

IEEE VTC2016-Spring Workshop on 5G New Air Interface

Full day workshop

15-18 May 2016, Nanjing, China



Call for paper

Scope of the workshop

The next generation (5G) cellular technology is expected to arrive in 2020. There are four trends indicating the need for a new generation of cellular technology including new air interface:

- The demand for wireless data is predicted to increase significantly, resulting in 1000x higher mobile data volumes and 10-100x higher end user data rates
- The number of connected devices is predicted to increase by a factor of 10-100, which means that up to 300,000 devices need to be served per access point
- Wireless connectivity will be applied to new use cases that require very reliable connections and mission-critical communication, such as vehicle-to-vehicle coordination, critical control of the power grid, etc.
- Remote presence and tactile Internet that impose stringent latency constraints on the overall connection, including the wireless part of it. Forecasts imply that the latency should be decreased for a factor of 5 in order to enable such services



The air interfaces for 2G, 3G, and 4G were all designed for specific use cases (limited only to voice and data communications) with a certain number of limited KPIs in mind (throughput, capacity, dropped/blocked call rates etc.). However, as outlined above, 5G requires the support of a much broader class of services and consequently a very diverse family of devices and traffic characteristics.

The scope of the workshop is to contribute to the design of a new 5G air interface taking specifically the above application constraints into account. An important subject of the workshop is the feasibility of a single **Golden Air Interface** able to support these requirements in a highly flexible manner.

New Air Interface solutions on PHY/MAC layer with respect to the following topics shall be addressed (but not limited to):

- Unified frame structure concepts
- Gigabit wireless connectivity
- Enabling scalable MTC for massive machine-type traffic
- Ensuring reliability in mission-critical communication and V2V coordination
- Transmission with very low delay
- Advanced waveform design such as UFMC, FBMC or any other competing approach including MIMO
- Advanced signal processing solutions such as compressed sensing for scalable MTC
- Low-complex massive MIMO solutions (TDD/FDD, pilot contamination, antenna correlations etc)
- Control signaling architecture for support of small cell architecture
- Interference management and co-channel interference mitigation
- Control signaling architecture for support of heterogeneous networks
- Advances in synchronization and channel estimation & equalization for multicarrier waveforms and wideband single-carrier transmission
- Peak to average power ratio (PAPR) reduction techniques, efficient techniques for out-of-band radiation reduction
- Relaying and range extension techniques
- New coding solutions for small resource blocks
- Cross-layer aspects such as coded random access for contention-based access vs scheduled access
- Regulatory and standardization aspects

Website:

<http://workshop2016.fantastic5g.com/>

Workshop Co-Chairs

Frank Schaich (ALCATEL-LUCENT, Germany)
Berna Sayrac (ORANGE, France)
Martin Schubert (HUAWEI, Germany)
Gerhard Wunder (Fraunhofer HHI, Germany)
Hao Lin (ORANGE, France)
Klaus Pederson (Nokia Networks, Denmark)
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Important Dates

Paper Submission : January 10, 2016
Author Notification : February 10, 2016
Final paper submission : March 10, 2016
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