

## High-speed Internet for the future: TU Dresden participates in project for next-generation mobile communication systems

**TU Dresden joins with international partners in the research project “5G-XHaul” that will design the backbone for the 5<sup>th</sup> generation of mobile networks.**

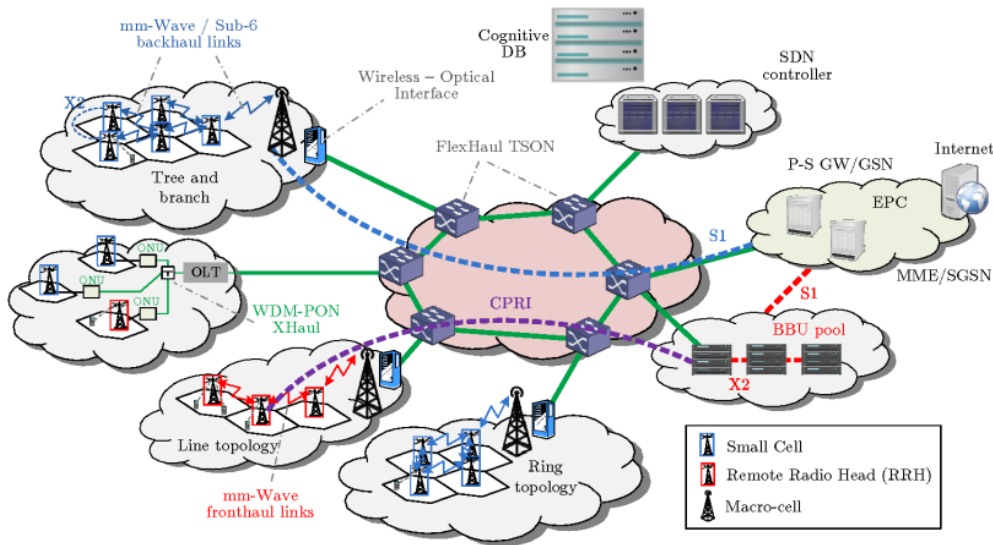
The next generation of mobile telephony called “5G” will make one thing possible: Internet is always accessible. In 2020, dead spots will be a problem of the past, if researchers are able to implement their ambitious goal worldwide. Scientists of the of TU Dresden’s Vodafone chair now participate in the European project “5G-XHaul” that has the goal to find effective solutions to the rapidly growing demand for broadband connections. The project partners include industrial companies, research institutes and universities from four European countries.

Which parameters must be improved for networks of the future in order to meet the demand for broadband communication? “Universities and companies work closely together in our project which helps us to clarify such questions. The industry will define the demands. The researchers will find possible solutions. 5G-XHaul will help to ensure that every smart phone owner can rely on an uninterrupted network connection with a high data rate,” said Dr. Eckhard Grass from the IHP institute (Innovations for High Performance Microelectronics), who is coordinating the project.

TU Dresden’s Vodafone Chair Mobile Communications Systems will participate in 5G X-Haul by providing its expertise on 5G access technologies and how these impact the design of the future transport network. New powerful cost-effective networks are necessary in order to connect the access points, also called base stations, with the core network of the telecommunication providers. Especially at transport hubs such as railway stations, airports or during major events the network connection must be dynamically adapted to the local and temporal needs.

Professor Fettweis from the Vodafone chair explains: “5G-XHaul proposes a converged architecture for the transport network, which is the backbone of every mobile network. Integrating a large number of different technologies such as optical fiber and wireless links into a single architecture is a key problem to enable an efficient network operation. Additionally, new technologies like the utilization of large antenna arrays (massive MIMO) or the ultra-low latency “tactile internet” will put even more demanding requirements on the transport network.”

The project 5G-XHaul is part of the 5G Infrastructure Public Private Partnership (5G-PPP). The joint initiative of the European information and communications industry and the European Commission will examine the current infrastructure and their limitations and specify requirements for the next generation of communications networks and services. Based on the requirements, technical solutions will be investigated and tested. The project 5G-XHaul is funded by the EU program “Horizon 2020” with around 7.3 million euros. It runs over a period of three years, until June 2018.



For the 5th Generation of mobile networks, a complex mixture of different technologies is needed. Powerful Time-Shared Optical Networks (TSON) are used as a backbone. Basestations are connected using Passive Optical Networks (PON), mm-Wave radio links or radio systems operating in the WLAN frequency bands. (Sub-6 GHz). Based on user mobility information, the network topology is dynamically adapted and optimised.

The following partners participate in 5G-XHaul: IHP, Huawei, Telefonica I+D, i2CAT, Blue Wireless Technology, ADVA Optical Networking, COSMOTE, Airrays, TES Electronic Solutions, University of Bristol, University of Thessaly and TU Dresden.

## 5G-XHaul



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