5G Delegation Trip for Bavarian Researchers to Brno and Prague (Czechia), 11-12 September 2024

On the occasion of the European Wireless 2024 conference in Brno, 9-11 September.
(More about the conference at https://ew2024.european-wireless.org)

Aim
The objective of this two-day mission is to explore the 5G research landscape in Brno and Prague, enabling researchers from Bavaria to meet their Czech colleagues and discuss potential future research and innovation collaborations.

Preliminary programme *(as of 5th June 2024)*

Arrival to Brno (individually)
Optional: Attendance at European Wireless 2024 conference on 9-10 September
Informal dinner with the 5G Corridor team on 10 September at 7pm (place tbc)

Wednesday, 11 September (Brno/Prague)

9:00 - 10:00	Meeting with the 5G Corridor team at the lobby of Hotel Continental (*Adresse: Kounicova 680/6, 602 00 Brno*) and introduction of participants; Transfer by minibus to the campus of the Brno University of Technology in Brno-Královo Pole
10:00 - 12:00	Visit to the **Laboratories at the Faculty of Electrical Engineering and Communication Technologies, Brno University of Technology** Led by Mr. Jiří Hošek, Deputy Head of the Institute of Telecommunications: ● Vodafone Unilab - 5G+ networks lab ● Cybersecurity Lab ● Laboratory of Transmission Media and Optical Networks Presentations from members of Bavarian delegation
12:00	Lunch
13:30 - 15:00	Visit to the **RICAIP Testbed for Industry 4.0, Central European Institute of Technology** Led by Mr. Pavel Václavek, Research Group Leader and Research Area Coordinator Presentations from members of Bavarian delegation
15:30 - 16:30	Visit to company **Sewio Networks, s.r.o.** (https://www.sewio.net/), Milan Šimek, CEO (tbc)
17:00	Transport by minibus to Prague and check-in at hotel
20:00	Networking dinner

Thursday, 12 September (Prague)

9:00	Check-out and meeting with the 5G Corridor team at the hotel lobby; Transfer to the campus of the Czech Technical University in Praha-Dejvice
9:30 - 13:00	• Visit to the **6Gmobile Research Lab, Faculty of Electrical Engineering, Czech Technical University in Prague**, Led by Mr. Zdeněk Bečvář, Head of the 6Gmobile Research Lab • Visit to the **Czech Institute of Informatics, Robotics and Cybernetics, Czech Technical University in Prague (CIIRC CTU)**, Led by Ms. Lenka Lhotská, Dept. of Cognitive Systems and Neurosciences, and other research teams at CIIRC depending on the profiles/interests of Bavarian participants. (More about research at CIIRC: https://www.ciirc.cvut.cz) • Presentation of **project 5G Agriculture Platform, Czech University of Life Sciences Prague** (https://agrip.cz/) Led by Mr. Jan Beneš, Project Coordinator, Czech University of Life Sciences • Presentations from members of Bavarian delegation
13:30	Networking lunch with Czech researchers
15:00	End of the delegation trip and departure of participants

Contacts

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Registration of participants
and applications for 5G Corridor travel grant
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Conditions of Participation

This delegation trip is designed for up to eight representatives from Bavarian research organizations and universities without strong existing links to Czech research institutions. Participants should have expertise in 5G-related themes and an interest in potential cooperation with Czech research partners. Participation is limited to one representative per organization.

The 5G Corridor Munich-Prague will cover the costs of the program, local transport in Brno and Prague (including transport from Brno to Prague), and meals. Participants are expected to organize and cover their travel costs to Brno and from Prague, as well as their accommodation costs. Recommendations for accommodation in Brno and Prague will be provided to ensure smooth organization.

The program will be conducted in English without translation.

If you are interested in participating, please inform us at munich-prague@bayfor.org by 25 June at the latest. Please provide brief information about your motivation and research interests via the enclosed form. We will respond to all interested researchers and confirm participation by 30 June.

If your participation is confirmed and you need support covering accommodation and travel costs, you can apply for the 5G Corridor travel grant. For details, please contact Michaela Eggert at munich-prague@bayfor.org.

About the 5G Corridor Munich-Prague (Organizer)

The 5G Corridor Munich-Prague supports the development and implementation of joint cross-border projects, particularly in scientific, technological, and economic cooperation in 5G application areas such as eHealth, Connected Mobility, Smart Regions, and Cybersecurity. It is based on a joint declaration by the Bavarian State Chancellery, the Bavarian Ministry of State for Federal and European Affairs and Media, and the Ministry for Industry and Trade of the Czech Republic from 2020, aiming to jointly propel digital transformation.

More information: www.munich-prague.org

Places to Visit and Projects to Meet

In Brno

Brno University of Technology (BUT)

Brno University of Technology (BUT) is the second-largest technical/engineering university in the Czech Republic. Its tradition dates back to 1899, and more than 125 years later, the university has 17,000 students. Today, BUT has eight faculties and three university institutes, and it is part of two centres of excellence (CEITEC, IT4Innovations). BUT programs cover not only engineering but also the fields of natural science, architecture, fine arts, IT, and economics, with a strong interdisciplinary emphasis and close connection with the industrial sphere.
More information: www.vut.cz/en/

- **Laboratories at the Department of Telecommunications, Faculty of Electrical Engineering and Communication Technologies, BUT**

  The Department of Telecommunications at the Faculty of Electrical Engineering focuses on teaching and research, especially in the areas of ICT, cybersecurity, image and speech signal processing, processing of large data sets (big data), and hardware development. Its research activities specialize in high-speed communication networks, 5G networks, IoT, Industry 4.0, Smart Grids, Smart Home, cybersecurity and critical infrastructure security, AI, speech and image signal processing, hardware development, and testing. The faculty has developed many partnerships with national and multinational ICT companies.
  More information: www.feec.vutbr.cz
  Address: Technická 3082/12, 616 00 Brno-Královo Pole

  #Vodafone Unilab - 5G+ Networks Lab
  Within the lab, the focus is on communication technologies for the IoT. Students specifically learn about Narrowband IoT (NB-IoT) wireless communication technologies, LTE Cat-M, LoRaWAN, and Sigfox (i.e., Low-Power Wide-Area (LPWA) technologies), and WiFi and Bluetooth Low Energy (i.e., wireless technologies with local range). The aim is to introduce the issues of wireless transmissions in the context of SmartGrids and Industry 4.0. The focus is mainly on the optimization of wireless data transmission (choice of protocols for data transmission) and security, given the limited parameters of each technology. Since the laboratory is directly connected to the infrastructure of telecommunication operators, research activities can be carried out here concerning the development of new communication units that will be part of future industrial equipment or equipment for measuring physical quantities, i.e., electricity meters, water meters, gas meters (these devices are currently not capable of secure remote readings).

  Cybersecurity Lab
  The laboratory is used for teaching and research activities focused on cybersecurity. Students can perform the tasks of so-called ethical hacking using virtualized infrastructure, practically test the methods and consequences of attacking devices or services, and then explore the possibilities of protection, for example, using application firewalls. The laboratory has a quantum communication infrastructure for teaching and research in the field of quantum security. There are devices for stress testing, generating cyber attacks, and development on high-speed FPGA network cards.

The laboratory is also used for cybersecurity training on the unique BUTCA platform (Brno University of Technology Cyber Arena).

Laboratory of Transmission Media and Optical Networks
The laboratory is aimed at practical verification of theoretical knowledge in the field of transmission media. The lab is equipped to assemble and measure transmission quality, including potential failures. The instruments include fibre optic welders, attenuation meters, dispersion meters, and cable finders. In the laboratory, there is an optical polygon suitable for testing and comparing instruments from different manufacturers. In addition to teaching, several research projects are carried out here, particularly in the field of the use of optical fibres for sensors.

- **Central European Institute of Technology (CEITEC BUT)**
  Since its establishment in 2011 as a consortium of six Brno universities and research institutions, including BUT, CEITEC has quickly developed into a cutting-edge infrastructure for research. The multidisciplinary nature of CEITEC, and the integration of fields such as life sciences, advanced materials, nanotechnologies, and cybernetics, make it the first research centre of its kind in the Czech Republic.

  Part of CEITEC BUT's research infrastructure is the **Testbed for Industry 4.0**, created as part of international cooperation within RICAIP – Research and Innovation Center on Advanced Industrial Production (more information about this project can be found below). This smart test factory (420 square meters) focuses on digitization and automation of production. It helps small and medium-sized companies implement innovative solutions more quickly. It offers dynamometers for industrial linear and rotational actuators, a 3-axis machining center, an assembly line with collaborative robots, a 5-axis machining center, AR/VR, precise measurement of dimensions, a robotized warehouse, a laser cutting/welding and turning machine.
  More information: www.ceitec.eu/ricaip/
  Address: CEITEC BUT Testbed for Industry 4.0: Purkyňova 651/139, 612 00 Brno-Medlánky

Company Sewio
Sewio Networks is a manufacturer of a real-time location system (RTLS) that drives business results for manufacturers, warehouses, distribution centers, OEMs, and more. The Sewio system is built on ultra-wideband technology (UWB) and delivered with RTLS Studio, remote management, and visualization software. It provides partners and customers with a precise, easy-to-integrate, reliable, and fully scalable IoT solution for indoor location tracking, enabling companies to achieve greater efficiency, profitability, and safety. Founded in 2014, Sewio has offices in the USA, UK, Germany (Hamburg), and Czechia. Sewio has 80+ system integration partners and powers customers in 45 countries. The customers include Volkswagen, Toyota, Budweiser Budvar, TPCA, Škoda, and ENEL.
More information: https://www.sewio.net/
Address: Technology park JIC INMEC, Purkyňova 649/127, 612 00 Brno-Medlánky

In Prague

The Czech Technical University in Prague (CTU)
The Czech Technical University in Prague (CTU) was founded in 1707 and is one of the largest and oldest technical universities in Europe. It has eight faculties and more than 18,000 students. The university offers 170 accredited study programs, of which 53 are in foreign languages.
More information: https://www.cvut.cz/en

- **The 6Gmobile research lab at the Faculty of Electrical Engineering, CTU**
  The 6Gmobile Research Lab at the Department of Telecommunication Engineering at CTU's Faculty of Electrical Engineering focuses on key aspects and challenges related to future mobile networks and emerging wireless technologies. The 6Gmobile Research Lab continues with a similar team and research directions addressed by its predecessor, the 5Gmobile Research Lab, which was founded by Zdeněk Bečvář in 2015.
  More information: https://6gmobile.fel.cvut.cz/
  Address: Technická 2, 160 00 Prague 6 - Dejvice

- **The Czech Institute of Informatics, Robotics and Cybernetics (CIIRC CTU)** is an institute of the Czech Technical University in Prague (CTU) founded in 2013. One of its main objectives is to integrate information and cybernetic research and education at CTU. Besides many research teams (https://www.ciirc.cvut.cz/teams-labs/), the National Centre for Industry 4.0, including Testbed for Industry 4.0, the National Centre for Construction 4.0, and the Centre of the City of the Future, are part of CIIRC.
  More information: https://www.ciirc.cvut.cz
  Address: Jugoslávských partyzánů 3, 160 00 Prague 6 - Dejvice

***Research centre*: The Research and Innovation Centre on Advanced Industrial Production (RICAIP)**
RICAIP is a European distributed research centre of excellence focusing on R&D in robotics and artificial intelligence applications for distributed production. RICAIP creates a unique research environment for the development and testing of innovative solutions for advanced, modular, and fully integrated industrial production. RICAIP is based on a strategic partnership of four leading Czech and German research institutions. The founding partners are CIIRC CTU, CEITEC BUT in Brno, DFKI (Deutsches Forschungszentrum für Künstliche Intelligenz), and ZeMA (Zentrum für Mechatronik und Automatisierungstechnik) based in Saarbrücken.
More information: https://ricaip.eu/

***Research project*: 5G Agriculture platform, University of Life Sciences Prague**
The 5G Agriculture Platform (AGRIP) is a research project being implemented by a consortium of four partners: the University of Life Sciences Prague, T-Mobile Czech Republic a.s., Orbit Merret, s.r.o., and Jump-Tech, s.r.o. It is funded by the Technology Agency of the Czech Republic. The outcome of the project is a 5G platform for precision agriculture, which will provide a comprehensive process for collecting, processing, and providing the required data for real-time decision-making processes in precision agriculture. The proposed platform represents a central core unit providing the necessary real-time information to a system of cooperating equipment (fleet of drones, tractors, other equipment) for the implementation of agricultural activities such as spraying, pest control applications, crop health monitoring, etc.
More information: https://agrip.cz/