An Overview on 5G: The Next Generation of Mobile Communication

David Martin*

Department of Telecommunications, University School of Technology, USA

Description

The development of the new generation of mobile and wireless systems, also known as 5G wireless systems, is the current focus of research conducted by industry and academics as the following advancement in the evolution of mobile communication systems. 5th Generation (5G), which has a time frame longer than 2020. 5G will offer remedies to the growing demand for the expansion of bandwidth-intensive mobile services, applications such as 3D, virtual reality, high definition video, and the anticipated rise in machine to machine mThe requirement for incredibly dependable (M2M) messages for services like e-health, etc. Future 5G system requirements have already been specified at several fora in order to meet the aforementioned demands.

One thousand times more wireless area capacity, ten to one hundred times more connected devices, ten to one hundred times more user data rate, ten times longer battery life for low power Massive Machine Communication devices, and five times less End-to-End (E2E) latency are a few of these requirements. The fulfilment of these challenging requirements together with the broad range of identified use cases and scenarios in 5G will demand more than a simple evolution of the radio access technology or the network architecture like in previous generations such as 2G/3G/4G. Instead, more radical changes can be expected from the very beginning, even in the main concepts of cellular networks. These changes are needed to provide the necessary degree of flexibility that allows combining heterogeneous components of 5G under a common holistic framework.

In this respect, the introduction of Network Function Virtualisation (NFV) and Software Defined Network (SDN) capabilities are also expected to play an important role in the development of the future 5G networks. This special issue focuses on the radio access portion within the aforementioned general framework and takes into account the fact that research into 5G technologies is now still in its early stages. More specifically, it offers information on the innovative designs and resource management strategies that will enable meeting the standards anticipated for next 5G networks. Five papers covering various subjects that are pertinent from the standpoint of the development of the 5G network have been chosen for this purpose. In order to provide a framework for 5G networks, the special issue starts with the paper entitled "A Survey on 5G: The Next Generation of Mobile Communication". This paper analyzes the limitations of current networks in relation to the requirements of 5G and presents a survey of the different key technologies and architectures for 5G. "What will Interference be Like in 5G HetNets?" is the headline of the article. talks about the potential effects of the more dense tiny cell architectures for 5G on the current interference patterns. It includes many case studies to demonstrate how many of the models currently in use can produce potentially very erroneous interference and performance forecasts when the peculiarities of 5G diverse scenarios are taken into consideration. "What will Interference

be Like in 5G HetNets?" is the headline of the article talks about the potential effects of the more dense tiny cell architectures for 5G on the current interference patterns. It includes many case studies to demonstrate how many of the models currently in use can produce potentially very erroneous interference and performance forecasts when the peculiarities of 5G diverse scenarios are taken into consideration.

We hope that readers will appreciate the papers in this special issue and utilise them to learn more about the various issues facing radio access network architectures and resource management for 5G, as well as some of the existing solutions. We appreciate all of the authors who submitted papers for this special issue as well as all of the reviewers who offered helpful criticism to raise the calibre of the papers. Finally, we would like to express our gratitude to Prof. Ian Akyildiz, Editor-in-Chief, and the Elsevier Editorial Staff for their assistance with the creation of this special issue. The fulfilment of these challenging requirements together with the broad range of identified use cases and scenarios in 5G will demand more than a simple evolution of the radio access technology or the network architecture like in previous generations such as 2G/3G/4G. Instead, more radical changes can be expected from the very beginning, even in the main concepts of cellular networks [1-5].

Acknowledgement

Conflict of Interest

The Author declares there is no conflict of interest associated with this manuscript.

References

1. Panwar, Nisha, Shantanu Sharma and Awadhesh Kumar Singh. "A survey on 5G: The next generation of mobile communication." *J Telecommun Syst Manage* 18 (2016): 64-84.

2. Siljak, Harui, Irene Macaluso, and Nicola Marchetti. "Artificial Intelligence for dynamical systems in wireless communications: Modeling for the future." *J Telecommun Syst Manage* 7 (2021): 13-33.

3. Yadav, Pranay, Alok Upadhyay, V.B. Surya Prasath, Zakir Ali and Bharat Bhooshan Khare et al. "Evolution of wireless communications with 3G, 4G, 5G, and next generation technologies in India." *J Telecommun Syst Manage* 709 (2021): 355-359.

4. Boudko, Svetlana, Peder Aursand and Habtamu Abie. "Evolutionary game for confidentiality in IoT-enabled smart grids." *J Telecommun Syst Manage* 11 (2020): 582.

5. Zheng, Pai, Zuoxu Wang and Chun-Hsien Chen. "Industrial smart product-service systems solution design *via* hybrid concerns." *J Telecommun Syst Manage* 83 (2019) 187-192.

***Address for Correspondence**: David Martin, Department of Telecommunications, University School of Technology, USA., E-mail: davidmartin@emline.org*

How to cite this article: Martin, David. "An Overview on 5G: The Next Generation of Mobile Communication." J Telecommun Syst Manage 11 (2022): 320.