

WIRELESS AND RADIO COMMUNICATIONS



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Connectivity plays an increasingly important role in the way people live and businesses operate, and it is therefore not surprising that wireless communications is growing faster than the entire economy. Recently 5G has started to replace 4G, bringing new enhanced capabilities to the end user. The number of 5G connections exceeds 1 billion as of the time of this writing.

One major characteristic of 5G is ultra-reliable and low-latency communications (URLLC) that enable Industrial Internet of Things (IIoT).

The article, “Configured Grant for Ultra-Reliable and Low-Latency Communications: Standardization and Beyond,” by Majid Gerami and Bikramjit Singh describes the grant allocation mechanism that avoids the known scheduling requests and scheduling grants, and that can achieve ultra-low latency access. The article also discusses how this grant allocation mechanism can evolve in future 3GPP standards.

The field of public safety mission-critical communications for a long time was not receiving enough attention from the research community because public safety agencies were happily using the P25 Land Mobile Radio for primarily voice. With 5G this is expected to change due to two reasons. First, the requirements of public-safety communication increasingly include data and other enhanced capabilities, and, second, 5G is fast, reliable, and capable of appropriately prioritizing mission critical traffic.

The article “5G New Radio for Public Safety Mission Critical Communications” provides an overview of the changing service requirements of public safety mission critical communications and how 5G can satisfy these requirements.

The last article in our series is also on public safety mission-critical communications and is entitled, “Towards Provid-

ing Connectivity When and Where It Counts: An Overview of Deployable 5G Networks.” It addresses 5G networks that can be easily deployed, and discusses their architecture, performance, and coexistence with existing networks. Deployable networks are necessary to provide temporary coverage in various mission-critical situations.

As always, we hope that the readers find the articles useful and insightful.

BIOGRAPHIES

TODOR COOKLEV is Professor of Electrical and Computer Engineering at Purdue University Fort Wayne, Fort Wayne, Indiana. He has contributed to the development of a number of communications standards, including Bluetooth, DSL, Wi-Fi, cellular, and VITA 49, serving at times in leadership positions in standardization organizations. His current research interests include most aspects of modern wireless systems and standards. He has contributed to more than 100 publications. He is currently Member-at-Large of the Board of Governors of IEEE Standards Association and serves as an editor of the wireless and radio communication series of the *IEEE Communications Standards Magazine*.

LEIF R. WILHELMSSON (leif.r.wilhelmsson@ericsson.com) currently holds a position as Principal Researcher at Ericsson Research and a position as adjunct professor at Lund University. He received his Ph. D. in 1998 in Telecommunication Theory from Lund University and has been with Ericsson Research since then. He has been involved in various standard development organizations, including Bluetooth SIG, DVB, and IEEE 802.11. Currently, he serves as secretary in IEEE 802.11bf. His research interests include digital communication, short range wireless systems, multi-standard coexistence, and machine learning.

PEIYONG ZHU (peiyong.zhu@huawei.com), Senior Vice President of Wireless Research, is a Huawei Fellow, IEEE Fellow, and Fellow of Canadian Academy of Engineering. She is currently leading 6G wireless research and standardization in Huawei. The focus of her research is advanced radio access technologies. She is actively involved in 3GPP and IEEE 802 standards development. She received the M.Sc. degree from Southeast University in 1985 and the Ph.D. degree from Concordia University in 1993.