LTE, LTE-Advanced & 5G All about State-of-the-Art Mobile Communications

LTE is the most successful mobile communications standard of all time. Launched in 2010. LTE is now available in almost every country in the world and there are many billions of LTE contracts. LTE has been and is being further developed towards 5G as LTE-Advanced and LTE-Advanced Pro.

A variety of functions make LTE more flexible, more powerful, more customer-oriented and more cost-effective. The agenda includes very high data rates (Gbit/s), intelligent heterogeneous network structures with cells from a few 10 m to 100 km, new frequency ranges, the Cellular Internet of Things CIoT with NB-IoT and LTE-M, device-to-device D2D transmission and group communication for BOS, intelligent antenna systems and much more.

LTE is increasingly becoming the one radio system for all possible users and use cases.

This course includes an introduction to LTE basics, milestones and standardization, the LTE network and OFDMA-based radio transmission as well as the central LTE-Advanced (Pro) features. The most important evolutionary steps towards 5G, the current status, possibilities and limitations are explained. Finally, 5G is outlined: 5G requirements, 5G milestones, the 5G network and the basics of 5G radio transmission.

Course Contents

- LTE Standardization in 3GPP
- LTE Milestones
- LTE Network EPS
- Evolved Packet Core EPC
- LTE Radio Network E-UTRAN
- LTE Radio Interface E-UTRA
- OFDMA & SC-FDMA
- Resource Block & Resource Element
- QoS Concept with ARP & OCI
- LTE-Advanced & LTE-Advanced Pro
- 3GPP Release 10 16
- Heterogeneous Networks HetNets
- Self-Organizing Networks SON
- Optimized Cell Edge: ICIC, eICIC & CoMP
- Proximity Services ProSe with D2D communication
- LTE for Public Safety Networks / BOS
- Carrier Aggregation and Dual Connectivity
- Supplementary Downlink SDL
- TDD-FDD Joint Operation
- MIMO Evolution & Massive MIMO
- Higher Order Modulation HOM
- New Device Categories & Gigabit LTE
- Cellular Internet of Things CIoT: NB-IoT & LTE-M
- Embedded SIM (eSIM/eUICC)
- New Frequency Bands
- LTE in Unlicensed Bands: LTE-LAA
- 5G (IMT-2020) Requirements, Standardization & Milestones
- 5G Radio Transmission: New Radio NR
- 5G network: NG RAN & 5GC
- 5G Spectrum

E-Book The detailed digital documentation package, consisting of an e-book and PDF, is included in the price of the course.

Target Group

The course is aimed at anyone who wants to get to know and understand LTE and many of its facets, as well as the current evolutionary steps from LTE-Advanced and LTE-Advanced Pro to 5G.

Prerequisites

Basic knowledge of telecommunications, GSM and/or UMTS/HSPA knowledge is helpful.

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.TE, LTE-Advanced & 50

Table of Contents

LTE. LTE-Advanced & 5G – All about State-of-the-Art Mobile Communications

Mobile Communications Basics & LTE Introduction 1

- Basics of Mobile Communications 1.1
- 1.2 Cellular Mobile Communications: from 1G to 6G
- 1.3 LTE Objectives
- LTE Standardization 1.4
- 1.5 LTE Milestones

2 LTE Architecture: The Evolved Packet System EPS

- 2.1 EPS- Overview
- LTE User Equipment UE 2.2
- 2.3 Evolved UTRAN
- 2.4 Evolved Packet Core EPC
- 2.5 FPS Interfaces & Summary
- 2.6 IP Multimedia Subsystem IMS

3 LTE Identities & Security

- 3.1 LTE Identities
- 3.2 Security Functions in LTE
- 3.2.1 IMEI Check
- 3.2.2 Confidentiality of the Subscriber Identity
- 3.2.3 The Authentication Vector
- 3.2.4 Mutual Authentication
- 3.2.5 Start of Encryption and Integrity Check
- 3.2.6 Integrity Check
- 3.2.7 Encryption
- 3.2.8 LTE Security Algorithms

LTE Applications & QoS 4

- 4.1 LTE Applications
- 4.2 EPS Bearer
- 4.3 OoS in LTE & OCI
- Voice Telephony in LTE: CSFB or VoLTE 4.4 SMS and LTE
- 4.5

5 The LTE Wireless Interface E-UTRA

- 5.1 F-UTRA Overview
- 5.2 E-UTRA Transmission: OFDMA E-UTRA UL Transmission: SC-FDMA 5.3
- 5.4 Bandwidth & Resource Allocation
- 5.5 Adaptive Modulation and Coding
- 5.6 MIMO: Multi-Antenna Transmission
- 5.7 LTE Data Rates
- Duplex Transmission: FDD & TDD 5.8
- 5.9 LTE Frequencies
- 5.10 Conclusion

Evolution after 5G: LTE-Advanced (Pro) 6

3GPP Evolution: LTE-Advanced (Pro) 6.1

7 Self-Organizing Networks SON

- 7.1 SON—Goals
- 7.2 SON Functions
- SON Architecture 7.3
- Automatic Neighbor Relation ANR 7.4

Heterogeneous Networks (HetNets) 8

Heterogeneous Networks: Overview 8.1

- Macro, micro, pico, or femto cell? 8.2
- 8.3 Femto Cells
- 8.4 HetNet Expansion: Chances and Challenges

ICIC, eICIC, & CoMP: Rescue for the Cell Boundary 9

- 9.1 The Problem: Inter-Cell Interferences
- Inter-Cell Interference Coordination (ICIC) 9.2
- 9.3 Enhanced ICIC
- Coordinated Multi-Point CoMP 9.4

10 D2D & Group Communication for BOS

10.1 Direct Communication: Device-to-Device D2D

- 10.2 Proximity Services ProSe
- 10.3 ProSe Architecture & Interfaces
- 10.4 ProSe Direct Discovery
- 10.5 ProSe Direct Communication
- 10.6 GCSE: Group Communication
- 10.7 Mission-Critical Push-To-Talk (MC-PTT)
- 10.8 Sidelink for Cellular V2X
- 10.9 FRMCS: The GSM-R Successor

11 Carrier Aggregation

- 11.1 Carrier Aggregation
- 11.2 Supplementary Downlink 11.3 FDD-TDD Carrier Aggregation
- 11.4 Dual Connectivity
- 11.5 Multi-RAT Dual Connectivity

12 MIMO Evolution

- 12.1 Release 10: 8x8 MIMO
- 12.2 Active Antenna Systems (AAS) 12.3 Full-Dimensional MIMO = Massive MIMO

13 Higher Order Modulation (HOM)

- 13.1 LTE Modulation Procedure
- 13.2 256QAM & 1024QAM

New UE Categories: Step by Step towards 5G 14

- 14.1 Rel. 10. The 4G target is reached!
- 14.2 Rel. 11, 12, & 13: The Path to 4.5G
- 14.3 Rel. 14 & 15: Gigabit LTE

15 Cellular Internet of Things: NB-IoT & LTE-M

- 15.1 The Internet of Things IoT
- 15.2 Radio Technologies for the IoT
- 15.3 LTE Evolution for the IoT
- 15.4 LTE-M
- 15.5 NB-IoT
- 15.6 LTE-M & NB-IoT: Summary and Preview

16 Embedded SIM & Remote SIM Provisioning

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- 16.1 eSIM for M2M
- 16.2 Benefits of the eSIM
- 16.3 Standardization of the eSIM
- 16.4 Remote SIM Provisioning 16.5 Global SIM

FOCUS

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17 New Frequency Ranges

17.3 New LTE Frequency Bands

17.4 Frequency Auction 2015

18 LTE in Unlicensed Bands

18.1 Unlicensed Bands

18.4 LWA vs. LTE-LAA

18.3.1 LTE-UE

19 5G

19.1.1 5G Usage

19.1.2 5G Operator

19.1.3 The 5G Timetable

19.2.1 5G User Equipment

19.1.4 Central 5G Components

19.2.2 5G Radio Access Network

19.2.3 5G Core Network 5GC 19.2.4 Network Slicing

19.2.5 Mobile Edge Computing

19.4 5G Spectrum

19.5.2 NR Bandwidths

19.5.3 5G Peak Rates

19.5.4 Shorter Latencies

19.5.6 Massive MIMO

19.7 Conclusion

19.5.7 Carrier Aggregation in NR

19.6 Migration from LTE to 5G

19.8 Preview: 5G Evolutionary Steps

19.8.3 5G-Advanced: 5G Evolution towards 6G

20 Optionally: Mobile Communications & Health

20.5 Studies on the Topic Mobile Communications and Health

19.8.1 3GPP Release 16 Highlights

19.8.2 3GPP Release 17 Highlights

19.9 The Future: What\qs next?

20.1 Electromagnetic Waves

20.6 Fakes & Facts

Δ

20.3 Radio Spectrum and Usage

List of Abbreviations

20.2 Thermal and Non-thermal Effects

20.4 Limits for Mobile Communications

19.3 5G Identities and Security

19.3.1 Subscriber- and Equipment-related Identities

19.3.2 AKA, Encryption, and Integrity Check

19.5.5 NR Duplex Transmission: TDD & FDD

19.5 5G Radio Interface: New Radio

19.5.1 OFDMA: Scalable Subcarriers

19.2 The 5G Network Architecture

17.5 Worldwide Usage of LTE Bands

18.2 LTE-WLAN Radio Level Aggregation LWA

19.1 The 5th Generation of Mobile Communications (5G)

18.3 LTE Unlicensed: LTE-U & LTE-LAA

18.3.2 LTE-LAA: License-Assisted Access

17.1 Frequencies and Network Coverage

17.2 World Radiocommunication Conference 2015