
Foreword

So, here we are... after having gone through so many generations of standards for telecommunication systems, from analogue networks to digital and the creation of mobile networks – from the first global generation GSM – we are now at the dawn of the 5G era, where almost anything and everything seems possible for our systems.

The standards for management have been a part of that journey, starting with the first International (ISO, IEC, ITU) Recommendations for management of the Open Systems Interconnection (OSI) model 7-layer stack and the M-series for Telecommunications management network (TMN) in the early 90's. These important steps defined the concept of reference point and the first object-oriented information models.

The core principles of those information models were then reused by ETSI in the '12-series' specifications for GSM management and again by 3GPP SA5 – from 1999 onwards – building around the concept and framework of Integration Reference Points for 3G and 4G.

For 5G, the SA5 specifications have reused many of the components developed for 3G and 4G but we have now moved over to a service-based architecture (SBA) framework to facilitate easier and more flexible use of our services and interfaces. The SBA is being used by traditional operators' management systems as well as by 3rd party service providers for new 'vertical' industry sectors. It is exciting to see how many new applications that the 5G system will enable over time, often for uses that were previously un-seen.

This special issue on "Operations" shows some of those exciting new applications, as well as shining a light on the foundations that they are built on: 3GPP and ETSI standardization of management, orchestration, charging and network functions virtualization for 5G. Enjoy the reading!

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Guest Editor



Thomas Tovinger is chairman of 3GPP SA Working Group 5 (SA5) since 2015. Thomas holds a Master of Science diploma in Engineering Physics with Computer Science specialization (1980) from Chalmers University of Technology, Gothenburg (Sweden) and has over 35 years of experience in the telecommunications industry working for Ericsson since 1980. Thomas worked with OSS software design, system design and testing from 1980 to 1999. He joined his first standardization group 1993: ETSI SMG6 developing the GSM management specifications. He joined 3GPP SA5 from the start 1999 and was rapporteur of the first Configuration Management group 1999–2001 where he was heavily involved in introducing the IRP (Integration Reference Point) concept for SA5.

From 1999 to 2015 Thomas was rapporteur and chair of various SA5 work items and Sub Working Groups, and he was also member of the ETSI TISPAN NGN (Next Generation Networks) Network Management group (WG8) from 2005 to 2007. In August 2007 he was elected for the first term as vice chair of 3GPP SA5, a role which he pursued until 2015. In August 2015 Thomas was elected chairman of SA5, a position which he has held until today.