MAWA EVENTS

Address: No. 857, Block A2. Leisure Commerce Square - No 9., 46150 Petaling Jaya, Selangor, Malaysia

Phone: +601116373203 | **Email:** info@mawaevents.net

FUNDAMENTALS OF DIGITAL TWIN

"Digitally Mirroring Physical Assets for Smarter, Predictive, and Connected Operations"

Schedule

Venue	Fees
In-House	ASK FOR THE QUOTATION

► **Available delivery methods:** In-House Training

Introduction

Digital Twin technology is at the core of Industry 4.0 and smart systems. It represents a digital replica of physical assets, processes, or systems that can be used for real-time monitoring, simulation, and analysis. Organizations are increasingly using Digital Twins to reduce costs, improve performance, predict outcomes, and enhance operational efficiency.

This comprehensive 5-day training introduces participants to the core principles, architecture, lifecycle, and practical applications of Digital Twin technology. The course covers design strategies, enabling technologies like IoT and AI, and real-world use cases across industries such as manufacturing, energy, and infrastructure.

Objectives

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

- Define the concept and purpose of a Digital Twin
- Describe the technologies that enable Digital Twins (IoT, AI, cloud, edge computing)
- Identify different types of Digital Twins and their industry-specific applications
- Develop a basic Digital Twin framework and integration plan
- Interpret performance and behavior using digital simulations and data analytics
- Build a roadmap for Digital Twin implementation aligned with organizational goals

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Why Attend

- Understand the evolution and strategic value of Digital Twins
- Learn how to deploy simulation and real-time data to optimize systems
- Gain practical insights into integrating IoT, cloud, and AI into operations
- Access Digital Twin templates, frameworks, and planning tools
- Become a valuable resource in your organization\'s digital transformation journey

Target Audience

This program is designed for:

- Engineers, designers, and system architects
- IoT and automation specialists
- Digital transformation leaders
- IT and infrastructure professionals
- Asset and operations managers
- Innovation and smart technology strategists

Individual Benefits

Key competencies that will be developed include:

- Practical understanding of Digital Twin design and lifecycle
- Experience with simulation, real-time monitoring, and digital modeling
- Familiarity with key technologies like sensors, data platforms, and analytics
- Tools for evaluating readiness and planning implementation
- Recognition as a digitally capable leader in your industry

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Enhanced ability to optimize asset performance through predictive insights
- Accelerated innovation and R&D with simulation-driven design
- Improved decision-making based on real-time system visibility
- Reduced maintenance costs and equipment downtime
- Stronger alignment between physical operations and digital capabilities

Instructional Methodology

This course follows a blended learning approach combining theory with practice:

- **Strategy Briefings** – Core Digital Twin principles, frameworks, and enabling technologies
- **Case Studies** – Global examples of Digital Twin applications in various sectors
- **Workshops** – Practical exercises to build, map, and plan Digital Twin systems
- **Peer Exchange** – Collaborative sessions on challenges and strategic discussions
- **Tools** – Digital Twin templates, readiness assessments, and roadmap planners

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Course Outline

DETAILED 5-DAY COURSE OUTLINE (CUSTOMIZABLE)

Training Hours: 7:30 AM – 3:30 PM Daily Format: 3–4 Learning Modules | Coffee breaks: 09:30 & 11:15 | Lunch Buffet: 01:00 – 02:00

Day 1: Introduction to Digital Twin Fundamentals

Module 1: Digital Twin Concepts & History (07:30 – 09:30)

- Definitions and core concepts
- Evolution of Digital Twins in industrial settings
- Business value and strategic context

Module 2: Technology Enablers (09:45 – 11:15)

- Sensors, IoT, and connectivity
- Cloud vs Edge computing in Digital Twins
- Role of AI, data analytics, and cybersecurity

Module 3: Digital Twin Types and Models (11:30 – 01:00)

- Component, system, and process-level twins
- Physical-Digital-Physical (PDP) loop explained

Module 4: Discussion – Key Use Cases & Benefits (02:00 – 03:30)

Day 2: Digital Twin Architecture and Platforms

Module 1: Building a Digital Twin Ecosystem (07:30 – 09:30)

- Architecture components: physical asset, data, models, services
- Real-time data acquisition and streaming

Module 2: Data Integration & Interoperability (09:45 – 11:15)

- APIs, communication standards, and protocols
- Data quality, normalization, and latency

Module 3: Digital Twin Platforms & Tools (11:30 – 01:00)

- Overview of software tools (PTC, Siemens, Azure, etc.)
- Simulation vs real-time monitoring

Module 4: Workshop – Design Your Digital Twin Blueprint (02:00 – 03:30)

Day 3: Industrial Applications and Sectoral Use Cases

Module 1: Smart Manufacturing & Industry 4.0 (07:30 – 09:30)

- Predictive maintenance, real-time control
- Supply chain visibility and performance optimization

Module 2: Energy, Oil & Gas, and Utilities (09:45 – 11:15)

- Pipeline management, grid monitoring, asset inspection

Module 3: Infrastructure, Smart Cities & Healthcare (11:30 – 01:00)

- Building lifecycle management, hospital equipment, urban planning

Module 4: Group Activity – Use Case Mapping (02:00 – 03:30)

Day 4: Data Analytics, Security, and Governance

Module 1: Predictive Modeling and Insights

(07:30 – 09:30)

- Forecasting behavior and anomalies
- Real-time dashboards and alerts

Module 2: Cybersecurity in Digital Twin Environments (09:45 – 11:15)

- Threat models and mitigation strategies
- Role-based access, encryption, and trust management

Module 3: Data Governance & Standards (11:30 – 01:00)

- Ownership, quality, ethics, and compliance
- ISO and IEEE standards related to Digital Twins

Module 4: Workshop – Analytics and Security Planning (02:00 – 03:30)

Day 5: Strategy, Roadmap, and Future Trends

Module 1: Readiness Assessment & Gap Analysis (07:30 – 09:30)

- Evaluating digital maturity
- Organizational readiness checklist

Module 2: Digital Twin Implementation Roadmap (09:45 – 11:15)

- Pilot project planning
- Change management and stakeholder alignment

Module 3: Future of Digital Twins & Emerging Trends (11:30 – 01:00)

- Digital Threads, autonomous systems, AI/ML integration
- Role in the Metaverse and Digital Product Lifecycle

Module 4: Course Review & Final Assessment (02:00 – 03:30)

Certification

Participants will receive a **Certificate of Completion in Fundamentals of Digital Twin**, verifying their technical and strategic understanding of Digital Twin design, deployment, and value creation across enterprise environments.

Why Choose MAWA Events

- **Global Expertise:** More than 17 years of experience in professional training and consulting.
- **Industry-Leading Faculty:** Courses delivered by seasoned professionals with hands-on experience.
- **Practical Insights:** Learn to turn theory into actionable strategies for real-world business impact.
- **Client-Focused Solutions:** Customized programs designed to achieve your organisation’s unique goals.

In-House / Customized Training Interested in running this course for your team? Please contact us:	TEL: **+601116373203**	EMAIL: **info@mawaevents.net**

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