

COURSE DESCRIPTION

INTERNET OF THINGS- BUSINESS AND TECHNOLOGIES

Format:
Classroom

Duration:
2 Days

COURSE SUMMARY

- Exposure to the latest IoT analysis from Ovum experts
- Technology trends and standards evolution
- Examples of live and planned IoT deployments
- Technology market traction
- Clear and concise technology comparisons
- IoT ecosystem fully explored
- Future technologies and market examined



“The course was very insightful and the lessons learnt from the course will be very relevant to the telecoms industry.”

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COURSE SUMMARY

IoT is often heralded as the “next big thing” for both operators and associated industries, with predictions frequently quoting that there will be over 50 billion connected devices by 2020. However in order to cost-effectively address the scale of the potential market it is important that there are industry standards established to support all elements of the IoT/M2M ecosystem.

This 2-day training programme will focus on current and future business activities and standards activity in the realm of radio access. There are already a number of competing technologies that may be suitable for the many and various IoT applications, however they will need to meet the low power/low cost/short and long range requirements of a typical IoT service. This training will provide an over view of the existing and proposed technologies, from WiFi-based radio access to 3GPP Release 13 proposals of NB-LTE and LTE-M.

Amongst other issues that must be considered for IoT deployments are spectrum availability and suitability, and the activities of the regulators in supporting this. Security for massively deployed IoT/M2M systems is also a concern for the operators and will be reviewed in this programme.

OUTCOMES & COMPETENCY DEVELOPMENT

Participants will develop or be able to:

- An understanding of the scope and scale of the IoT market
- An awareness of the range of technical solutions for connected IoT
- Develop business solutions for the connected device market
- Understand the current trends related to the technology and business of IoT
- Appreciate the performance differences of the various technologies available today
- Fully understand the evolution of the technology and market
- Show the differences in technology from several standards bodies and proprietary developers
- Develop connected device strategies based on market opportunities and technology availability
- Build the confidence to make decisions on technology implementation and procurement that are commercially viable, minimise risk, and in line with the strategy and goals of the wider organisation.

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COURSE CONTENTS

IOT, INTERNET OF THINGS, OVERVIEW

- What is IoT/M2M
- IoT Stack/Value Chain
- Type of Devices
- IoT history and evolution
- IoE, Internet of Everything
- Machine to Machine vs IoT
- IoT Applications and Services
- The IoT Ecosystem
- Industry Predictions and Market Trends
- Gartner Hype Curve
- Revenue Opportunities from Internet of Things

IOT MARKET TRENDS AND BUSINESS CASES

- Consumer and Enterprise M2M
- Consumer and Enterprise IoT
- Global Market Penetration
- Industry Trends
- Potential IoT Markets
 - Manufacturing
 - Smart Cities/Homes
 - Transportation
- Access Technology Traction and market size
- IoT Value Chain
 - Where the CSPs, Platform, HW companies exist
- Monetising IoT
 - Digital Transformation
- Priorities
 - Data Analytics
 - Importance of Supporting Systems
- Principle Markets and Barriers to Entry
- Partnerships and Collaboration
- Studies
 - Connected Cars
 - Smart Cities
 - Insurance

IOT ENABLING TECHNOLOGIES

- Big Data Intro
 - Big Data Analytics
 - NoSQL
 - Hadoop
 - Big data supply chain
- IOT Architecture
 - Network Topologies for IoT
 - Requirements for IoT Systems and Devices
- IP and Non-IP Based Clients
- What makes IoT possible?
- High-Level Languages
- Processing power
- Long battery life (Low power consumption)
- Energy Harvesting
- Low device cost (Cost reduction)
- Low deployment cost
- Low deployment cost - Ericsson case
- SoC, System on a Chip
- H/W Miniaturisation
- IoT Use Cases
- Low Power LAN/PAN

IOT STANDARDISATION

- IOT Reference Model
- ISO, International Organisation for Standardisation
- ITU, International Telecommunication Union
- IEEE Institute of Electrical and Electronics Engineers
- IETF, Internet Engineering Task Force
- Internet of Things Europe
- IERC, European Research

- Cluster on the Internet of Things
- Internet of Things Europe, IOT-i
- Internet of Things Europe, IOT-A
 - CEN/CENELEC
 - ETSI
- IOT CHINA
- Industrial
- Other bodies

EXISTING AND PROPOSED TECHNOLOGIES

- Radio Access Standards for IoT
- Standards Evolution and Suitability
- Cloud computing – Service Models
- Cloud Classification
- Technology Comparisons
- Hardware and firmware
- Sensors and wireless sensor networks
- Intelligent Electronic Device, IEDs
- Radio Frequency Identification (RFID)
- Wireless SoCs
- Cloud based IOT Platforms
- Building the IOT Technology
- Enablers, Engagers, Enhancers
- 3GPP Release -Proposed Technology
- Different Connectivity alternatives
- Wireless technology parameters
- Wired connectivity
- Cellular IoT: GSM, WCDMA, LTE
- IoT over Cellular – 2G
- IoT over Cellular – LTE
- Leveraging Existing LTE Services

COURSE CONTENTS

CELLULAR NETWORKS

2G/3G/4G

- General Information – What is 3GPP?
- 3GPP Rel- IoT Radio Access Solutions
- EC-GSM (Former EC-EGPRS), Extended Coverage – GSM
- LTE-M
- Functions and Services
- LTE-M Performance and Data Rates
- NB-LTE-M
- NB-LTE Performance and Data Rates
- In-Band and Standalone
- GPP NB-IoT: Supported Features
- Cellular Evolution
- Different deployment scenarios for 4G systems

IEEE - PROPOSED TECHNOLOGY

- Networking Technologies
- Wi-Fi – ac, ah, ai
- Wireless Ethernet and IoT
- Bluetooth and IoT
- GATT, Generic Attribute Profile
- Zigbee
- Released Specifications
- IETF
- LoWPAN IPv header compression examples
- LoWPAN Addressing
- Requirements and characteristics
- Functions and Services
- Comparison of wireless standards

PROPRIETARY - PROPOSED TECHNOLOGY

- Narrowband Cellular for IoT (NBCIoT)
- The road to Cellular Internet of Things
- NB-IoT
- NB-IoT deployment
- Clean Slate Cellular IoT
- CleanState IoT – DL Channelisation / LTE-M
- CleanState IoT – UL Channelisation / LTE-M
- Deployment in GSM sub-carrier
- Deployment in LTE guard bands

SPECTRUM FOR IOT

- Spectrum Availability and Use Cases
- Frequency bands
- Licensed spectrum vs Proprietary solutions
- Unlicensed sub-GHz bands
- Shared/Unlicensed Spectrum
- IOT in Licensed Spectrum
- Dedicated Spectrum
- White Space
- Dynamic Spectrum Allocation
- Weightless
- Low Band VHF for Business Radio
- IOT and 5G ??

IOT SECURITY

- IoT Security
- Security evolution
- Beecam's new IoT Security Threat Map
- European Privacy Directive

- Criticism and Political Ramifications
- The IoT – Life Cycle Security Controls for IoT devices
- Network and Device Security
- Use Cases and Security Challenges
- Sensors on shelves
- Automated checkout
- Smart Fitting Room/Smart Mirror
- Proximity Advertising
- Security alarm and Environmental Sensors
- Privacy-by-Design Principles
- Device authentication
- Firewalling
- Security in IoT implementation
- Privacy, Autonomy and Control
- Industry attempts to Secure IoT
- Environmental impact
- Protective Architecture

OUR TRAINING SERVICES

TELECOMS & TECH ACADEMY STRUCTURE

Our training programmes are delivered worldwide as part of the training and development plans of many operators, vendors, and service providers. The programmes cover a wide range of competency development requirements.

To ensure we meet the training needs of the industry as effectively as possible, we operate three schools:

School of Telecoms & Tech Business

Business training tailored to the telecoms industry, ranging from the intensive 5-day Telecoms Mini MBA to specialist leadership and marketing training.

School of Advanced Communication Technologies

Covering a multitude of technologies, these courses range from overviews aimed at non-technical staff to in-depth engineering training.

Distance Learning

Our comprehensive suite of Distance Learning programmes provide an excellent opportunity to expand knowledge and build confidence.

OUR TRAINERS

We only use trainers and programme directors that satisfy the following three criteria:

- Experts in their field
- High level of industry experience
- Expert facilitators and training professionals.

All our trainers have undergone a rigorous selection process and are subject to continuous monitoring and evaluation. Each trainer is accredited for specific courses or topic areas. Whether engineers or business experts, all our trainers are required to continue their own development within their specialist areas, and to broaden their Industry view of trends, best practice and technology.

This is achieved by our on-going work with many tier 1 operators and vendors, and by full exposure to Ovum research and KNect 365 TMT worldwide events.

UNIVERSITY ACCREDITATION

Some of our programmes have been accredited by the University of Derby Corporate; a UK-based university highly acclaimed in the area of employer engagement. They are at the forefront of the drive to integrate highly focused industry-led training with the academic rigor and quality control of university-based education. Our comprehensive Advanced Telecoms Management Series have been accredited Post-Graduate Level, with our extensive suite of Distance Learning at Undergraduate Level)

We would be happy to discuss extending accreditation to tailored ATMS or programmes based on our Distance Learning modules. Although accreditation is specific to these programmes, the work we do with the University of Derby enable us to develop and apply best practice across our portfolio.

CUSTOMISED IN-HOUSE TRAINING

Telecoms & Tech Academy has worked with countless companies to deliver customised training programmes. We take time to understand your requirements, you'll work with our specialist training team to ensure that we deliver your perfect training programme for your business.

A customised training programme from Telecoms & Tech Academy ensures you get a course that precisely matches your organisation's needs, presented by a first-rate training organisation, with access to all the latest industry research and analysis.

WHY CHOOSE IN-HOUSE TRAINING FROM TELECOMS & TECH ACADEMY?

- Content can be customised to focus on the issues you want – work with us to develop the training course to match the exact needs.
- Unique industry research – from Ovum's team of industry leading analysts
- Expert trainers – our team of versatile trainers have the knowledge and experience to deliver a highly effective learning experience
- The most efficient way to train your staff – at the time and location to minimise disruption
- Flexible delivery options – with a range of instructor led, distance learning and virtual classroom formats available you can build a blended solution to maximise training effectiveness over the long term
- Pre and post course assessment – can be included in programmes to measure competencies and check on the required progress.

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