Approaching the Promise of 5G

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Abstract

This editorial comes in two parts: some remarks on fulfilling the promise of 5G as it rolls out; and a brief introduction to the papers in this issue.

Fulfilling the Promise of 5G

The fifth generation of mobile technology and services, "5G", is being rolled out in many countries, as we know from the many marketing announcements. Thus far, much public attention has been about 5G New Radio, a unified and more capable wireless air interface, which is already delivering enhanced mobile broadband in many locations.

But the 5G standards also include a core network for service delivery based on cloud computing (as described by Bruce Davie and summarized in Campbell (2021 [5])). This provides interfaces, potentially open to third parties, through which they can define and deliver unique and innovative services. It remains to be seen how the telecommunications network providers will respond to this opportunity and what capabilities they will make available to third-party service providers.

The 5G capabilities include network slicing, where aggregations of network and service resources are made available to a restricted group of users. This can provide, for example, highly available and specifically tailored telecommunications services to emergency responders, without the need for a separate mobile network. Other uses for network slices could include "private" industrial or mining networks delivered over the public mobile network.

In addition to enhanced broadband, the 5G standards respond to the use cases for ultra-reliable and low-latency communications and for massive machine-type communications. These use cases have not yet received much marketing attention, but they are likely to be transformative in some applications. For example, a widespread deployment of sensors and actuators for smart-city applications could be supported by massive machine-type communications delivered over a 5G network. We are yet to see just how widely these use cases will be supported in the ongoing 5G deployments.

Of course, the standards development process is never complete. As a paper in this issue Soldani, 2021 [6]) points out, new standards are continually in development. The vision of 6G is a long wish list of features building on the foundation of 5G. There will be regular releases of new standards, but what will eventually form "6G" is still a work in progress.

Meanwhile, the broadband performance of mobile networks is approaching or exceeding the performance of many fixed-network accesses. Mobile broadband is becoming a realistic competitor to fixed broadband, at least in terms of download and upload speeds. While fixed networks *can* always provide better performance than mobile networks, the fact that they do not is a reflection of all the innovation, research and development that has been directed at mobile communications over the past two decades. Fixed networks have not received the same attention. Fixed access can be used to accelerate the deployment of 5G mobile services (see, for example, the remarks by Andrew Hamilton reported in Campbell (2021 [5]) or Cioffi *et al.* (2020 [7])) – and they should be, to support cost-effective availability of the benefits of 5G.

As Reg Coutts, whose obituary we publish in this issue Gerrand, 2021 [8]), was fond of saying: "5G is much more than mobile". As he understood, fulfilling the promise of 5G is only just beginning.

In This Issue

We publish in this issue two papers related to public policy. *The Broadband Futures Forum: The Rise of 5G and the NBN* continues our series of reports on TelSoc forums concerning the future of broadband access in Australia, this one from May 2021. *Regional Mobile Telecommunications Performance* recommends the monitoring of mobile broadband performance in rural areas to improve the delivery of communications services in these regions.

In our Digital Economy section, we publish two papers. *Appropriate Social Media Platforms Commensurate with the Maturity of Organizations* describes several levels of sophistication in the use of social media by businesses. *The Adoption of E-commerce in SMEs: the Colombian Case* identifies the drivers for small and medium businesses to take up e-commerce.

In our Telecommunications section, we have three papers. The paper *6G Fundamentals: Vision and Enabling Technologies* looks at the ongoing standards process and outlines new features that could be included in a "6G" release. *An Analysis of Consumer Trends in the Telecommunications Markets of Russia and Vietnam* presents data from these countries and identifies similar trends in each. *Universal Service and Competition: The Cook Islands and Australia* describes the policy coordination that should apply in the introduction of a universal service levy.

In our Biography and History sections, there is one research paper, *Policy Legacies from Early Australian Telecommunications*, which describes the interaction of public and private sectors in the development of communications in Australia. We also publish an obituary of Reg Coutts, founding President of TelSoc (publisher of this *Journal*), in *Emeritus Professor Reginald Paul (Reg) Coutts (1949-2021)* and reprint one of his papers in *Revisiting the Universal Service Obligation Scheme*.

As always, we encourage you to consider submitting articles to the *Journal* and we welcome comments and suggestions on which topics or special issues would be of interest.

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