



CTU in Prague, CIIRC, and the National Centre for Industry 4.0

Dr. Roman Holý
(lead by Prof. Vladimír Mařík)
CIIRC - Czech Institute of Informatics,
Robotics, and Cybernetics

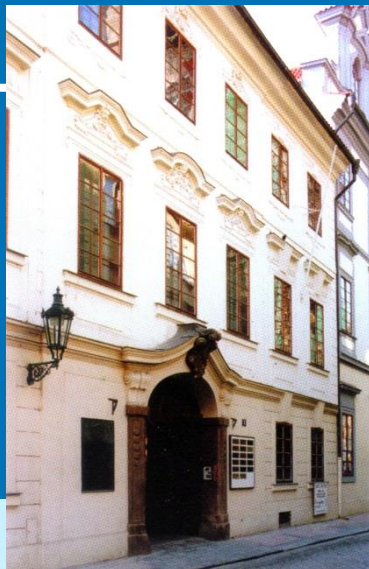
The 3rd RRI International Symposium
30th of November 2017





Czech Technical University in Prague

(Established 1707 – Oldest TU)





**NÁRODNÍ CENTRUM
PRŮMYSLU 4.0**

Structure of the University - 8 Faculties & 5 University Institutes



ČVUT
ČESKÉ VYSOKÉ
UČENÍ TECHNICKÉ
V PRAZE

- Faculty of Civil Engineering
- Faculty of Mechanical Engineering
- Faculty of Electrical Engineering
- Faculty of Nuclear and Physical Sciences
- Faculty of Architecture
- Faculty of Transportation Systems
- Faculty of Biomedical Engineering
- Faculty of Information Technology
- Klokner Institute
- Institute of Sports
- Masaryk Institute of Advanced Studies (MÚVS)
- University Center of Economically Efficient Buildings (UCEEB)
- Czech Institute of Informatics, Robotics, and Cybernetics (CIIRC)





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- **Based on experience – a new Institute of CTU established in 2013**
 - **CIIRC should play the role of the national center of excellence in the subject fields**
 - **8 research programs - departments:**
 - Robotics (Prof. Václav Hlaváč)
 - Intelligent Systems (Prof. Vladimír Mařík)
 - Industrial Informatics (Prof. Zdeněk Hanzálek)
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- Industrial Production Control (Prof. Michael Valášek)
 - Cyber-Physical Systems (Prof. Michael Šebek)
 - Cognitive Science and Biomedical Eng. (Dr. Lenka Lhotská)
 - Assistive Technologies (Prof. Olga Štěpánková)
 - Research Platforms: Center of Applied Cybernetics (Prof. Vladimír Kučera)
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- **The goal: State-of-the-art, competitive and self-sustainable institution**



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Key project activities of CIIRC



ČVUT
ČESKÉ VYSOKÉ
UČENÍ TECHNICKÉ
V PRAZE

AI4REason: ERC project aimed at automatic logic reasoning (Dr. Josef Urban)

ARUM (EU 7FW IP) and DigiCor (H2020): planning and scheduling system for Airbus Industries (Prof. Vladimír Mařík)

FUMA: large project in image processing for Missile Defense Agency (MDA) (Prof. Václav Hlaváč)

RA-DIC: Big Data in Industrial Automation – funded by Rockwell Automation

TRADR: Human-machine Cooperation in Robotics (EU 7 FW project)

SAFELOG: Advanced Robotics – Human/Robot Interaction (EU Horizon 2020) (Dr. Libor Přeučil)

UPDRIVE: Cars without drivers (EU Horizon 2020)

ALQUIST: Bot manager (Top 3 in the Alexa Prize by Amazon)





EU Structural Funding – Operational Program OP VVV



3 Excellent Teams funded for 6 years (since 2017)

- **Artificial Intelligence and Reasoning – Dr. Josef Urban (ERC Grant Recipient) - 6 mil. EUR**
- **Intelligent Machine Perception – Dr. Josef Šivic (ERC Grant Recipient) - 5.2 mil. EUR**
- **Robotics for Industry 4.0 – Prof. Robert Babuška, 7 mil. EUR**

Key researchers are highly respected personalities with excellent international track records.

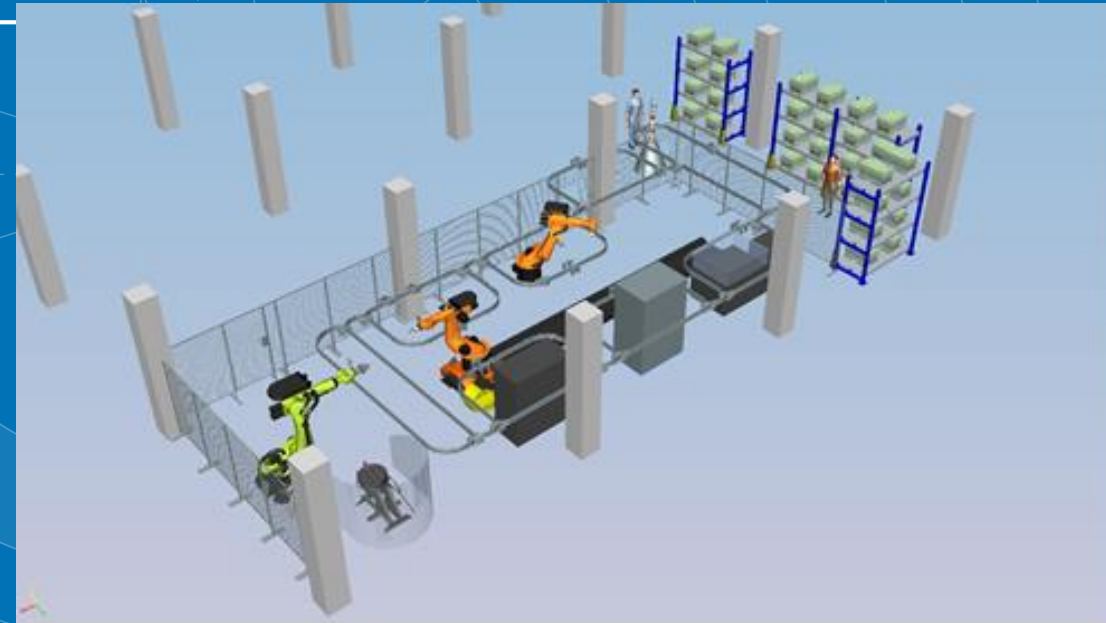




Testbed at CIIRC Czech Technical University



- ✓ **The very first testbed for Industry 4.0** in the country (support by **Siemens** and **Škoda Auto**, and some Czech SMEs) – Opened on September 4th, 2017
- ✓ **Particular goals:**
 - ✓ **Industry 4.0** compatible solutions for **SMEs**
 - ✓ **Interoperability** of Czech-made machine tools and SW solutions with Industry 4.0 facilities
 - ✓ **Creating community of companies,**
direct contacts of
SMEs with global players





Development - National Centre for Industry 4.0

April 2013

Concept „Industrie 4.0“ in Germany

February 4, 2016

Czech National Initiative Industry 4.0 submitted

April 11, 2016

Czech-German Workshop in Prague

August 24, 2016

Czech National Initiative Industry 4.0 approved

August 25, 2016

Collaboration Agreement between CIIRC & DFKI

April 2017

Czech Robotic Mission to Japan





Development - National Centre for Industry 4.0

February, 6, 2017

Steering Committee for Testbed 4.0 at CTU (CTU, Siemens, Škoda AUTO)

February, 15, 2017

Alliance Society 4.0 as a governmental body established

May 2, 2017

Official Opening of CIIRC

September 4th, 2017

Opening of NCP4.0





Open platform - National Centre for Industry 4.0

- Academic institutions
- Industry leaders
- Associations and Innovation Centres
- Bottom-up approach (versus Top-down in the case of Alliance Society 4.0)
- Complementary part to the Alliance Society 4.0
- Technology solution oriented
- Public – Private Partnership
- Open platform for cooperation and synergies





Main objectives - Inspire & Make the Czech Industry 4.0

- Implementation of the principles of Industry 4.0
- Increase awareness about Industry 4.0 and Society 4.0
- Cooperation between academia and industry – sharing best practices and technological solutions
- Promote education and interdisciplinary research in Industry 4.0
- New R & D strategies and provide statements on Industry 4.0 topics
- Integration of the Czech research and industry into the European infrastructure
- Testbed network at CTU, Brno University of Technology, VŠB – Technical University of Ostrava, and other institutions in the Czech Republic
- Promote know-how transfer to the industrial sphere, including start-ups and managed innovations
- ...





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Founding partners





Inter - National Cluster for Industry 4.0





- German-Japanese-Czech workshop on Industry 4.0 held in Prague, April 30, 2016
- Prof. Mařík: RRI Forum in Tokyo - 16.10.2016
- Czech Robotic Mission to Japan (April 2017)
- 98 Japanese manufacturing companies in the Czech Republic

Honorary Doctorate for
Dr. Shoichiro Toyoda in 2006





Open Invitation

- Open Invitation to join the ecosystem – National Centre for Industry 4.0
- We are open to more Partners & Members – the only condition – Czech legal entity but till now no Japanese firms involved (but contacts with Fanuc, Mazak, Toyota, etc.)
- Looking forward to our cooperation with you!
- Contact:

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