Training Catalogue
27/05/2020

KAÏNA-COM
TRAINING CATALOGUE

IoT Communication Networks

Nos locaux
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KIoT002 – IoT Communication Networks

Reference	KIoT002
Experience	☒ Beginner ☒ Intermediate ☐ Advanced
Duration	Training Program: • 2 days
Training Method	☐ I: i-learning, individual training (web-based training) ☒ V: v-learning, virtual class ☐ C: c-learning, classroom training **KAÏNA-COM** LE CARRÉ HAUSSMANN II, 6 Allée de la Connaissance 77127 Lieusaint - France
Price	1.390,50 € HT
Prerequisite	• Basic technological understanding • Basic communication and network knowledge
Audience	The course is designed for anyone who works with, or has a professional interest in IoT

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KIoT002 – IoT Communication Networks, Continued

Objective

IoT allows objects to be sensed and controlled remotely across existing network infrastructure, creating opportunities for more direct integration between the physical world and computer-based systems, and resulting in improved efficiency, accuracy and economic benefit.
The world of communications is adapting to IoT, with new types of wireless networks (such as LPWA Networks), protocols and infrastructure being developed to match the specific challenges and demands of this rapidly growing technology.
This seminar will address these challenges and provide participants with the in-depth knowledge needed to understand and work with IoT wireless networks.
We will cover the wide range of developing new wireless networks and standards relating to all aspects of IoT, including 3GPP networks e. g. LTE-MTC, NB-IOT; alternatives such as LORA, SIGFOX and others; all activity and business issues related to IoT, and a look at how these networks will evolve into 5G.

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KIoT002 – IoT Communication Networks, Continued

Course Contents

Course Contents :

Table 1: KIoT002 - Course Contents (Day#1)

Chapter	Description
Introduction	• The IoT Building Blocks • Major standard groups and alliances • IoT spectrum allocation aspects
IOT challenges and requirements	• IoT Network Challenges – Interoperability and Scalability – Data volume, Data acquisition and Analytics • IoT Service Requirements – Mobility Vs. Fixed Broadband – MTC – Machine Type Communications: Massive MTC, Critical MTC – Energy Saving – Low Power and Wide Area – IoT Verticals Typical Use-Cases : Connected Car, Smart City, Smart Grid, mHealth, etc. • IoT Network Design Requirements – Network KPIs: Mobility, Spectrum Efficiency, Latency, Connection Density, etc. – Different Communications Models: Device to Device, Cloud to Device, Device to Gateway – Moving Networks (MN) – Multi-homing and Identity management – Edge Computing

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KIoT002 – IoT Communication Networks, Continued

Course Contents, continued

Chapter	Description
IOT NETWORK ARCHITECTURE Solutions	• IoT reference architecture – C-IoT architecture – C-IoT architecture for roaming • Why are LPWANs "long–range"? – LoRaWAN network architecture and standards – LoRaWAN Classes – What LoRa can do that others cannot – Private network infrastructure • URLCC Ultra Reliable Low Latency network architecture solutions – Connected Car – Industrial and Tactile IoT
IOT Low Power Short Range Networks	• IoT/M2M Key Enabling Wireless Technologies – Bluetooth Low Energy (BLE) – ZigBee – Thread – Wi-SUN

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KIoT002 – IoT Communication Networks, Continued

Course Contents, continued

Table 2: KIoT002 - Course Contents (Day#2)

Chapter	Description
IOT network solutions review	• IoT Network solutions Characteristics. • C–IoT – Cellular Networks Solutions – NB-IoT – 3GPP LPWA Narrowband IoT solution LTE Cat–NB1 – LTE-M – eMTC LTE Cat–M1 – URLCC – Ultra Reliable Low Latency Comm. solutions • LPWAN Unlicensed Spectrum Solutions – SigFox – LoRA – Ingenu (ex. On–Ramp) – Wi-Fi HaLow – 802.11ah
IOT Network Virtualization	• SDN – Software Defined Networking – The SDN concept – Controller Northbound / Southbound APIs • NFV – network functions virtualization – ETSI ISG for NFV – VNF – Virtualized Network Functions – network function SW implementation – NFVI – NFV Infrastructure – The physical resources (compute, storage, network) and the virtual instantiations that make up the infrastructure
IOT CORE NETWORK SOLUTIONS CHARACTERISTICS	• IoT Solutions Characteristics – Managed Vs. Unmanaged Network, Business Models – e.g. Partnerships, single ownership, • C–IoT – The full range of LPWA solutions – Cellular network architecture, EC–GSM, LTE–M, NB–IOT • Use case – enables the remote control of lights via a smartphone

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KIoT002 – IoT Communication Networks, Continued

Course Contents, continued

Chapter	Description
IoT security challenges and solutions	• General security elements – The need for security – Cryptography – UICC / SIM car – Connectivity protocols • Cellular security elements – Cellular elements, Cellular anonymity, Cellular authentication and ciphering • Sigfox and LoRa security solutions • User privacy protection
The End	• Summary • Q&A • Course's Evaluation