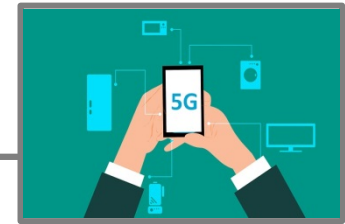


5G - Next Generation Mobile Network



Overview

- Description: 5G “5th generation mobile communications” is the term for a family of technologies that, as a whole form the next standard for mobile networks (as an evolution of 3G (UMTS) and 4G (LTE)). This technology “package” consists of new technologies combined with existing technologies mainly from fixed IP networks
- State of research: Basically all technological parts of 5G are in a “high TRL” state (6 to 8) with system trials starting basically all over the world. In parallel standardization processes from ITU and 3GPP (necessary for commercial equipment development) to be ready in 2020.
- Capabilities: 5G is specifically aiming to deliver on the perceived needs for network capabilities for Internet-of-Things (IoT) applications: Broadband access in dense areas (several thousand devices/km²), large scale broadband access everywhere (>50Mbit/s), high user mobility (usable while moving fast), handling huge numbers of IoT devices in the same area simultaneously, very low latency to be able to support critical systems like autonomous cars, high reliability and resilience, ability to prioritize traffic even in high load situations, Audio/Video broadcasting in very high quality and the ability to deliver a variety of application and user specific network parameters within one physical network segment at the same time.
- Limits: A 5G network needs a higher number of radio sites than the predecessor technologies. Due to limited acceptance for radio sites in the neighborhood this might be a challenge to the technology reaching its desired performance. It is projected that 5G will work partially in the frequency range around 6GHz that is already used by several other services like satellite communications. This might lead to problems locally, and hinder the rollout and installation of 5G networks. 5G Backhaul (Networks needed to connect 5G sites) might become a bottleneck for bandwidth.

Further Information

- Key player: Standardization and norming: ITU, 3GPP; Equipment: Huawei, Ericsson, NSN; Networks: All Mobile Operators; Research: National Science Foundation (USA), DARPA, Univ. of Beijing Posts & Telecommunications.
- Readiness: System Trials have started within the last 24 month, first commercial systems to be expected in 2020
- Users: In addition to the broad public, the 5G features specifically aim to substitute existing fixed (last mile) and older radio technologies
- Future outlook and forecast: 5G will coexist with the older 3G and 4G standards for some time as the rollout of networks and substitution of older equipment will take several years, While being commercially available in some areas starting 2020 it will take at least 5 years to be widely available in rural areas also
- Related Technologies: 3G, 4G
- Links: <http://www.itu.int/en/ITU-T/focusgroups/imt-2020/Pages/default.aspx>, http://www.3gpp.org/news-events/3gpp-news/1614-sa_5g