TECHNICAL UNIVERSITY OF KOŠICE

TECHNICAL UNIVERSITY of KOŠICE

Its mission and participation in H2020 programme presented by introduction of the project MIDIH

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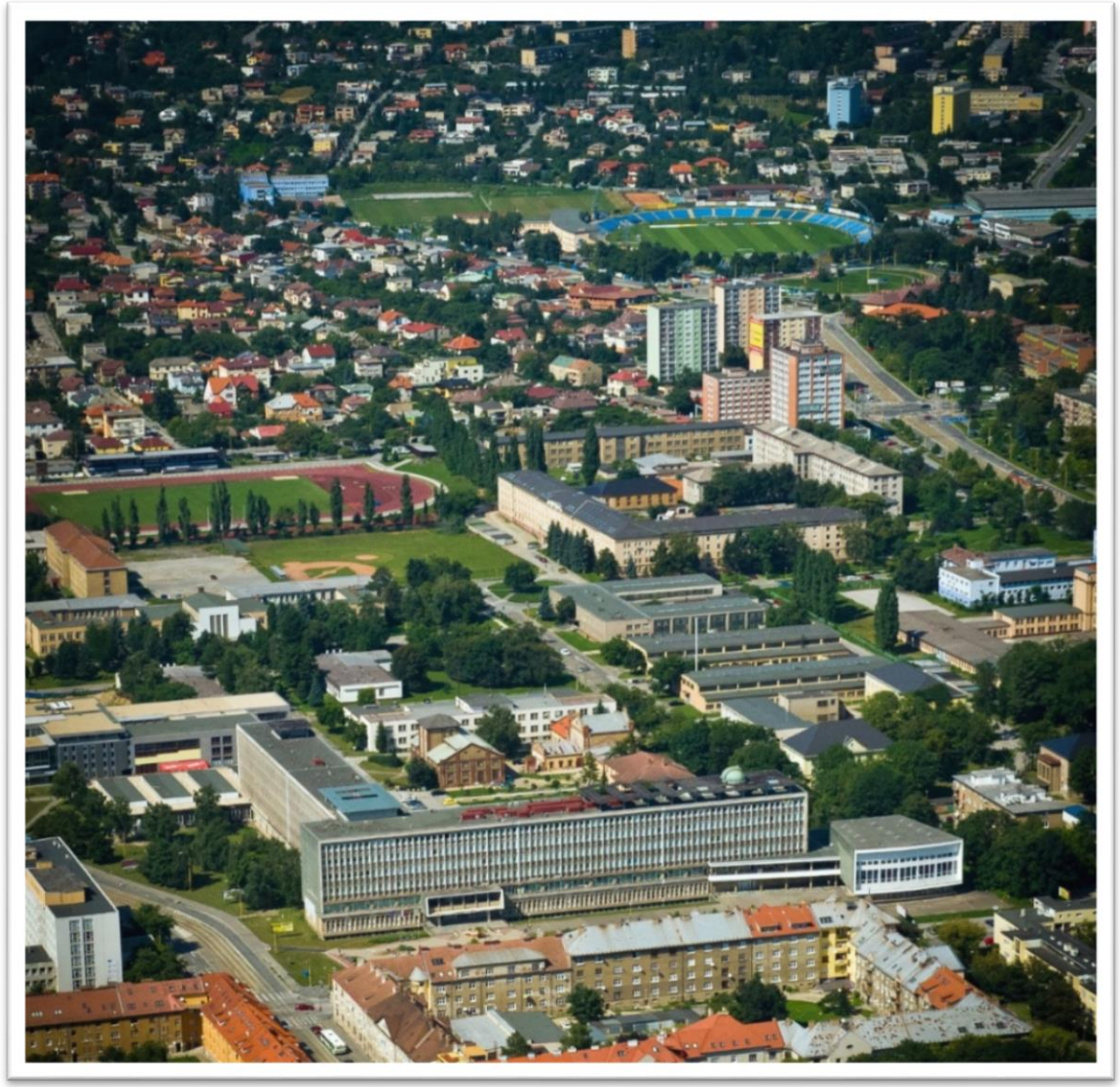
Prešov; 19. Jun, 2019



Cities	2
Campuses	3
Buildings	80
Area	43 ha

TUKE Campus

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PUBLICLY VISIBLE

Area	43 ha
Cities	2
Campuses	3
Buildings	80
Alumni	87 520

GOOD STUDENT/TEACHER RATIO

9 658 students, **808** teachers

11 % from abroad, **40** countries

INTERESTING COMPOSITION of FACULTIES

1. **Mining, Ecology, Process Control and Geotechnology** (1952)
2. **Materials, Metallurgy and Recyclation** (1952)
3. **Mechanical Engineering** (1952)
4. **Electrical Engineering and Informatics** (1969)
5. **Civil Engineering** (1977)
6. **Economics** (1992)
7. **Manufacturing Technologies (campus in Presov)** (1992)
8. **Arts** (1998)
9. **Aeronautics (former University of military)** (2005)

- **171** mil. EUR total assets
- **74** mil. EUR total revenue FY 2017

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TUKE basic statistics

Basic mission of the university

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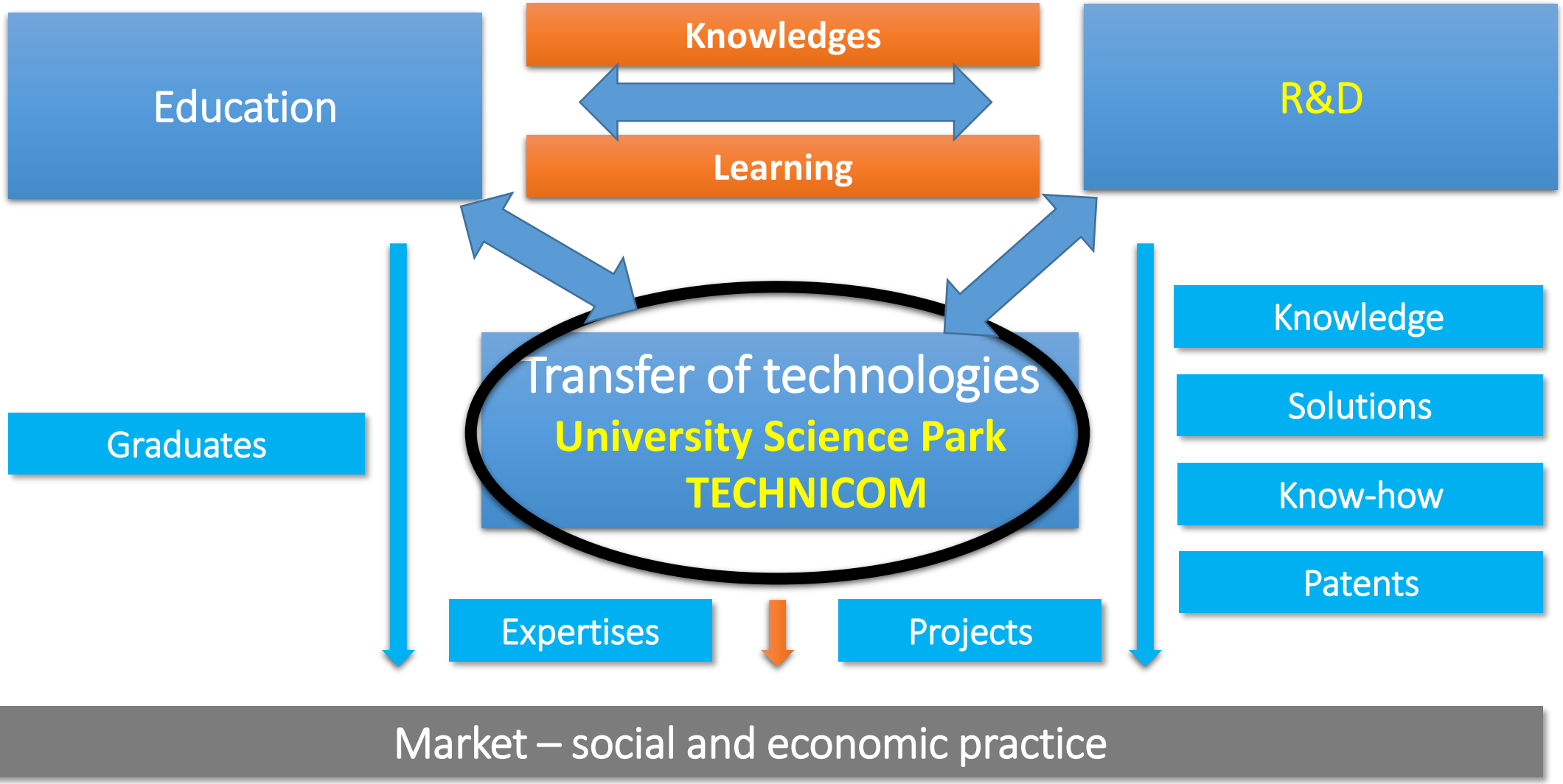

Transfer of Technology (TT) / Research background at TUKE

Six centres of excellent research and development:

- **Technologies for material processing and exploitation (mining, material science and metallurgy);**
- **ICT for "cybernetic space" (todays CPS /IoT space);**
- **New materials for automotive electronics (todays orientation on intelligent components and systems in the framework of "Industry 4.0"concepcts);**
- **"Smart" mechanical engineering technologies and products development, production and distribution with "zero" emerging risks;**
- **Progressive material, constructions and technologies for civil engineering;**
- **Biomedical engineering and additive technologies (collaboration with UPJŠ).**

Technology transfer (TT), is a complex matter …

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- **The historical, legal, economic, cultural and political circumstances are behind** the efficiency of the transfer of knowledge and products obtained by research into practice in the country;
- **Research and development results** are made available to society through their commercialization;
- **Intellectual property rights (IPR) –>** key tool to promote UNIVERSITY-INDUSTRY W2W collaboration + partnerships
- **Our university must strive to create an appropriate climate** for the effective transfer of new knowledge into industrial and social practice.
- **Encouraging TT at the TUKE => a couple of years ago ... Milestones: 1998 (Cassovia R&T Park - naive attitude - a fraudster / hoaxer has earned a few thousand Euros), 2000 (Regional association + design of properties), 2010 (Construction of UVP TECHNICOM building started + UCITT created) and 2013 (project "UVP TCHNICOM …" was launched).**

PROJECT TITLE:

University Science Park TECHNICOM for Innovation Applications Supported by Knowledge Technology

Operational Programme Research and Development

Priority axis 2: Support to research and development

Measure 2.2: Transfer of knowledge and technology from research and development into practice.

Code: OPVaV-2011/2.2/01-PN ; **ITMS: 26220220182**

RECIPIENT:

Technical University of Košice (TUKE)

PARTNERS:

University of Pavol Jozef Šafárik in Košice (UPJŠ in Košice)

Prešov University in Prešov (PU in Prešov)

BUDGET:

EUR 41,984,703.52

Eligible costs: EUR 41,735,688.04

Non-returnable financial subsidy: EUR 39,648,903.64

DURATION:

01/06/2013 … 30/04/2018 ?!?

OP VaV / op R&D _ 2007-2013 (Phase 1) and OP Val / OP R&I _ 2014-2020 (Phase 2)

STRATEGIC GOAL OF THE PROJECT (MISSION): „*TO BUILD USP TECHNICOM AS AN INTERNATIONALLY RECOGNIZED CENTRE FOR RESEARCH AND TECHNOLOGY TRANSFER IN THE AREAS OF INTEREST BY MEANS OF INNOVATIVE APPLICATIONS SUPPORTED BY KNOWLEDGE TECHNOLOGY*"

Specific objectives of the project:

1) **Organizational and managerial facilitation of the establishment and operation of USP TECHNICOM on the basis of high-quality scientific management**
2) **Building the physical and functional infrastructure of the park as a sophisticated research and technology entity**
3) **Cutting-edge applied research and development in the selected fields of science and technology (by 36 Pilot Projects):**
    1. **Information and communication technologies,**
    2. **Electrical engineering, automation and control systems,**
    3. **Mechanical engineering,**
    4. **Civil engineering (construction, transport, …),**
    5. **Environmental engineering (mining, metallurgy, …),**

Taking into account the corresponding social and human dimensions (impact).

The solution is focused on the coordination and facilitation of 36 (26+6+4) selected PILOT PROJECTS of applied research and development in priority areas of USP TECHNICOM

in compliance with the OP R&D call:

"The transfer of the relevant knowledge and technology from research and development into social and economic practice."

What was finally created

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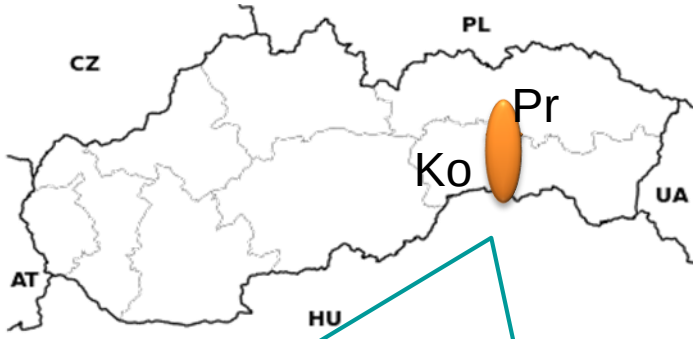
University science park TECHNICOM at TUKE (UVP TECHNICOM) officially open at 3. October, 2017, as an innovation ecosystem providing support services (close to a IHUB mission):

- **ONE STOP SHOP - expected and required support for innovation and technology transfer of R&D knowledge and products (including support for intellectual property rights) ;**
- **"Win to Win" collaboration between academic and public research organisations and practice;**
- **Business acceleration of „Hi-Tech" companies through Spin-off, Start-up initiatives (realised at TUKEs´- Startup Centre and Incubator for 2014);**
- **Consultancy, expertise, technology intermediation and engineering services guaranteeing smart applications in the corresponding scientific and technological fields of industrial and social practice;**
- **Relevant education and training activities.**

Services are supported by stakeholders of the TUKE R&D and Innovation Ecosystem



Európska únia

Final global outcome of the "USP TECHNICOM .." project was (to date 30. Jun 2018) establishment of **the Association TECHNICOM (AT) as a platform for innovative applications supported by smart technologies,** which is **active network of 3 participating universities with similar University Science Park (USP) institutions.**

The TUKE with help of the UVP TECHNICOM, ***is leader and holder of the Association.*** **Partners are***: the Pavol Jozef Šafárik University in Košice (**UPJŠ**) through its Faculty of Science, and Prešov University (**PU in Prešov**) through its Faculty of Humanities and Natural Sciences.*

The **high-quality applied R&D**, innovation and TT at the Association TECHNJCOM, **are focused on the five fields of science and technology:**

1. **Information and communication technologies.**
2. **Electrical engineering, automation and control systems.**
3. **Mechanical engineering.**
4. **Civil engineering**.
5. **Environmental engineering (mining, metallurgy, water management**

USP TECHNICOM facilities: Competence centres and + internal partners centres:

- **Competency Centre for Knowledge Technologies Aimed at Smart Innovation of Production Systems in Industries and Services (KC ZATIPS / FFEE + FME|)** - Active RTD collaboration with seven High Tech companies. (The project supported by OP VaV / OP D&D / period: 2007-2013) => **MIDIH**, „Manufacturing Industry Digital Innovation Hubs“; 767498; Call: H2020 FOF-12-2017- ICT; typ IA (2017-2020); http://midih.eu/project.php

- **the VUKONZE (competence) Centre / FCE|** renewable energy recourses. The Centre includes 13 specific laboratories from TUKE and Slovak Academy of Science in Kosice, (The project supported by OP VaV / OP D&D / period: 2007/2013);
- **+TUKE, representing by the Faculty BERG**, is an associated member of **KIC EIT RawMaterials** (from 2015) with leading position among associated members of this community. The **"Regional Innovative HUB of Košice"**, was set up in January 2018 by **the European Institute of Innovation and Technology (EIT)** under the "KIC" EIT RawMaterials at TUKE;

- + **Prototyping and Innovation Centre (PaIC)** at the Faculty of Mechanical Engineering. (Project UVP TECHNICOM + FME resources) => RIMA, „Robotics for Infrastructure Inspection and Maintenance; 824990, Call: H2020-EU.2.1.1/ICT-2018-1; typ RIA;(2019-2021); https://cordis.europa.eu/project/rcn/219072/factsheet/en

Activities of the USP TECHNICOM in area of "Business Acceleration Programme".
The advantage of the USP TECHNICOM allocation is access to the high quality R&D infrastructure and relevant mentoring support within TUKE

How to enter Startup centrum?

Project selection is realised by the competition: "Have you got an idea?"

Since 2014:

- **Eight rounds of innovative ideas competitions**
- **100 more** candidates entered presentations of their ideas;
- 40 "Ideas" were selected for 6 months period pre-incubation in the Startup Centre TUKE;
- 9 + 1 SMEs take incubation process at the TUKE Incubator.

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Innovation and Technology transfer

TUKE H2020 Projects ……. at 1.Janury. 2019

- Research and Innovation Action (RIA) …….. 6
- Innovation Action (AI) …… 2
- Coordination and Support Action (CSA) …….. 1
- Marie Sklodowska-Curie Action (MSCA) ……..3
- Accompanying measures (AM) …….. 1

Selected Projects with relation to "smart" solution and digitalisation

1. **MIDIH**, „Manufacturing Industry Digital Innovation Hubs"; 767498; Call: H2020 FOF-12-2017- ICT; typ IA (2017-2020); http://midih.eu/project.php
2. **PICASO**, „A Personalised Integrated Care Approach for Service Organisations and Care Models for Patients with Multi-Morbidity and Chronic Conditions"; 689209, Call: H2020-PHC-2015-single-stage (SC1), RIA (2016-2019); https://www.picaso-project.eu/news/
3. **MONSOON**, „MOdel based coNtrol framework for Site-wide OptmizatiON of data-intensive processes; 723650, Call: H2020, the SPIRE Public-Private Partnership ,2016; typ RIA (2016-2019); https://www.spire2030.eu/monsoon (SPIRE - Sustainable Process Industries);
4. **PLUGGY,** "Pluggable Social Platform for Heritage Awareness and Participation"; 726765, Call: H2020-SC6-CULT-COOP-2016 , typ RIA (2016-2019); https://www.pluggy-project.eu/
5. **RIMA**, „Robotics for Infrastructure Inspection and Maintenance; 824990, Call: H2020-EU.2.1.1/ICT-2018-1; typ RIA;(2019-2021); https://cordis.europa.eu/project/rcn/219072/factsheet/en
6. **LessThanWagonLoad,** „Development of 'Less than Wagon Load' transport solutions in the Antwerp Chemical cluster"; 723274-1; Call: H2020-SC 4,MG-2016-2017);typ RIA;(2017-2020); http://lessthanwagonload.eu/index.htm
7. **CHROMIC**, „effiCient mineral processing and Hydrometallurgical RecOvery of by-product Metals from low-grade metal contaIning seCondary raw materials", 730471; Call: H2020-SC5-2016-OneStage; typ RIA; 2016-2020; http://www.chromic.eu/the-project/

Project MIDIH "**Manufacturing Industry** Digital Innovation Hubs", **want to be "one stop shop" of services, providing manufacturing industry with access to the most advanced digital CPS/IoT solutions supported by access to the active Case Studies of advanced industrial experiments, to pools of human and industrial knowledge and competencies, and access to "ICT for Manufacturing" market and financial opportunities.**

MIDIH Project mission:

MIDIH leverages networks of local Competence Centres and Regional or EU Digital Innovation HUBs , each specialised in peculiar aspects of the CPPS/IIOT (Cyber Physical **Production** System / **Industrial** Internet of Things) technologies and able to attract, mentor and nurture local Manufacturing SMEs towards Industry 4.0 projects, experiments and business -> **an one-stop-shop global marketplace** for “manufacturing industry” - CCs and DIHs network supported by:

- Developed **common open source platform (DIHWARE)** of **knowledge, methods, technologies and collaboration tools will be shared among the MIDIHs network (pan-European „digital“ ecosystem)** and allow cross-border fertilisation, continuous improvement and open innovation of local manufacturing industry.
- A set of developed **models and methodologies for the creation of regional DIHs supporting the efficient digital transformation of manufacturing companies in line with the Industry 4.0 strategy.**

Some items from H2020 project MIDIH "Manufacturing Industry Digital Innovation Hubs"

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Under the Digitising European Industry Initiative, 'Digital Innovation Hubs' (**DIHs**) have been **designed as mediation and engineering institute to support industrial businesses (**in particular SMEs and Mid-CAPs) **in their digital transformation**. **DIHs acting as a one-stop-shop, they provide of support services** to companies in their region and beyond by allowing them **to access knowledge, methods and software, technology platforms, prototyping solutions and testing facilities.**

- They operate and help SMEs **embrace digital transformation (with respect to Industry 4.0 strategy for CPS/IoT systems),**
- They **interact with regional, national and EU ecosystems**,
- and by **their ecosystem improve impact though coordinated access to EU, national and regional funding.**

The effectiveness of DIH services depends on the quality of its internal and external stakeholders.

The Competence Center is, **in this case, dedicated to the development of innovative projects in the adequate field of Industry 4.0 concepts for CPS/IoT systems**. CC mission is to provide companies (mainly SMEs + Mid-CAPs) in given industrial field with services including mainly:

-Supporting with information activities on Industry 4.0 and management of digital-assessment tools, in assessing their required level of digital and technological maturity;

-Implementation of innovation (RTD) projects by industrial research and experimental development ensuring by collaborating with customer companies, including: proof-of-concept activities; technological scouting and support for the choice of technologies (engineering service);

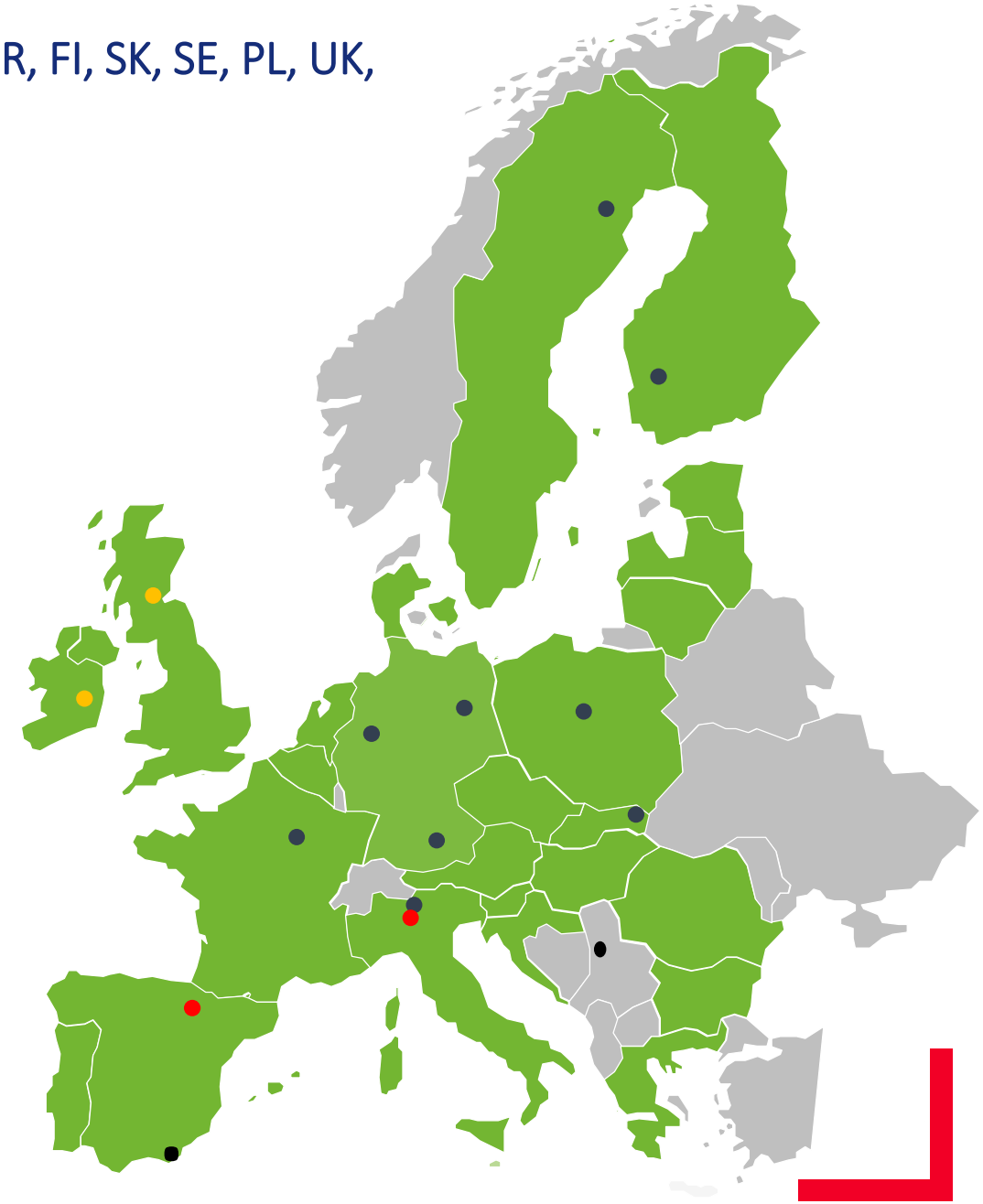
-**Participating in training activities** based on the analysis of use cases, **to promote and disseminate skills on Industry 4.0 within the enterprises.**

MIDIH Project Consortium : 21 partners from BE, IT, DE, FR, FI, SK, SE, PL, UK, IE, ES, RS (12 coutries).

- **9 CPS/IOT Competence Centers.**
- **2 Teaching Factories (PoliMi; INNOVALIA).**
- **2 Regional Manufacturing Digital Innovation Hubs (IMR/IR; USTRAT / UK).**

PLUS

- **2** Pan –European Digital Innovation Hubs
  EIT Digital, IDSA at *FhG IML.*
- 3 Industrial case-study providers
  (CRF)FIAT, (IML FhG - CC8)
  Thyssen , (NECO) Tivoly .
- 3 Open source digital platform providers
  Athos, Engineering SPA., FIWARE Foundation.
- Two IoT specialized SMEs
  - ***NISSA (Serbia) and HOPU (Spain).***



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The MIDIH Network of CCs:

CC1	**CPS/IOT Networks and M2M Communication c/o FhG FOKUS (Berlin CC)**
CC2	**CPS/IOT Trust Management and Cybersecurity c/o IMT (France CC)**
CC3	**CPS/IOT Modelling and Simulation and Digital Twin of CPS-enabled Production Systems c/o Fortiss (Munich CC)**
CC4	**CPS/IOT Real Time Streams Analytics c/o VTT (Finland CC)**
CC5	**CPS/IoT in Smart production systems and services c/o CC5/UVP TUKE (Slovakia CC)**
CC6	**CPS/IOT in Cloud Industrial Analytics Architectures and Tools c/o CEFRIEL (Italy CC)**
CC7	**CPS/IOT based Edge Computing and Local Clouds c/o LTU (Sweden CC)**
CC8	**CPS/IOT Data Value Chain Sovereignty in FhG IML (Dortmund CC)**
CC9	**CPS/IOT HPC-based Cloud Manufacturing in PSNC (Poland CC)**

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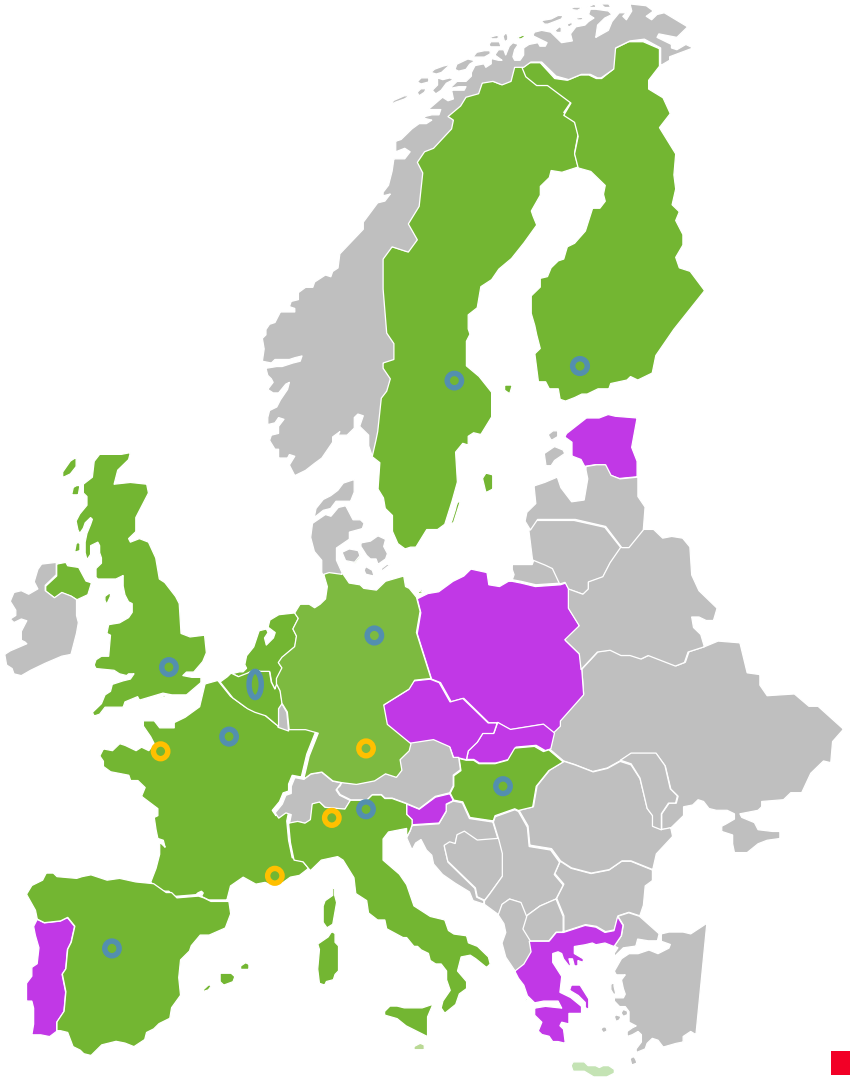
MIDIH Boosters – 2+1 pan-EU Digital Innovation Hubs or DI networks

1. **EIT DIGITAL**
2. IDSA network (International ~~Industrial~~ Data Space Association / Data Sovereignty) cca. 90 members

+ FIWARE Foundation _**network of Digital Innovation HUBs for Open Source Platforms / successful world-wide association**



- **9 co-location Centers + 4 Satellites in 9 countries hosting the national branches of EIT Digital Accelerator**
- **8 courtiers with ARISE Innovation DIGITAL Centers**

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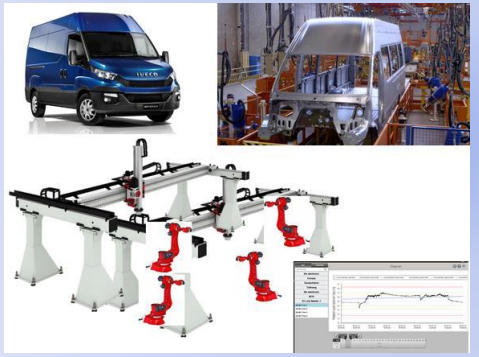
Experiments … 3 Lighthouse experiments inside of the project … AND cca. 16 + 16 industrial experiments provide by two MIDIH open Call's winners.

Predictive Maintenance in Automotive



CRF Scapa.

FCA
FIAT CHRYSLER AUTOMOBILES

Product-Service Systems in Cutting Tools

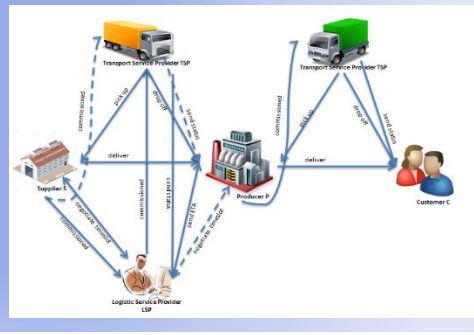
NECO S.A

TIVOLY

Logistics Interoperability in Steel Industry

INDUSTRIAL DATA SPACE ASSOCIATION

ThyssenKrupp



MIDIH Open Call 2 :

Deadline: 6th August 2019, at 17:00 Brussels local time;
Expected duration of participation: 6 Months
Indicative budget for MIDIH Call-1: € 960,000
Maximum funding request per proposal: € 60,000

https://midih.eu/opencall_2.php

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MIDIH Open Platform – DIHWARE – the illustrative scheme




COLLABORATION PLATFORM
for DIGITAL INNOVATION HUBS

Ideation Platform | Living Lab Innovation | Wikis & Fora | Social Networks | Websites Crawler | Search Engine

Access to Competencies	Access to Technology	Access to Experiments	Access to Knowledge	Access to Market
Assets Manager	OSS Catalogue	Lighthouse Experiments	Maturity Model	Ideas Incubation
Team Building	Reference Architecture	X-Border Experiments	Training & Formation	Business Acceleration
Partner Search	Applications Marketplace	kPIs Lessons Learned	6Ps Method Migration	Capital & Funding

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Thank you for attention

..... ????

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MIDIH MANUFACTURING INDUSTRY DIGITAL INNOVATION HUBS

SUCCESS in Framework programmes … or H2020 .. , or Horizon Europe, ...

It is always about personal engagement supported by the corresponding quality of available research (in most cases, as well + development / R&D) team.

- **acceptance** by the scientific community and practice;
- **active and, with a focus on the corresponding R&I programs, targeted engagement** in international scientific actions;
- **appropriate involvement in domestic and foreign research and professional** communities;
- **actively participation in Information Days and appropriate "internet**" (including social networks, …) **actions for relevant Calls** …;
- **contact with the National and EU Support Structures of Horizon 2020 …**
- **adequate knowledge and experience in the project management** (including finance management), in functionality of the Funding and Tenders Portal, ….
- …

Position in the project consortium: - **Active / non-passive participant** - if well "negotiated" will get at least "TASK" ..., or WP management if we professionally do! ... adequate knowledge of project management (management management, administration, professional guidance and coordination ...)

Project coordinator ... only after 3-5 successful participations in EU research projects ... attention: the project coordinator prepares and forms a consortium if the proposal passes so the project co-ordinates and manages .. it's good to have a scientific manager .... it is possible to engage a verified organization of project management .....