CTU
CZECH TECHNICAL UNIVERSITY IN PRAGUE

CZECH INSTITUTE OF INFORMATICS ROBOTICS AND CYBERNETICS CTU IN PRAGUE

CIIRC CTU
Research in Intelligent Manufacuring

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CIIRC in Nutshell

Center of Research Excellence: Linking excellence with applicability and applications of results

- **Building an AI Eco-System for Manufacturing**, but also **Smart Cities, Energy 4.0**, and **Health Care:**
  - **200+** researchers and **100 Ph.D.** students
  - **41 EU** projects, **61** national projects, **25** industrial contratcs since 2018
  - Budget 2021 – **15 mil. EUR**
  - CTU recognized as **#4 in Computer Vision** and **#8 in Robotics in Europe** (2022)
  - Participation **in 4 of 6 EU Centers of Excellence**

  - The core research facility: **Testbed for Industry 4.0** – a set of machines and algorithms which enable to build experimental flexible production lines and their parts, to develop, implement and verify novel solutions for Industry 4.0 needs

Building an AI Ecosystem

- **Key Project: Flagship RICAIP EU Project** (49 mil. EUR) - Teaming Program - **supports Testbed 4.0**:
  4 founding partners: CIIRC, CEITEC BUT Brno, DFKI Saarbruecken, ZEMA Saarbruecken, new partners: Fraunhofer IWU Dresden, TU Ostrava
- **National Center of Competence „Cybernetics and AI“:** 9.0 mil. EUR for 4 years
- Seat of the **National Center for Industry 4.0**
- **EU EIT Project “Manufacturing”:** 50 partners, funding for 5 years (330 mil. EUR)
- **European Digital Innovation Hub for AI:** the only one in the Czech Republic
- Seat of the Central-European **CLAIRE, ELLIS, GAIA-X** and **IDSA** offices
- CIIRC is building an **AI ECOSYSTEM of Academia-Industry cooperation** using combination of diverse forms of project funding – **NEW ROLE OF THE UNIVERSITY**

Testbed for Industry 4.0, CIIRC CTU in Prague

- State-of-the-art experimental environment for distributed production -1640 m2
- Inseparable part of the RICAIP Centre
- **R&D – Innovation – Education**
- Technology:
  - Reconfigurable assembly line with 6 robotic stations; 30+ robots, Flexible conveying system; Collaborative robots, Machining robots, Hybrid additive and subtractive Manufacturing, 3D printers (HP MJF, PolyJet...), Automatic warehouse, Robotic vision lab & more
- US-EU workshop on Intelligent Manufacturing, June 2-4, 2022

Click for VIDEO

RICAIP

Research and Innovation Centre
on Advanced Industrial Production

Testbed for Industry 4.0, CIIRC CTU in Prague

Progress & Future Trends

- **Strong linkage with industry** has been achieved: ŠKODA AUTO, Siemens and T-Mobile are the key partners, tens of SMEs are absorbing our solutions
- RICAIP is involved in the leading-edge discussions concerning **future trends in Industry 4.0** on European level:
  - **Explainable AI solutions for cooperation in hybrid robot-human teams**
  - **Integration of Machine Learning methods by using semantics**
  - **5G communication on the factory floor**
  - **Zero-error Production**
  - **Standardization**
- **AIQUAMA joint research project** focused on these topics has got the first funding from BMBF – 1,7 mil. EUR from July 2022, the funding from the Czech side is expected

European Cloud & Edge Continuum & SYSTEM INTEGRATON Industry

COMENIA
Campus for System Integration Industry

IPCEI – CIS
Important Project of Common European Interest

R&D APPLICATION FIELD
Commercial customer use-cases, R&D&I capacities

Various customers

INDUSTRIAL COMP. CLOUD
AI algorithms, use cases, repositories, computing hubs.

TRIX CONNECTIONS

CZECH INSTITUTE OF INFORMATICS ROBOTICS AND CYBERNETICS CTU IN PRAGUE

CERTICON

NEAR & FAR EDGE
Regional datacenter infrastructure for colocation, housing, IaaS

T-Mobile

Deutsche Telekom

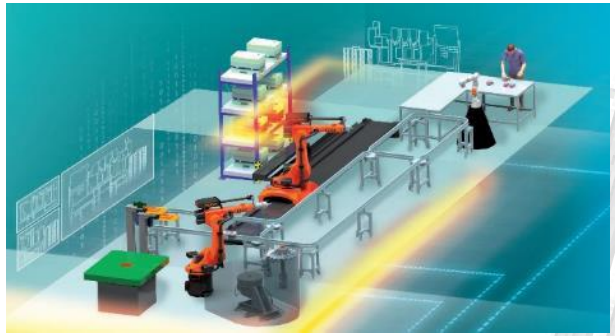
COMENIA Facilities

TRIX FAR EDGE PRAGUE (COMENIA LIGHTHOUSE)

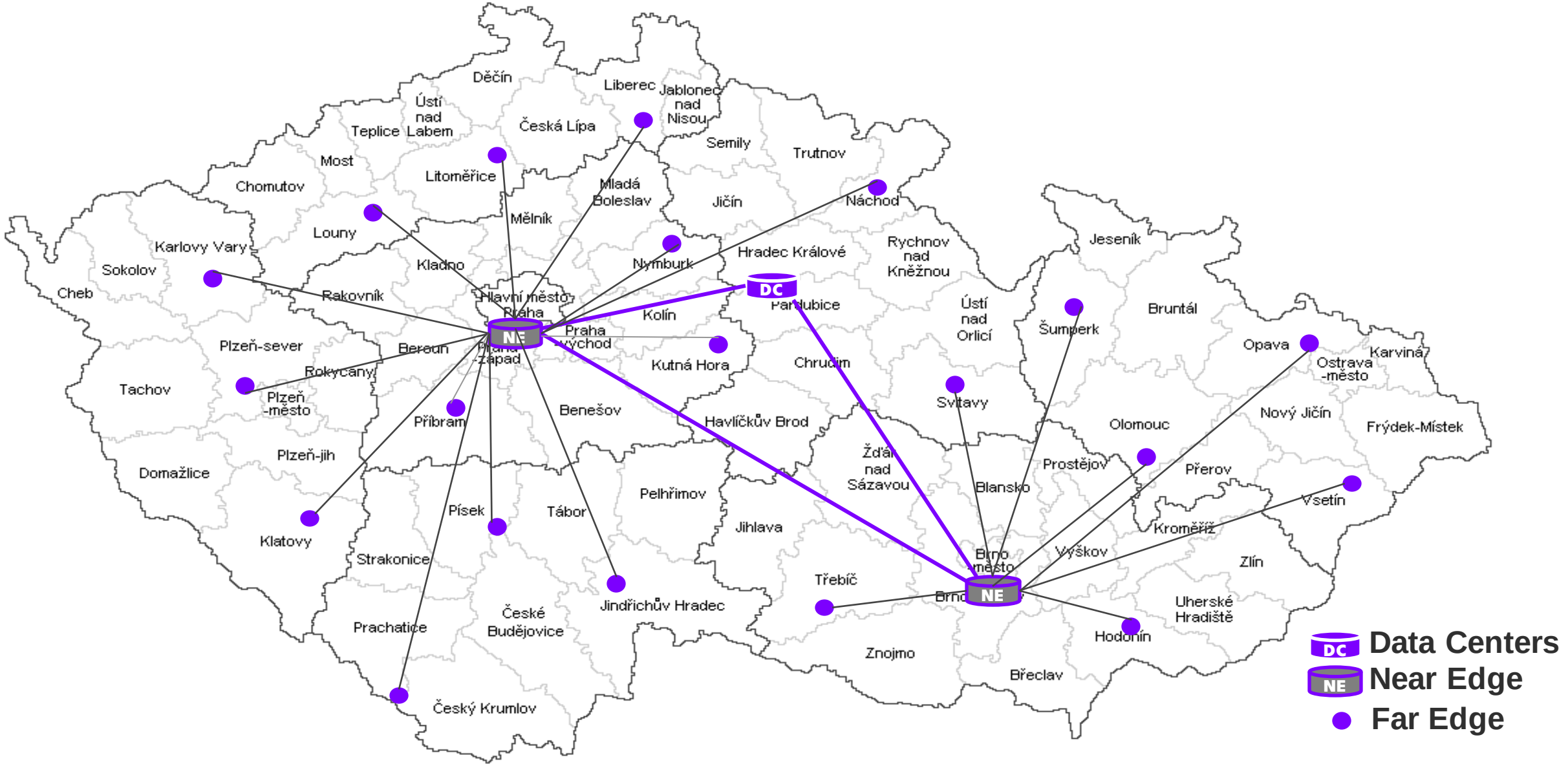
TM DATA CENTER OPATOVICE (COMENIA NEAR/CORE EDGE BOHEMIA)

COMENIA IoT Platform & CERTICON Orchestration & Optimization SW

CIIRC CTU ON PREMISE EDGE (INDUSTRY 4.0 Testbed)



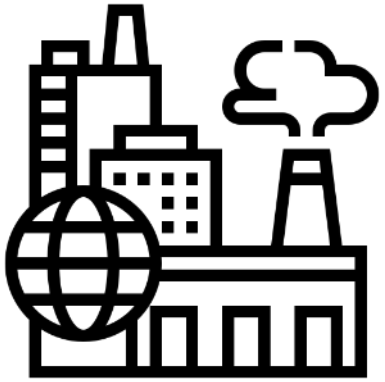
Network Model



COMENIA Ambition

COMENIA
Campus for System Integration Industry

- To build the very first large INDUSTRIAL CLOUD & COMPUTING R&D&I infrastructure in the Czech Republic & CEE – **481 mil EUR in 7 years**
- To address the market failure in CEE and mitigate massive capital, data and brain drain.
- To foster data driven **system integration industry** for Energy, Manufacturing, Logistics, and Pharma/Biotech.
- To keep industrial data in Europe. Secured & exploitable.



To create the ecosystem of trust between academia, public sector and application fields.

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Thank you for your attention!

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