Digital Twin Concepts for ERP-Managed Assets Training Course

Professional Development Training Course Outline

Category	Enterprise Resource Planning (ERP)	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

The convergence of Industry 4.0 and Enterprise Resource Planning (ERP) is fundamentally transforming asset management. A Digital Twin is a dynamic, virtual replica of a physical asset, system, or process, continuously synchronized with real-time operational data via IoT sensors and existing enterprise systems. This powerful synergy transcends traditional asset monitoring by enabling Predictive Maintenance, deep Simulation capabilities, and unprecedented Performance Optimization. For organizations managing vast, complex asset portfolios via their ERP platforms, integrating Digital Twins offers a vital pathway to achieving operational excellence, substantial cost reduction, and a significant competitive edge in the global market. This training focuses on the practical application and integration strategies required to unlock the full potential of this game-changing technology.

Digital Twin Concepts for ERP-Managed Assets Training Course provides a comprehensive, vendor-agnostic framework for implementing a Digital Twin Strategy that directly enhances ERP-Managed Asset Lifecycle Management. We will delve into the architectural components, data governance, and analytics necessary to create a cohesive Digital Thread between the physical world and the business intelligence residing in your ERP system. Participants will master the methodology for building high-fidelity twins from individual Component Twins to large-scale System Twins to drive Data-Driven Decision Making in areas like capital planning, maintenance scheduling, and sustainability. The ultimate goal is to equip professionals with the strategic and technical know-how to successfully deploy Digital Twins for quantifiable business value.

Programme Curriculum

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Course Duration

5 days

Course Objectives

The successful learner will be able to:

1. Define Digital Twin Architecture within the context of Enterprise Asset Management and ERP systems.
2. Differentiate between a Digital Shadow, Digital Thread, and a true Dynamic Digital Twin.
3. Evaluate high-impact Digital Twin Use Cases across the asset lifecycle for tangible ROI.
4. Master the principles of Real-Time Data Integration from IoT/OT sources into the ERP environment.
5. Develop a blueprint for Data Governance and Ontology Mapping for twin data accuracy.
6. Apply Predictive Analytics and Machine Learning to Digital Twin models for Condition-Based Monitoring.
7. Design and execute complex 'What-If' Simulation scenarios for process optimization and risk mitigation.
8. Formulate a strategic plan for Interoperability between IT (ERP) and OT systems.
9. Optimize Maintenance Strategy using twin-generated insights.
10. Measure and report on Asset Performance Management (APM) KPIs improved by Digital Twins.
11. Explore the role of AR/VR and Digital Visualization in interacting with ERP-managed twins.
12. Address Cyber-Physical Security challenges inherent in Digital Twin implementations.
13. Drive Organizational Change Management necessary for Digital Twin adoption and culture shift.

Target Audience

1. Asset Managers and EAM System Owners
2. Maintenance and Reliability Engineers
3. ERP Solution Architects
4. Digital Transformation and Industry 4.0 Leads
5. IT/OT Integration Specialists
6. Operations Managers and Plant Directors

7. Data Scientists and Advanced Analytics Professionals
8. Capital Projects and Lifecycle Planners

Course Modules

Module 1: Digital Twin & ERP Foundation

- Conceptual definition
- The Digital Thread
- Architecture components
- How Digital Twins enrich core ERP functions
- Case Study: Siemens' use of a Digital Twin of a Gas Turbine for enhanced Predictive Maintenance integrated with SAP EAM for automated Work Order generation.

Module 2: Data Acquisition and Interoperability

- IoT Sensors and Edge Computing for high-fidelity data capture.
- Streaming, cleansing, and contextualizing OT data for the twin.
- Interoperability Standards and open platforms.
- Creating a unified Semantic Model and Ontology for data consistency across IT/OT.
- Case Study: A major refinery's journey to create a consolidated data lake for all equipment data to feed a system twin, eliminating data silos.

Module 3: Modeling and Simulation Techniques

- Types of Digital Twins
- Physics-Based Modeling and Data-Driven Modeling
- Building virtual environments and calibrating the twin to physical reality
- Running Stochastic and Deterministic simulations for failure prediction and process capacity.
- Case Study: Testing new production line layouts and process changes in a simulated twin before physical implementation to optimize throughput and energy usage.

Module 4: Digital Twin for Predictive Maintenance

- Transitioning from time-based/preventive to Condition-Based Monitoring.
- Using ML models within the twin to predict Failure Modes.
- Calculating Remaining Useful Life for critical ERP-tracked assets.
- Automatically triggering alerts and creating priority ERP Maintenance Notifications.
- Case Study: How an energy company used a transformer Digital Twin to predict dielectric fluid degradation, preventing a catastrophic failure and saving millions in downtime.

Module 5: Performance Optimization and APM

- Continuous performance monitoring and Real-Time Visibility of asset health.
- Using the twin for Prescriptive Analytics.
- Optimizing Energy Consumption and material usage at the asset level.
- Improving Overall Equipment Effectiveness and bottleneck identification.
- Case Study: A manufacturer using a production-line Digital Twin to identify and eliminate micro-stoppages, boosting OEE by 15% within three months.

Module 6: Lifecycle Management and Capital Planning

- Integrating twin data into Capital Expenditure and Operating Expenditure planning.
- Using the twin to validate design changes and assess the impact of new assets.
- The role of the twin in Decommissioning and Circular Economy planning.
- Linking the Digital Twin to the ERP Financial Module for total cost of ownership analysis.
- Case Study: An infrastructure firm using a bridge's Digital Twin to justify a repair-vs-replace decision, securing long-term funding by proving RUL extension.

Module 7: Visualization and Human Interaction

- Creating immersive user experiences with Augmented Reality and Virtual Reality
- Developing user-friendly Digital Twin Dashboards for different stakeholder roles.
- Integrating twin data with Geospatial Information Systems for large-scale assets.
- Employing HMI (Human-Machine Interface) best practices for operator decision support.
- Case Study: Field service technicians using an AR headset to overlay real-time twin health data onto a physical pump, speeding up diagnosis and repair.

Module 8: Strategy, Governance, and Security

- Developing a multi-stage Digital Twin Roadmap aligned with business strategy.
- Establishing a Digital Twin Governance framework
- Addressing Cybersecurity Risks for interconnected IT/OT systems
- Calculating and communicating the Business Value (ROI) of Digital Twin projects.
- Case Study: Implementing a robust Cyber-Physical Security protocol across a utility's grid-asset twins to prevent malicious manipulation of the virtual replica.

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call +254769199797

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

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