

EDITORIAL

Open Access



EURASIP Journal on Wireless Communications and Networking: Special Issue on EuCNC 2019: “Enabling Technologies for Networks beyond 5G”

Luis M. Correia*

*Correspondence:
luis.m.correia@tecnico.
ulisboa.pt
University of Lisbon, Lisbon,
Portugal

5G wireless mobile networks were already fully standardised in their release regarding the radio interface, and since 2019 many field trials led to the launch of commercial services together with the availability mobile phones. While 5G starts being a reality, many open challenges in research and development still exist related to network virtualisation, slicing, optimisation, new frequency bands, massive MIMO implementation and optimisation of initial radio access network deployments, among others. It is also relevant to follow the new ideas for the evolution of 5G towards future industrial and IoT massive services, as well as the expected new human interfaces and their effect on the mobile network behaviour, not only for the so-called beyond 5G (5G+) but also aiming already at 6G.

This Special Issue originates from the international conference EuCNC 2019 (European Conference on Networks and Communications), which was held in June 2019 in Valencia (Spain). The Technical Programme Chairs of the conference selected the best papers, and subsequently invited the authors to submit an extended version of their paper, by at least one third of their length, for possible consideration in this Special Issue. The main target was to collect and present quality research contributions in the most recent activities related to 5G+ networks. Through this Special Issue, the state-of-the-art is presented and new challenges are highlighted, regarding the latest advances on system radio interfaces and network architectures, including cloud and virtualisation solutions, management technologies, and vertical application areas, among others, suitable for various 5G+ industries. The motivation for this Special Issue was to present the latest and finest results on the evolution of 5G+ research and prototyping activities, coming, but not exclusively (since EuCNC is a conference open to the whole research community), from projects co-financed by the European Commission within its R&D programmes.

The scope of this Special Issue is quite large, covering from the basic aspects of radio propagation at the bands of hundreds of GHz to applications dealing with autonomous



© The Author(s), 2021. **Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

cars, showing that, indeed, the aspects of 5G+ are very diverse and start progressing in the path to 6G:

- “A Line-of-Sight Channel Model for the 100–450 GigaHertz Frequency Band” (Joonas Kokkonen, Janne Lehtomäki and Markku Juntti) presents a simple parametric polynomial line-of-sight channel model, derived from a simple and compact molecular absorption loss model for this band.
- “Performance Evaluation of MIMO Broadcast Systems for Advanced Digital Terrestrial TV” (Takuya Shitomi et al.) addresses the transmission performance of spatial multiplexing cross-polarised MIMO relative to the capacity and robustness of digital terrestrial broadcasting, via experimentation in a laboratory and in large-scale field trials in central Tokyo.
- “Practical Cross-Layer Testing of HARQ-Induced Delay Variation on IP/RTP QoS and VoLTE QoE” (Adriana Lipovac et al.) proposes and demonstrates a VoLTE QoS and QoE test procedure based on PHY/MAC/RLC/IP/TCP-UDP/RTP cross-layer protocol analysis and perceptual speech quality QoE measurements for the transmission of voice in LTE and beyond.
- “Evaluation of LiDAR Data Processing at the Mobile Network Edge for Connected Vehicles” (Tiia Ojanperä et al.) studies the feasibility and benefits of localised mobile network edge applications for supporting vehicles, when vehicle sensor data processing is installed in these mobile network edge nodes, focusing on a LiDAR data based obstacle warning case.
- “5G Connected and Automated Driving: Use Cases, Technologies and Trials in Crossborder Environments” (Dirk Hetzera et al.) shows the problems and results from a European project, 5GCroCo, which addresses cooperative, connected and automated mobility across Europe, requiring harmonised solutions to support cross-border seamless operations.
- “Transition Technologies Towards 6G Networks” (Thiago R. Raddo et al.) addresses key technologies in the transition towards 6G, along with key-performance indicators for their evaluation and use cases, namely free space optics, terahertz systems, photonic integrated circuits, softwareisation and multi-core fibres.

We hope that you enjoy the reading of this set of selected papers.

Narcis Cardona, iTEAM, Universitat Politècnica de València, Spain.

Luis M. Correia, IST/INESC-ID, University of Lisbon, Portugal.

(Guest Editors).

Published online: 21 May 2021

Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.