WELCOME
Welcoming address and setting the scene: Introduction by the organisers
Welcoming address and setting the scene: Introduction by the organisers

Renata Pfefferova
European Cluster Collaboration Platform / National Cluster Association (NCA)
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.
Visit the ECCP website and follow us on social media

www.cluster collaboration.eu

@Clusters_EU

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 Facilities

FZU Slovanka

FZU Cukrovarnická

FZU – HiLASE Laser Center in Dolní Břežany

Joint Laboratory of Optics – FZU & UPOL
CLUSTERS MEET REGIONS

CZECH CLUSTERS AS LEADERS OF GLOBAL DIGITAL AND GREEN ECOSYSTEMS

PRAGUE, CZECH REPUBLIC
23 - 24 OCTOBER 2023

EUCLUSTERS MATCHMAKING EVENTS

NEXT GEN EU
JIRI HERINEK, President, NCA
&
LUBOS KOMAREK, Vice-chairman, CEDEG
SESSION 1: Czech Clusters as Leaders of Global Digital and Green Ecosystems

Welcome to the Czech Republic
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
Domains of Specialization according to the existing RIS3 Strategy

- **Life Sciences** – biotechnologies, biomedicine, pharma
- **Creative industries** – digital media, artistic 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

Supporting startups and SMEs based on quadruple helix model
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.”
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
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
THANK YOU
The Cluster Landscape in the Czech Republic: Nurturing Collaboration and Innovation
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
Jiri Herinek
president
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.
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 klastrorých / výzkumných a podpůrných organizací
cluster / research and support organisations

884/207 firm / ostatních členů
companies / other members

275 tis členů / členů
Total number of employees in member organisations
Czech Cluster Organisations cover near all Industrial Ecosystems
Map of the clusters in the Czech Republic and the members profiles

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
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.
Czech Golden Cluster and the Best Projects of the Year announcement
Czech Golden Cluster
2022
National Cluster Association awards

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
National Cluster Association awards

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
National Cluster Association awards

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
National Cluster Association awards

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
National Cluster Association awards

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
National Cluster Association awards

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
THANK YOU

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

www.nca.cz

@NAsociace

National Cluster Association - CZ

Národní klastrová asociace - National Cluster Association CZ
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.

Source: ECCP (2023), own elaboration based on Eurostat.
Czechia’s national innovation & regional competitiveness performance

EIS: CZ – Czechia as an “Moderate Innovator“

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

Source: Regional Innovation Scoreboard 2023
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 organisation with 101-150 members (3%; ØEU: 7%)

Collaborative Areas: Partnering for projects; internationalisation; digitalisation

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

<table>
<thead>
<tr>
<th>INNOSUP-1</th>
<th>ESCP-4i</th>
<th>ESCP-4x</th>
<th>ESCP-S3</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Horizon 2020 Initiative</td>
<td>- COSME initiative</td>
<td>- COSME initiative</td>
<td>- COSME initiative</td>
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<tr>
<td>- Development of new-crossectoral industrial value chains across the EU</td>
<td>- Development and implementation of joint internationalisation strategies to support SME internationalisation</td>
<td>- Boost the cross-cluster networking and learning within the EU and development of cluster management excellence</td>
<td>- Boost cluster cooperation in specific thematic areas in the field of regional smart specialisation strategies</td>
</tr>
<tr>
<td>- 2 clusters involved in 3 different projects (IMPACT&amp;GT, Amulet, Vida)</td>
<td>- 6 clusters involved in 9 ESCP-4i projects</td>
<td>- 5 clusters involved in 7 ESCP-4x projects</td>
<td>- 2 clusters participated in 2 ESCP-S3.</td>
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2021-2027 funding period

<table>
<thead>
<tr>
<th>Euroclusters</th>
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<tr>
<td>- Single Market Programme</td>
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<tr>
<td>- Support the implementation of the EC industrial strategy through cross-sectoral, interdisciplinary and trans-European cluster initiatives</td>
</tr>
<tr>
<td>- 5 clusters involved in 5 Euroclusters (CirCluWater, RESIST, PIMAP4Sustainability, INGENIOUS, Rural Tourism)</td>
</tr>
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</table>

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

- **CirClInWater**: addressing the lack of water-smart solutions in the most pressing and vulnerable industries in the EU ecosystem.

- **EU Rural Tourism**: establishing a transnational base for rural tourism SMEs by combining the expertise of local tourism clusters with that of partners in the information and networking field.

- **INGENIOUS**: assisting energy-intensive industries in adapting to the twin transition and penetrating key markets

- **PIMAP4Sustainability**: enhancing the innovation potential of industries in the metalworking and aerospace sectors by leveraging KET technologies and photonics.

- **Resist Eurocluster**: aims to provide targeted services designed to support the green and digital transitions of the automotive, manufacturing and digital industries.

- **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

Contribution of competencies of Czech cluster organisations to the priority areas

- Advanced machinery/technologies for globally competitive industry
  - very high contribution: 7
  - high contribution: 1
  - some contribution: 1
  - low contribution: 1
  - very low contribution: 1
  - none: 1

- Healthcare, advanced medicine
  - very high contribution: 3
  - high contribution: 2
  - some contribution: 2
  - low contribution: 2
  - very low contribution: 2

- Sustainable agriculture and environmental sector
  - very high contribution: 3
  - high contribution: 1
  - some contribution: 2
  - low contribution: 4

- Digital technologies and electrical engineering
  - very high contribution: 1
  - high contribution: 3
  - some contribution: 4
  - low contribution: 3

- Cultural and creative industries
  - very high contribution: 3
  - high contribution: 2
  - some contribution: 1
  - low contribution: 4

- Transport for the 21st century
  - very high contribution: 2
  - high contribution: 2
  - some contribution: 3
  - low contribution: 1
  - very low contribution: 3

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

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
Panel Discussion: Practice of the Local Collaboration
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
NETWORKING LUNCH
SESSION 2: Modern Digital Solutions and High Technology: Harnessing AI and Cybersecurity in the Manufacturing Sector
Introduction to the topic

Dr. IVO RIHA
Chairman of the Board of CEDEG
Vice President of NCA
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
Presentation of Session 2 speakers...
The Bittersweet Vision of Computer Vision

Lukáš Benzl
Executive Director
How many cameras does the municipal camera system have in Prague?
Monitoring center
Monitoring center somewhere in China
What's bittersweet about that?
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. 😊
How is it possible?
Machine vision
Computer vision
SW libraries, SaaS, platforms, end-to-end
The end of privacy in the name of business?
- Remote biometric identification
- Biometric categorization systems
- Predictive policing systems (profiling)
- Emotion recognition systems
- And more...
It is important to see the good as well
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?
THANK YOU

Visit the Czech AI Association website and follow us on social media

https://asociace.ai/

@asociaceai

Česká asociace umělé inteligence

FB Česká asociace umělé inteligence
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)

2016: 0.61
2017: 0.70
2018: 0.86
2019: 1.16
2020: 2.95
2021: 5.99
2022: 8.44
2023: 11.50
2024: 14.57
2025: 17.65
2026: 20.74
2027: 23.84

Source: Statista, FBI, IMF
Cyber security context

War moves into virtual space

Cyber security spending on the rise - Really?

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
Identity and access manager

- Citizen ID/EiDAS
- JIP/KAAS
- BankID
- Facebook
- Google

Applications
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
THANK YOU

Visit the IdStory website and follow us on social media

www.idstory.com

IdStory - the story of your identity

our_idstory
Digitisation of small and medium-sized enterprises

ING. ZDENKA DOLEZALOVA
Manager of EDIH NEB
AIM: ACCELERATE DIGITAL TRANSFORMATION OF:

- SMALL-MEDIUM ENTERPRISES
- SMALL MID-CAPS
- PUBLIC ORGANIZATION
European Digital Innovation Hub Northern and Eastern Bohemia (EDIH NEB)

co-funded by Czech Recovery Plan
Consortium members
Our services

TEST BEFORE INVEST

SUPPORT TO FIND INVESTMENT

"ONE STOP SHOP" for DIGITIZATION

DIGITAL ACADEMY

BUILDING INNOVATION ECOSYSTEM
Subjects of digitalization

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

TEST BEFORE INVEST

BIO BUSINESS INTELLIGENCE DATA MANAGEMENT ADDITIVE MANUFACTURING
AUTOMATION INTERNET OF THINGS SMART FACTORY
THANK YOU

Visit the EDIH-NORTHEAST website and follow us on social media

www.edih-northeast.cz

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

FB Evropský digitální inovační hub - EDIH Northeast
KRISTINA SERMUUKSNYTE-ALESIUNIENE

European Cluster Manager of the Year 2022, DIH Coordinator/Cluster Manager, AgriFood Lithuania DIH
THANK YOU
Visit the AgriFood Lithuania DIH website and follow us on social media

www.agrifood.lt
@AgriFoodDIH_LTU
AgriFood Lithuania
FB AgriFood Lithuania
SESSION 3: Exploring Real-World Examples and Implementation of Clean Technologies, 3D Printing and VR Industry
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”
THANK YOU

Visit the Klastr MECHATRONIKA website and follow us on social media

www.klastrmechatronika.cz/
Klastr MECHATRONIKA
Klastr Mechatronika
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

<table>
<thead>
<tr>
<th>Year</th>
<th>Description</th>
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<tbody>
<tr>
<td>1995</td>
<td>Foundation</td>
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<tr>
<td></td>
<td>• Offensive Zukunft Bayern (“Future Initiative Bavaria”)</td>
</tr>
<tr>
<td></td>
<td>• More than 27 Years of Success</td>
</tr>
<tr>
<td>GmbH</td>
<td>(limited company)</td>
</tr>
<tr>
<td></td>
<td>• Organisation for Innovation, Technology and Knowledge Transfer</td>
</tr>
<tr>
<td></td>
<td>Shareholder: LfA Förderbank Bayern</td>
</tr>
<tr>
<td>Supervisory Board &amp; Board of Trustees</td>
<td>• Representatives from Business, Science and Politics</td>
</tr>
<tr>
<td></td>
<td>Chair of Supervisory Board: Hubert Aiwanger, Bavarian State Minister of Economic Affairs</td>
</tr>
<tr>
<td></td>
<td>Chair of Board of Trustees: Dr. Hans-Otto Feldhütter (Fraunhofer)</td>
</tr>
<tr>
<td>32 Mio. €</td>
<td>Annual Revenue</td>
</tr>
<tr>
<td></td>
<td>• Institutionally funded</td>
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<tr>
<td></td>
<td>• Project funding</td>
</tr>
<tr>
<td></td>
<td>• Orders</td>
</tr>
</tbody>
</table>
Bayern Innovativ

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

- Network comprises more than 32,000 companies and over 75,000 active contacts

- "Networks and Thinknet.Bayern" division
  Digitalisation | Mobility | Energy | Health | Material & Production

- "Consulting and support" division
  Funding advice & project sponsorship | patent & ce standard advice | technology and innovation management | technology and innovation marketing | cultural and creative industries
Bayern Innovativ

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

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

**MATERIAL & PRODUCTION**

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

**DIGITIZATION**
Z.D.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
Bayern Innovativ

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

Innovation network and Thinknet.Bayern
Bayern Innovativ

Our Thinktank Network in Bavaria

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

Communication, Cooperation, Qualification, International
Contacts across disciplines and industries
Contacts with research and transfer institutions
National and international networking events
Cluster Mechatronik & Automation

Distribution
- NEO & Honorary members: 4%
- Others: 86%
- University / Research Institute: 11%
- SME: 67%
- GM: 20%
- GB: 13%
Cluster Mechatronik & Automation

Business areas
partners needs and clusters offerings

Show competence. Recognize trends.

Communication

Cooperation

Securing skilled workers. Develop employees.

Qualification

International

Share experience. Innovate together.

Increase visibility. Combining know-how.
Cluster Mechatronik & Automation

Communication
- Media
- Events
- Trade fairs

Cooperation
- Workshops
- Working groups
- Projects

Qualification
- Develop employees
- Share knowledge
- Accompany transformation

International
- Increase visibility
- Build bridges
- Harmonize services
Cluster Mechatronik & Automation

- Production Security
- Additive manufacturing
- Drive technology
- Robotics
- Artificial intelligence
- Mechatronic modularization
Common cross-border projects
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?
What’s next?

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

Big plans, big enthusiasts!
Great partnership!
“We want to do more together”
THANK YOU

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www.bayern-innovativ.de

Bayern Innovativ GmbH

Bayern Innovativ GmbH
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 financial 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.
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
Objective: replacement of existing steel jaws with lighter ones

- Topologically optimised jaws
- Material: Ti6Al4V
- For flat and round specimens
Simulation - performance

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

- Simplification of geometry to axisymmetric
- Tool material model: elasto-plastic
- Strength calculation with temperature consideration
- Damage model: Cockroft + Latham
Directed Energy Deposition (DED)
Analyzing

Cutting plan

Mechanical properties

Metallographic analysis – Nimonic 80A

Elongation [%]

Stress [MPa]
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

- 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

- 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 wheel

Rolling mandrel

Workpiece
Rolling - rolling mandrel
Insert for cutting tool

- 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

Final shape after machining

After 79285 pc

Deposited with preheating to 500 °C
Insert for cutting tool

- 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.
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 layer

Insert

Deposited part of the mandrel
Demonstration of 3 and 5 axis punch mandrel deposition
“Already connected”
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COMTES FHT a.s.
Multidisciplinary utilisation of virtual and augmented reality: challenges, benefits, implementation

ALENA LOCHMANNOVA
VR script & Didactics Specialist, XR Institute
• 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
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
From industry to cycling...
to crime scene and police
“Shaping the future with modern technology.”

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

JITKA VOCASKOVA – European Commission, DG GROW
KRISTINA SERMUUKSYNE-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
WRAP-UP
SITE VISITS
and
HopLink: Brews & Business Networking Night at the local Brewery
THANK YOU