

PROCESS IMPROVEMENT IN INDUSTRY 4.0 TRAINING SCENARIO

ACTIVITY SUMMARY

The activity is conducted as a collaborative serious game in which participants improve industrial processes by selecting and implementing Industry 4.0 technologies. Working in teams, they analyse operational challenges, identify relevant use cases, and combine technologies with industrial applications to enhance processes such as maintenance, production, quality, logistics, supply chain, and management functions.

TEACHING APPROACH



**GAME BASED
LEARNING**



**PROBLEM BASED
LEARNING**



**CHALLENGE
BASED
LEARNING**



**INTERACTIVE
TEACHING**

LEARNING OBJECTIVES

Knowledge

- Explain the main Industry 4.0 technologies and their industrial applications.
- Understand how digital technologies support process improvement across different business functions.
- Identify appropriate Industry 4.0 solutions for various industrial challenges.

Technical skills

- Analyse industrial processes and identify improvement opportunities.
- Select and combine Industry 4.0 technologies to address operational needs.
- Design technology-based solutions using industrial use cases.

Interpersonal skills

- Collaborate effectively to solve industrial challenges.
- Develop critical thinking and decision-making skills.
- Communicate and justify technology choices.
- Promote innovation and continuous improvement within industrial teams.

RESPONSABILITY

- The Production Engineer can take responsibility for improving manufacturing processes through Industry 4.0 technologies.
- The Maintenance Engineer can take responsibility for identifying digital solutions that enhance equipment reliability and maintenance performance.
- The Quality or QSE Manager can take responsibility for improving quality, safety, and environmental performance using digital technologies.
- The Supply Chain or Operations Manager can take responsibility for optimizing logistics, inventory management, and operational decision-making through Industry 4.0 solutions.

MATERIELS

"UNLOCKING INDUSTRY 4.H" SERIOUS GAME

TECHNOLOGY, ACTION AND CATEGORY CARDS

SERIOUS BOARD GAME

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SPECIFICATIONS OF THE ACTIVITY

INTRODUCE THE TRAINING AND GAME ENVIRONMENT

Recommended duration : 10 min

The trainer introduces the objectives of Industry 4.0 and explains how digital technologies contribute to improving industrial processes.

The game materials, including the board, Technology, Action, and Category Cards, are presented. The trainer then explains the game objectives, rules, and the different actions available during the activity to ensure that all participants understand the gameplay before starting.

ENSURE THAT TRAINEES UNDERSTAND THE OBJECTIVES OF THE TRAINING, THE FUNDAMENTALS OF INDUSTRY 4.0, AND THE ADVANTAGES OF SERIOUS GAME

DEFINE THE PROCESS IMPROVEMENT STRATEGY

Recommended duration : 15 min

Teams identify the industrial process they want to improve (e.g., maintenance, production, quality, logistics, supply chain, or management).

They then select six Category Cards (yellow cards) representing the most relevant Industry 4.0 technology domains. These selected categories constitute the digital transformation roadmap that will guide the rest of the activity.

Each team briefly presents and justifies its strategic choices.

ENCOURAGE TRAINEES TO DEFINE A COHERENT DIGITAL TRANSFORMATION STRATEGY BEFORE SELECTING TECHNOLOGICAL SOLUTIONS

EXPLORE AND ACTIVATE INDUSTRY 4.0 SOLUTIONS

Recommended duration : 70 min

Teams draw Technology and Action Cards and progressively improve their selected process. During each round, participants choose one of four possible actions: Explore, Pre-activate, Activate, or Discard. They analyse the relevance of each technology, match Technology and Action Cards with the selected categories, and progressively activate their Industry 4.0 roadmap while discussing potential industrial use cases.

DEVELOP DECISION-MAKING SKILLS BY SELECTING AND JUSTIFYING THE MOST RELEVANT INDUSTRY 4.0 TECHNOLOGIES FOR EACH INDUSTRIAL CHALLENGE.

PRESENT THE CONCRETE DIGITAL TRANSFORMATION ROADMAP

Recommended duration: 15 min

Once all selected categories have been activated, each team identifies the most relevant technologies and presents its digital transformation roadmap. Participants justify their technology choices, explain the associated industrial use cases, indicate the factory areas where each technology has been implemented, and discuss the expected benefits for operational performance, employees, and the organization.

PROMOTE KNOWLEDGE SHARING, CRITICAL THINKING, AND CONTINUOUS IMPROVEMENT THROUGH THE PRESENTATION OF INDUSTRY 4.0 SOLUTIONS AND THEIR INDUSTRIAL IMPACT

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EVALUATION

Knowledge assessment

- Assess trainees' understanding of Industry 4.0 technologies and their industrial applications.
- Evaluate their ability to identify process improvement opportunities using digital technologies.
- Measure their capacity to select and justify appropriate Industry 4.0 solutions for different industrial functions.
- Assess their ability to develop a coherent digital transformation roadmap supported by relevant industrial use cases.



Perception assessment

- Gather trainees' feedback on the serious game methodology and overall learning experience.
- Evaluate the perceived usefulness of the game for understanding Industry 4.0 technologies and process improvement.
- Assess participants' engagement, collaboration, creativity, and decision-making throughout the activity.
- Collect suggestions for improving the game mechanics, learning materials, and future training sessions.