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Internet of Things (IoT)

Connected infrastructure and strategic decisions

FA-0631

DevOps, Cloud & Infrastructure

Explore connected-device ecosystems, applications, infrastructure choices and the practical risks involved in planning an IoT initiative.

Introduction

This nontechnical exploratory course introduces decision-makers to Internet of Things infrastructure: devices, connectivity, data processing and user-facing services. It examines applications across consumer, industrial and public-service settings.

Participants discuss potential operational and business value alongside integration, lifecycle, security, privacy and governance constraints. The focus is on evaluating a proposed initiative and outlining a realistic roadmap, not building a production system or guaranteeing efficiency, revenue or sustainability gains.

Learning outcomes

The course teaches participants to:

- Describe the main components of a connected-device ecosystem.
- Compare common connectivity, cloud and edge considerations at overview level.
- Identify plausible IoT applications and the information needed to assess their value.
- Discuss integration, scalability, device-management and lifecycle challenges.
- Recognise security, privacy and ethical questions in collecting and using IoT data.
- Outline a staged evaluation and implementation roadmap for an illustrative initiative.

Prerequisites

- No programming or specialist IoT knowledge is required.
- A general understanding of digital technologies and their organisational uses is helpful.
- Interest in evaluating connected-device applications and their practical constraints.

Training outline

1. Introduction to IoT

- Defining IoT and Its Importance
- How connected-device ecosystems have evolved; distinguish established uses from emerging proposals.
- The Basic Components of IoT: Devices, Connectivity, Data Processing, and User Interface
- Overview of IoT Ecosystem

2. Technologies Powering IoT

- Sensors and Actuators
- Connectivity Solutions (Wi-Fi, Bluetooth, LPWAN)
- Cloud and Edge Computing
- Platforms for IoT Device Management and Data Analytics

3. Applications Across Sectors

- Smart Homes and Consumer IoT
- Industrial IoT (IIoT) and Manufacturing
- Smart Cities and Infrastructure
- Healthcare IoT (IoMT)
- Agriculture, Retail, and Beyond

4. Strategic Implications

- Assess potential efficiency and productivity benefits against cost, reliability and operational evidence.
- Evaluate proposed business models and revenue opportunities without assuming commercial success.
- Explore customer-experience uses and the evidence needed to assess their value.

- Environmental monitoring and sustainability applications, including measurement and lifecycle trade-offs.

5. Implementation Challenges

- Technical and Integration Challenges
- Scalability and Management of IoT Devices
- Security and Privacy Concerns
- Identify applicable regulatory and compliance questions for a selected context; this is not legal advice or a compliance certification.

6. Ethics, Security and Privacy

- Ethical Use of IoT Data
- Addressing IoT Security Vulnerabilities
- Data Privacy and Protection Strategies

Discuss device capabilities and organisational responsibilities using a recognised IoT cybersecurity baseline as a starting point, not a guarantee of compliance.

7. Future Developments and a Roadmap

- Discuss emerging developments with explicit uncertainty rather than forecasts.
- Identify readiness, interoperability and lifecycle questions for future IoT investments.
- Outline a staged IoT evaluation and implementation roadmap for an illustrative scenario.

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