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P L A N E T



Practical Learning
of Artificial Intelligence
on the Edge for indusTry 4.0

PLANET4 4.0I&CM TRAINING WORKSHOPS METHODOLOGY AND INSTRUCTIONS

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Statement of originality

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Note

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1 PREMISES

1.1 This document

This document presents the final version of the methodology elaborated for the Planet4 Innovation & Change Management (I&CM) training workshops and the instructions to properly use it.

1.2 Purposes of the Planet4 Innovation & Change Management training workshops

The methodology and instructions provided in this document are necessary for the developing and enhancing of the most important soft skills in the context of Industry 4.0 identified in the previous document R2.2 "SOFT SKILLS FRAMEWORK AND METHODOLOGIES TO ADOPT FOR THE PLANET4 4.0 I&CM TRAINING WORKSHOPS". The ultimate goal of this training is to contribute shaping and developing a 4.0 mindset in learners that will allow them to actively face disruptive changes in their future work environment and communicate them in the best way.

2 TRAINING WORKSHOPS METHODOLOGY

2.1 Highlights from the desk research and general methodology

After the results obtained in the desk research conducted to identify the main soft skills, methodologies to address Industry 4.0 challenges and typical organization for this kind of trainings, the following findings were highlighted (Table 1):

Most important soft skills	Leadership and ability to work in a team; Problem-solving and critical thinking; Communication and language skills.
Most used working methodologies	Agile, Lean and Design Thinking methodologies.
Most used organizations in similar trainings	Practical training/case studies addressed in groups, and theoretical lessons.

Table 1. Highlights from the desk research

The methodology for the Planet4 Innovation & Change Management training workshops takes inspiration from the **flipped classroom methodology** –i.e., learners individually approach and complete readings (the theoretical work) and then are engaged in working on problem-solving matters in class with others–.

In the I&CM training workshops this methodology is adopted alternating theoretical lessons (through brief introductions to the theories) and practical activities that engage learners to solve (session after session) a challenge working in teams.

2.2 Learning outcomes and learning objectives

The structure and contents of the training derive from the elaboration of the learning outcomes (the purpose of the educational activity) and the learning objectives (the description of how those learning outcomes are to be achieved).

Table 2 shows the outcomes and objectives elaborated following the findings of the desk research.

Learning outcomes	Learners will have a managerial, strategic and teamwork mindset that enable them to work and guide interdisciplinary groups in achieving realistic and innovative solutions in a 4.0 context.
Learning objectives	a. Collaborate in a multidisciplinary team.

- b. Apply human-center design and lean strategies to solve industrial challenges.
- c. Propose a fast prototypal way to test a solution idea.

Table 2. Learning outcomes and objectives

2.3 Assessment and evaluation: criteria and methodology

Following the established outcomes and objectives of the training, in this section will be defined the criteria and methodology of the assessment. Given the centrality of teamwork and Agile/Design Thinking methodologies, the evaluation criteria and assessment methodology both are focused on these points.

Assessment and evaluation methodology

- Learners are divided into teams to work on assignments.
- Each team propose a challenge they want to work on during the overall I&CM training workshops.
- Each team has a champion, a coordinator and a presenter.
- 1 team assignment per session related to the topic.
- Teams organize and schedule their meetings autonomously.
- The results are shown in the next session as a presentation.
- In the final session each team present a final presentation that sums up their process and results.

Evaluation criteria

- Proper application of the theories and principles addressed in the workshop session in the assignments.

Table 3. Assessment and evaluation

The final grade will be based on the results of the average grades for each assignment and the final presentation.

3 CONTENTS AND STRUCTURE

3.1 Contents and general structure

The I&CM training workshops introduce learners to useful theories and methodologies – informed by Agile, Lean, Design Thinking, Human-Centered Design, and Prototyping– that can improve the process of identifying and solving challenges in innovative ways.

The topics covered are the following:

- Session 1. Innovation and the product
 - What is innovation and how we can do it.
 - Product positioning statement.
 - Jobs to be done.
- Session 2. Design Thinking
 - The Design Thinking mindset.
 - The Design Thinking workflow.
- Session 3. Human-Centered Design
 - The HCD mindset.
 - User personas.
 - User stories.
 - Scenarios.
 - Use cases.
- Session 4. Prototyping
 - The prototyping manifesto.
 - The prototyping flow.
 - Typologies of prototypes and tools.
- Session 5. Final Presentations
 - Teams presents their final assignments.

For each session teams are engaged in completing assignments that, step-by-step, contribute to building more awareness on the process itself and represent the bricks of what will be the final presentations.

The assignments for each session are the following:

- Session 1. Innovation and the product
 - Define the team project
 - Write the product positioning statement of the project.
 - Write at least 4 jobs to be done.
- Session 2. Design Thinking
 - Design the workflow of the product (Empathize, Define, Ideate, Prototype).
- Session 3. Human-Centered Design
 - Define the user personas of the product (at least 3).
 - Write the user stories (at least 3 per persona).

- Session 4. Prototyping
 - Propose at least 2 prototypes.
- Session 5. Final Presentations
 - Rearrange and summarize the whole process in a final presentation.

3.2 Duration and estimated workload

Each session (except the first) lasts 2 hours and is organized into 2 phases: 1 hour of theoretical introduction to the topic and 1 hour of practical activity where learners present their assignments and are encouraged to discuss their process and findings.

In the first session, teachers and tutors will form groups of learners to work together in teams. Each team will work after given class assignment and will present them in the next synchronous lesson in a flipped classroom format. Every synchronous lesson will provide a brief introduction to the next topics and an explanation of how to work on the next assignment. The asynchronicity is given by the presence of additional educational material (external resources, articles, etc.).

In the table there are indications of the estimated time and workload for each lesson group and its structure.

	STRUCTURE	SESSION DURATION	STUDY WORKLOAD	TOTAL DURATION
SESSION 1 (INNOVATION AND INTRODUCTION)	1. Teams structuring and projects assignment	-	1hr	3hrs + 4hrs
	2. Module, next topic and assignment introduction	2hrs	-	
	3. Individual study (suggested)	1hrs (external resources)	1hr	
	4. Team work on assignment	-	2hrs	
SESSIONS 2-3-4 (DESIGN THINKING, HCD AND PRETOTYPING)	1. Assignment review	2hrs	-	3hrs + 3-5hrs each session
	2. Next topic and assignment introduction			
	3. Individual study (suggested)	1hr (external resources)	1hr	
	4. Team work on assignment	-	2-4hrs	
SESSION 5 (FINAL PRESENTATIONS)	1. Final team presentations and review (with company experts)	2hrs	-	2hrs

Table 4. Duration and estimated workload.

The total duration of the training workshops is **27-33 hours** (session duration + study workload) depending on teams' scheduling needs.

4 RESOURCES

4.1 Human resources

The **teacher** responsible for the delivery of the I&CM training workshops should be experienced in Agile/Design Thinking/Human-Centered Design frameworks. Teacher's main responsibilities are lecturing, supporting learners online, and reviewing assignments.

One or more **tutors** are expected to assist the teacher in following teams on assignments. Tutors work alongside teachers, and support students in their learning process, clarifying concepts and making sure that they have correctly understood the assignments.

Team composition

Each team of learners is intended to be composed of no more than 5 members, also considering:

- Interdisciplinarity of their members;
- Field of study;
- Personal projects;
- Scheduling needs.

Moreover, each team will choose 3 of the following figures:

- The project champion, who will ensure that the initial vision is translated into the proposed design and ideas;
- The coordinator, who guides team members in scheduling the meetings and correct carrying out of the assignments;
- The presenter, who will be responsible for the presentation of the assignments.

Company experts

Company experts are necessary to give a wider context in learners unaware of real-world challenges. Moreover, experts can bring their field expertise to help learners in focusing their problem-solving efforts and expand their views and mindset. Therefore, their responsibility is to support teams acting as consultants.

Company experts will intervene in the review process of team presentations, giving feedback and helping teams to better update their projects or proposals.

4.2 Educational Resources

The resources used to train learners are distinguished in:

- Internal:

- Slides
- Best practices for assignments
- External:
 - Articles
 - Books
 - Videos

Furthermore, learners are encouraged to use collaborative tools such as Google Drive, Google Slides, in order to carry out the activities of the workshops.



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