

<b>Course ID</b>	<b>Course Title</b>
<b>IoT1</b>	<b>Internet of Things (IoT)</b>
<b>Course Duration</b>	
<b>2 days</b>	
<b>Aimed At</b>	Executives, managers, engineers, and others who need a good understanding of the technology and impact of Internet of Things (IoT).
<b>Prerequisites</b>	Familiarity with networking, wireless, and Internet technologies will be helpful.
<b>Course in a Nutshell</b>	In this two-day in-depth course, you will acquire a broad understanding of the technical requirements for IoT (networks, devices, security, data management, etc.) as well as the issues and challenges for deploying and operating an IoT enabled application or service. Also discussed are some of the more advanced topics that are key to the future of IoT networks, services, and data. The course culminates in a workshop that will enable you to put your knowledge to work by planning an IoT enabled service.
<b>Customize It!</b>	We can customize this course, usually at little to no additional cost, to your project requirements and participant backgrounds. Topics can be added or omitted and the course can be made more or less technical depending on the audience interests.
<b>Course Outline</b>	<b>1. Introduction to the Internet of Things (IoT)</b> <ul style="list-style-type: none"><li>• <b>What is IoT?</b><ul style="list-style-type: none"><li>▪ Common Definitions</li><li>▪ Purpose of IoT</li></ul></li><li>• <b>IoT Building Blocks</b><ul style="list-style-type: none"><li>▪ Monitoring and Data</li><li>▪ Sensors and Intelligence</li><li>▪ Communications Modules</li><li>▪ Communications Media</li><li>▪ Data Storage and Management</li><li>▪ Distributed Processing</li></ul></li><li>• <b>IoT Technologies</b><ul style="list-style-type: none"><li>▪ Wireless<ul style="list-style-type: none"><li>○ Wireless WAN<ul style="list-style-type: none"><li>▪ Cellular WAN</li><li>▪ Non-cellular WAN</li></ul></li><li>○ Local Area Wireless</li><li>○ Personal Area Wireless</li></ul></li><li>▪ The Cloud<ul style="list-style-type: none"><li>○ Centralized Cloud</li></ul></li></ul></li></ul>

- Fog Computing
    - Device Addressing (IPv6)
    - Embedded Systems
    - Mediation and Orchestration
  - **Important IoT Verticals**
    - Connected Home
    - Connected Vehicles
    - Industrial IoT
    - Healthcare Industry
    - Retail Industry
    - Smart Cities
  - **Other Impacted Technologies**
    - Drones and Robotics
    - Wearable Tech
  - **IoT Ecosystem**
    - Wireless Service Providers
    - Device Manufacturers
    - Semiconductor and MEMS Providers
    - Systems Integrators
    - Application Development Community
- 2. Local and Personal Area Wireless for IoT**
- **WiFi and IoT**
  - **Personal Area and IoT**
    - BLE
    - NFC
    - Beacons
- 3. Wide Area Networks for IoT**
- **Cellular IoT WAN**
    - Narrow Band LTE (NB-LTE)
    - LTE-M/3GPP
    - EC-GSM-IoT/3GPP
  - **Non-cellular IoT WAN**
    - Low Power WANs (LPWAN)
    - LPWAN Comparison
    - Opportunities and Challenges
- 4. Security in IoT**
- **Core Issues**
  - **Advanced Issues**

- Distributed Computing
- Artificial Intelligence
- Beyond “Security”

## 5. IoT Mediation

- **Managing Identity in IoT**
  - Machine Identity
  - Business Identity
  - Individual Identity
- **Authentication, Authorization, and Accounting**
  - Lessoned learned about AAA in General
  - AAA in IoT
- **Real-time Predictive Analytics**
- **Artificial Intelligence and IoT Analytics**

## 6. IoT Data Management

- **IoT Data Management Issues**
  - Security
  - Privacy
- **IoT Data as a Service (IoTaaS)**
  - IoT Data Brokering
  - Next Generation Business Models
- **Real-time Predictive Analytics**
- **Artificial Intelligence and IoT Analytics**

## 7. Advanced IoT Concepts

- **Software Defined IoT (SDN IoT)**
- **IoT Real-time OS**
- **IoT APIs and Development Ecosystem**
- **Ambient IoT**
- **IoT Virtualization: R2V, V2R, and V2V**
  - Creating a Virtual Map of the Real: IoT Dictionaries
  - Manipulation of Real-world: Virtual to Real
  - IoT Simulation: Virtual to Virtual

## 8. Course Workshop: Planning an IoT enabled Service

- **Service Requirements**
  - Service Definition
  - Devices and Communications
  - Data Management

- **Device Planning**
  - Module Selection
  - Lifecycle Management
- **Network Planning**
- **Security Planning**
- **OSS/BSS Planning**

### **Wrap-up: Course Recap, Discussion, and Course Evaluation**

#### **How You Will Learn**

You will learn in lecture/workshop format from a telecommunications technologies expert with 25+ years of field expertise.

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