Digital Twin
on smart manufacturing

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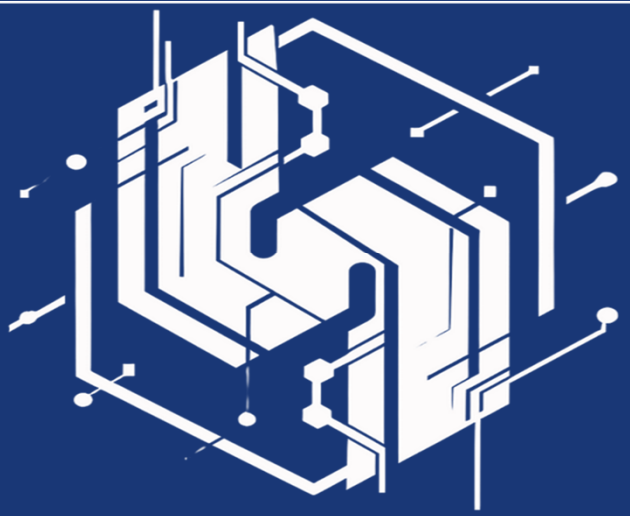

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Digital Twin

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The Digital Twin Initiative: Project Overview

Project Overview

Digital Twin on Smart Manufacturing project, a pioneering initiative designed to integrate advanced digital twin technologies into the heart of manufacturing education and practice.

This project aims to forge a strong link between current educational frameworks and the dynamic needs of the industry, preparing a new generation of technicians equipped with the skills to innovate, optimize, and revolutionize smart manufacturing processes.

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The Digital Twin Initiative: Project Overview

Project Consortium

The Digital Twin project unites 11 full partners and 20 associated partners from 5 EU countries (Italy, Spain, Sweden, Greece and Bulgaria) blending VET/HVET, higher education, enterprises, chambers of commerce and SMEs to meet end-user expectations with innovative Digital Twin solutions.

apro

B&B AUTOMATION

ATS Team 3D
A division of ATS Global

Politecnico di Torino
1859

POLITEKNIKA TXORIERRI

GAIA
INDUSTRIA DE CONOCIMIENTO Y TECNOLOGÍA APLICADA

GBM AUTOMATIZACIÓN DE PROCESOS

Göteborgs Tekniska College

HELLENIC MEDITERRANEAN UNIVERSITY

ESTABLISHED 1890
RUSE CHAMBER OF COMMERCE AND INDUSTRY

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The Digital Twin Initiative: Project Overview

Project Objectives

Digital Twin aims to aid education providers in meeting actual business needs, by providing an outstanding training offer to tailor their training programs more closely to industry requirements.

Our approach therefore is to exploit enabling technologies such as digital twin for the virtualization of industrial systems, but also to design, test and maintain machinery according to the indications of Industry 4.0/5.0

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The Digital Twin Initiative: Project Overview

Target Groups and Benefits

The Digital Twin project strategically targets students, workers, trainers, edu-vet providers, and companies, aiming to impart significant, lasting benefits across these groups.

1. **FOR STUDENTS:** Enhances competences and employability, preparing them for the future job market.
2. **FOR TEACHERS:** Provides better resources and skills to adapt teaching to the latest industry trends.
3. **FOR WORKERS:** Increases access to Digital Twin training and knowledge, improving professional skills.
4. **FOR EDU-VET PROVIDERS:** Strengthens their ability to satisfy industry demands and foster business collaboration.
5. **FOR COMPANIES:** Boosts the availability of skilled technicians, enriching the industry with Digital Twin expertise.

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The Digital Twin Initiative: Project Overview

Expected Results and Future Implications

1. DIGITAL TWIN SKILLS INDEX: Defines essential skills for Digital Twin technicians.
2. SELF-EVALUATION TOOL: Tailors training to individual upskilling needs.
3. TRAINING COURSE: Offers a 450-hour e-learning course with IVET & CVET modules in seven languages.
4. DIGITAL TWIN TRAINING METHODOLOGY: Includes a Trainer's Manual to enhance educational delivery.
5. DIGITAL TWIN LABS: Provides labs for hands-on application of e-learning content.
6. SKILLS COMPETITIONS: Hosts events to apply and test industry-relevant skills.
7. DIGITAL TWIN OCCUPATIONAL PROFILE: Establishes a new standard with advanced, specialized skills.

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The Digital Twin Initiative: Project Overview

Educational Programmes and E-Learning Course

450-Hour E-Learning Course:

- MOOC with 10 different topics
- Hands-on experience in Digital Twin technologies using Physical and Virtual Labs.
- Micro-Credentials: Targeted certifications to boost skills.

Accessible and Inclusive:

- Available in seven languages to meet diverse learner needs: English, Italian, Spanish, Basque, Swedish, Greek, Bulgarian
- Mobile App for the e-learning platform

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The Digital Twin Initiative: Project Overview

E-Learning activities

1. Introduction/prerequisites (PLC, 3DCad, IoT, Python) – 60h
2. Digital Twin – 45h
3. Virtual commissioning – 60h
4. Virtual maintenance – 60h
5. Business Intelligence – 45h
6. Virtual environment – 45h
7. Industrial Cybersecurity – 45h
8. Other technologies (Cloud computing, Reverse Eng., Robotics) – 45h
9. Green transition – 25h
10. Entrepreneurship and incubators setting – 20h

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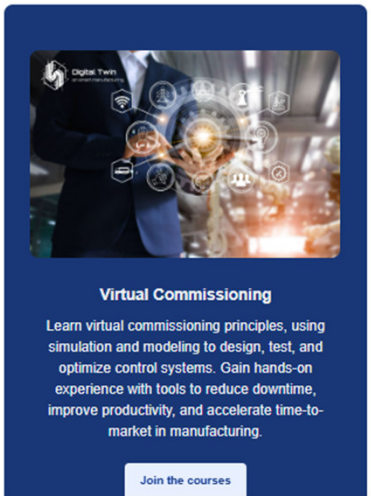
E-Learning activities



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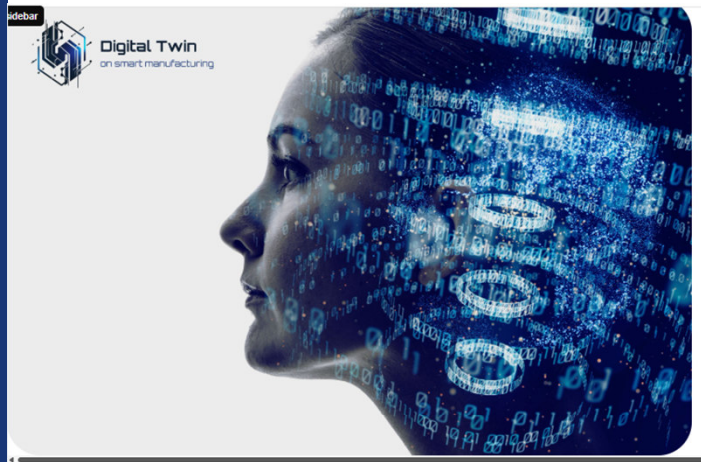
E-Learning activities



Introducing 3D CAD, PLC and IoT

Master the future of engineering with our comprehensive course on 3D CAD, PLC, and IoT. Learn to design detailed digital prototypes using 3D CAD software, automate industrial processes with PLC programming, and harness the power of IoT for real-time data analysis and system optimization. This course combines theory with hands-on practice, preparing you to innovate and excel in modern engineering and manufacturing industries

PLC - Programmable logic controller

Discover PLC fundamentals in our comprehensive course. Master basic operation, programming with ...

Introduction

Engineering drawing

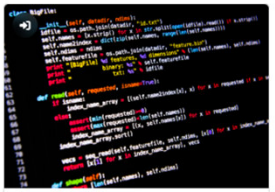
Engineering drawing is a type of technical drawing used to visually communicate how an object or ...

Introduction

IoT - Internet of Things

Connect, Control, and Automate the World Around You – Discover the Power of the Internet of Things.

Introduction



Introducing Python

Introduction

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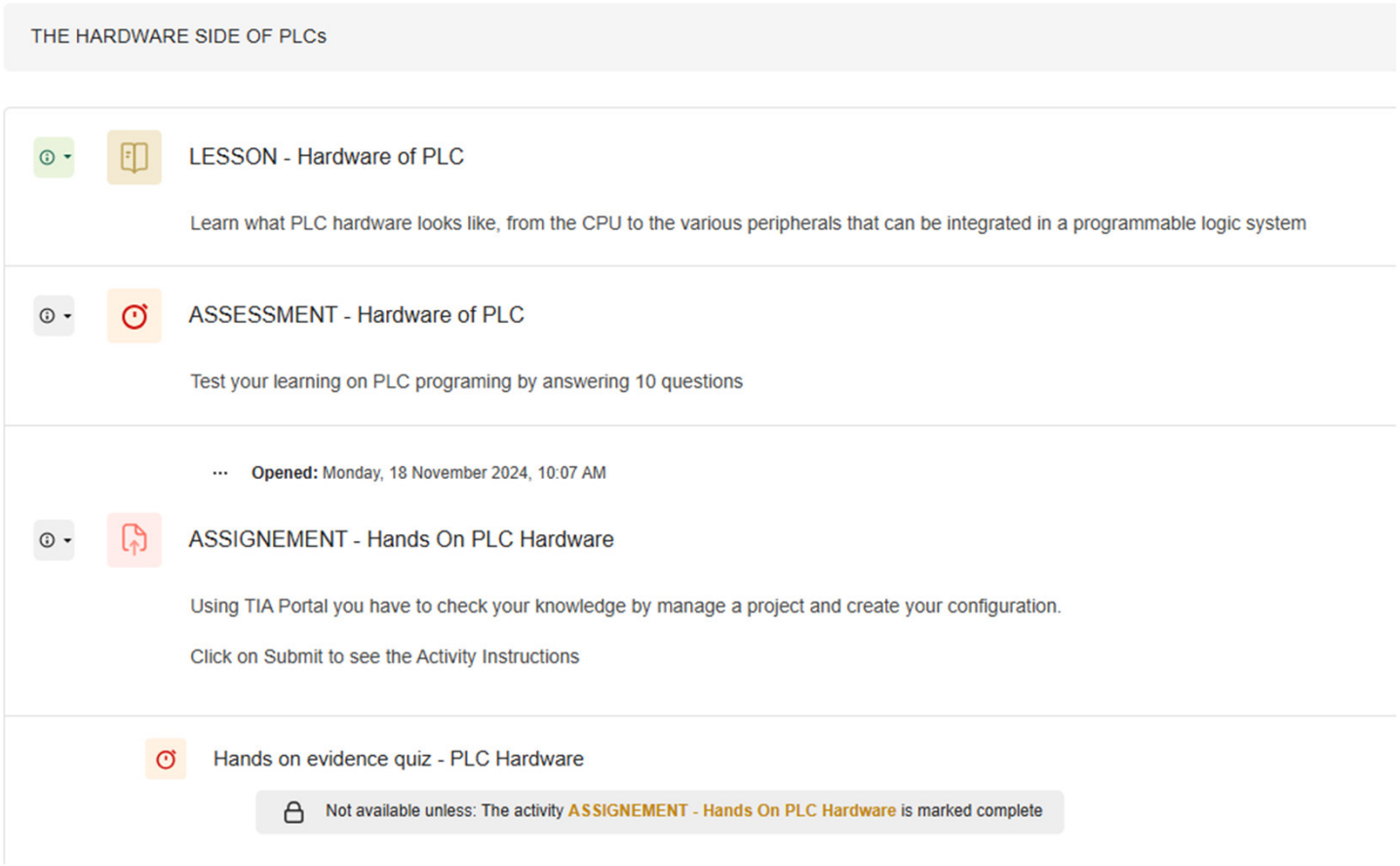
E-Learning activities



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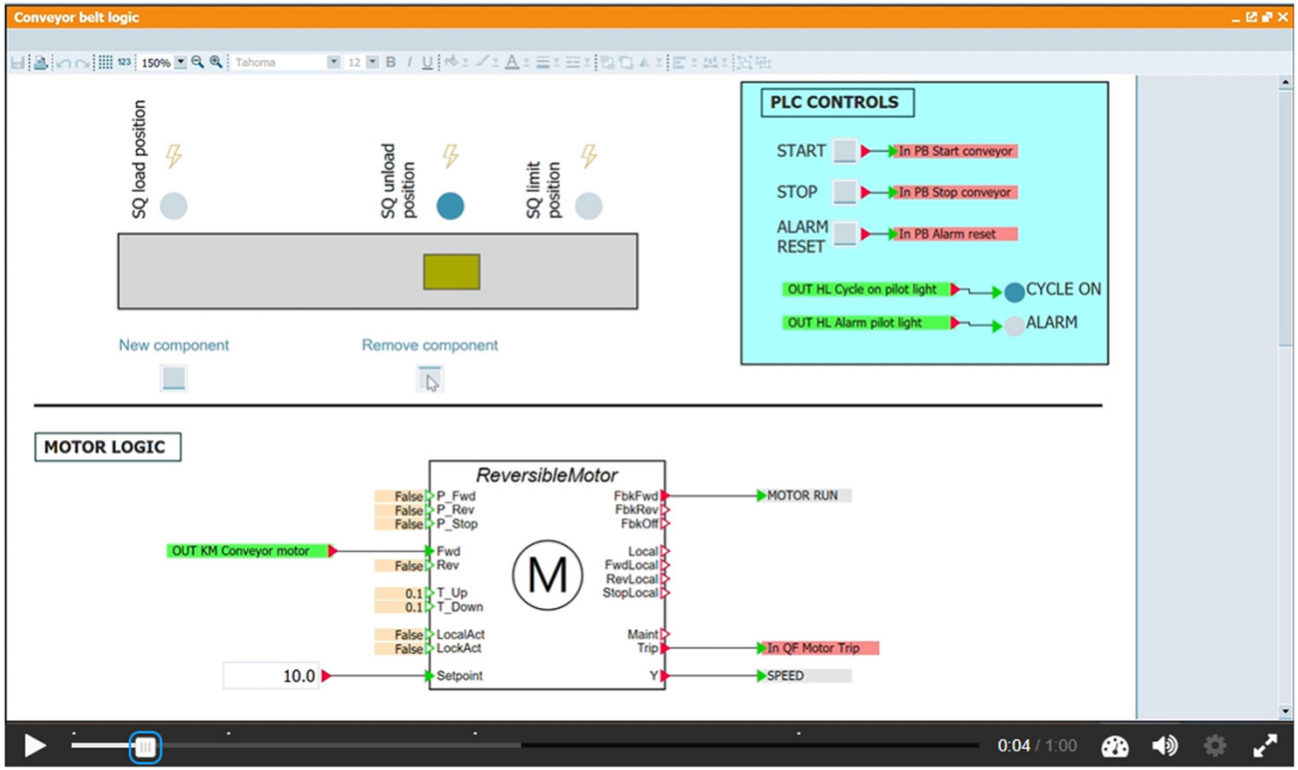
The Digital Twin Initiative: Project Overview

E-Learning activities

2. Simulation of a Conveyor Belt System

2.5. Final result and downloadable resources

In this final interactive video, you'll see the complete simulation in action—testing all key scenarios, including normal operation, sensor failures, and motor faults.



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E-Learning activities

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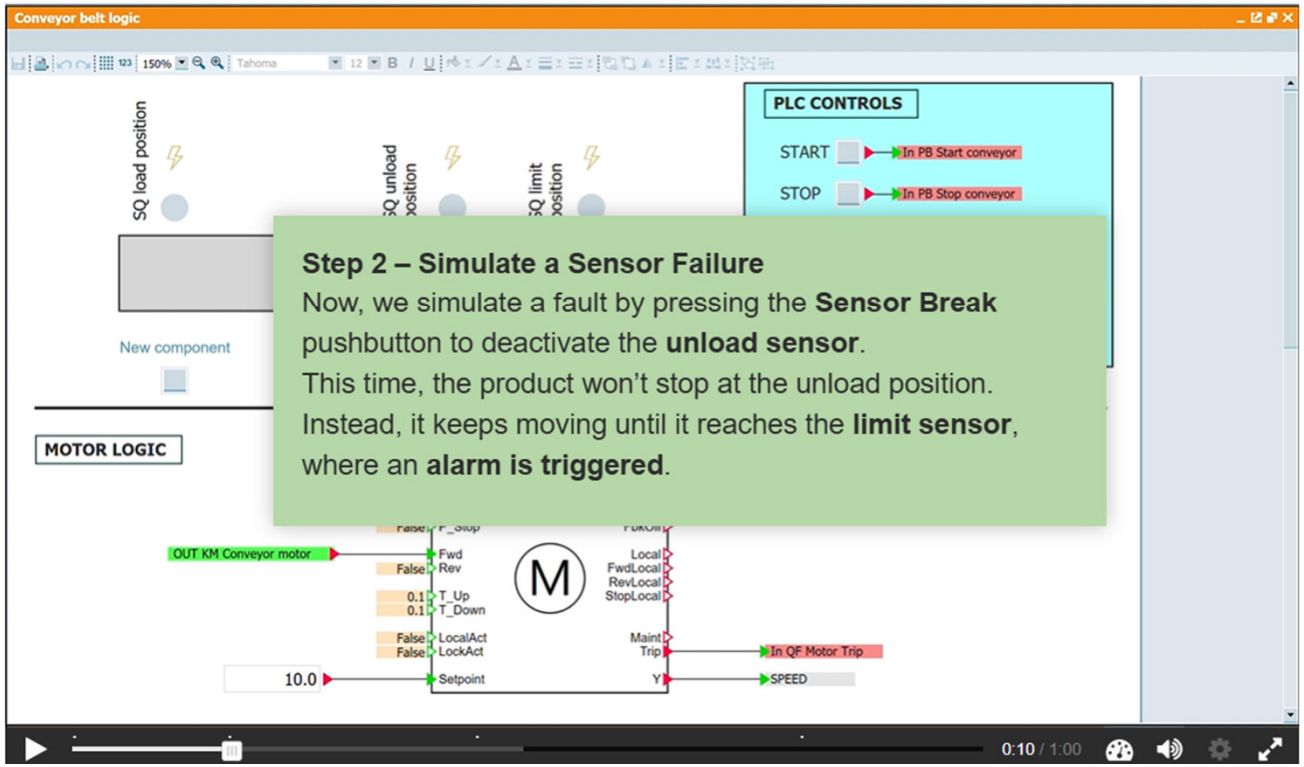

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The Digital Twin Initiative: Project Overview

Pilot & Skill competitions

Pilot Program:

- Launch Date: Autumn 2025
- Open to VET, H-Vet, HEI, Companies and Professionals
- Flexible Learning: Choose your own courses for a personalized learning path

Skill competitions:

- National Competitions: Held in Italy, Greece, Spain, Sweden and Bulgaria (other countries can join upon request)
- International Competition: hosted in Italy for national winners