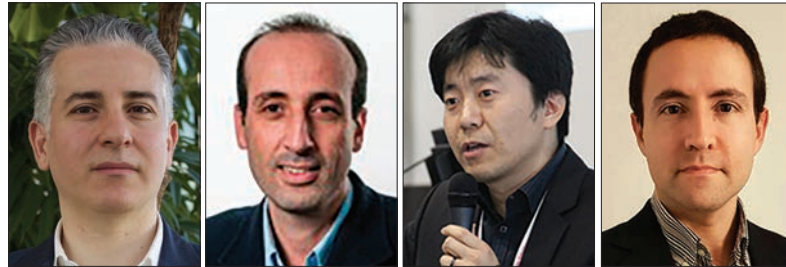# IoT and Machine-Type Communication

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The Internet of Things (IoT) is about connecting devices and creating related applications to suit a business and economic need. One of its value propositions is automation.

As the industry and academia understand the "plumbing" part of IoT and refine emerging business models such as ones based on software as a service (SaaS) and platform as a service (PaaS), the new developments increasingly focus on:
• Cross-domain interoperability
• Data analytics and the emergence of data marketplaces for IoT
• Dealing with new application domains in a cost optimized manner, in particular ones that require low latency, high resiliency and availability, and so on

The latter aspect is particularly generating a lot of industry attention, especially with 5G being specified to address requirements such as from the industrial and automotive domains. Interestingly, information and communication technologies (ICT) is teaming up with operational technologies (OT) in the 5G Alliance for Connected Industry and Automation (5G-ACIA) alliance and with the automotive industry in the 5GAA alliance to refine use cases, derive requirements, and identify any remaining gaps before deployments go mainstream. At the upper layers, advancements in semantic technologies, platforms, and exposure application programming interfaces (APIs) complement the developments being made at the network level.

The first article, "Ultra-High Reliable 5G V2X Communications," provides a perfect illustration of the momentum around technologies such as mobile edge computing, network slicing, and ultra-reliable low-latency communications (URLLC) and their role in addressing market-driven requirements from the vehicular domain in the context of 5G networks. The article explains the state of the art in the Third Generation Partnership Project (3GPP) as regards the support of cellular V2X in both 4G and 5G contexts. It also explains the value propositions of 5G features for automotive applications.

The second article, "Updates on RFC 4944: Fragment Forwarding and Recovery," deals with the transmission of IPv6 over IEEE 802.15.4 meshed networks designed for low-power wireless communications. In particular, the article describes efforts in place to resolve issues pertaining to fragmentation and reassembly of IPv6 packets when transmitted over 802.15.4. The article gives an overview of the ongoing efforts at the Internet Engineering Task Force (IETF) to solve the undesired issues of RFC 4944, along with preliminary performance evaluation results.

We hope the readers will enjoy this issue and find the articles useful. We would also like to express our thanks to the Communications Society staff and reviewers for their continuous support in the preparation of this issue.

Biographies

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Omar Elloumi [M] (omar.elloumi@alcatel-lucent.com) was until recently the Chair of the oneM2M Technical Plenary, a partnership project chartered to advance interoperability standards for consumer, enterprise, and industrial IoT. He is currently with Nokia Bell-Labs and CTO group as a Distinguished Member of Technical Staff, where he is responsible for standards and system architectures for IoT. He has co-edited several books on M2M communications and the Internet of Things published by Wiley and ETSI.

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