

From spectrum engineering to spectrum regulation to enable future 6G uses

Peter Faris – [European Communications Office](#)

Peter Faris is a spectrum expert at the European Communications Office in Copenhagen, which is the permanent office of the CEPT (European Conference of Postal and Telecommunications Administrations) organisation. He is responsible for supporting the work of various CEPT groups, with a particular focus on mobile broadband (5G/6G), satellite regulation and general spectrum engineering issues. He also contributes to the development of the SEAMCAT simulation tool. Prior to joining the ECO in 2016, Peter worked for the UK communications regulator Ofcom from 2008-2016, where his main role was on technical coexistence analysis related to awards of spectrum for 4G. He holds a Masters degree in Electronic and Communications Engineering from the University of Bristol.

Content and outline

In the continuous race for spectrum, there is growing interest in the use of increasingly higher frequencies. In order to ensure coexistence between incumbent users and newcomers across different frequency ranges, effective and future-proof regulatory solutions based on robust spectrum engineering techniques are required. The future wireless communication networks towards 6G bring new spectrum challenges, especially in view of the progressive integration of the terrestrial and non-terrestrial networks.

This keynote will explain the process of spectrum regulation from start to finish, and address the different levels of regulation for the use of frequencies at global, European and national level. The different roles of European bodies (i.e. CEPT, EC, ETSI) and also the ITU at the global level will be highlighted.

The main steps from modelling radio channels to spectrum regulation via spectrum engineering will be explained, showing how coexistence studies are the cornerstone for developing spectrum regulation, including European harmonisation measures and the ITU Radio Regulations.

Duration

30 minutes presentation + 15 minutes Q&A

Expected audience

INTERACT members interested in knowing more about spectrum regulation for radiocommunications

Channel modeling and emulation – industry perspective

Janne Kolu - Keysight Technologies

Mr. Janne Kolu leads Keysight Channel Emulation business and product development. With over 25 years of experience, he has had leadership positions in multiple business domains including Product Planning, Product Management, Research & Development, and order fulfillment. Janne has extensive knowledge of radio channel modeling and emulation technologies for 4G, 5G, and most recently 6G. He has a Master of Science degree in Physics from the University of Oulu, Finland.

Content and outline

The presentation aims to cover Keysight observations on radio channel topics and will share industry perspectives towards the future evolution of channel modeling and emulation. Keysight actively participates in global university collaborations and transforms theories into practical engineering solutions to enable our customer's success. Keysight has had a pole position in the industry since 2G to help customers innovate and implement transition between technology generations. The importance of accurate channel modeling and emulation has grown over the years, and it has become a de-facto approach to validate new wireless technologies. Digital twins and AI-accelerated solutions are impacting channel modeling as well, which will also be addressed in the presentation.

Duration

30 minutes presentation + 15 minutes Q&A

(WG1) SEAMCAT Monte Carlo simulator for spectrum coexistence studies

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Content and outline

The effective use of spectrum for future communication networks and for the enhancement of existing systems require both theoretical and experimental understanding as well as modelling of radio channels in any type of environment.

The SEAMCAT (Spectrum Engineering Advanced Monte Carlo Analysis Tool) simulation tool is a free-of-charge, open-source simulator maintained by the European Communications Office of CEPT. The tool integrates several antenna and propagation models and is designed for simulating coexistence scenarios between different radio systems across various frequency ranges. The tool uses the Monte Carlo method to produce statistical results determining the probability of interference between simulated systems. These results form the basis for spectrum harmonisation decisions in Europe as will be explored for selected case studies.

Users can also become part of the SEAMCAT community and contribute to the development of the tool through the SEAMCAT Technical Group (STG). The research community can provide valuable insight and expertise on new features and modelling capabilities for future technologies, and recent collaborations in this regard have proven successful for both parties.

Duration

30 minutes presentation + 15 minutes Q&A

Expected audience:

Researchers, academics and students involved in studies on antenna and propagation interested in prediction tools aiding the development of spectrum regulation.