

Softwarization and virtualization for “Space 2.0” vision enabling

**Seminar at Tallinn University of Technology, Thomas Johann Seebeck
Department of Electronics/COEL ERA-Chair**

Date and time: Thursday 29 August 2019, 14:00 to 17:00

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FB event: <https://www.facebook.com/events/1734025983408303/>

**Speaker: Claudio Sacchi, University of Trento, Dept. of Information Engineering and
Computer Science, Trento (Italy)**

Abstract

Satellite has been regarded for a long time as a mere relay orbiting around the Earth, suitable for global-coverage broadcasting applications. As the terrestrial wireless networking technology evolved, the role of satellite communications becomes more and more marginal, mainly due to their lack of flexibility. In order to be effectively integrated with terrestrial network infrastructures, the Space segment should be able at reconfiguring itself in some manner. Indeed, for users, developers and service providers, a payload designed 20 years ago – this is the average lifetime of an in-orbit satellite – is clearly obsolete. Unfortunately, if nonprogrammable hardware is used on-board, nothing can be done in order to change payload architecture and functionalities. In such a perspective, the progressive “softwarization” of digital communications and networking can provide an answer. This seminar aims at reviewing the state-of-the-art panorama about the softwarization of satellite communications, meaning with this term both the implementation of software-defined-radio based payload, provided with features like frequency agility, reprogrammable transmission waveforms and coding, and techniques for higher-layer network management, like resource virtualization and slicing. In the framework of a renewed “Space 2.0” vision, softwarization will definitely augment flexibility, reconfigurability, energy efficiency and resilience of the Space segment in the perspective of the future interaction and integration with 5G (and beyond) terrestrial deployments.

About the speaker

Claudio Sacchi received the "Laurea" Degree in Electronic Engineering, and the Ph.D. in Space Science and Engineering at the University of Genoa (Italy) in 1992 and 2003, respectively. From 1996 to 2002, he has been research cooperater with the University of Genoa, Dept. of Biophysical and Electronic Engineering (DIBE) and with the National Italian Consortium in Telecommunications (CNIT), managing project activities in the field of multimedia surveillance systems and satellite communications. Since August 2002, Dr. Sacchi is assistant professor at the Department of Information Engineering and Computer Science (DISI) of the University of Trento (Italy).

Claudio Sacchi is author and co-author of more than 100 papers published in international journals and conferences. In 2011, he was guest editor of the special issue of PROCEEDINGS OF THE IEEE: "Aerospace Communications: History, Trends and Future." Moreover, in 2015, he was guest editor of the featured-topic special issue of IEEE COMMUNICATIONS MAGAZINE: "Toward the Space 2.0 Era."

Dr. Sacchi has been invited lecturer to international PhD Summer schools. He also held seminars and short courses both for MSc and PhD students in recognized EU and North American Universities and research institutions. The research interests of Dr. Sacchi are mainly focused on wideband mobile and satellite transmission systems based on space, time and frequency diversity; MIMO systems; array processing; multi-rate and multi-access wireless communications; EHF broadband aerospace communications; software radio and cognitive radio; radio communications for emergency recovery applications.

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