



# **IoT DATA COLLECTION AND ANALYSIS FOR BUSINESS INSIGHTS TRAINING COURSE**

**14 - 18 DEC 2026  
KUALA LUMPUR  
5200 € (PER PERSON)  
REF: #DM8333\_91221**



## **COURSE INTRODUCTION / OVERVIEW:**

The Internet of Things (IoT) is revolutionizing industries by creating a vast network of interconnected devices that generate unprecedented volumes of data. The true value, however, lies not in the data itself, but in the ability to collect, process, and analyze it to derive actionable business insights. This course provides a comprehensive A-to-Z journey into the world of IoT data, from sensor deployment to strategic decision-making. As highlighted by academic pioneers like Dr. John A. Stankovic, a leading researcher in real-time and cyber-physical systems, the challenge is to build robust and intelligent data pipelines. This program, offered by BIG BEN Training Center, is meticulously designed to equip participants with the essential skills to navigate this complex ecosystem. Drawing on concepts discussed in foundational texts such as "The Internet of Things: Enabling Technologies, Platforms, and Use Cases", we will explore the entire data lifecycle. Participants will learn to design effective data collection strategies, manage massive datasets, apply advanced analytical techniques, and translate raw data into tangible business value, ensuring their organizations can fully leverage the power of the connected world. This training is not just about technology; it is about building a data-driven culture that fosters innovation and competitive advantage.

## **TARGET AUDIENCE / THIS TRAINING COURSE IS SUITABLE FOR:**

- Data Analysts and Scientists.
- IT Professionals and Network Engineers.
- Business Intelligence (BI) Professionals.
- Product Managers and Strategists.
- Software Developers and System Integrators.
- Operations Managers in IoT-driven industries.
- Technical Project Managers.
- Research and Development Professionals.
- Engineers working with sensor technology.

## **TARGET SECTORS AND INDUSTRIES:**

- Manufacturing and Industrial Automation.
- Healthcare and Medical Devices.
- Smart Cities and Urban Planning.
- Agriculture and Agribusiness.
- Logistics and Supply Chain Management.

- Energy and Utilities.
- Retail and Consumer Goods.
- Governmental agencies and public sector services.
- Telecommunications and Technology.



## TARGET ORGANIZATIONS DEPARTMENTS:

- Information Technology (IT) and Operations.
- Research and Development (R&D).
- Data Analytics and Business Intelligence.
- Product Development and Management.
- Operations and Production.
- Strategic Planning and Innovation.
- Engineering and Technical Services.
- Supply Chain and Logistics.
- Quality Assurance and Control.

## COURSE OFFERINGS:

By the end of this course, the participants will have able to:

- Design and implement robust IoT data collection architectures.
- Select appropriate sensors and communication protocols for specific use cases.
- Master techniques for real-time data ingestion and processing.
- Apply data cleansing and preprocessing methods for IoT datasets.
- Utilize time-series databases and big data storage solutions effectively.
- Perform exploratory data analysis to uncover patterns in sensor data.
- Implement machine learning models for predictive maintenance and anomaly detection.
- Create compelling data visualizations and dashboards for IoT insights.
- Develop strategies for ensuring IoT data security and privacy.
- Translate analytical findings into actionable business strategies and recommendations.
- Evaluate and select suitable IoT analytics platforms and tools.

## COURSE METHODOLOGY:

The training methodology at BIG BEN Training Center is designed to be immersive, practical, and highly interactive, ensuring participants can immediately apply their learning. We move beyond traditional lectures to foster a dynamic learning environment built on a foundation of real-world application. The course heavily emphasizes hands-on labs and simulated projects where participants will work with sample IoT datasets to build data collection pipelines and perform complex analyses. Case studies from diverse industries such as manufacturing, healthcare, and logistics will be dissected in group discussions to understand the practical challenges and successful strategies in IoT data management. Collaborative teamwork is a core component, with participants engaging in group exercises to solve complex problems,

encouraging peer-to-peer learning and knowledge sharing. Our expert instructors facilitate interactive sessions, encouraging questions and open dialogue to deepen understanding. Continuous feedback is provided throughout the course, both from instructors and peers, to help participants refine their skills and build confidence in their new capabilities. This blended approach ensures a comprehensive mastery of both the theoretical concepts and the practical skills required to excel in the field of IoT data analysis.



## **COURSE AGENDA (COURSE UNITS).**

### **UNIT ONE: FOUNDATIONS OF THE IoT DATA ECOSYSTEM**

- Introduction to the Internet of Things (IoT) and its architecture.
- The IoT data lifecycle from generation to action.
- Types of IoT sensors and data characteristics.
- Understanding data volume, velocity, and variety in IoT.
- Key communication protocols (MQTT, CoAP, HTTP).
- Introduction to edge, fog, and cloud computing models.
- Ethical considerations and the impact of IoT on business.

### **UNIT TWO: STRATEGIES FOR IoT DATA COLLECTION AND INGESTION**

- Designing a scalable data collection strategy.
- Sensor integration and data acquisition techniques.
- Managing device connectivity and network considerations.
- Real-time data streaming vs. batch processing.
- Implementing data ingestion pipelines with tools like Kafka and Flume.
- Edge analytics for pre-processing data at the source.
- Ensuring data quality and integrity at the point of collection.

### **UNIT THREE: STORING AND MANAGING IoT DATA**

- Data preprocessing and cleansing techniques for sensor data.
- Handling missing values and noisy data in IoT streams.
- Introduction to time-series databases (e.g., InfluxDB, Prometheus).
- Using NoSQL and big data storage solutions like Hadoop HDFS.
- Data warehousing and data lakes for IoT analytics.
- Data governance policies for IoT data management.
- Strategies for efficient data compression and storage.

### **UNIT FOUR: ADVANCED IoT DATA ANALYSIS AND MACHINE LEARNING**

- Exploratory data analysis (EDA) for IoT datasets.
- Statistical methods for analyzing time-series data.
- Anomaly detection algorithms for identifying unusual events.
- Predictive maintenance models using machine learning.

- Applying classification and regression models to sensor data.
- Introduction to deep learning for complex pattern recognition.
- Real-time analytics and stream processing frameworks.



## UNIT FIVE: VISUALIZATION, SECURITY AND BUSINESS APPLICATIONS

- Principles of effective data visualization for IoT.
- Building interactive dashboards with tools like Grafana or Tableau.
- Implementing robust security measures for IoT data.
- Addressing data privacy and compliance (e.g., GDPR).
- Developing a business case for an IoT data project.
- Case studies in smart manufacturing, smart cities, and connected health.
- Final project. creating an end-to-end IoT data analysis solution.

### FAQ:

#### QUALIFICATIONS REQUIRED FOR REGISTERING TO THIS COURSE?

There are no requirements.

#### HOW LONG IS EACH DAILY SESSION, AND WHAT IS THE TOTAL NUMBER OF TRAINING HOURS FOR THE COURSE?

This training course spans five days, with daily sessions ranging between 4 to 5 hours, including breaks and interactive activities, bringing the total duration to 20 - 25 training hours.

#### SOMETHING TO THINK ABOUT:

As IoT data becomes increasingly commoditized, where will the true competitive advantage lie: in the sophistication of data collection, the speed of analysis, or the creativity of its application?

#### WHAT UNIQUE QUALITIES DOES THIS COURSE OFFER COMPARED TO OTHER COURSES?

This course distinguishes itself by offering a holistic, business-centric perspective on the entire IoT data lifecycle, moving far beyond a purely technical or tool-based approach. While other programs may focus narrowly on specific protocols or analytics software, our curriculum is strategically designed to bridge the critical gap between engineering, data science, and business strategy. We emphasize the "why" behind the "how", ensuring participants not only master the technical skills of data collection and analysis but also understand how to translate those skills into tangible business value and competitive advantage. The curriculum integrates practical case studies that reflect real-world complexities, challenging participants to think critically about trade-offs in system design, data governance, and security. Rather than just teaching algorithms, we focus on developing an analytical mindset, enabling participants to formulate the right questions and design appropriate analytical solutions for unique business problems. The course's emphasis on building an end-to-end data pipeline in a simulated environment provides a unique, hands-on experience that solidifies learning and builds practical confidence, preparing participants to lead and execute impactful IoT initiatives within their organizations.