Spectrum for 5G
Towards a fully networked society

Brussels, 8 October 2014

Background

Additional spectrum for mobile broadband services (MBB) will be considered by ITU-R at WRC-15 under agenda item 1.1, addressing MBB growth up to around 2020. Forecasts from industry and academia as well as general consumer trends however point towards continuing growth beyond 2020 in the demand for MBB. Researchers continue to advance the technological capabilities of MBB to satisfy the expected growth and the demands of the new applications. These activities indicate that new spectrum bands need to be made available to support the development of future human and machine-type communication and associated economic growth also beyond 2020.

5G will need to operate in a multi-Radio Access Technology environment, where evolution of current MBB technology families and 5G are expected to co-exist. In addition, 5G should incorporate a robust multi-connectivity architecture leveraging the available radio access technologies to provide seamless wireless connectivity. 5G networks may integrate a range of technological solutions for frequencies below 6GHz as well as for new spectrum bands above 6GHz including mmWave not previously considered for MBB.

5G networks will incorporate technologies for ultra-narrowband to ultra-wideband operations and support a fully connected networked society where access to information and sharing of data, including cloud based services, is provided anywhere and anytime for anyone and anything (Internet of Things). Mobile access to internet services shall match the capabilities of fixed networks. Mobile user equipment will play a wide and continuously evolving variety of roles in everyday life.

Benefits for stakeholders

5G will enable new services, connect new industries and empower new user experiences in networks with lower cost of deployment and operation, with a more consistent user experience, higher capacity and better energy efficiency:

- **High data rates and capacity** will be provided, with target data rates of 10 Gbps or more in order to meet increasing requirements on quality and bit rates (e.g. for high resolution video streaming and augmented reality) and to satisfy the requirements of more cloud based services of all types: financial, entertainment, educational and many others.
- **Massive increase of connectivity capabilities** will serve the increasing number of connected devices (Internet of Things), due to e.g. machine-type communication and sensors (roads, railways, safety systems).
- **Substantial reduction of latency**, to the order of 1 ms or less will enable new latency-critical applications e.g. for traffic safety, critical infrastructure protection, gaming or emerging industrial internet applications.
- **Energy-efficient systems and devices** will reduce power consumption and enable ultra-long battery life.
- **Lower network deployment and operational costs** will drive affordable services.

Our Recommendations

The development of 5G systems will rely on different components where new spectrum bands will be of paramount importance.

The identification of new frequencies is a topic with a long lead time. Preparations are already on-going for a WRC-19 agenda item for allocation and identification of spectrum for 5G in frequency ranges above 6 GHz.

DIGITALEUROPE believes that Europe should be a centre of excellence for 5G research and development and recommends the following steps to make the appropriate spectrum available for 5G. European institutions and administrations should consider:

- Supporting an agenda item for WRC-19, through a European Common Proposal (ECP) for the allocation of additional spectrum for Mobile Services and identification for IMT to enable 5G.
- Ensuring the finalization of ITU-R WP5D deliverables in time for WRC-15 providing a vision of IMT in a future society.
- Including the consideration of new spectrum bands below and above 6GHz for 5G in the second phase of the Radio Spectrum Policy Programme (RSPP).
- Developing a detailed investigation of spectrum within CEPT for spectrum above 6GHz covering all the existing Radio Services, their use and future needs and trends.

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DIGITALEUROPE ensures industry participation in the development and implementation of EU policies. DIGITALEUROPE's members include 58 corporate members and 36 national trade associations from across Europe. Our website provides further information on our recent news and activities: http://www.digitaleurope.org

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