The Path to 5G

Duration – ½ day

Synopsis

There is currently much discussion and many papers on the development and deployment options for 5G networks and services. Key industry bodies, vendors and service providers are broadly aligned in many areas regarding 5G service provision models and use-cases, and consequently the finer details are emerging. A common objective is that 5G should be an end-to-end system environment designed to support sustainable business models which support value creation.

Radio spectrum released by the WRC in 2015 will be further augmented in 2019 to support the huge demands that will be placed on 5G systems, and it is expected by the GSMA that 5G needs spectrum within three key frequency ranges, (Sub-1 GHz, 1-6 GHz and above 6 GHz), to deliver widespread coverage and support all use cases.

In addition to supporting the evolution of the established prominent mobile broadband services, 5G will be required to support countless emerging use cases, ranging from applications with very low bandwidth requirements to applications and services with very demanding requirements on data rate and latency.

This presentation introduces 5G concepts and principles based on the design goals and visions from standards organisations, regulatory bodies and leading vendors. The course presents various service provision mechanisms required to enable new and varied use-cases and verticals, (such as Cellular IoT, Mission Critical Control, Automotive, Entertainment and Media), and details the physical and logical architecture options that are currently being specified to support these. Virtualisation, dynamic resource optimisation and performance management are all discussed, including Cloud RAN, Core and Edge options. The course also presents the evolution of radio techniques and waveforms, including developments in multiple access, multi-RAT, TDD and MIMO technologies.

Presentation Content

Introduction to 5G

- Requirements and objectives
- Key principles
- Use-case overview
- 5G Status update

Service expansion examples

- Enhanced Mobile Broadband
- Mission Critical Control
- Automotive
- Entertainment and media

Architecture domains

- Mobile / Wireless RAN
- Fixed networking
- Computing and storage
- Security

Service provisioning and delivery

- Policy based
- Slicing principles

- QoS / QoE mechanisms
- Virtualisation (Core / Edge / RAN)

Radio access evolution

- Spectrum usage
- TDD optimisation
- Waveform evolution
- Multi-RAT principles
- Massive MIMO