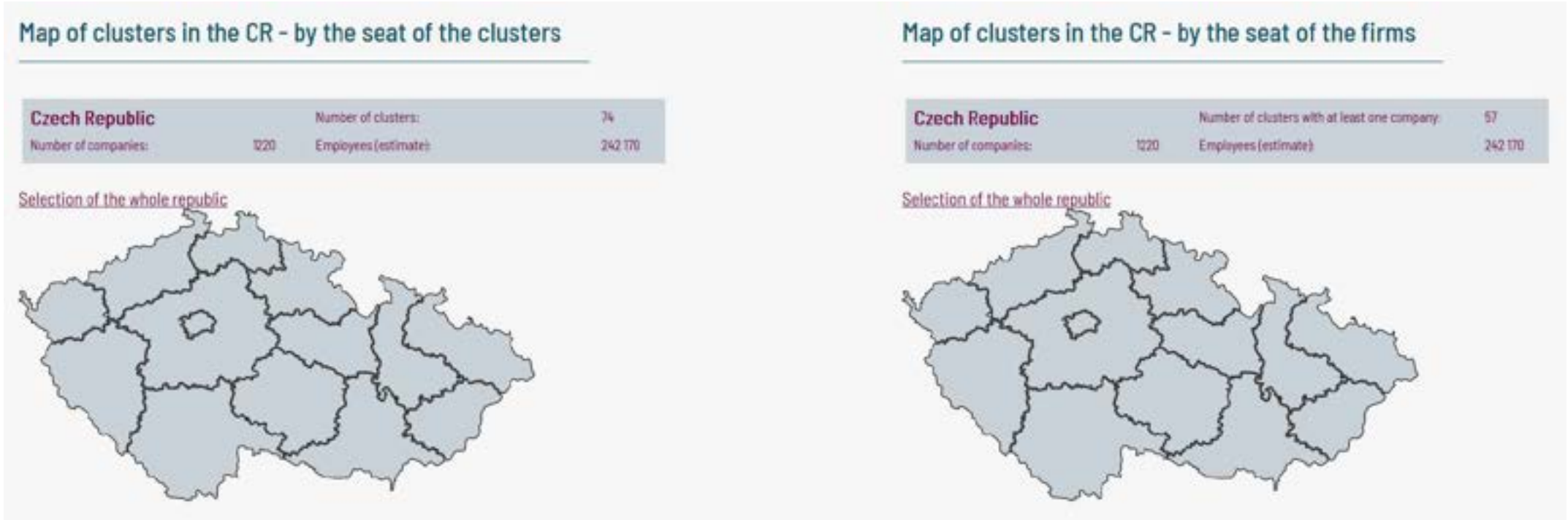
Czech Cluster Organisations cover near all Industrial Ecosystems



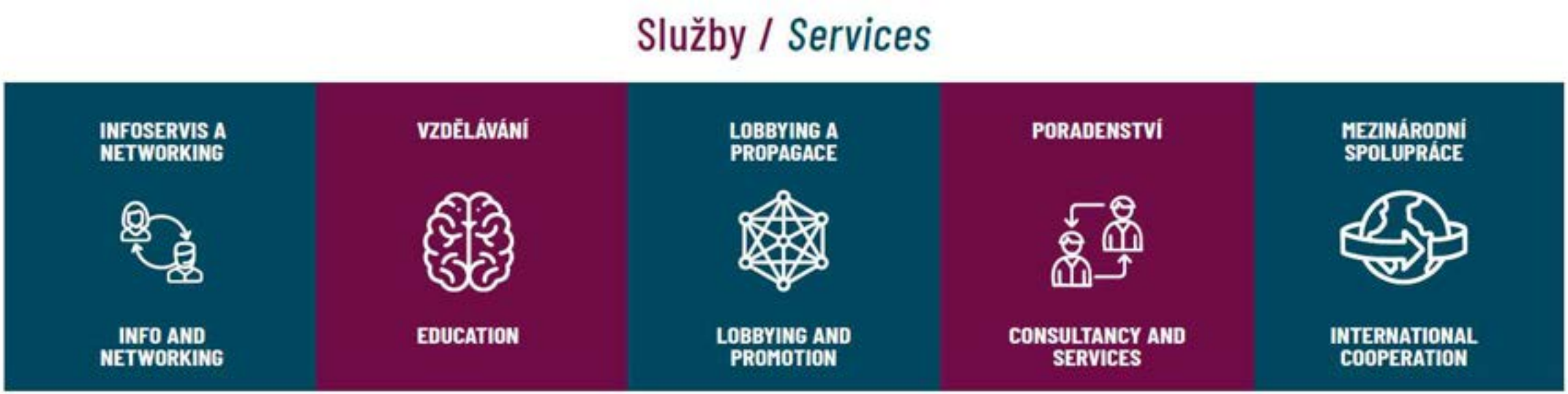


Map of the clusters in the Czech Republic and the members profiles



https://nca.cz/en/clusters-map-cr/

National Cluster Association



We connect cluster organisations and technology platforms to defend their needs and develop cluster policy in the Czech Republic.

Networking and lobbying | Consultancy | Internacionalisation | Education

- **regular NCA members´ online meeting**
- **Cluster Days**
- **regular NCA information service**
- NCA Grant opportunities signpost
- digitalisation support & cybersecurity conferences
- eDIHs, RIS3
- relationship with relevant stakeholders
- education
- consultation for members, Regions (cluster excellence, project management)
- EU project members

MINISTRY OF INDUSTRY AND TRADE

TransferaCZ

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EUROPEAN CLUSTERS ALLIANCE

EUROPEAN CLUSTER COLLABORATION PLATFORM

EUCLES
European Clusters Excellence Labelling Structure

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Ukraine: We are looking forward for our cooperation!

Signing 'Join Statements' with 5 National cluster associations (PL, SL, RO, CZ, LT - UA)

NCA supports European Cluster Excellence Initiative

The cluster excellence label is the condition for projects focused on collective research and the acquisition of shared infrastructure.

The NCA trained two auditors from the Czech Republic to help clusters with the certification.

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Czech Golden Cluster 2022

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Golden Cluster 2022

cluster organisation

Czech Optical Cluster

for long-term support of the optical ecosystem in the Czech Republic

In Prague on 23 Oct 2023

Jiri Herinek
president NCA

Honorary Award

for supporting development and innovation in companies

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HONORARY AWARD

cluster organisation

Czech Hemp Cluster

for promoting development and innovation in companies

In Prague on 23 Oct 2023

Jiri Herinek
president NCA

Honorary Award

for the development of internationalisation and promotion of the Czech Republic

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HONORARY AWARD

cluster organisation

Cluster of Czech Furniture Manufacturers

for the development of internationalisation and promotion of the Czech Republic

In Prague on 23 Oct 2023

Jiri Herinek
president NCA

Honorary Award

for the promotion and development of education

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HONORARY AWARD

cluster organisation

CLUTEX - Technical textile cluster

for the promotion and development of education

In Prague on 23 Oct 2023

Jiri Herinek
president NCA

Honorary Award

for the development of the innovation environment

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HONORARY AWARD

cluster organisation

Cluster MECHATRONIKA

for the development of the innovation environment

In Prague on 23 Oct 2023

Jiri Herinek
president NCA

Honorary Award

YOUNG MANAGER TALENT OF THE YEAR

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HONORARY AWARD

YOUNG MANAGER TALENT OF THE YEAR

Kristian Cely

for consistency and dynamics of the development of the CREA Hydro&Energy cluster

In Prague on 23 Oct 2023

Jiri Herinek
president NCA

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Visit the National Cluster Association website and follow us on social media

www.nca.cz

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Setting the Scene – Presentation of ECCP Input Paper for the Czech Republic

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Setting the Scene – Presentation of ECCP Input Paper for the Czech Republic

LENNART GALDIGA

Team Member ‘Data & Policy‘, ECCP / Prognos AG

Economic profile of Czechia

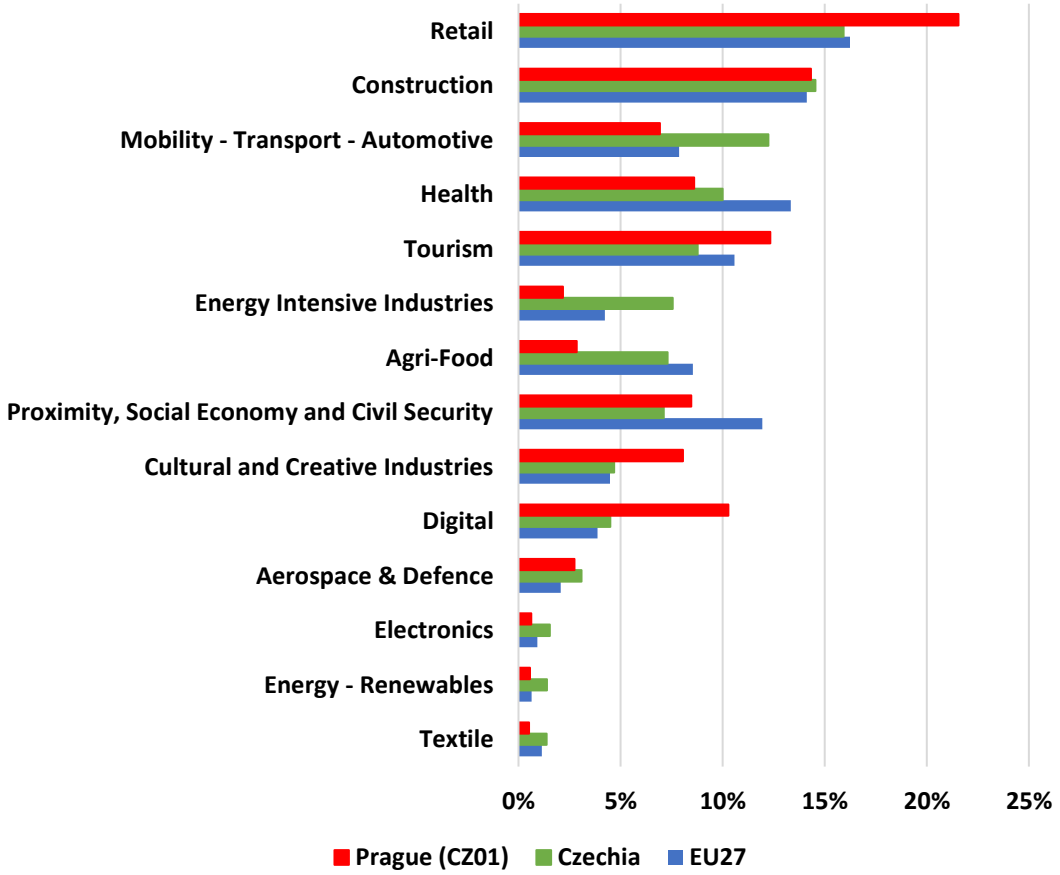
General trends in the economy:

- **GDP per capita of €29,700 (PPS)** (EU27 average of €32,400), with **apparent regional disparities** between the capital region of Prague and the more rural regions of Czechia.
- Successful economic rebound after the **COVID-19 pandemic** through government intervention.

Sectoral composition:

- **Manufacturing** makes up an important industry in terms of employment (26.8%) in less densely populated regions, whereas the capital region is more service-focused compared to the national average.
- The more rural regions of Czechia boast specialisation in industrial ecosystems like **Energy – renewables**, **Mobility – Transport – Automotive** and **Electronics.**
- The capital region exhibits specialization nodes in the **Digital as well as Cultural and Creative Industries ecosystems**.

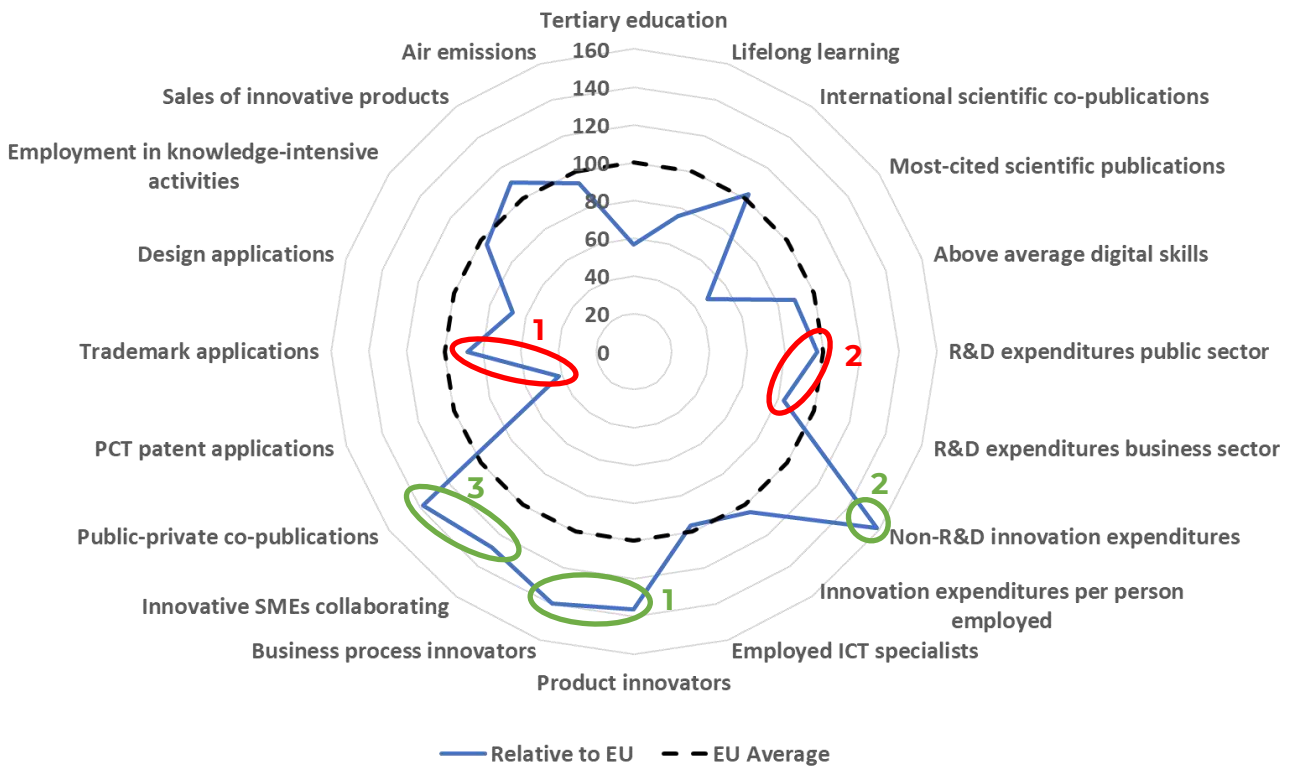
Employment shares across the Industrial Ecosystems



Source: ECCP (2023), own elaboration based on Eurostat.

Czechia‘s national innovation & regional competitiveness performance

EIS: CZ – Czechia as an “Moderate Innovator“



Source: Regional Innovation Scoreboard 2023

Relative strengths of the innovation landscape

1. Product and business process innovators *(relative to EU)*
2. Non-R&D innovation expenditures
3. Innovative SMEs collaborating with others and public-private co-publications (Relative to EU)

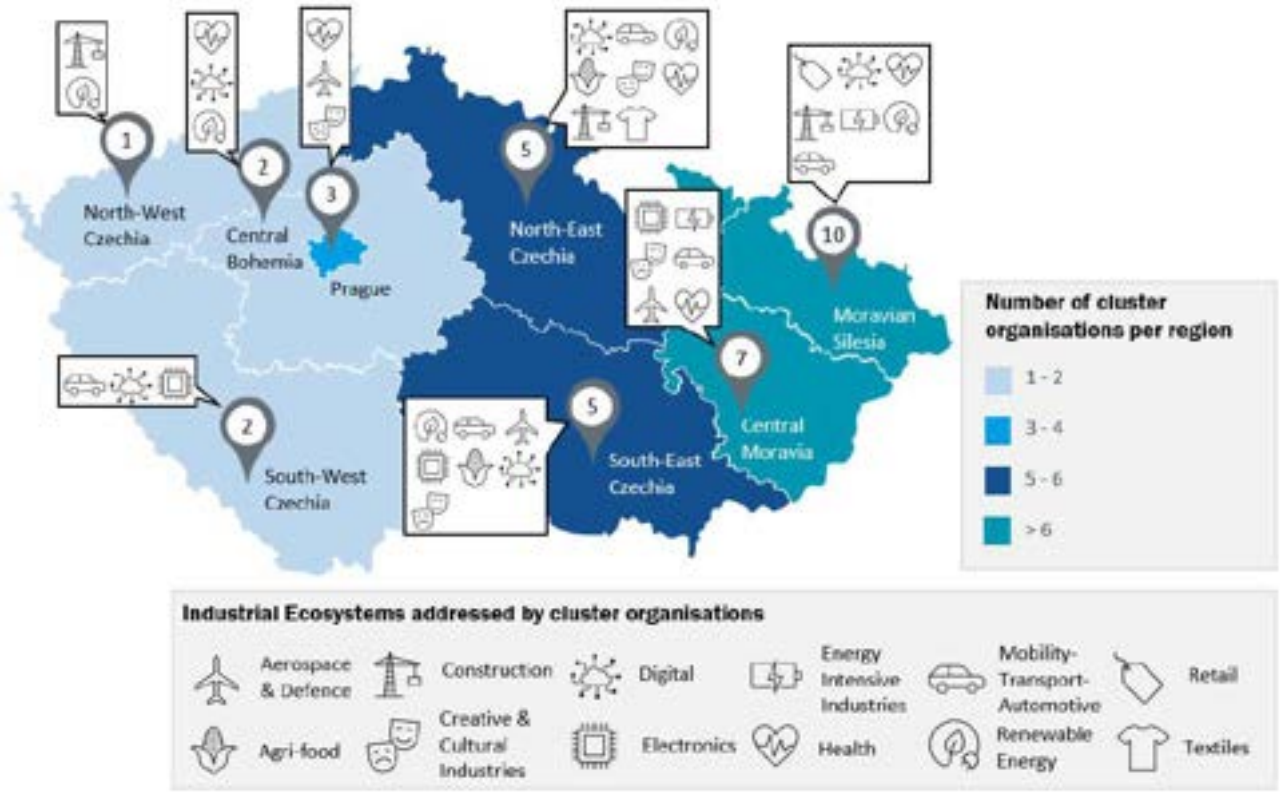
Areas for improvement:

1. PCT patent and Trademark applications (relative to EU)
2. R&D expenditures in both the public sector and business sector (relative to EU)

Regional Competitiveness Index 2022

- Czechia’s overall average score falls slightly **below the EU average**, with significant variations among Czech regions.
- The capital region of **Prague** stands out for its relatively high performance, particularly in **Higher education and LLL, Business Sophistication and Innovation**

Cluster organisations* in Czechia: Locations, sectors and structures



Cluster Organisations

- 35 Cluster Organisations (CO) registered on the ECCP from Czechia
- Covering 12 out of 14 EU Industrial Ecosystems
- Top 3: Digital, Mobility-Transport-Automotive, Renewables/Energy

Member Structure

- Small cluster organisations (15-50) members account for vast majority of total (83%; ØEU: 34%)
- Five larger cluster organisations with 51-100 members (14%; ØEU: 27%),
- One cluster organisations with 101-150 members (3%; ØEU: 7%)

Collaborative Areas: Partnering for projects; internationalisation; digitalisation

Source: ECCP (2023). Own elaboration based on https://reporting.clustercollaboration.eu/all; last access 26.07.2023. ***registered on the ECCP**

Importance of cluster organisations for regional economic competitiveness

Cluster organisations are **positively correlated** with a range of **economic competitiveness indicators**:

Business environment

+ Public R&D expenditure
+ Human resources in science & technology

Firm behaviour

++ Business R&D expenditure
+ Employed ICT specialists

Intermediate performance indicators

+ Apparent labour productivity
+ PCT patents per Capita
+ ICT patents

Outcome indicators

+ GDP per Capita
+ Employment in technology & knowledge intensive sectors
+ Share of ICT in GVA

However: The presence of regional industrial agglomerations is also linked with **higher air pollution**.

++ Positive correlation
+ Weak positive correlation

Source: Own elaboration based on ECCP Summary Report 2022

The European Commission offers important programmes for collaborative projects among clusters & their members

2014-2020 funding period

2021-2027 funding period

INNOSUP-1

- Horizon 2020 initiative
- Development of new-cross-sectoral industrial value chains across the EU
- **2 clusters involved in 3 different projects (IMPACT&GT, Amulet, Vida)**

ESCP-4i

- COSME initiative
- Development and implementation of joint internationalisation strategies to support SME internationalisation
- **6 clusters involved in 9 ESCP-4i projects**

ESCP-4x

- COSME initiative
- Boost the cross-cluster networking and learning within the EU and development of cluster management excellence
- **5 clusters involved in 7 ESCP-4x projects**

ESCP-S3

- COSME initiative
- Boost cluster cooperation in specific thematic areas in the field of regional smart specialisation strategies
- **2 clusters participated in 2 ESCP-S3.**

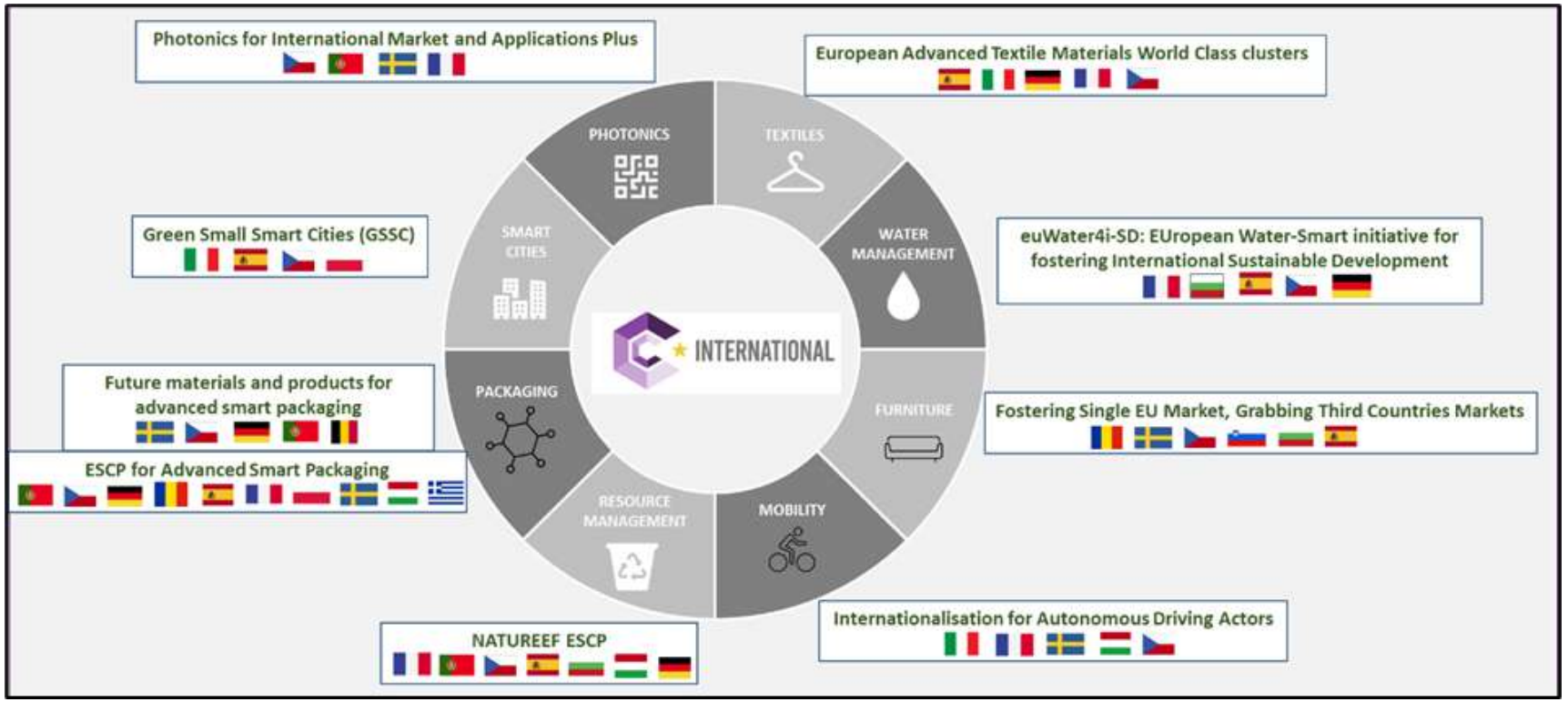
Euroclusters

- Single Market Programme
- Support the implementation of the EC industrial strategy through cross-sectoral, interdisciplinary and trans-European cluster initiatives
- **5 cluster involved in 5 Euroclusters (CircInWater, RESIST, PIMAP4Sustainability, INGENIOUS, Rural Tourism)**

Source: ECCP (2023)

Six clusters from the Czech Republic involved in ESCP-4i with European partners

Overview of the involvement in the ESCP-4i

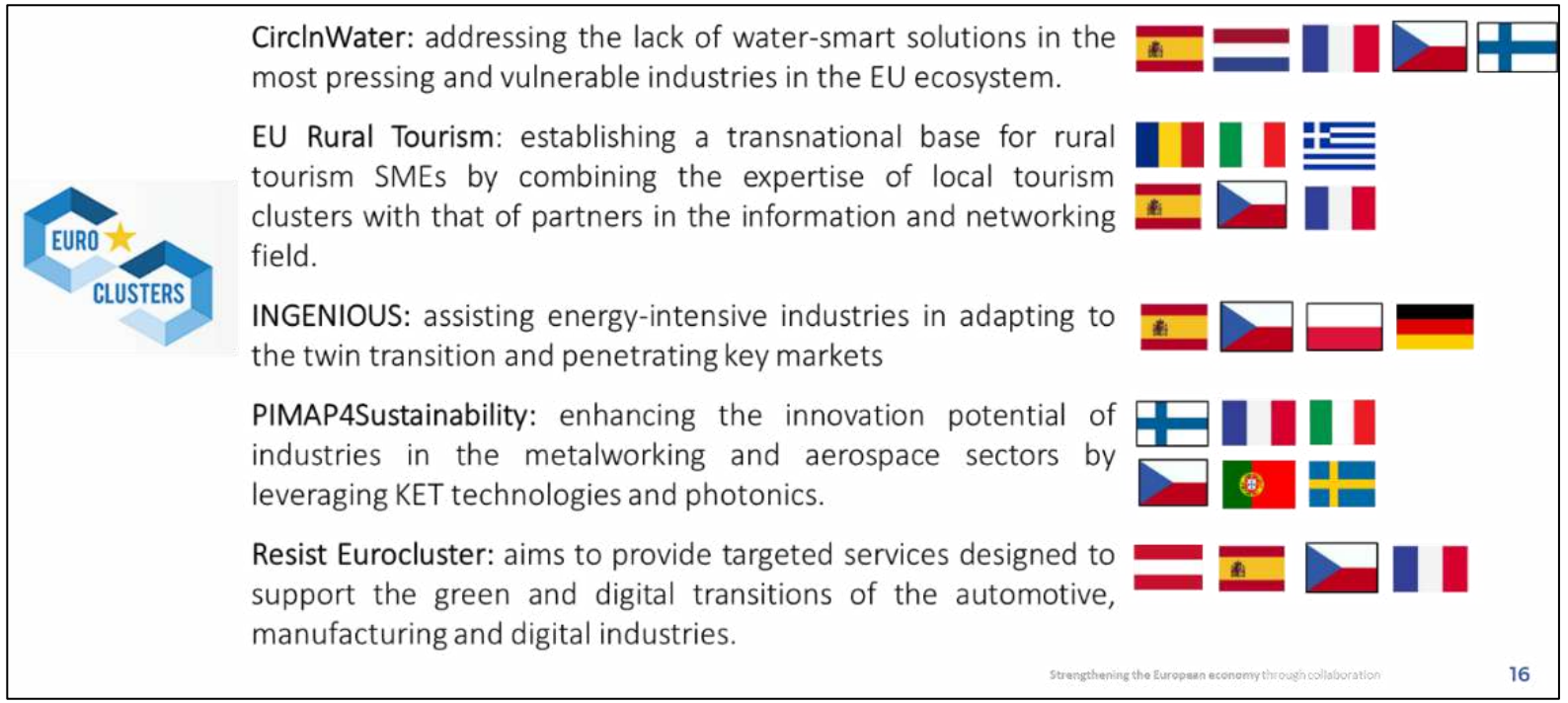


- **9 project participations in the ESCP-4i** by 6 Czech cluster organisations.
- **The projects involved European cluster partners** from 23 different countries.
- **Thematic focus:** textile, packaging, mobility, resource management amongst others
- **Diverse target markets**: Australia, Canada, USA, China, Japan, South Korea and more.

Source: ECCP (2023) based on information from COSME data hub.

Five cluster organisations from the Czech Republic part of first Eurocluster call

Overview of involvement in the Euroclusters initiative



- **Five** cluster organisations involved **in as many different Euroclusters projects** (out of the 30 existing Euroclusters)
- **Thematic focus** on textile, tourism, aerospace and automotive amongst others
- **Cluster partners** come from 13 different member states

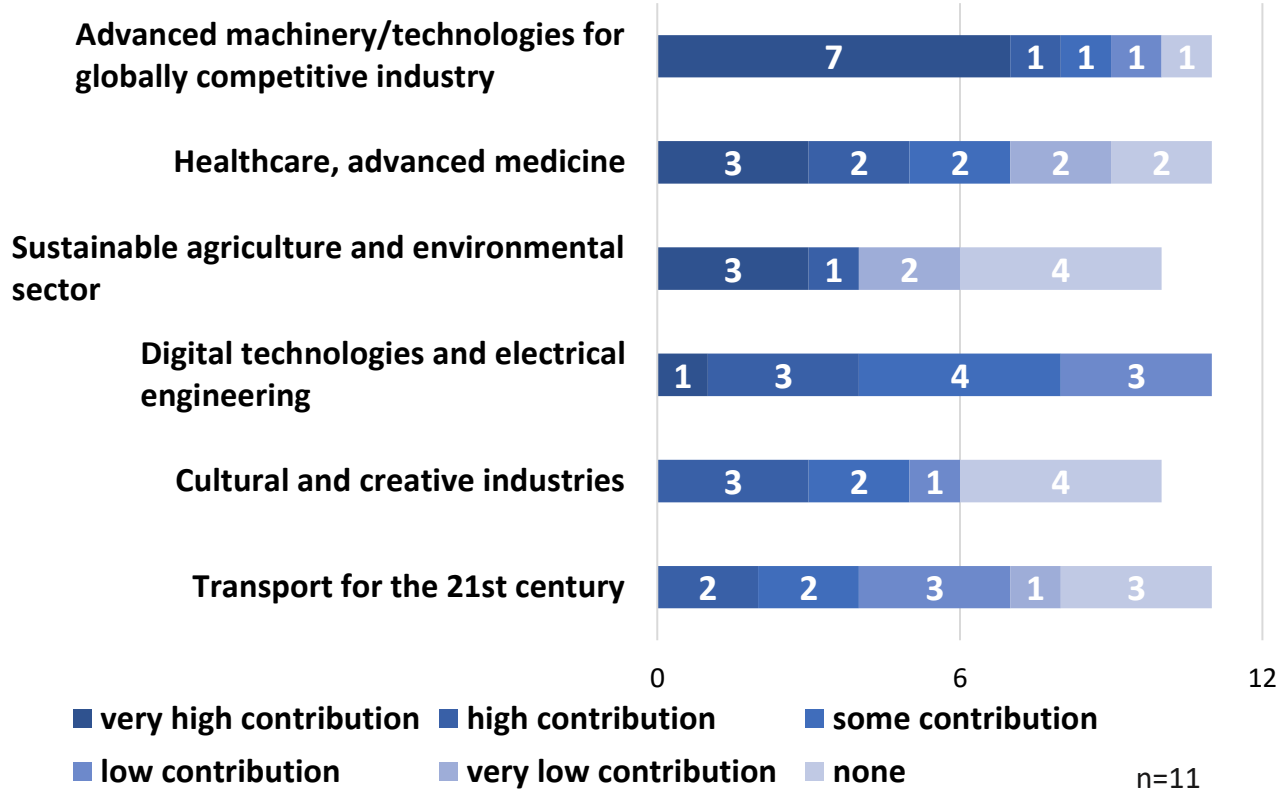
Source: ECCP (2023)

Priorities of the Czech S3 Strategy 2021-2027 & survey results

Priority areas of Czechia

1. Advanced machinery/technologies for globally competitive industry
2. Digital technologies and electrical engineering
3. Transport for the 21st century
4. Healthcare, advanced medicine
5. Cultural and creative industries
6. Sustainable agriculture & environmental sectors

Contribution of competencies of Czech cluster organisations to the priority areas



Source: ECCP (2023) own elaboration based on National Research and Innovation Strategy for Smart Specialisation of the Czech Republic 2021–2027

Final Remarks

Economic profile

- The Czech economy is characterized by a significantly large manufacturing sector prominent in less densely regions. Meanwhile, the capital region is more oriented towards services, as shown in their ecosystem specialisations.
- According to the EIS 2023, Czechia is classified as a Moderate Innovator, exhibiting particular strengths in certain key indicators associated with the dimensions of Firm Investments, Innovators, and Linkages

Cluster landscape

- Diverse cluster landscape that is active in 12 out of 14 EU industrial ecosystems with specific strengths in Digital, Mobility-Transport-Automotive, and Energy/Renewables
- Many cluster organisations show a strong priority for partnering for projects and international cooperation

Cross-border cooperation

- Cluster organisations from the Czech Republic were involved in cross-border projects (INNOSUP-1, ESCP-4i, ESCP-4x, ESCP-S3) in the 2014-2020 period.
- Cluster organisation from the Czech Republic are actively involved in 5 out of 30 Euroclusters (around 17% of all Euroclusters).

Smart Specialisation

- The Czech S3 2021-2027 identifies 6 priority areas that address a wide range of topics
- Cluster organisations in Czechia contribute to all priority areas of the S3, especially in the areas of machinery/industry, Healthcare, and agriculture & environment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Panel Discussion: Practice of the Local Collaboration

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Panel Discussion:
Practice of the Local Collaboration

ROBERT WENZEL – Head of R&D Infrastructure Department, Ministry of Industry and Trade

JAROMIR BERANEK – Chairman of the International Relations and EU Funds Committee, City of Prague

LUKAS BENZL – Director of the Czech AI Association

PETR SUCHOMEL – Head of Knowledge and Technology Transfer, Palacký University Olomouc

PETR PRIKRYL – Czech Manager of the Year 2022, Czech Optical Cluster

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NETWORKING LUNCH

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SESSION 2: Modern Digital Solutions and High Technology: Harnessing AI and Cybersecurity in the Manufacturing Sector

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Introduction to the topic

Dr. IVO RIHA

Chairman of the Board of CEDEG
Vice President of NCA

EU - Digital Decade 2030

Digital Europe in 2030 - During the Czech Presidency of the Council of the EU, a new vision and directions for the digital transformation of Europe until 2030 **(Digital Decade 2030)** were approved. The EU aims to empower individuals and businesses in a digital, human-centred, sustainable and prosperous future.

Selected goals by 2030

Promoting digital skills: Digital skills for work and life are a priority on the European political agenda. Our common goal is to improve citizens' digital skills and competences.

Digitization of public services: EU's key public services are 100% online. 100% of citizens have online access to medical records. 80% of citizens use digital identification.

Digital transformation of businesses: 75% of EU companies use cloud/artificial intelligence/big data. More than 90% of SMEs achieve at least a basic level of digital competence.

CEDEG, z.s.

CEDEG is an European ecosystem joining dynamic and progressive entities in the fields of digitalization and progressive environmental technology. CEDEG promotes the concept of Society 5.0 and creates meaningful synergistic and socially beneficial projects boosting the digital and green transformation and smart, sustainable and inclusive growth.

Key Technologies

DIGITALIZATION

- Internet of Things
- Digital Security
- Big Data
- Gaming
- Artificial Intelligence, Virtual Reality
- Smart City and mobility
- Microelectronics
- Cloud services

PROGRESSIVE ENVIRONMENTAL TECHNOLOGY

- Energy
- Circular economy
- Green technology
- Packaging and biodegradable materials
- Water, air and their purification
- Advanced technology in engineering
- Nanotechnology

CZECH-SLOVAK TECHNOLOGY SUMMIT 2024 (C-STS)

DATE: JUNE 12 - 13, 2024

PLACE: MIKULOV CASTLE, CZECH REPUBLIC

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Presentation of Session 2 speakers...

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The Bittersweet Vision of Computer Vision

Lukáš Benzl

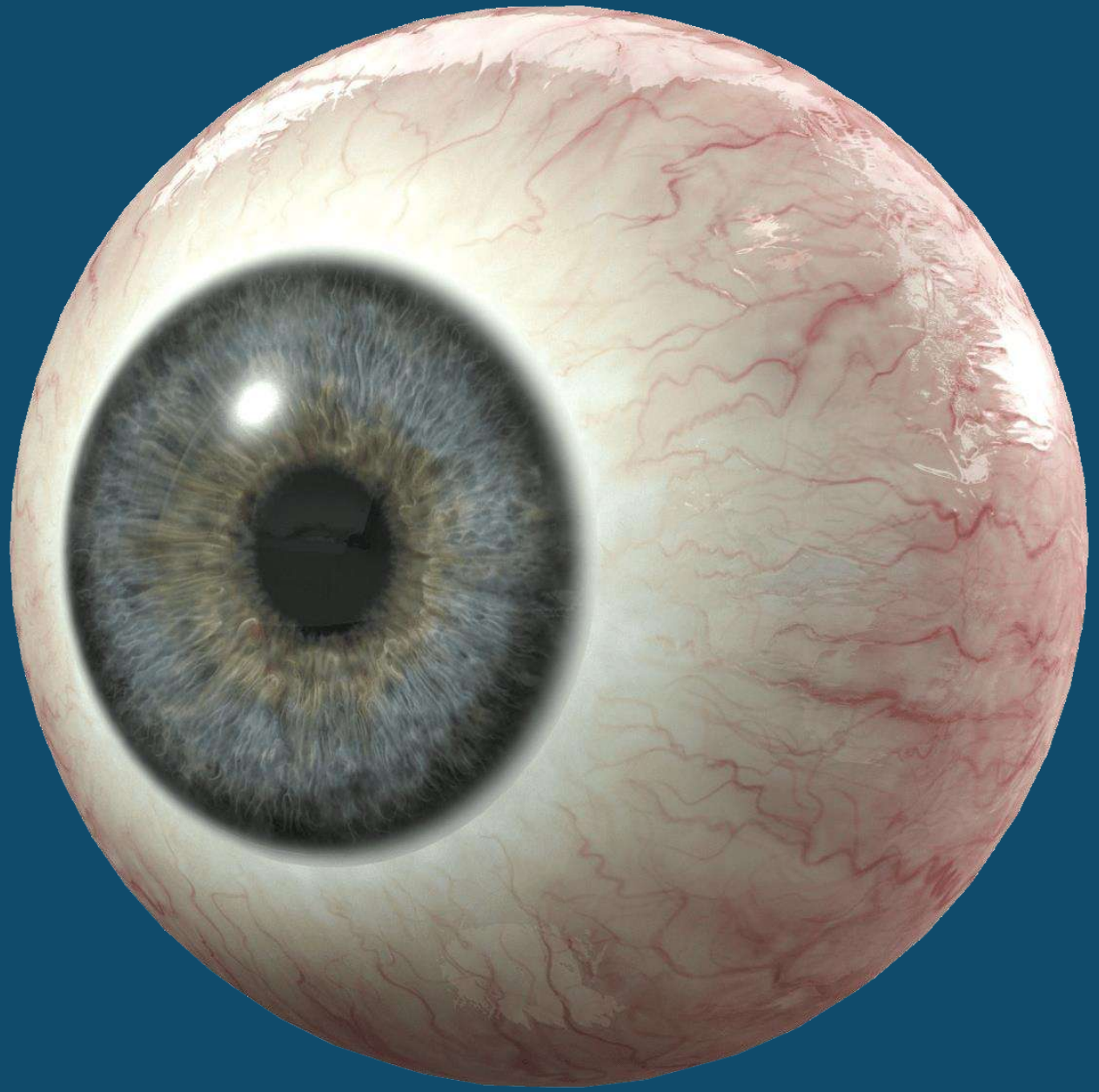
Executive Director

Česká asociace umělé inteligence

How many cameras does the municipal camera system have in Prague?

Monitoring center

4 500



942 562

Monitoring center somewhere in China

Camera + AI

What's bittersweet about that?

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Pinned

Lukas Benzl
@lukasbenzlcom

Promote ···

This concept shows how a coffee shop ☕ can use AI to analyze baristas and customers.

Enjoy your Double Chocolate Chip Frappuccino and privacy while there is time. 😅

111 573 1,282 219K

Elon Musk 
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How is it possible?

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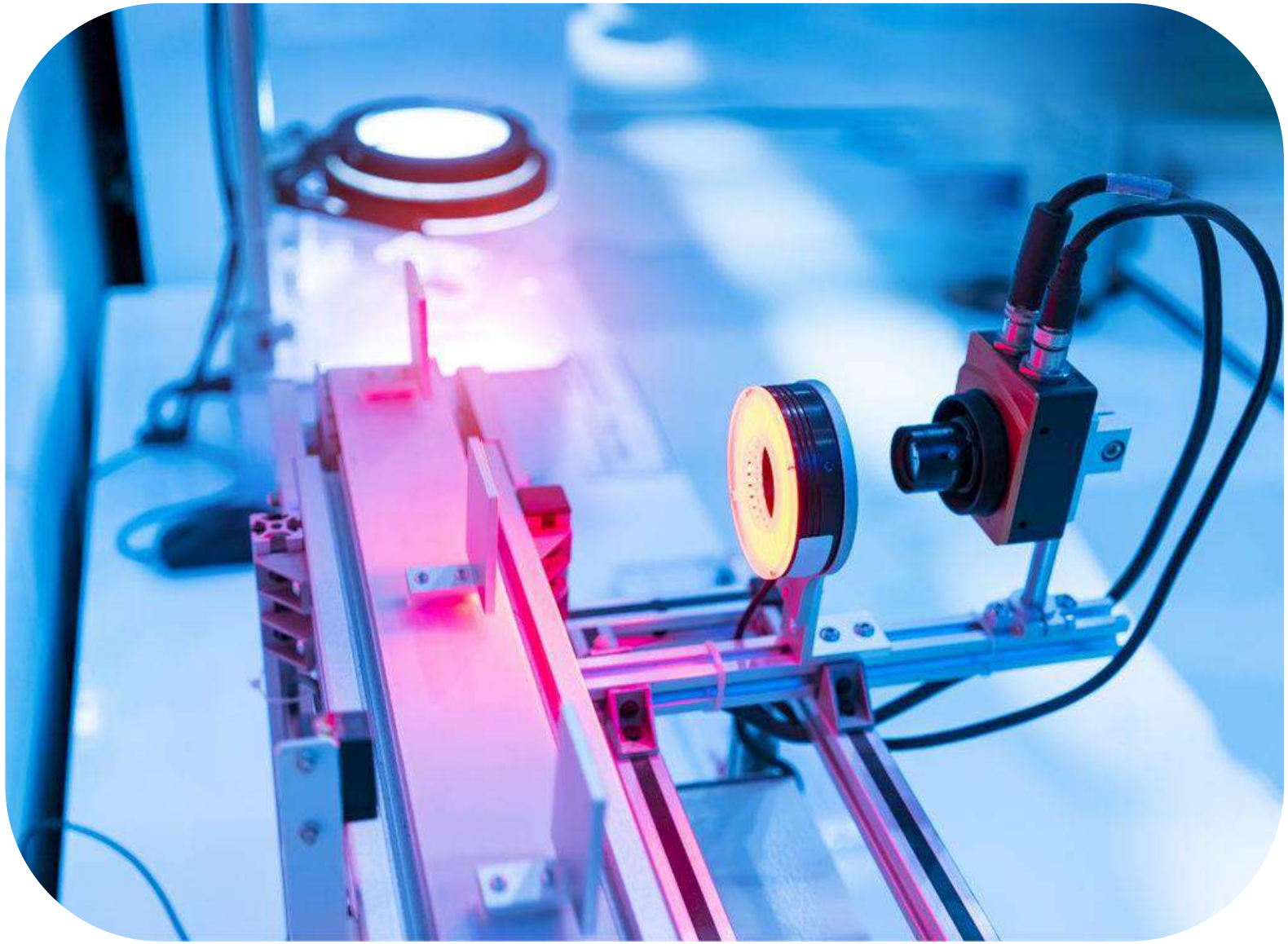
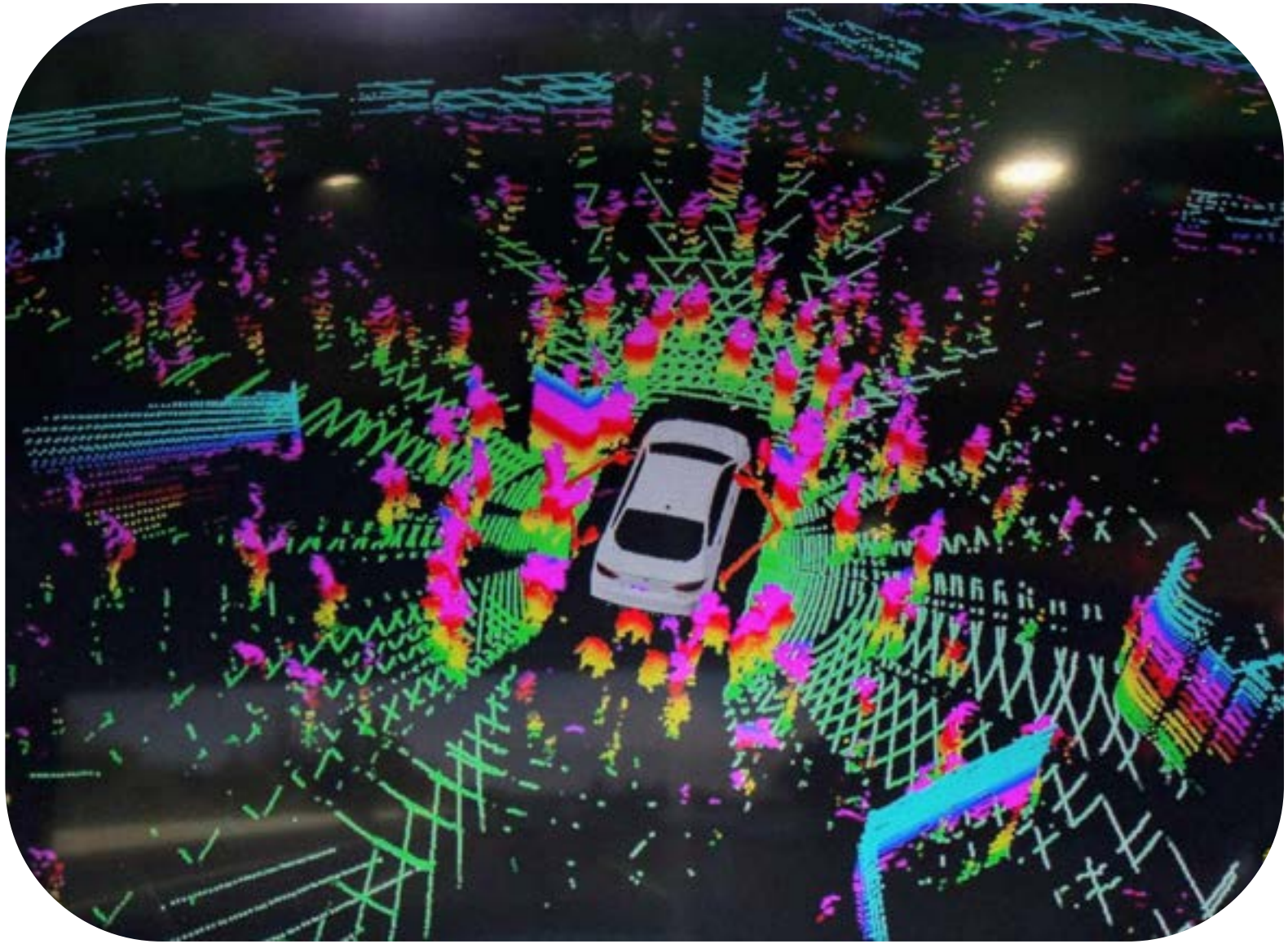
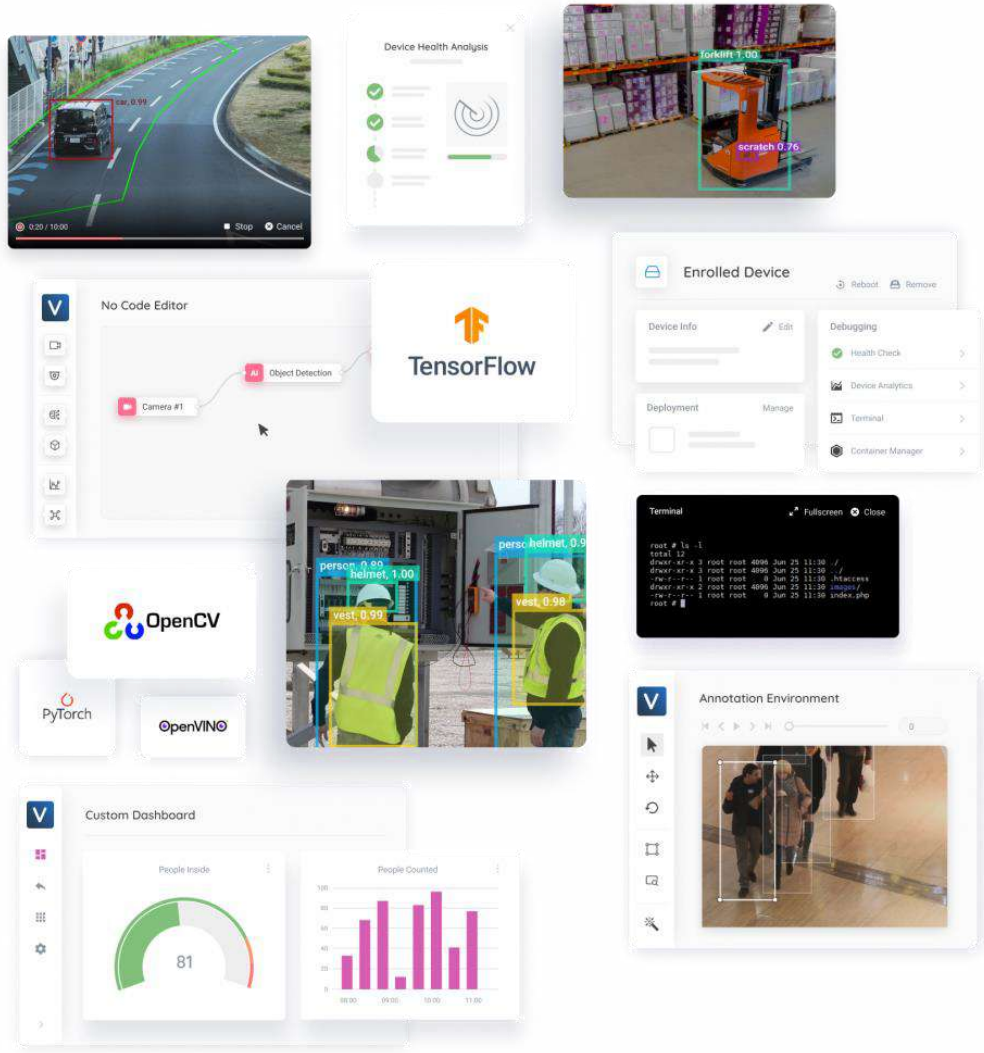
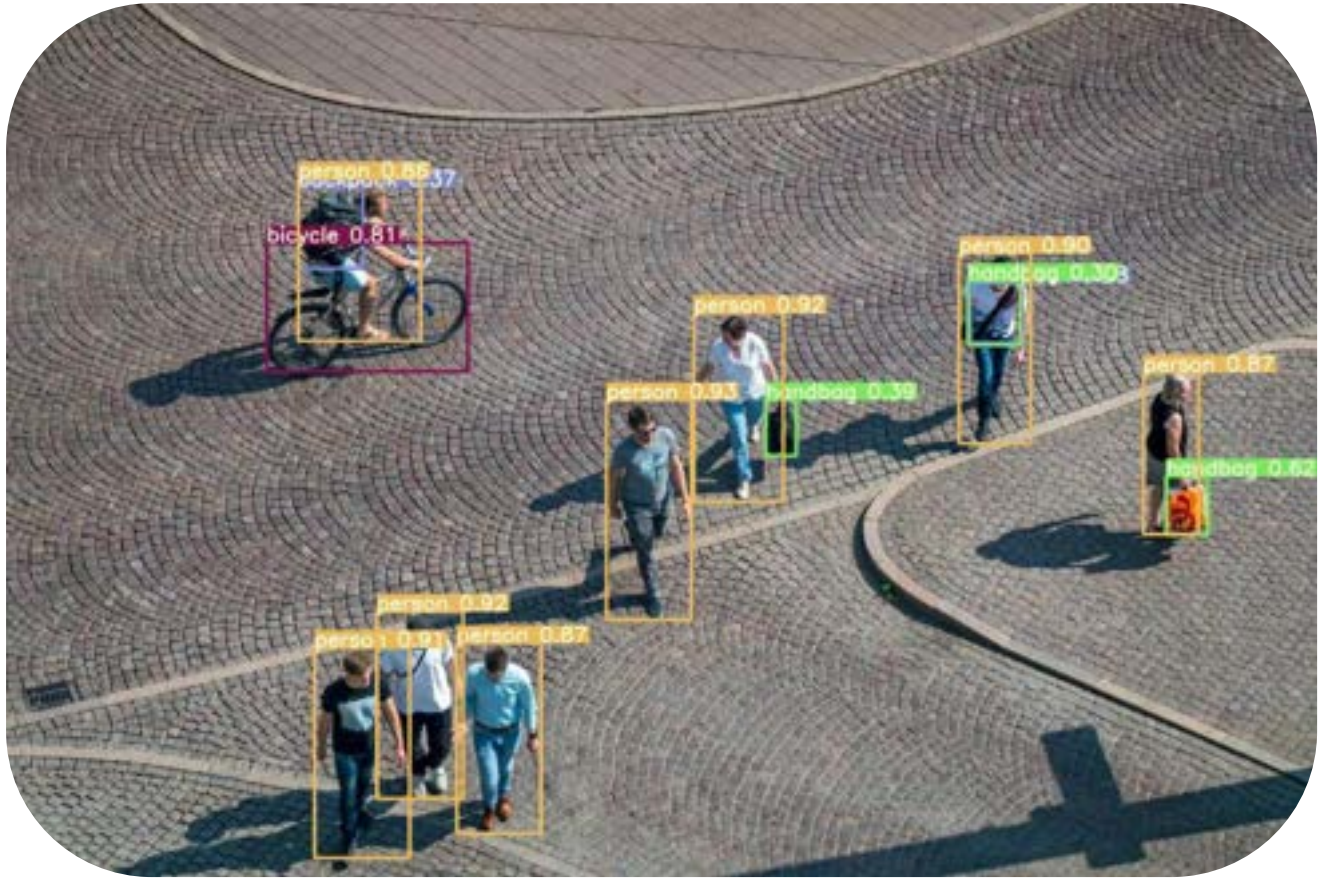


Machine vision



Computer vision





Viso.AI - YOLO

SW libraries, SaaS, platforms, end-to-end

The end of privacy in the name of business?

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- Remote biometric identification
- Biometric categorization systems
- Predictive policing systems (profiling)
- Emotion recognition systems
- And more...

AI Act

It is important to see the good as well

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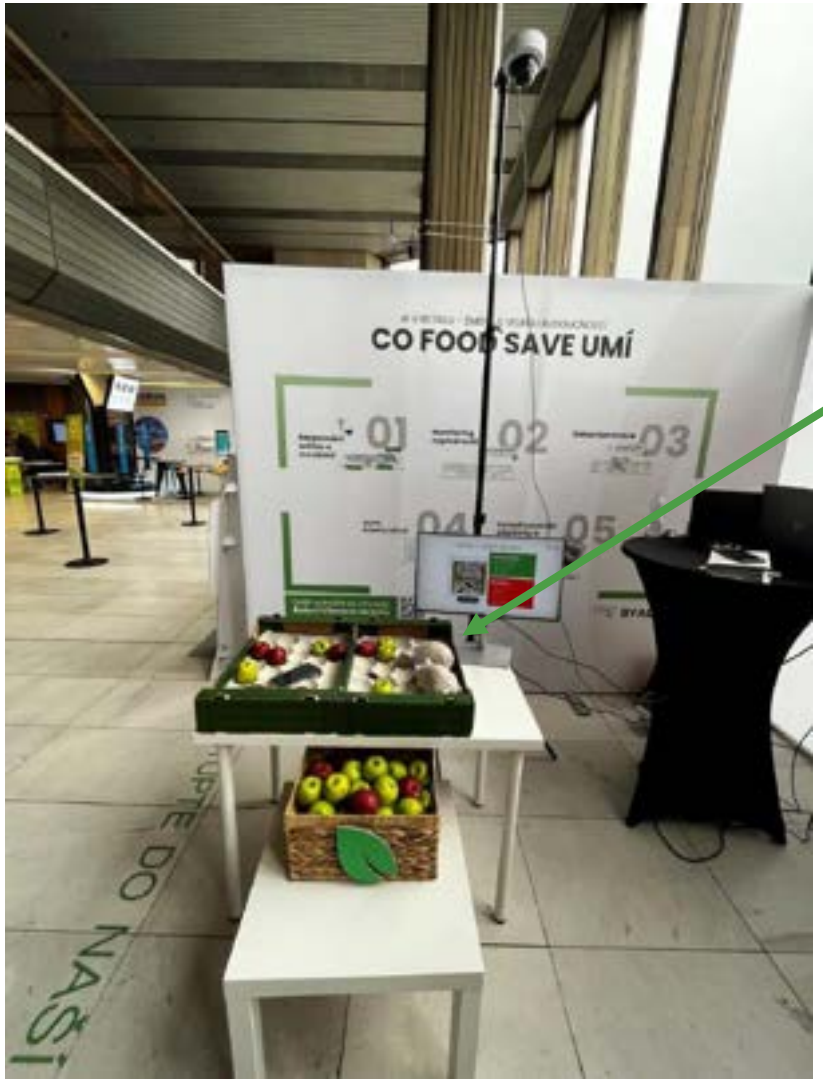
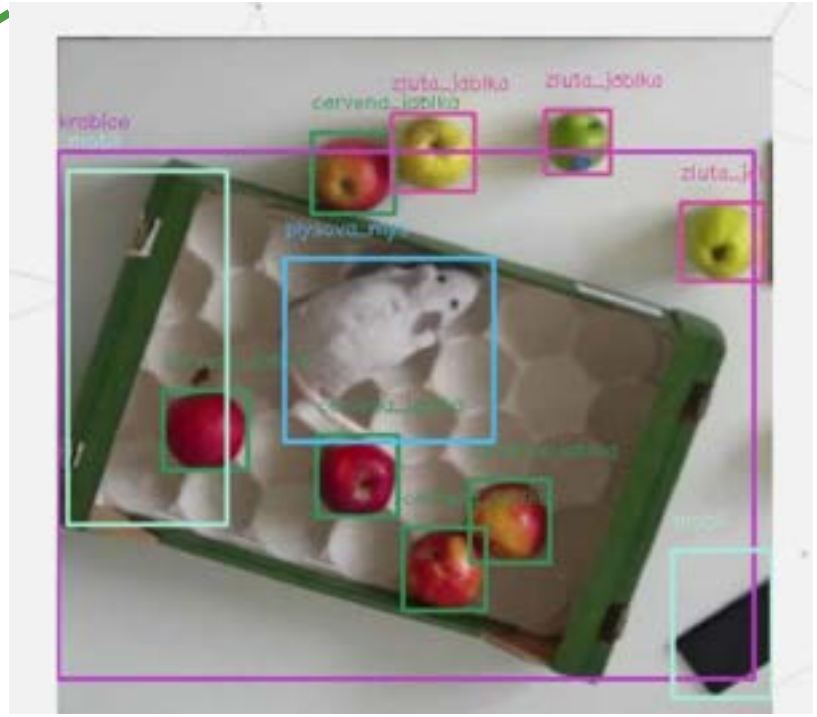
FOOD SAVE
BY ADF


CO FOOD SAVE UMÍ
01
02
03
04
05
CHUTĚ DO NÁS!


zluta_jablka
zluta_jablka
cervena_jablka
krabice

Examples of use

- Efficient replenishment of goods to the shelves
- Optimization of baking processes
- Queue detection
- Warning in case of contamination of goods on the shelves
- Analysis of customer behavior and movement around the store
- Detection of perishable and rotting fruit
- Identification of goods at self-service checkouts
- Detection of rodents and birds in warehouses and stores
- Theft detection
- Detection of protective equipment in the workplace

And the conclusion?

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Effective access to IT services

ING. ALES ROMAN

Sales Director, IdStory

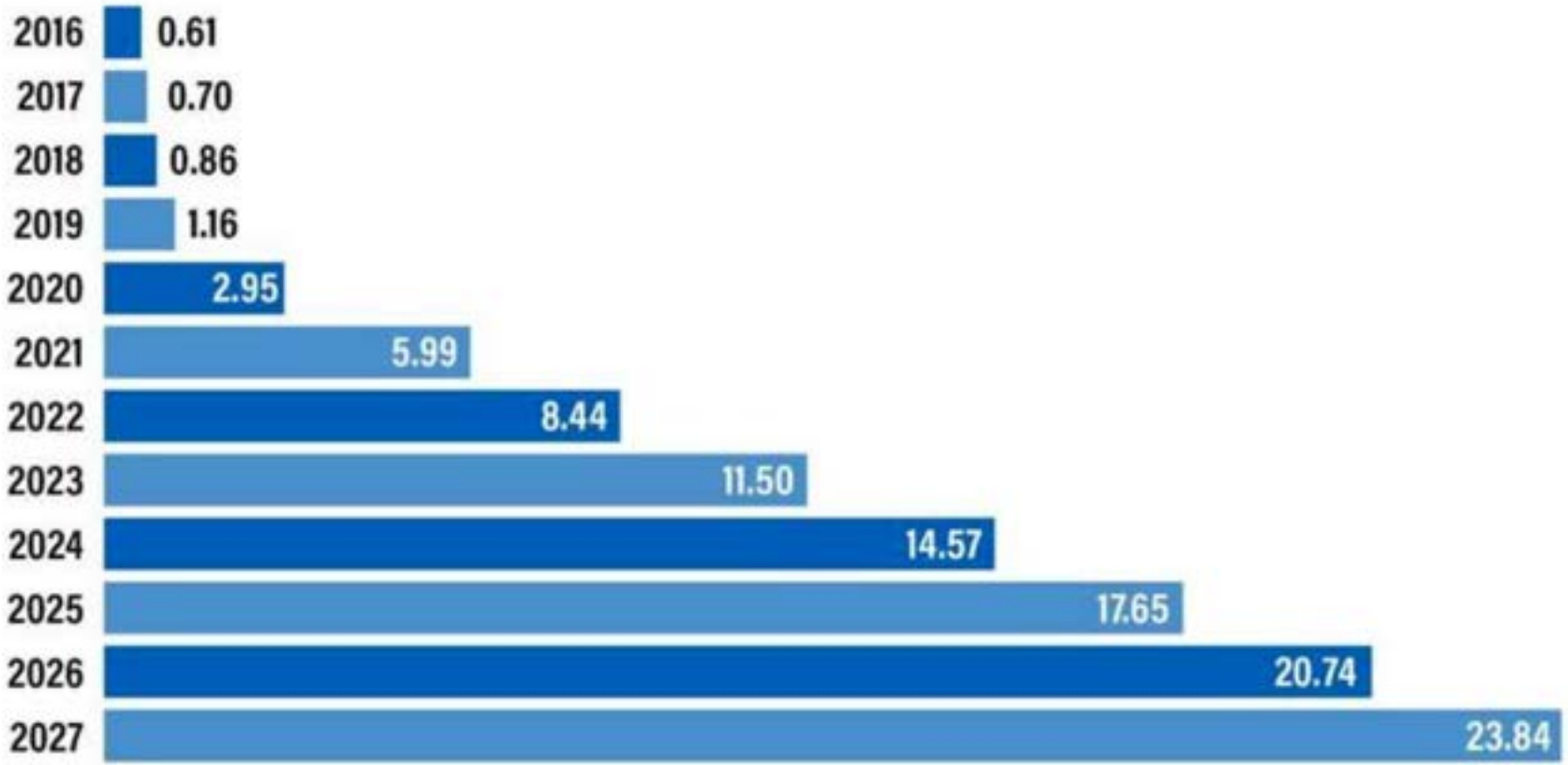
Cybersecurity in the CZ and the EU

Cybersec is a big topic not only in the Czech Republic

The number of cyber attacks is constantly growing

Large development centres eg. Microsoft

ESTIMATED COST OF CYBERCRIME
(in $tn)



Source: Statista, FBI, IMF

Cyber security context

War moves into virtual space

Cyber security spending on the rise - Realy?

Security within organisations is key - penetrations into the company through internal employees

Legislative opportunities

GDPR

NIS2 directive

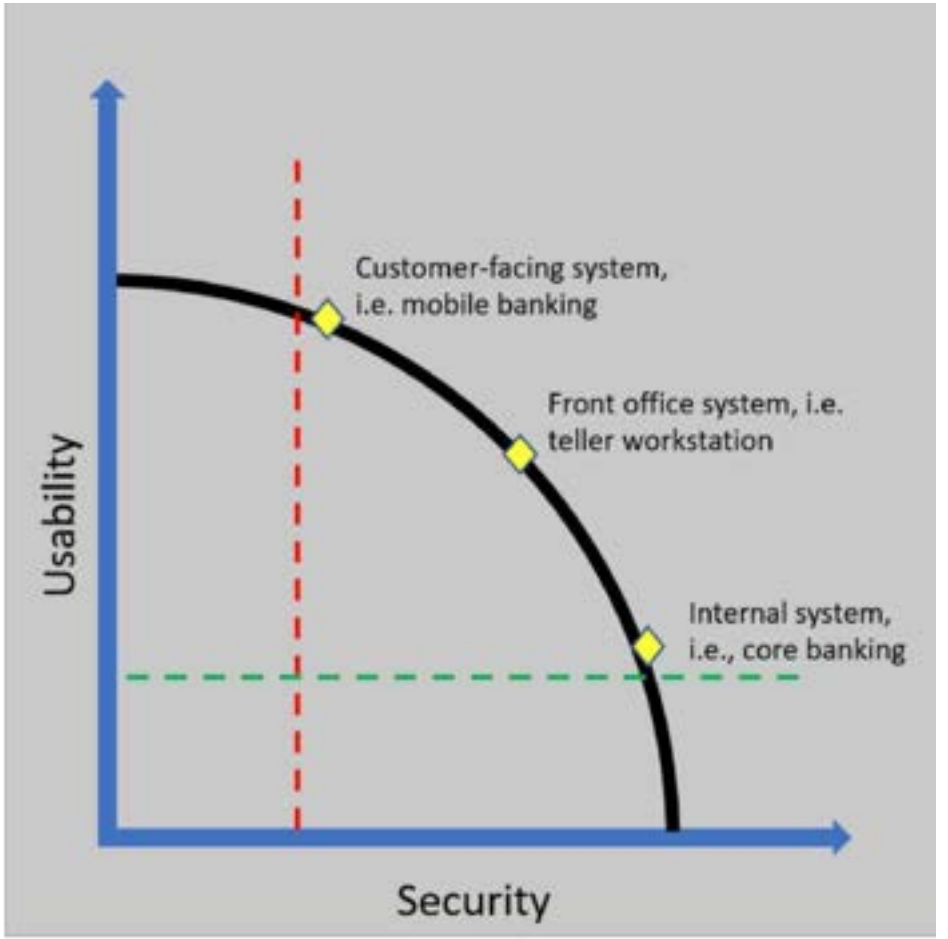
ct No. 181/2014 Coll. Cyber Security Act

n° 910/2014 on electronic identification and trust services for electronic transactions in the internal market (eIDAS)

Cultivate the environment

User perspective

- One way to log in
- Access anytime and anywhere
- Short password
- Access rights management
- 100% protected



Source: Microsoft Security versus usability: overcoming the security dilemma in financial services

Accessibility to data

- How will we control access to them?
- Who should access them?
- How will we log in?
- What protects me?
- Who is the guarantor?

Challenges and risks

- Personal data protection
- Increased attacks
- Citizen confidence
- Identity and access management systems
- Security standards and protocols

Inconsistency and complexity

- Different standards and legislation
- Different processes
- Different systems
- Complexity

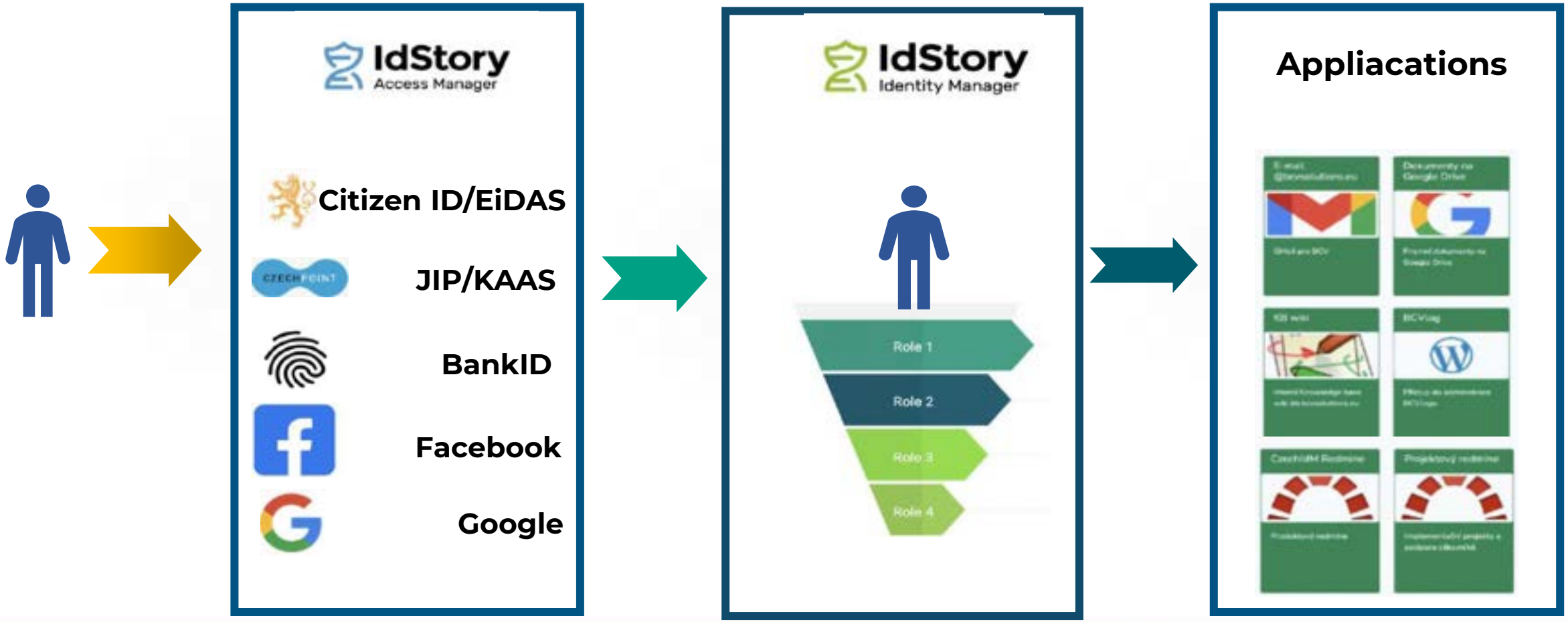
Identity and access management

- We are at the beginning when identity is created
- Integrating the internal and external worlds
- Increasing cybersecurity and user experience
- Standardising processes and setting rules
- Improved collaboration and efficiency
- The right access for the right people


EduId
Eduroam
myID
Electronic ID
Citizen identity
Bank Identity Act
BankID + NIA
eIDAS
Google, AppleID...
JIP/KASS
Services


EduId
JIP/KASS
Eduroam
IdStory
Google, AppleID...
myID
Services
eIDAS
Electronic ID
BankID + NIA
Citizen identity
Bank Identity Act

Identity and access manager



3 takeaways

Take legislation as an opportunity

Cyber security can go in tandem with UX

Keep track of who has access to your data

Ing. Ales Roman

Sales Director, IdStory

ales.roman@idstory.com

+420 722 908 675

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Digitisation of small and medium-sized enterprises

ING. ZDENKA DOLEZALOVA

Manager of EDIH NEB

European Digital Innovation Hubs Network

pan-European initiative

Co-funded by the European Union

151 EDIHs

AIM:

ACCELERATE DIGITAL TRANSFORMATION OF:

- SMALL-MEDIUM ENTERPRISES
- SMALL MID-CAPS
- PUBLIC ORGANIZATION

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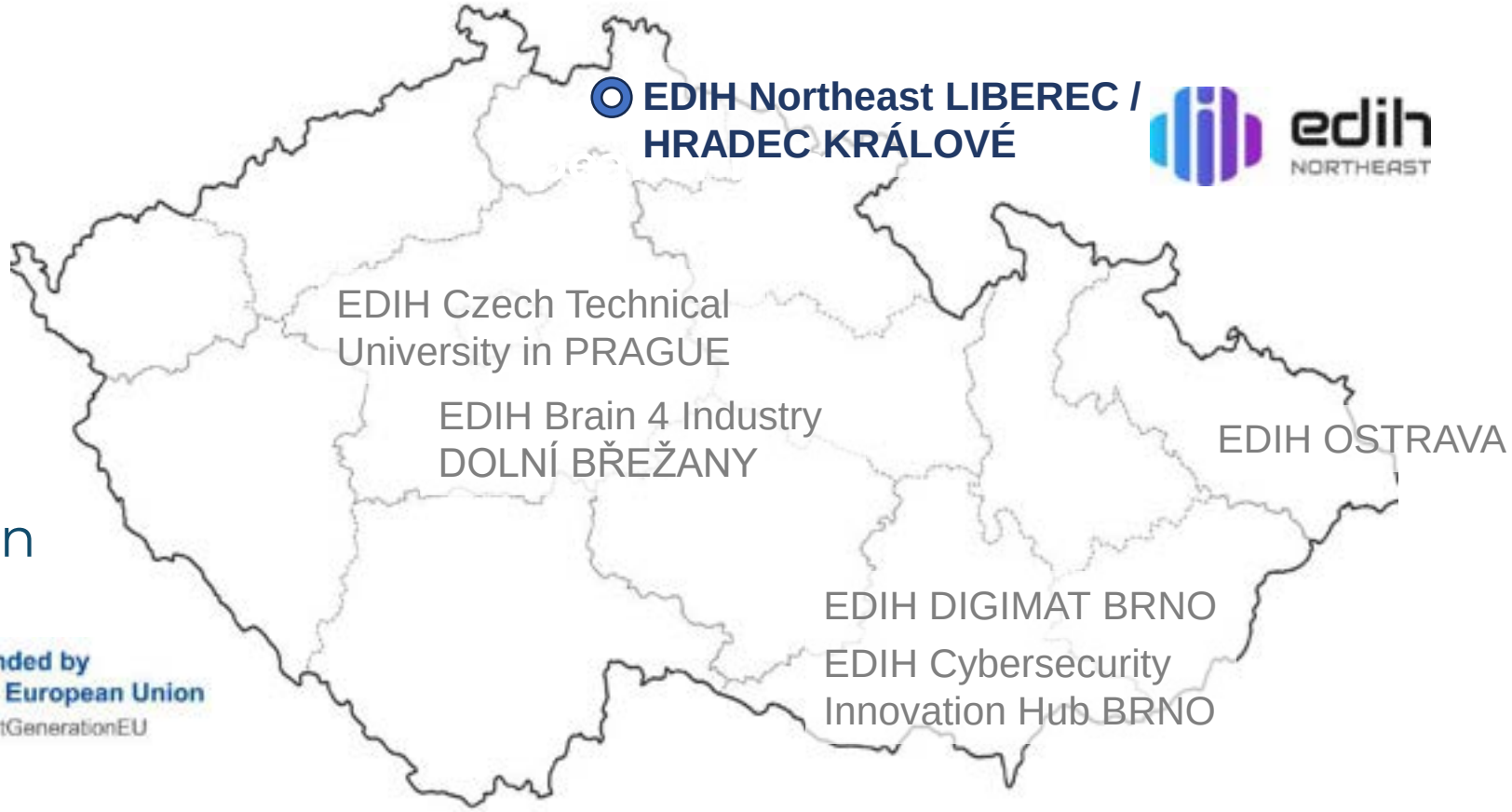
European Digital Innovation Hub Northern and Eastern Bohemia (EDIH NEB)

co-funded by
Czech Recovery Plan



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Consortium members

Our services

TEST BEFORE INVEST

SUPPORT TO FIND INVESTMENT

DIGITAL ACADEMY

BUILDING INNOVATION ECOSYSTEM

„ONE STOP SHOP“ for DIGITIZATION

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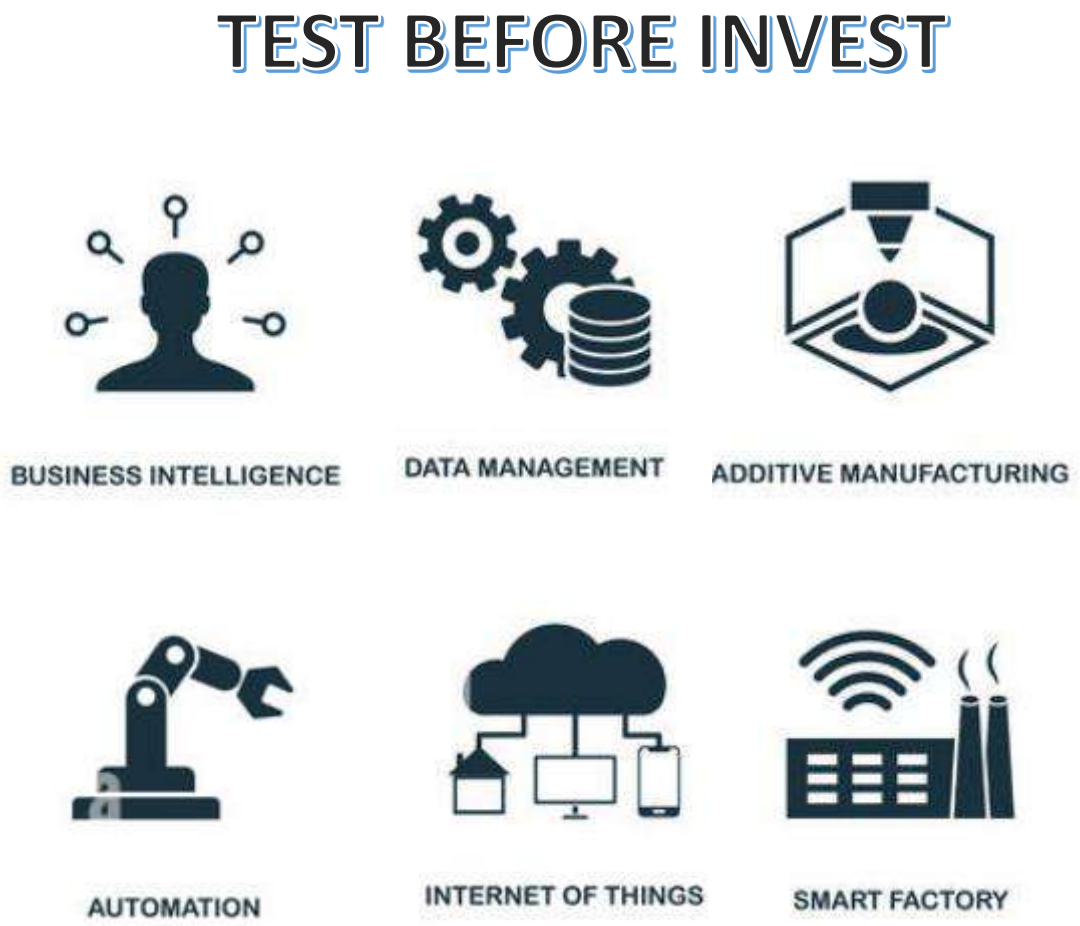
Subjects of digitalization



- Technologies ready to be applied
- Space for close cooperation between Universities, tech-centres and small businesses
- Opportunity for technological progress

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European Digital Innovation HUB for the Liberec and Hradec Králové regions (EDIH NEB)

FB Evropský digitální inovační hub - EDIH Northeast

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AI & Cybersecurity Innovations in AgriFood Manufacturing

KRISTINA SERMUKSNYTE-ALESIUNIENE

European Cluster Manager of the Year 2022, DIH Coordinator/Cluster Manager, AgriFood Lithuania DIH

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SESSION 3: Exploring Real-World Examples and Implementation of Clean Technologies, 3D Printing and VR Industry

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Introduction to the topic

KATERINA PODANA

Executive Director, Klastr Mechatronika
and Member of the Board, NCA

Klastr Mechatronika

Born in industrial region with many innovative ideas

Connecting

People
Ideas
Topics

Connecting People

Crossborder collaboration
Inspire each other
Motivate each other

Thomas Ramming

Connecting Ideas

R&D and industry

Michal Zemko

Connecting topics

- Engineering,
- Machinery,
- Research, Education,
- Additive Manufacturing,
- Lasers,
- Automation,
- Digital Twins,
- Virtual, Extended Reality

Marek Bureš & Alena Lochmanová

“Connecting”

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Successful and Cross-Border Collaboration

TOMAS RAMMING

Material and production, Project manager, Bayern Innovativ GmbH

Successful and Cross-Border Collaboration
Networking and Matchmaking Events for SMEs

- Presentation of
  - Bayern Innovativ
  - Cluster Mechatronik & Automation
- Common cross-border projects
  - Project 217
  - AMNET
- What´s next?

Why cross-border collaboration?

Klastr MECHATRONIKA

internationalisation • research • education • additive manufacturing

- founded as collaboration partner for CMA in 2011
- connected regions but many barriers

there is a need & a big potential for cross-border activities

bayern innovativ
Innovation leben

bayern innovativ

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Bayern Innovativ

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Innovation leben

1995
Foundation

- *Offensive Zukunft Bayern* ("Future Initiative Bavaria")
- **More than 27 Years of Success**

GmbH (limited company)

- Organisation for **Innovation, Technology and Knowledge Transfer**

Shareholer: LfA Förderbank Bayern

Supervisory Board & Board of Trustees

- Representatives from **Business, Science and Politics**

Chair of Supervisory Board: Hubert Aiwanger, Bavarian State Minister of Economic Affairs
Chair of Board of Trustees: Dr. Hans-Otto Feldhütter (Fraunhofer)

32 Mio. €
Annual Revenue

- **Institutionally funded**
- Project funding
- Orders

Bayern Innovativ

bayern innovativ
Innovation leben

> 300
Employees

- 243 full-time equivalent
- Teams of experts spanning industries and technologies

32.000
Customers

- Network comprises more than **32.000 companies** and over **75.000 active contacts**

1(n):n
Services

- **“Networks and Thinknet.Bayern“ division**

  Digitalisation | Mobility | Energy | Health | Material & Production

1:1
Services

- **“Consulting and support“ division**

  Funding advice & project sponsorship | patent & ce standard advice | technology and innovation management | technology and innovation marketing | cultural and creative industries

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HEALTH
Department Forum MedTech Pharma e.V.
(largest network in the healthcare sector in Europe),
ZD.B Digital Health, TEAM-X

MOBILITY
Cluster Automotive,
Electromobility Competence Centre, Transformation pilot Automotive,
ZD.B Connected Mobility, Cleantech Innovation Park

MATERIAL & PRODUCTION
Cluster New Materials and Cluster Mechatronik & Automation, Additive Manufacturing Coordinating Body, ZD.B Digital Production & Engineering, AI-Production Network, Textile Innovation Network

ENERGY
Cluster Energy Technology,
ZD.B Digitization in the energy sector,
ZD.B Innovative Constructing – digital and sustainable

DIGITIZATION
ZD.B Center for Digitization Bavaria: Bavarian Chips Alliance,
theme platforms Quantum technology, 6G, Cybersecurity, Working world 4.0, Smart cities/regions, Competence Network Digital Agriculture Bavaria

FUNDING ADVICE
Funding advice and project sponsorship, point of contact and hotline for the Bavarian Research and Innovation Agency,

PATENTS AND STANDARDS
Patent Center Bavaria
CE-Standard advice

TECHNOLOGY AND INNOVATION MANAGEMENT
Digital Innovation Platform (DIP),
transfer of technology, innovation coaching

TECHNOLOGY AND INNOVATION MARKETING
Joint stands at trade fairs representing Bavaria,
Enterprise Europe Network

CULTURAL AND CREATIVE INDUSTRIES
bayernkreativ
Bavarian Center for Cultural and Creative Industries

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Bayern Innovativ

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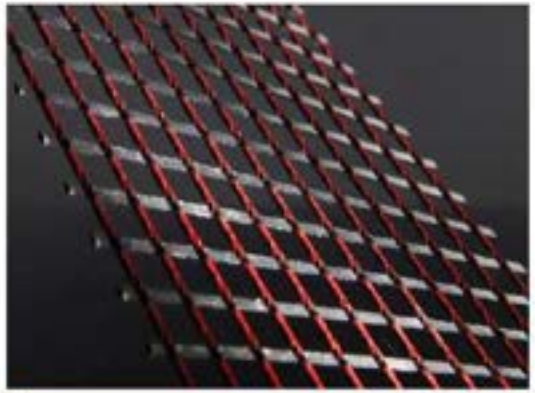
Innovation leben

Using a scarf to reinforce concrete?
An idea turns into innovation.

BEST PRACTICE
WILHELM KNEITZ SOLUTION IN TEXTILE GMBH
CARBONBETON



Technology and Innovation Management | **Research & Development** | **Technology and Innovation Marketing**

- technology scouting / industry screening
- innovation workshops
- transfer & technology forums
- cooperation partners
- funding & sponsorship
- Bavarian joint trade fair stand
- studies & publications
- innovation congresses

Innovation network and Thinknet.Bayern

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Bayern Innovativ

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Innovation leben

Our Thinktank Network in Bavaria

- 46 Funding and consultancy organisations
- 25 Cluster and networks
- 16 Chambers and Associations
- 45 Entrepreneur center
- 43 Universities and colleges
- 50 non-university research institutes
- 33 Transfer points

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cluster mechatronik & automation

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Cluster Mechatronik & Automation

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Communication, Cooperation, Qualification, International

Contacts across disciplines and industries

Contacts with research and transfer institutions

National and international networking events

Cluster Mechatronik & Automation

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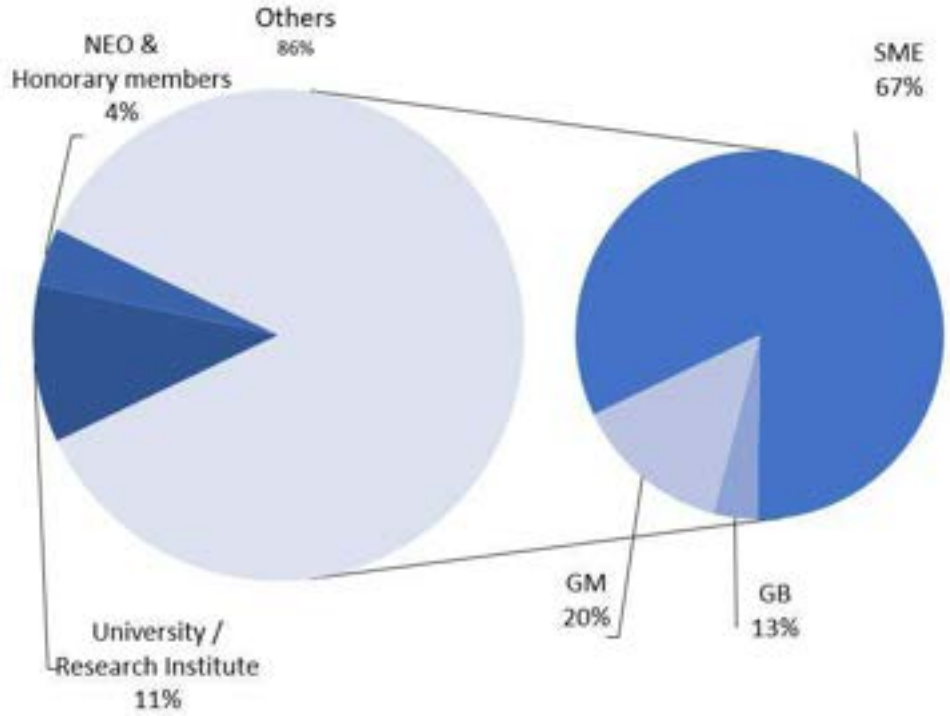
Cluster Mechatronik & Automation

Distribution



Europe-wide

Bavaria-wide

Cluster Mechatronik & Automation

Business areas

partners needs and clusters offerings

Show competence.
Recognize trends.

Share experience.
Innovate together.

Securing skilled workers.
Develop employees.

Increase visibility.
Combining know-how.

Cluster Mechatronik & Automation

cluster mechatronik & automation

bayern innovativ Innovation leben

Communication

Media


Events


Trade fairs

Cooperation


Workshops


Working groups


Projects

Qualification


Develop employees

Share knowledge


Accompany transformation

International


Increase visibility


Build bridges


Harmonize services

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Cluster Mechatronik & Automation

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Production Security

Additive manufacturing

Drive technology

Robotics

Artificial intelligence

Mechatronic modularization

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Common cross-border projects

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Common cross-border projects

Project 217

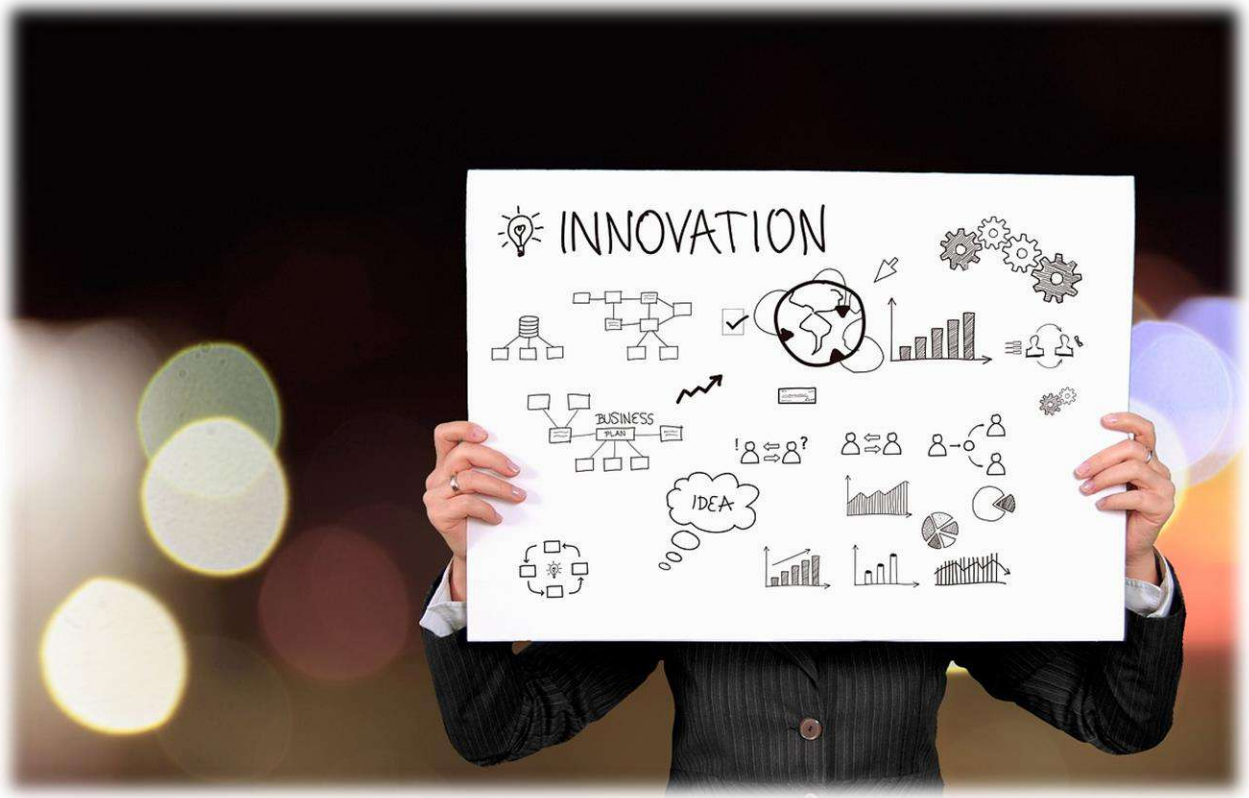
Network for technology transfer between SMEs in the Czech-Bavarian border region in the field of advanced manufacturing technologies

- Duration: 2018-2021, Interreg Bavaria-Bohemia

Project 217

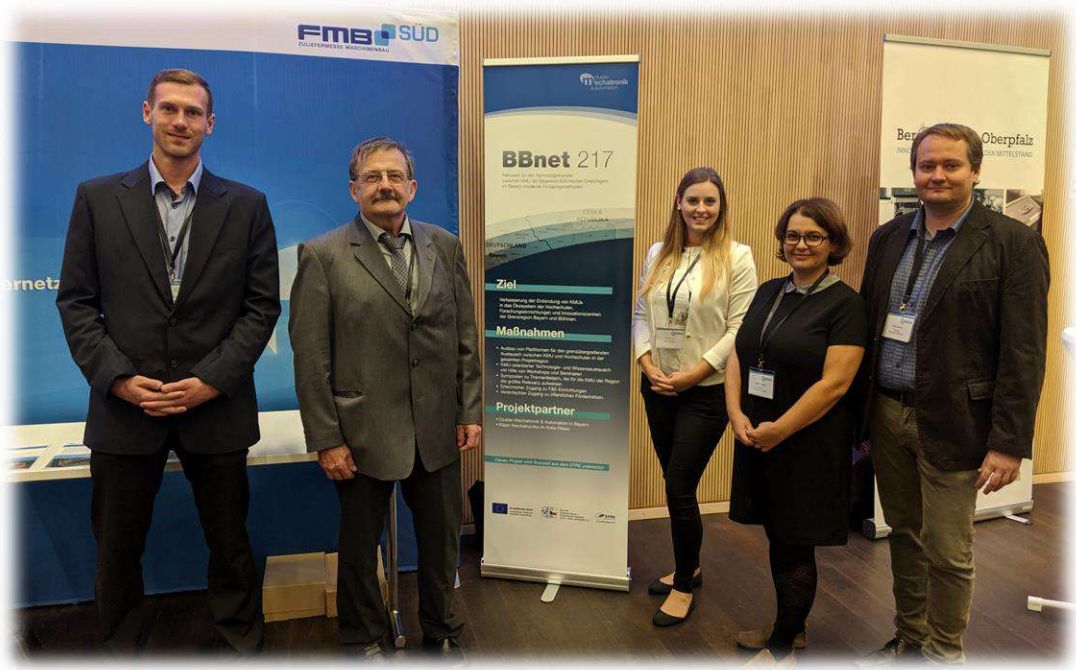
Overview (2018 – 2021)

- Two partners: KM + CMA
- Joint events
- Joint fairs
- Joint concept



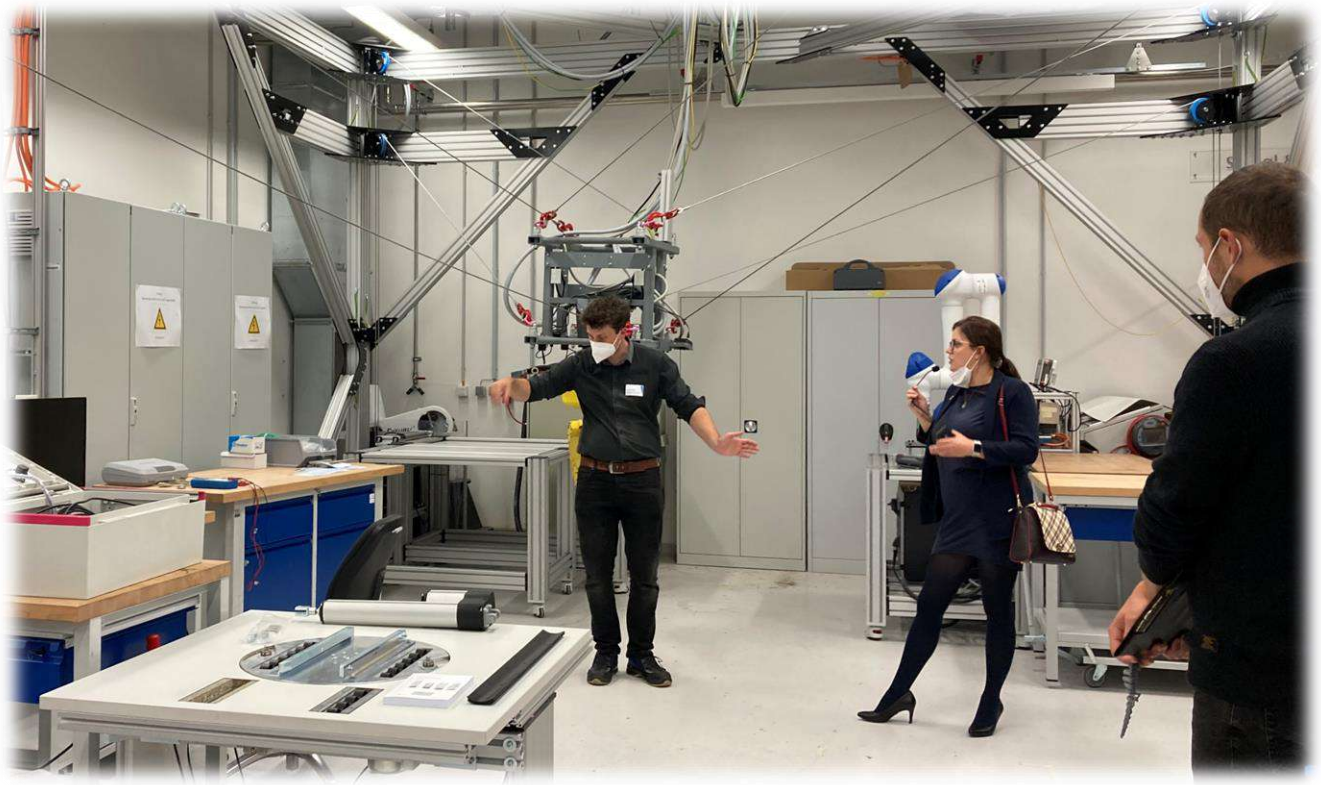
Projekt 217 – events – technology transfer

Project 217 – fairs



Projct 217 – concept

Best Bavarian praxis
in cross-border form



AMNET

- Duration: 2021-2022
- Network to support knowledge and technology transfer in additive manufacturing

AMNET – events & networking

- Conference in Dobřany (2022)
- Just regional projects

What´s next?

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What´s next?

- Roadtrip along borders
- Further joint projects
- Events on various current topicss

Big plans, big enthousiasts!

Great partnership!

“We want to do more together”

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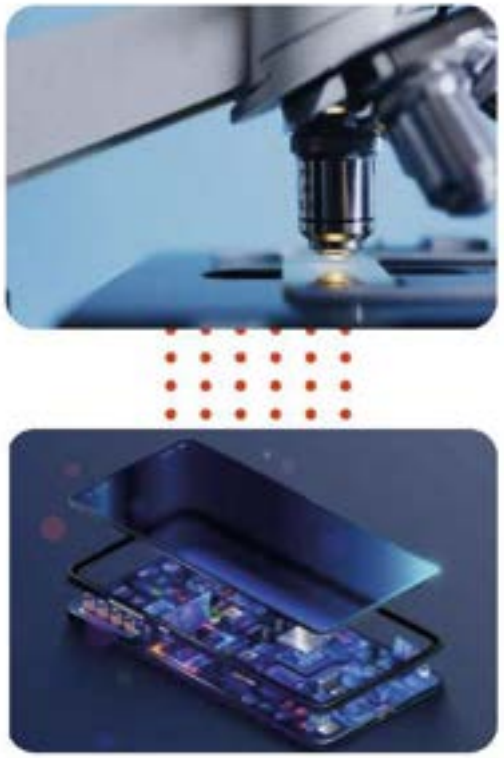
Metal 3D printing - How to do it

MICHAL ZEMKO

Executive Director, COMTES FHT

COMTES FHT a.s. - introduction

- We are **a private research organisation** focusing on metal materials research, the development of technologies, their implementation, materials testing and analyses.
- We provide **research and development as a service** - the results of our work are applied in practice.
- We provide consultancy in the field of f**inancial support for research and development projects** from public funds.
- We are **partners with technology leaders** in many industries, such as Apple, Škoda, Boeing, Swatch, Doosan, and many others.



Highlights

- We handle projects comprehensively - **from the initial idea to a prototype.**
- More than **sixty motivated researchers**, including foreign researchers.
- We have **state-of-the-art laboratories and extraordinary know-how** - more than 100 experienced experts in one facility.
- We have **over 20 years of experience** and hundreds of completed development projects whose results have been put into practice.

Why print metal?

- Clean – from very basic idea of AM and in every application
- I need a complex shape
- I need high performance
- I need a piece that's original
- I need it fast
- Because it's worth it

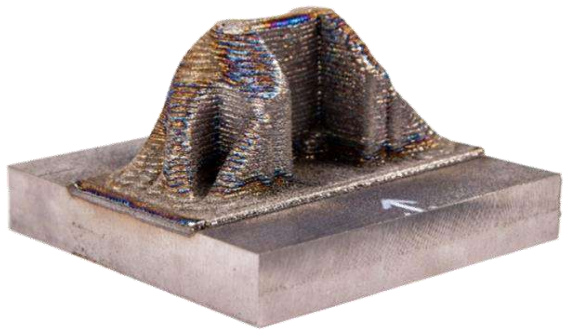
Image courtesy of SpaceX via Twitter.

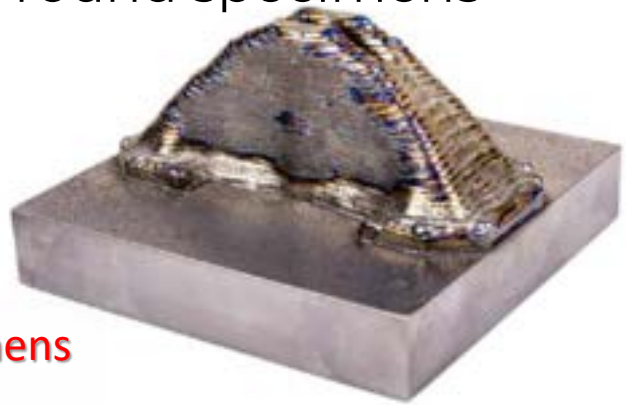
Design - topological optimization

- Objective: replacement of existing steel jaws with lighter ones
- Topologically optimised jaws
- Material: Ti6Al4V
- For flat and round specimens

Jaws

Jaws for flat specimens

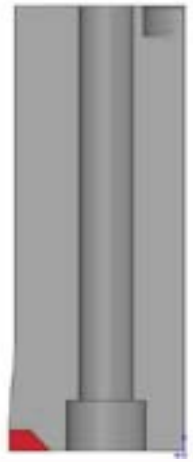


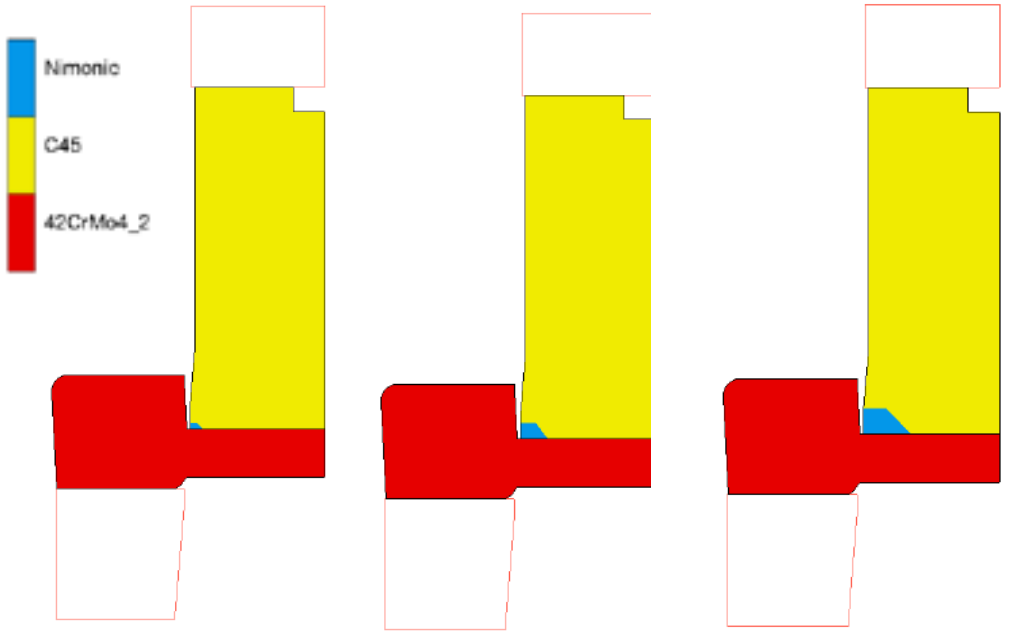


Jaws for round specimens

Simulation - performance

- Simplification of geometry to axisymmetric
- Tool material model: elasto-plastic
- Strength calculation with temperature consideration
- Damage model: Cockroft + Latham





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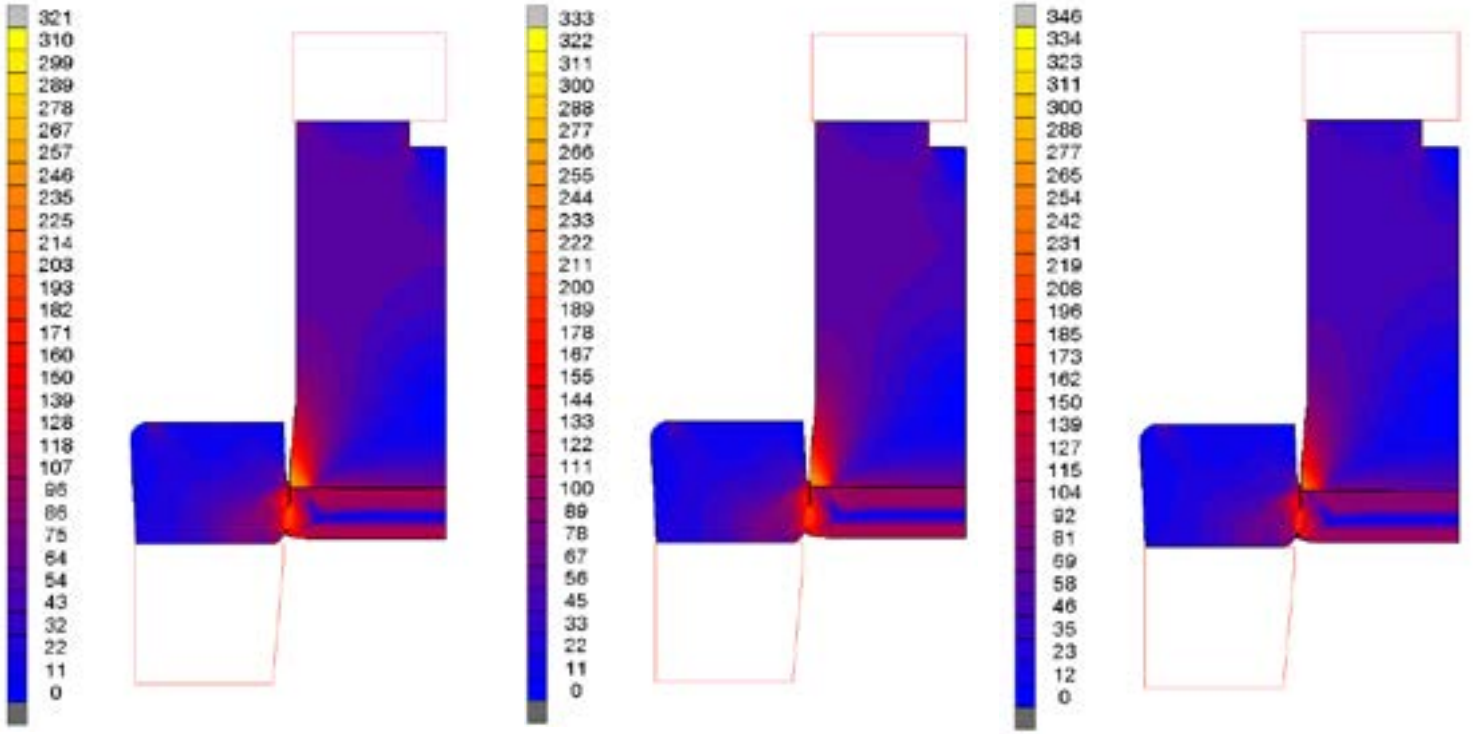
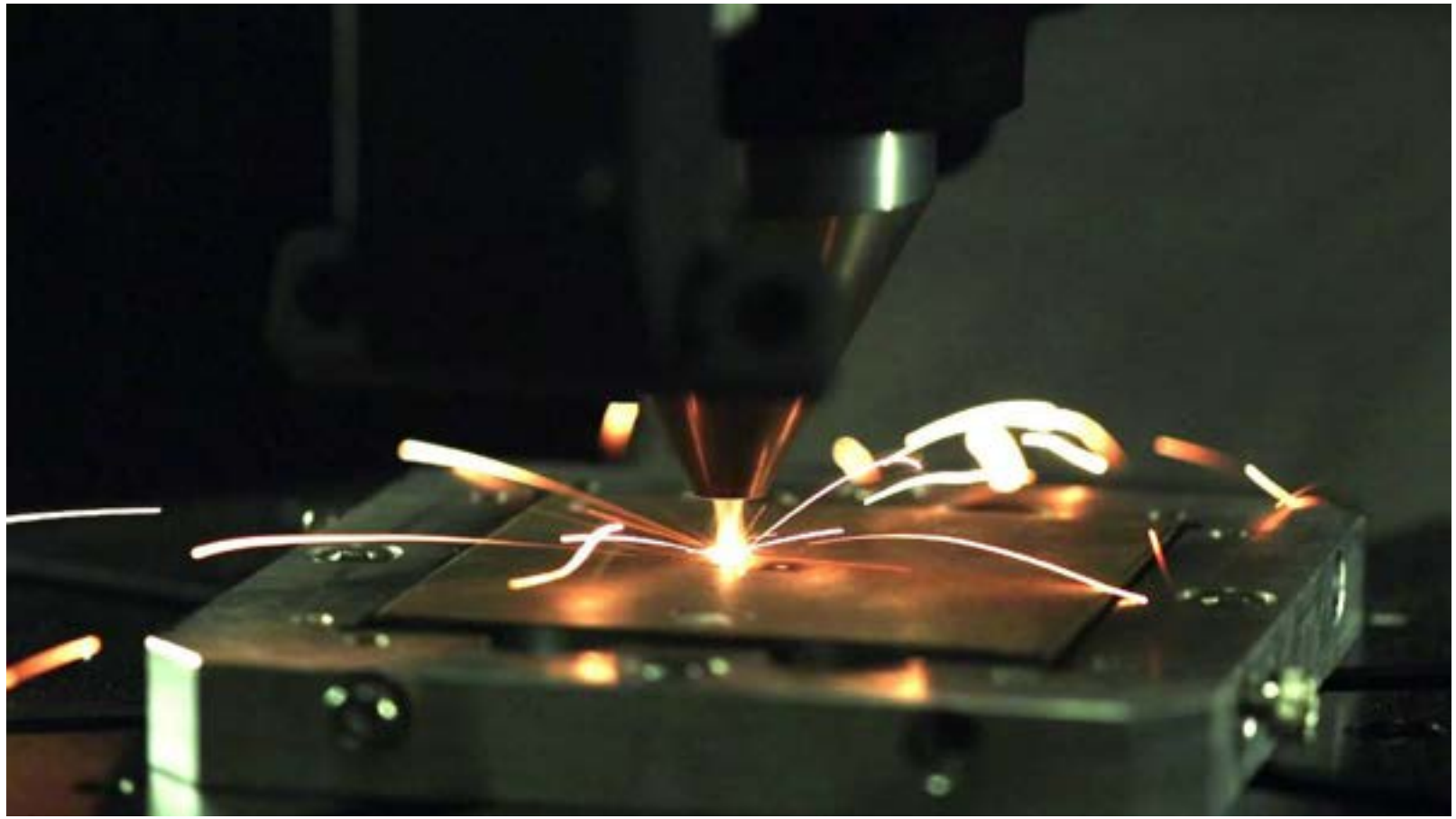
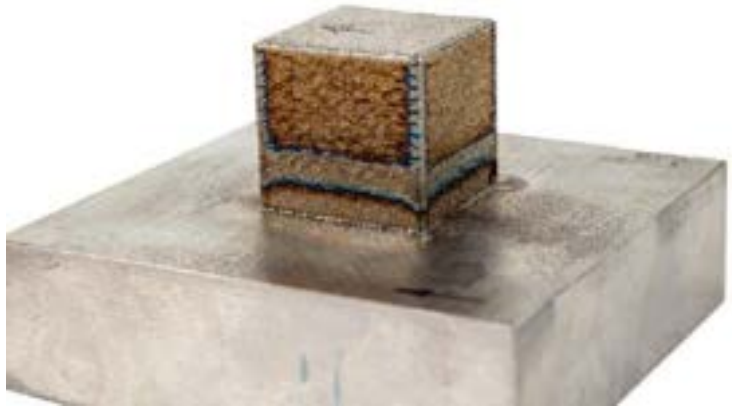
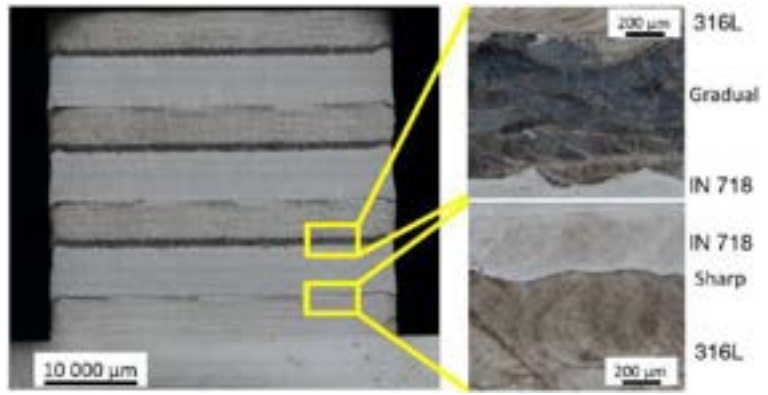


Directed Energy Deposition (DED)

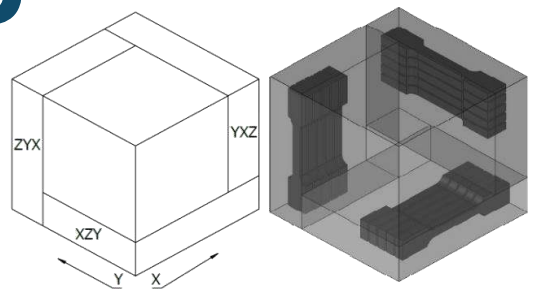




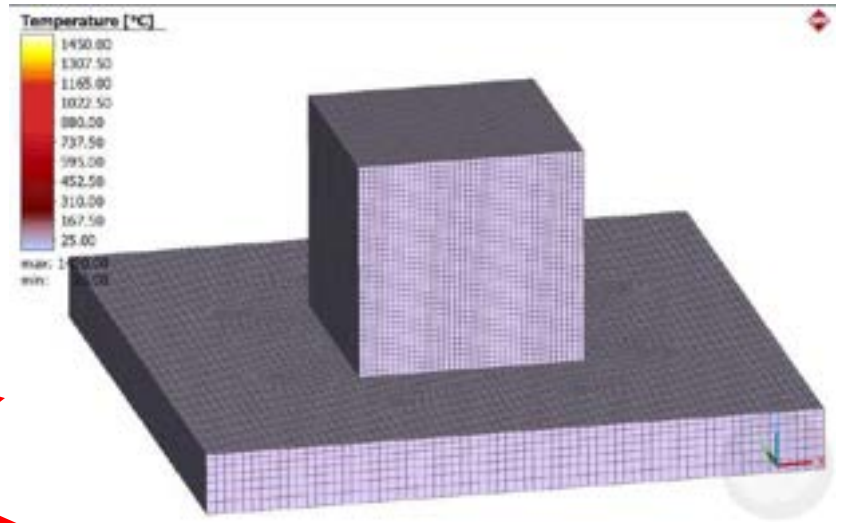


316L + IN718

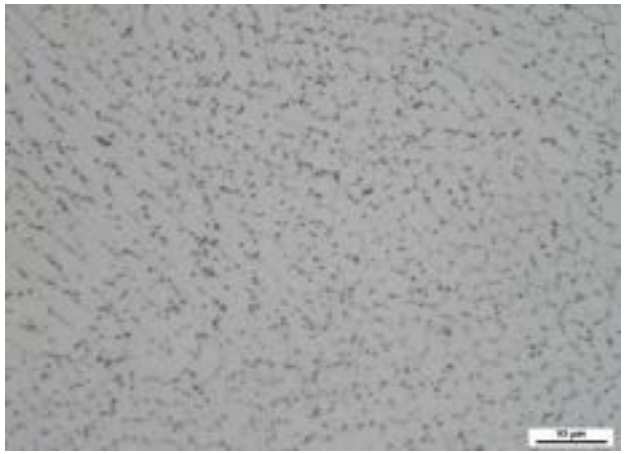
Analyzing



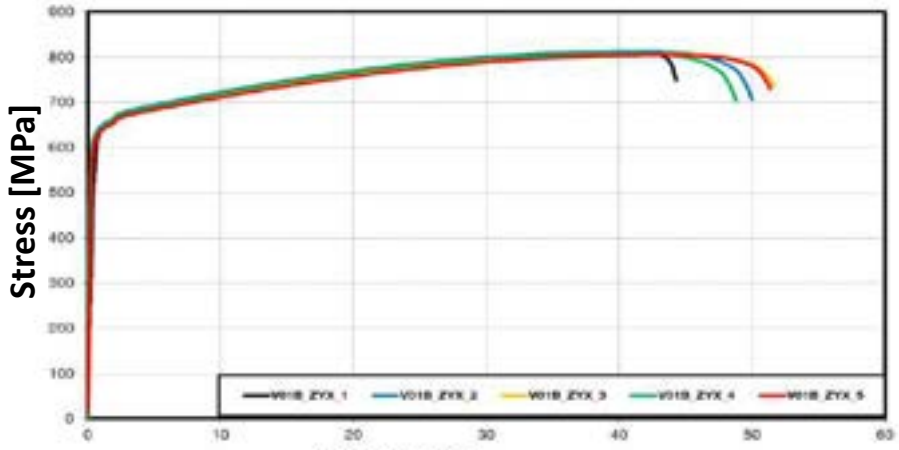
Cutting plan



Mechanical properties

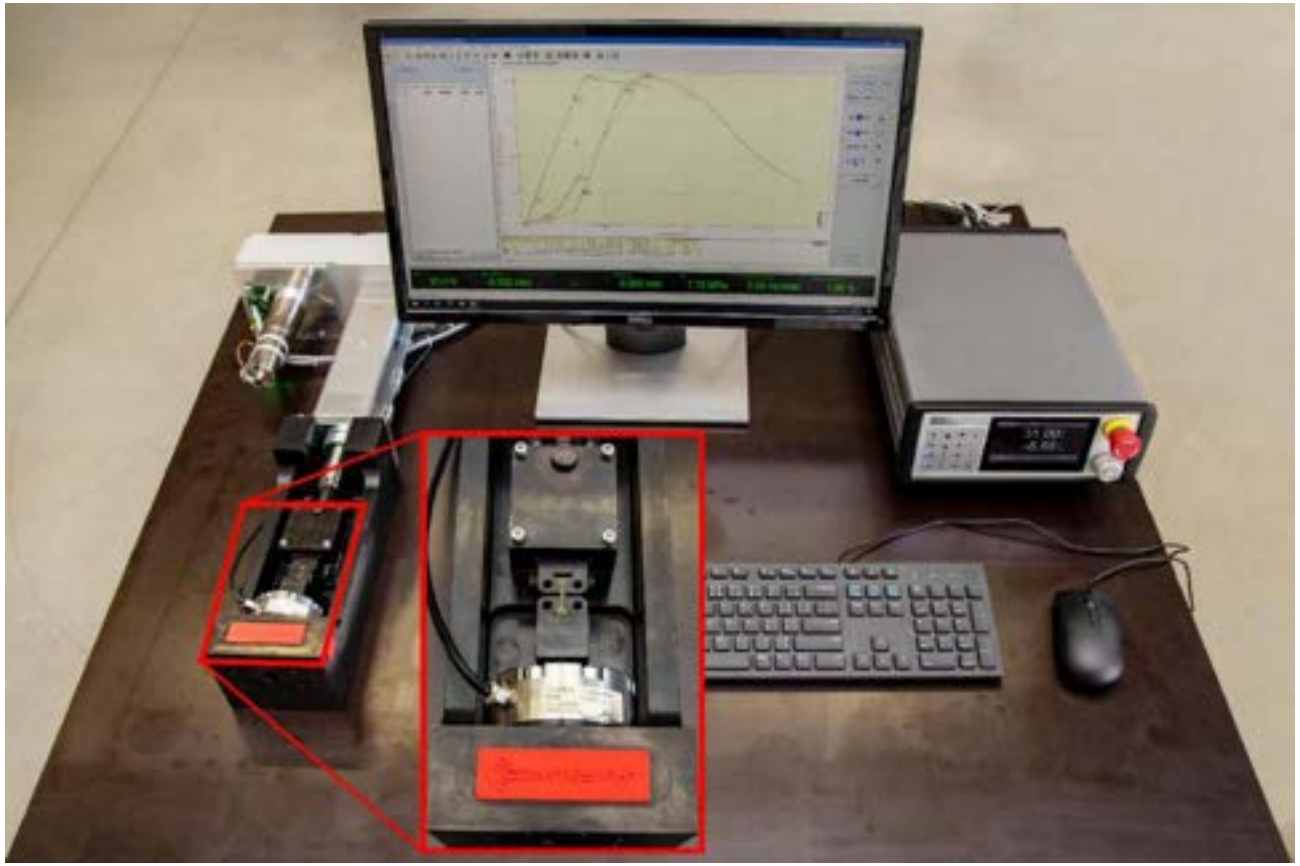


Metallographic analysis – Nimonic 80A



Miniaturized testing machine

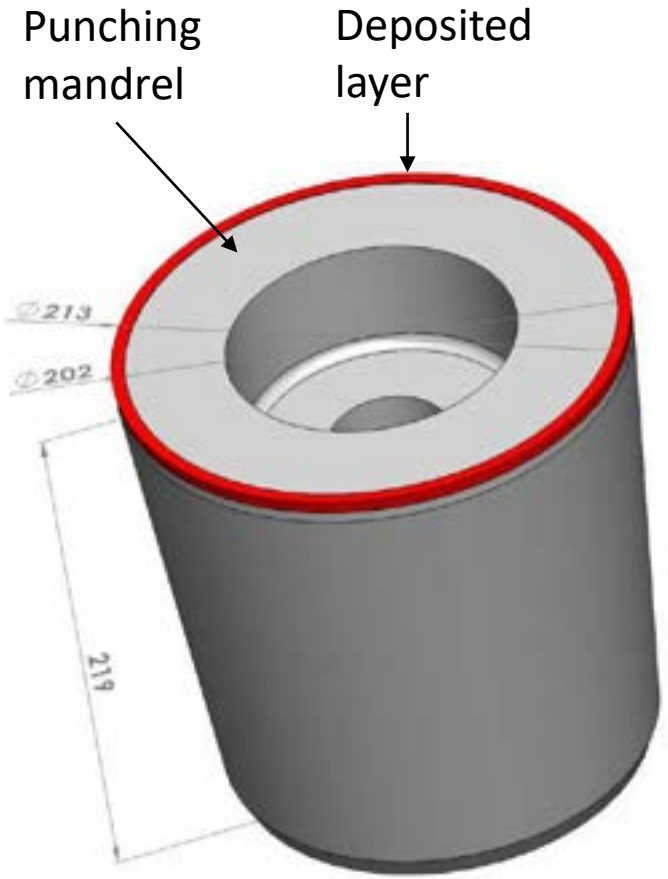
- Compact and mobile device for measuring mechanical properties.
- Evaluation of force-displacement and stress-strain curves.
- Accessories:
  - Integrated sample dimension measurement option
  - Interchangeable jaws according to sample geometry
  - Strain measurement using an external DIC system - virtual extensometer



Punching mandrel

CZECH PRECISION FORGE

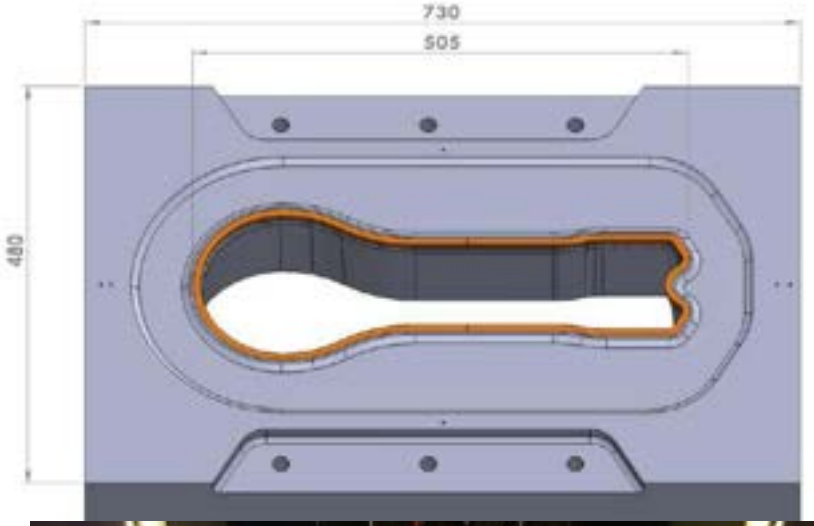
- Objective: to increase tool life in the hot forging process.
- Punching mandrel made of C45 material
- Deposited ring-shaped edge
- Old technology:
  - Manual arc welding (electrodes made of 1.2567 material)
  - Tool life 300 pcs, edge sharpening after every 50 pcs
- DED deposition:
  - Deposited material Nimonic 80A
  - Tool still running in the machine, currently 1510 pcs without sharpening

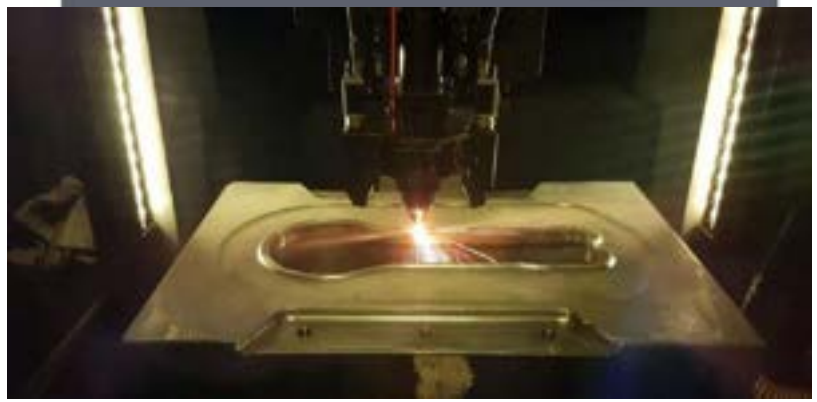


Staple for connecting rods

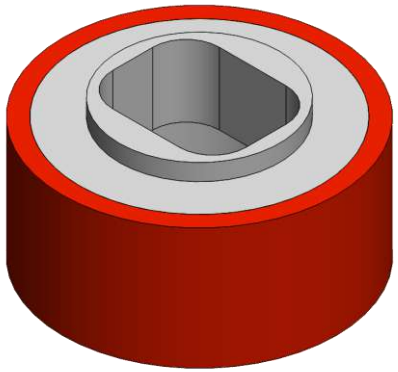
CZECH PRECISION FORGE

- Goal: increase tool life when cutting at forging temperature
- S355 shear bars
- Deposited functional edge
- Old technology:
  - Welded shear edge made of austenitic steel
  - Tool life 300 pcs
- New technology:
  - Nimonic 80A
  - Tool still running in the machine, currently 1448 pieces without resharpening



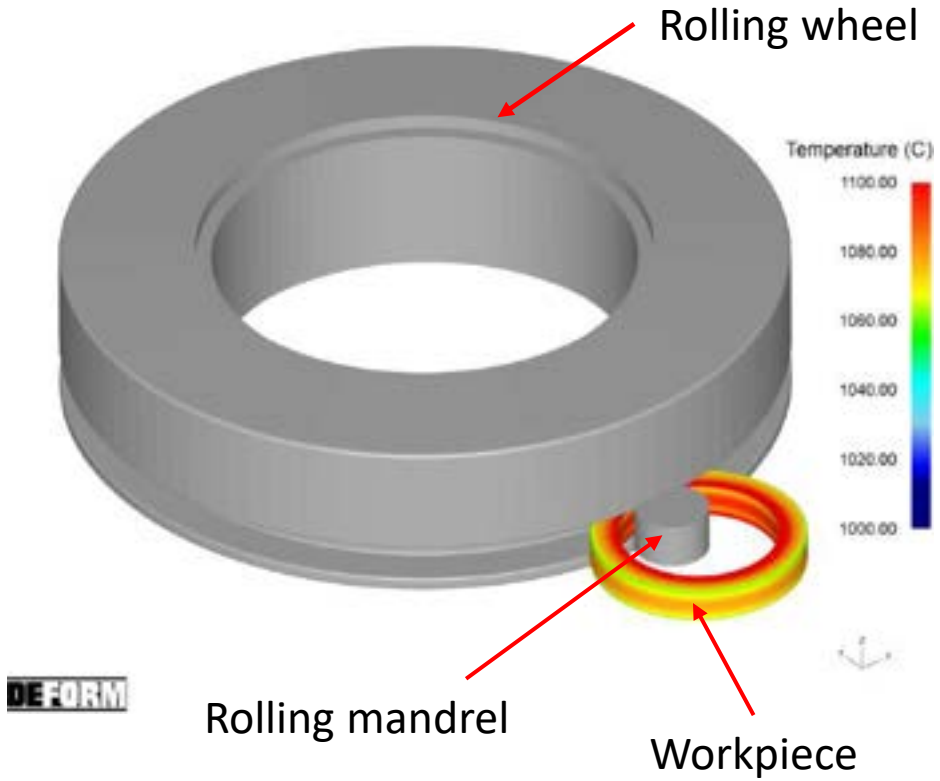


Rolling - rolling mandrel

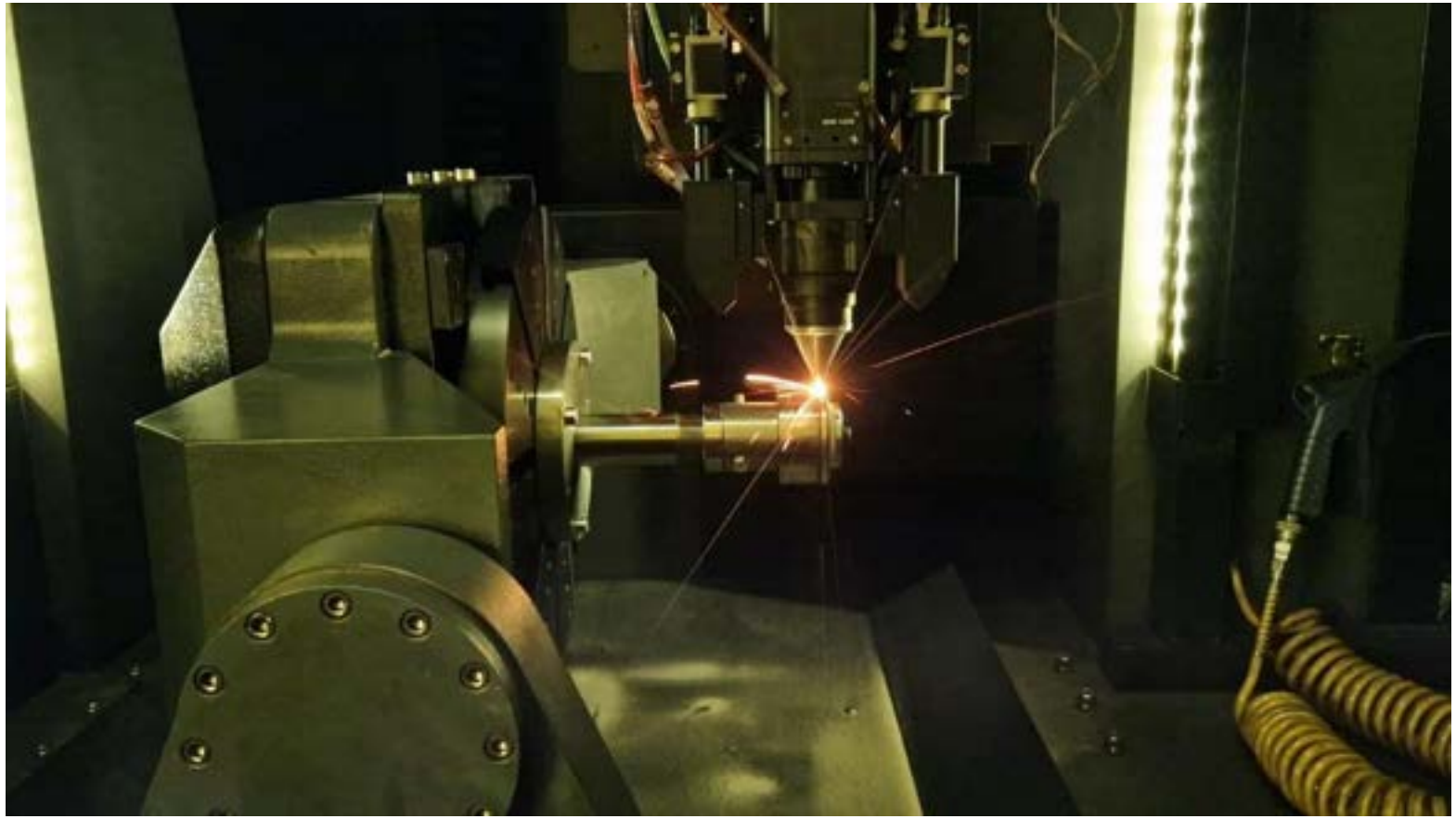


CAD model

Part after printing without machining



Rolling - rolling mandrel

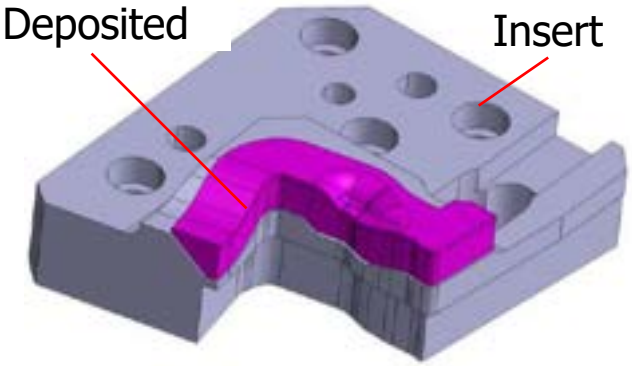


Insert for cutting tool

PWO Czech Republic a.s.

- Functional shearing surface for cutting material S500MC
- Base material: DIN 1.2312
- Deposited material: M2
- Tool life: 79 285 pcs
- Deposited with preheating to 500 °C

Preheating the tool in the printer



CAD model

After deposition

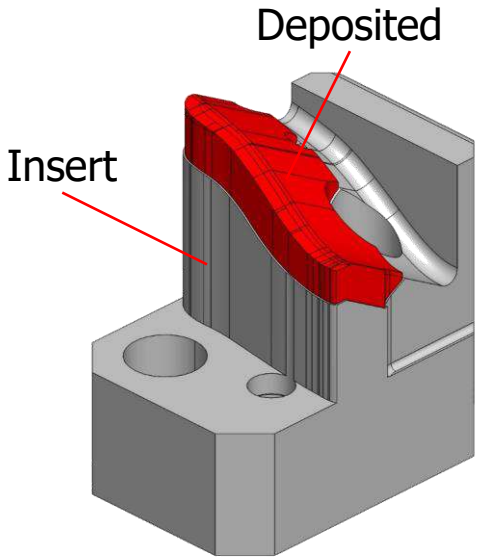
Final shape after machining

After 79285 pc

Insert for cutting tool

PWO Czech Republic a.s.

- Functional surface of sheet metal cutting tool B19837
- Base material: DIN 1.2312
- Deposited material: M2
- Tool life: 260,000 pieces
- (old technology max. 50,000 pieces)
- Deposited with preheating to 500 °C

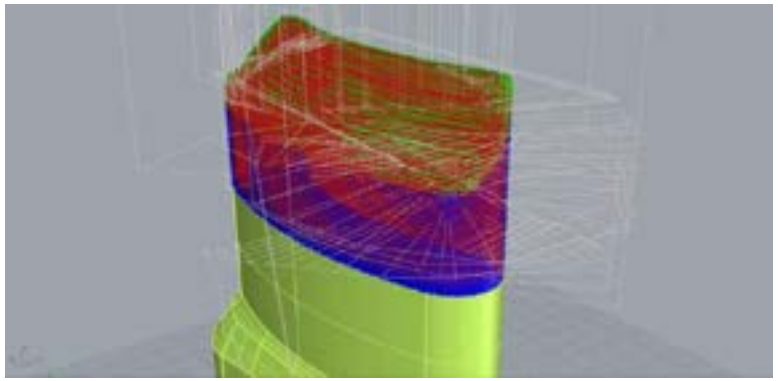


Light damage after 190 100 pcs, there will be re-sharpening and further use of the tool.

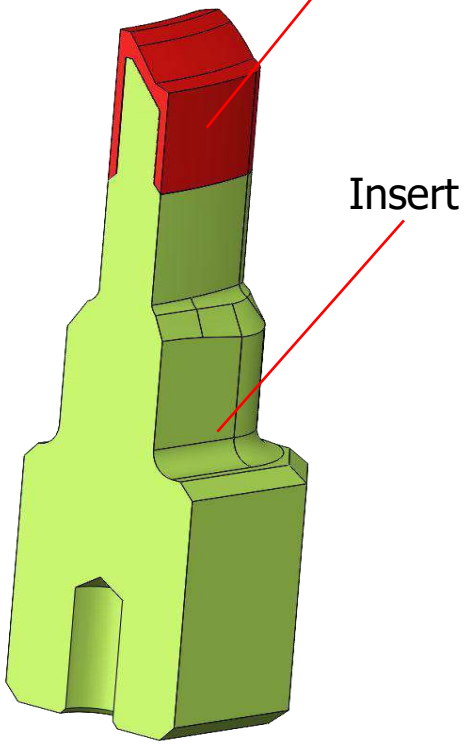
Insert in machine

Punching mandrel

- Combination of 3 and 5 axis deposition
- Deposited layer of Nimonic 80A
- Total of 4 pieces in the disc punching machine
- 3,000 forgings forged



CAM deposition preparation



Deposited part of the mandrel

Demonstration of 3 and 5 axis punch mandrel deposition

“Already connected”

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Multidisciplinary utilisation of virtual and augmented reality: challenges, benefits, implementation

ALENA LOCHMANNOVA

VR script & Didactics Specialist, XR Institute

Introduction

Extended Reality Institute

INDUSTRY
HR
ERGONOMY
TECHNOLOG

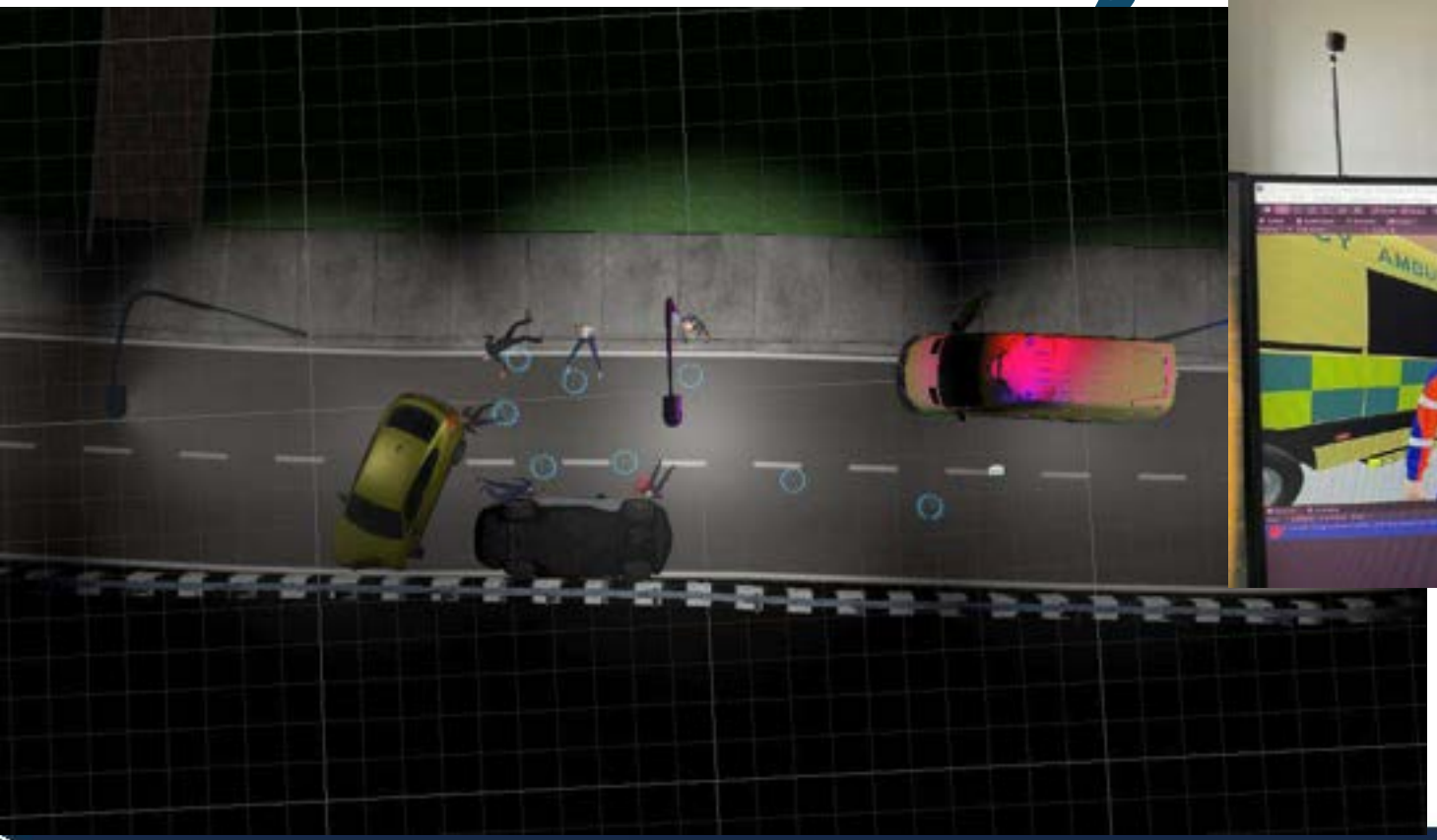
Medical
Training
School

- Technology company founded in 2016
- Orientation to consulting in the field of industrial engineering
- Since 2019, the company's main focus is on research
- Applied research, industrial research and experimental development in the fields of virtual and augmented reality and ergonomics
- Sectors: industrial production, logistics, administration, healthcare, education and security forces

VR and AR laboratory

- Creation of specially focused virtual and augmented reality applications
- Main HW: Meta Quest 2
- Gesture control - hand tracking
- Control software platform

Project: Rescue system training in virtual reality



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Rehabilitation projects

- Virtual reality and kinesthetic illusions in rehabilitation
- Rehabilitation as prevention
- Digital system for the rehabilitation of movement disorders of central origin in children using augmented reality

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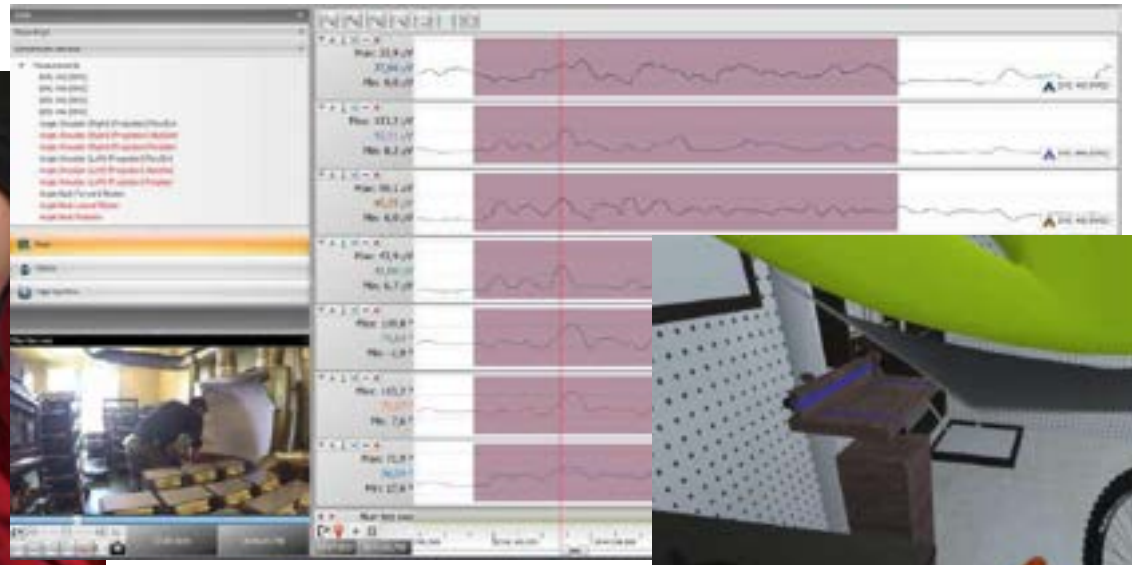
From industry to cycling...



....to crime scene and police

“Shaping the future with modern technology.”

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SESSION 4: Panel Discussion: Fostering Collaboration among Clusters and Innovation Actors at Regional, National, and International Levels

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Panel Discussion: Fostering Collaboration among Clusters and Innovation Actors at Regional, National, and International Levels

JITKA VOCASKOVA– European Commission, DG GROW

KRISTINA SERMUKSNYTE-ALESIUNIENE – European Cluster Manager of the Year 2022, DIH Coordinator/Cluster Manager, AgriFood Lithuania DIH

THOMAS RAMMING – Material and production, Project manager, Bayern Innovativ GmbH

BRETISLAV SKACEL – Cluster Manager, CREA Hydro&Energy

LUBOS KOMAREK – Chairman of the Board of Directors, NANOPROGRESS

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SITE VISITS
and
HopLink: Brews & Business Networking Night at the local Brewery

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