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What can the world expect from 5G?

Joseph Boccuzzi

Intel Corp., USA

The mobile industry is about to encounter very interesting times ahead, which come with their own challenges. As with previous cellular generations there is not only an expectation of increased system/user performance, but also the addition of new system features. The figure below shows how LTE has evolved (5G is expected to continue this trend) to where we are today with new applications creating new markets. We have seen an exponential consumption of mobile data traffic (especially video) occur. There is a need to deliver the connected Car culminating with the autonmous vehicle. Our homes have just begun connecting appliances to people and over the past few years we have seen cities creating CTO positions to plan for Smart Cities of tomorrow. Let's not forget the movement towards Indutry 4.0 as factories become more automated and wired communications become replaced with wireless communications. Our hopes are to support new Services and Vertical Markets with this 5G standard.We begin with a capability overview of 5G and its driving factors, since incremental improvements over LTE will not justify the significant capital investments needed to deploy 5G. Next we discuss use cases and the various wireless technologies required to enable them such as: Modulation/Coding, Signal Processing techniques, Spectral Efficiency, Small Cells, etc. The ICT movement is tantamount to the success of 5G deployments, especially to SDN and Disaggregation. A discussion on deployment scenarios will reveal the need to have a flexible and scalable Network Architecture applying SDN principles to release/manage services for Cloud deployments (eg. Network Slicing, Cloud-RAN, Open Source, etc.). Deploying MEC architectures address low latency applications and allow for value added CSP and TSP services. Moving away from deploying fixed functions over custom hardware towards virtualized functions over general purpose platforms supports the Cloud movement. We will end our discussion with comments on future technology direction.

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Page 44