De Couvreur Sebastien

Documentation of pilots

Thomas More campus De Nayer – ICT4Industry

Spring 2020

With the support of the
Erasmus+ Programme
of the European Union

Introduction

This document contain the documentation of spring 2020 ICT4Industry. The document contains a description of the settings and the motivation of the case, as well as an overview of the key performance indicators (KPIs) for the pilot. The execution and documentation of pilots are part of larger process, named Educational Framework, aimed at transforming educational programmes for future Industry 4.0 capabilities. The case/pilot is chosen based on two initial analysis, respectively focused at industry and the institution. For further information regarding the overall process, please see the document 'Educational Framework'.

Contents

- Description of pilot (summary)
- KPIs and how they are measured
- Implementation of the Educational Framework
- Results (KPIs) and evaluation

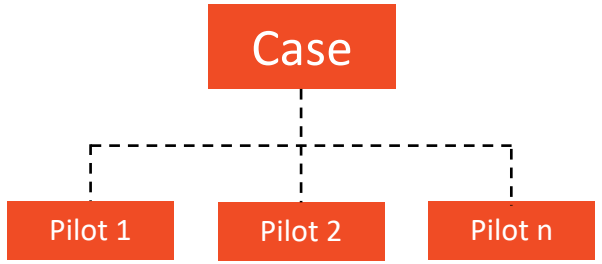

Fig. 1. The figure shows the relationship between the two terms: *case* and *pilot*.

With the support of the Erasmus+ Programme of the European Union

Description of the pilot (summary)

This pilot case at TMMA is a course of the educational programme “Electronics & ICT” (*EQF level 6, bachelor’s degree*). The course is named “ICT technology for industry”, it is a 3 ECTS course of the total of 180 ECTS from the full program. The pilot will be given in the fourth semester.

In this pilot, our aim is to develop the knowledge and skills for the different electronic & ICT systems, which are used in the industrial applications. This knowledge and set of skills will come useful in the ever changing landscape of the industry. Each lecture consist of an introduction to the theory, followed by a continuation of a project. The project is fully aimed on IIoT and industry 4.0 technologies and challenges. The students will get access to the “Factory of the future”-lab, this platform will be used as a collaboration platform for different groups. The topics covered during these lectures are: IIoT/industry 4.0 trends, Augmented reality, Cyber security, Data gathering and processing, Cloud environment.

In one of the lectures the students will be able to talk to an integration and application expert of the pharmaceutical industry. This expert will give them a look into the wonderous world of the pharmaceutical industry and why certain elements are important in what they are learning.

The goal of this course, pilot, corresponds with the industrial analytics, which pointed to an increasing demand of students with both the knowledge of the ICT and automation world and with a digital mindset focussed on innovation and being able to integrated systems and applications rather then isolated stand-alone solutions.

With the support of the Erasmus+ Programme of the European Union

Description of the pilot (summary)

The course, ICT technology for industry, is based on the following learnings goals from the curriculum:

Knowledge:

- **A**pplied theory and methods for the project based on IIoT/industry 4.0 trends, such as Augmented reality, Cyber security, Data gathering and processing, Cloud environment.
- Develop knowledge of the practical and theoretical contents during project work in groups.

Skills:

- Identify, analyse and solve problems and assess the realization against the established requirements.

Competencies:

- Project management, communication and collaboration on various topics

With the support of the Erasmus+ Programme of the European Union

KPIs and how they are measured

Based on the aim of pilot, three focus areas are identified and consider to be viable, through KPIs. The three focus areas are: 1) The student's ability to identify new learning needs related to IIoT/industry 4.0, 2) the student's ability to integrate the use IIoT/industry 4.0 tools into their project, and 3) Organization of the course/pilot study.

Identified KPIs and methods for measuring

1. The student's ability to identify new learning needs related to IIoT/industry 4.0

   The students will be asked to identify their needs related to this topics through a multiple-choice quiz during the lecture.

2. The students' ability to integrate the use of IIoT/industry 4.0 tools into their project

   During an evaluation after the course, the students' ability to integrate the IIoT/industry 4.0 tools in the production process development is evaluated by the lecturer.

3. Organization of the course/pilot study

   Through a mandatory institutional evaluation after the semester, the students are asked to evaluate, how the course is organized and how it can be improved in future.

With the support of the Erasmus+ Programme of the European Union

Implementation of the Educational Framework

Educational activity sketch

The course is consist of 8 lectures, a lecture per week. Almost each lecture rely on a computer-based classroom, where the students will have to gain knowledge by using course relevant software applications, and the lecture will be targeting discussion, hands-on experience of digital tools and supervision.

In the first lecture, the lecturer introduces the content of the course, including the tasks. Furthermore, the self-study for all lectures will be presented, consisting of reading materials and videos material.

In the remaining lectures, the students are expected to have prepared for lecture, and the task of the day will be presented. The task will show a detail of the specific digital manufacturing tool and technique, and part of the assignment is to describe how these sub-tasks can be applied to their project.

With the support of the Erasmus+ Programme of the European Union

Implementation of the Educational Framework

Relation to Authentic Task Design

The educational framework is implemented through a case with an ill-defined output, which the students must integrate into the course project report. The course takes place over the 8 weeks, which lets the students investigate the problem field for several different perspectives and describe and implement relevant course material into their semester projects.

Groups formed by the students solve the task. The case topic is the use of studied IIoT/industry 4.0 tools and techniques to solve the task and compile a report. Students will gain the opportunity to implement their domain-specific knowledge into the “Factory of the future”-lab environment.

With the support of the Erasmus+ Programme of the European Union

Implementation of the Educational Framework

Elements

The learning process is iterative, as the students will get an overview in the first lecture, and the knowledge will be expanded in each lecture in the same topics.

Blended learning and computer-based class – the students will receive learning content online through cloud environment so that they can have access to the study material during the class. This gives room for more insightful feedback.

Supervision and feedback – The reflection will be facilitated through feedback, both in class and online platform.

With the support of the Erasmus+ Programme of the European Union

Results and Evaluation

[A description of the results (KPIs) and an overall evaluation of the pilot. This is filled in after the pilot is executed]

With the support of the
Erasmus+ Programme
of the European Union