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NextGEng Project

WORK PACKAGE 4

CASES FOR EXPERIENTIAL LEARNING PROJECTS

R4.2.a

Report Schedule and detailed plan for the first round

October, 2023



WP4	R4.2.a Schedule and detailed plan for the first round
Authors	David Bonillo, Silvia Satorres
Short Description	Schedule and detailed plan for the first round: CEL1-ISR project
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1. Introduction

The aim of this report is to present a detailed plan for the intensive week of the CEL1 project. The ISR Company proposed the CEL1 project, and the University of Jaén (Spain) hosts it. It has to be implemented in the first round, that is, during the second semester of 2023. This report gives a brief description of the CEL project, its timing and the main activities to be done during the intensive week.

The information available in the reports: R4.2.a, R4.2.b and R4.2.c will be included the CEL promotion brochure R4.3.a. This brochure will be used to explain to students what a CEL project is and which the options for the first projects round are.

2. Description of the CEL1 project

CEL1 project was proposed by the ISR Company. ISR is an entrepreneurial project of people that was born in 2016 as a spin-off of the University of Jaén. Today they are a group of more than 40 people, who work every day to offer machine vision solutions to the industry, specializing in the quality control of surfaces with high aesthetic value. One of its business lines is to offer innovative solutions for the agro sector and the CEL1 project is framed within this line.

The project is entitled: “**Design of an olive quality control system**”. The main objective is to design and develop a station able to classify the olive quality based on olives multispectral images. To achieve that, the students will do the following tasks:

- Project planning.
- Acquisition station CAD design.
- Classification algorithm develop (Linear SVM based).

The selected students should have a multidisciplinary profile and HEIs supervisors could be involved in the following courses: C3 - Design Projects, C4 - Quality Assurance and Applied Methods or C5 - Computer Aided Design. Other HEI supervisor’s profiles are also welcomed.

3. CEL 1 project timing

Figure 1 shows a summary of the project timing. Until now, the CEL topics for the first round have been chosen. The student selection for the first round should finish in January 2024 and the intensive weeks should be implemented in February 2024. The intensive week is followed by a three months of distance work and the the end, the students, involved in each of the three CEL projects, have to present the results in a seminar held in April/May 2023.

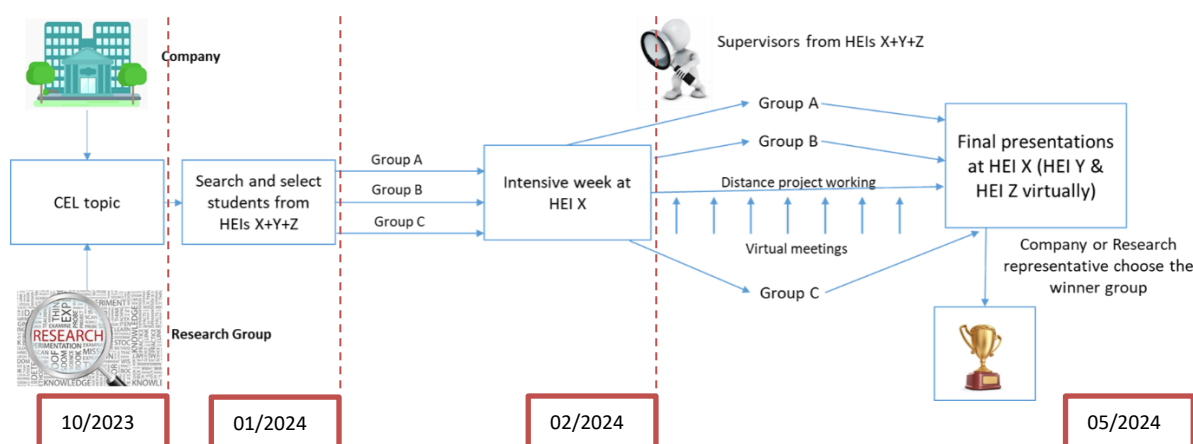


Figure 1. Summary of the timing for the first round of CEL projects

Table 1 shows a detailed overview of the timing for the CEL1 project. Based on the information collected in R4.2.a, R4.2.b and R4.2.c, students will be provided with a brochure in which the first round CEL projects are described. HEIs partners, in accordance with companies' partners, will define the student selection criteria. The selection criteria are public and inclusive and are delivered to the students during the CEL project promotion period before the selection process.

Table 1. Detailed overview of CEL1 project

Activity	Task	Description	Deadline
Participants selection	Selection of HEI supervisors and company or research group representative	One company or research group representative has to be chosen for each of the CEL projects. At each HEI 2 supervisors have to be designated for every CEL project	W44 3/11/2023
	Brochure for students	CEL project proposals for the first round	W45 10/11/2023
	Plan for the students selection	Internal guidelines for HEI supervisors	W45 10/11/2023
	Informative meetings	Meetings with students to explain CEL project proposals and how to apply them.	W46 17/11/2023
	Students application	Opening time for students application (20/11/2023). Deadline for student application time (24/11/2023)	W47 20/11/2023 & 24/11/2023
	Student selection	Each of the HEI supervisors will assess their students applications and will choose 18 students (6 for every CEL project).	W49 04/12/2023- 07/12/2023
	Booking hotels and flight tickets	The responsible of WP4 at each HEI will be in charge of assuring that students and supervisors can travel in the intensive weeks	W3 19/01/2024

Intensive weeks	<ul style="list-style-type: none"> - Create the agenda for the intensive weeks - Organize all the activities (tailored seminars, project work sessions, social, activities, visits, etc) 	<p>The responsible persons for organizing the intensive weeks are the HEI partners supervisors hosting the event. The intensive weeks facilitate students to directly interact with company Representatives, supervisors and international students.</p>	W7 12/02/2024-16/02/2024
Distance project working	<ul style="list-style-type: none"> - Periodic evaluation of the students' progress 	<ul style="list-style-type: none"> - the HEI supervisor evaluates the project implementation status (students prepare short reports with activities implemented in the past two weeks) 	W8 – W16
Final seminars	<ul style="list-style-type: none"> -Create agenda of the final presentation - organize the online meeting (select online platform, send invites ...) 	<p>The responsible persons for organizing the final conference are the HEI partner supervisor from the country that organize the CEL Project together with company/research group representative</p>	W17 22/04/2024-26/04/2024

Figure 2 shows the number of participants in each of the CEL projects. In total, for the first round are taking part: 3 company or research group representatives (one per CEL project), 18 HEI supervisors (2 per HEI x 3 HEIs x 3 CEL projects) and 54 students (6 per HEI x 3 HEIs x 3 CEL projects).

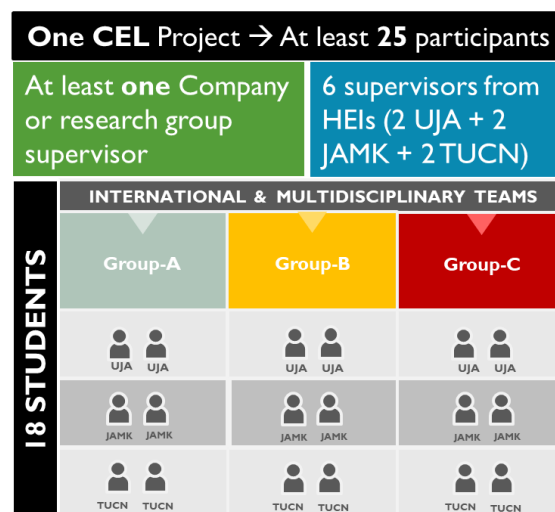


Figure 2. CEL project participants

4. CEL1 seminar proposals for the intensive week

The intensive week integrates a mix of academic, laboratory/company visit, experiential and project work activities that involve students, teachers and company/research group experts. Related with the academic activity the following seminars are proposed for the intensive week:



- Olive defectology & engineering solutions
- Computer vision-based quality control solutions
- Demonstration of different computer-vision based industrial stations.



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WORK PACKAGE 4

CASES FOR EXPERIENTIAL LEARNING PROJECTS

R4.2.b

Report Schedule and detailed plan for the first round

October, 2023



WP4	R4.2.b Schedule and detailed plan for the first round
Authors	David Bonillo, Silvia Satorres, Ciprian Lapusan
Short Description	Schedule and detailed plan for the first round: CEL2-TUCN project
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	31/10/2023	Silvia Satorres	Review
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1. Introduction

The aim of this report is to present a detailed plan for the intensive week of the CEL2 project. The Technical University of Cluj-Napoca, through the research group of the Applied Mechatronics Research Laboratory proposed the CEL2 project and will also host it. The project is implemented in the first round, during the second semester of the academic year 2023-2024. This report gives a brief description of the CEL project, its timing and the main activities to be done during the intensive week.

The information available in the reports: R4.2.a, R4.2.b and R4.2.c will be included in the CEL promotion brochure R4.3.a. This brochure will be used to explain to students what is a CEL project and which the options for the first projects round are.

2. Description of the CEL2 project

CEL2 project was proposed by the research group of the Applied Mechatronics Research Laboratory [AMR] from the Technical University of Cluj-Napoca. The research laboratory is part of the Mechatronics and Machine Dynamics Department from the Automotive, Mechatronics and Mechanical Engineering Faculty. The research topics covers mathematical modelling of mechatronics systems, Hardware In the Loop simulations (HIL), Fluid Power Simulation & Control and Motion-Force Control. The proposed topic in CEL2 project follows the research line developed in the AMR Lab.

The project is entitled: “**3-axes GANTRY ROBOT (3GR)**”. The main objective is to Design a 3-axes GANTRY ROBOT subject to the following requirements:

- the movement along the X, Y, Z axes is carried out using electric motors mounted on the fixed base of the robot (they must not be mounted on moving parts)
- the transmission of the movement for the axes (X, Y, Z) is done using toothed belts
- the robot workspace is 300 x 400 x 200 mm³ (X, Y, Z)
- on the Z axis a gripper is attached; the gripper must be able to manipulate workpieces with cylindrical geometry: 30 mm (diameter), 30 (height), 50 grams (mass); the gripper can be operated by any technology

The students' task will focus on:

- Conceptual design of 3GR and gripper
- Virtual prototyping and validation
- Result analysis: benefits and drawbacks

The selected students should have a multidisciplinary profile (mechanics, robotics, control etc.) and HEIs supervisors should have competences in one of the following fields: mechanics, mechatronics, robotics, or automation.

3. CEL 2 project timing

Figure 1 shows a summary of the project timing. Until now, the CEL topics for the first round have been chosen. The student selection for the first round should finish in January 2024 and the intensive weeks should be implemented in February 2024. The intensive week is followed by a three months of distance work and at the end, the students, involved in each of the three CEL projects, have to present the results in a seminar held in April/May 2023.

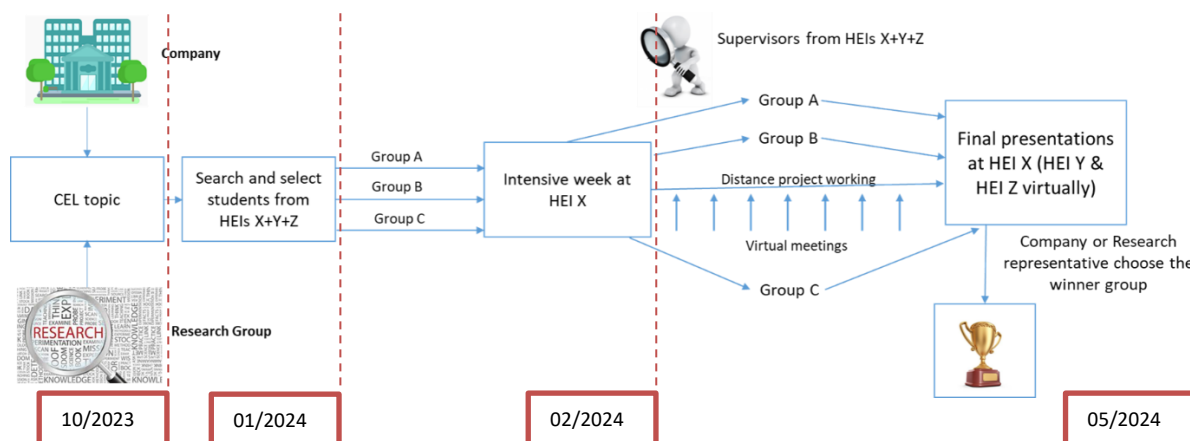


Figure 1. Summary of the timing for the first round of CEL projects

Table 1 shows a detailed overview of the timing for the CEL2 project. Based on the information collected in R4.2.a, R4.2.b and R4.2.c, students will be provided with a brochure in which the first round CEL projects are described. HEIs partners, in accordance with companies' partners, will define the student selection criteria. The selection criteria are public and inclusive and are delivered to the students during the CEL project promotion period before the selection process.

Table 1. Detailed overview of CEL2 project

Activity	Task	Description	Deadline
Participants selection	Selection of HEI supervisors and company or research group representative	One company or research group representative has to be chosen for each of the CEL projects. At each HEI 2 supervisors have to be designated for every CEL project	W44 3/11/2023
	Brochure for students	CEL project proposals for the first round	W45 10/11/2023
	Plan for the students selection	Internal guidelines for HEI supervisors	W45 10/11/2023
	Informative meetings	Meetings with students to explain CEL project proposals and how to apply them.	W46 17/11/2023
	Students application	Opening time for students application (20/11/2023). Deadline for student application time (24/11/2023)	W47 20/11/2023 & 24/11/2023

	Student selection	Each of the HEI supervisors will assess their students applications and will choose 18 students (6 for every CEL project).	W49 04/12/2023-07/12/2023
	Booking hotels and flight tickets	The responsible of WP4 at each HEI will be in charge of assuring that students and supervisors can travel in the intensive weeks	W3 19/01/2024
Intensive weeks	- Create the agenda for the intensive weeks - Organize all the activities (tailored seminars, project work sessions, social, activities, visits, etc)	The responsible persons for organizing the intensive weeks are the HEI partners supervisors hosting the event. The intensive weeks facilitate students to directly interact with company Representatives, supervisors and international students.	W7 12/02/2024-16/02/2024
Distance project working	- Periodic evaluation of the students' progress	- the HEI supervisor evaluate every 2 weeks the project implementation status (students prepare short reports with activities implemented in the past two weeks)	W8 – W16
Final seminars	-Create agenda of the final presentation - organize the online meeting (select online platform, send invites ...)	The responsible persons for organizing the final conference are the HEI partner supervisor from the country that organize the CEL Project together with company/research group representative	W17 22/04/2024-26/04/2024

Figure 2 shows the number of participants in each of the CEL projects. In total, for the first round are taking part: 3 company or research group representatives (one per CEL project), 18 HEI supervisors (2 per HEI x 3 HEIs x 3 CEL projects) and 54 students (6 per HEI x 3 HEIs x 3 CEL projects).

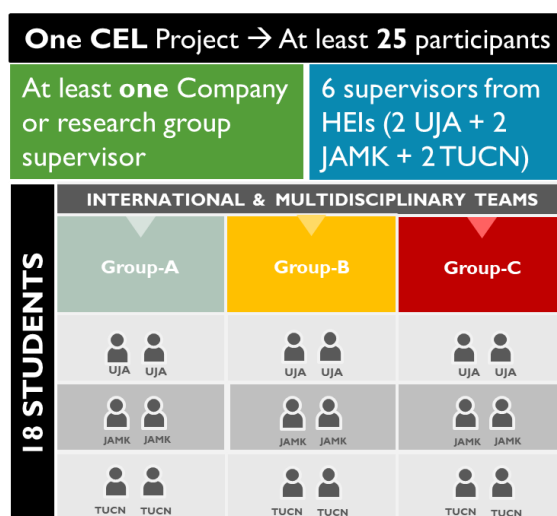


Figure 2. CEL project participants



4. CEL2 seminar proposals for the intensive week

The intensive week integrates a mix of academic, laboratory/company visit, experiential and project work activities that involve students, teachers and company/research group experts. Regarding academic activity the following seminars are proposed for the intensive week:

- Tools for modeling and simulating integrated systems
- Simulate the proposed solutions in an integrated environment (Matlab) to validate the concept and to identify the best solution.
- Comparative analyses of different conceptual solutions of 3GR.



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NextGEng Project

WORK PACKAGE 4

CASES FOR EXPERIENTIAL LEARNING PROJECTS

R4.2.c

Report Schedule and detailed plan for the first round

October, 2023



WP4	R4.2.c Schedule and detailed plan for the first round
Authors	Matti Siistonen, Juhani Salonen, Silvia Satorres
Short Description	Schedule and detailed plan for the first round: CEL3-VALMET project
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1. Introduction

The aim of this report is to present a detailed plan for the intensive week of the CEL3 project. The finish company VALMET proposed the CEL3 project and the University of Applied Science JAMK will host it. The project is implemented in the first round, during the second semester of the academic year 2023-2024. This report shows a brief description of the CEL project, its timing and the main activities to be done during the intensive week.

The information available in the reports: R4.2.a, R4.2.b and R4.2.c will be included in the CEL promotion brochure R4.3.a. This brochure will be used to explain to students what is a CEL project and which the options for the first projects round are.

2. Description of the CEL3 project

CEL3 project was proposed by VALMET (Finland). Valmet is a leading global developer and supplier of process technologies, automation and services for the pulp, paper and energy industries. More than 19,000 professionals around the world work for Valmet and the company has over 220 years of industrial history and a strong track record in continuous improvement and renewal.

The project is entitled: **“Design of a test object for a pressing-based manufacturing process”**. The main objective is conceptualizing and designing a “test object” for a pressing-based manufacturing process. The knowledge from such tests can be used to adjust process parameters and mechanics for totally new concept of pressing wood-based materials.

The students’ tasks will focus on:

- Project planning.
- Working with test object for a pressing-based manufacturing process
- 3D models and/or concept-level technical drawings
- Hand-drawn or digital illustrations (e.g. PowerPoint, Photoshop, Paint) or low- to medium-fidelity physical prototypes made from materials such as wood, plastic (3D-printing) or modelling clay

The selected students should have a multidisciplinary profile and HEIs supervisors could be involved in the following courses: C3 - Design Projects, C5 - Computer Aided Design or C6 – Manufacturing Technology. Other HEI supervisor’s profiles are also welcomed.

3. CEL 3 project timing

Figure 1 shows a summary of the project timing. Until now, the CEL topics for the first round have been chosen. The student selection for the first round should finish in January 2024 and the intensive weeks should be implemented in February 2024. The intensive week is followed by a three months of distance work and at the end, the students, involved in each of the three CEL projects, have to present the results in a seminar held in April/May 2023.

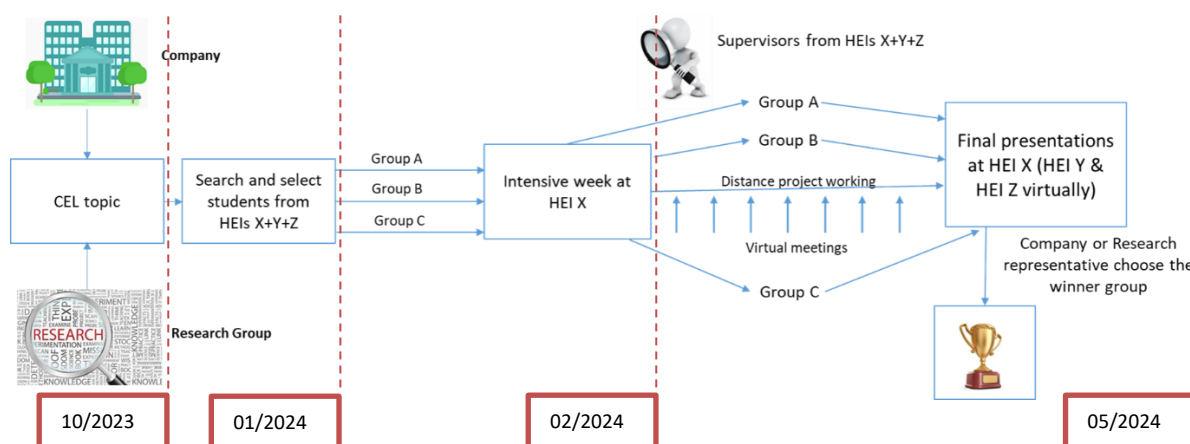


Figure 1. Summary of the timing for the first round of CEL projects

Table 1 shows a detailed overview of the timing for the CEL3 project. Based on the information collected in R4.2.a, R4.2.b and R4.2.c, students will be provided with a brochure in which the first round CEL projects are described. HEIs partners, in accordance with companies' partners, will define the student selection criteria. The selection criteria are public and inclusive and are delivered to the students during the CEL project promotion period before the selection process.

Table 1. Detailed overview of CEL3 project

Activity	Task	Description	Deadline
Participants selection	Selection of HEI supervisors and company or research group representative	One company or research group representative has to be chosen for each of the CEL projects. At each HEI 2 supervisors have to be designated for every CEL project	W44 3/11/2023
	Brochure for students	CEL project proposals for the first round	W45 10/11/2023
	Plan for the students selection	Internal guidelines for HEI supervisors	W45 10/11/2023
	Informative meetings	Meetings with students to explain CEL project proposals and how to apply them.	W46 17/11/2023

	Students application	Opening time for students application (20/11/2023). Deadline for student application time (24/11/2023)	W47 20/11/2023 & 24/11/2023
	Student selection	Each of the HEI supervisors will assess their students applications and will choose 18 students (6 for every CEL project).	W49 04/12/2023- 07/12/2023
	Booking hotels and flight tickets	The responsible person of WP4 at each HEI will be in charge of assuring that students and supervisors can travel in the intensive weeks	W3 19/01/2024
Intensive weeks	- Create the agenda for the intensive weeks - Organize all the activities (tailored seminars, project work sessions, social, activities, visits, etc)	The responsible persons for organizing the intensive weeks are the HEI partners supervisors hosting the event. The intensive weeks facilitate students to directly interact with company Representatives, supervisors and international students.	W7 12/02/2024- 16/02/2024
Distance project working	- Periodic evaluation of the students' progress	- the HEI supervisor evaluate every 2 weeks the project implementation status (students prepare short reports with activities implemented in the past two weeks)	W8 – W16
Final seminars	-Create agenda of the final presentation - organize the online meeting (select online platform, send invites ...)	The responsible persons for organizing the final conference are the HEI partner supervisor from the country that organize the CEL Project together with company/research group representative	W17 22/04/2024- 26/04/2024

Figure 2 shows the number of participants in each of the CEL projects. In total, for the first round are taking part: 3 company or research group representatives (one per CEL project), 18 HEI supervisors (2 per HEI x 3 HEIs x 3 CEL projects) and 54 students (6 per HEI x 3 HEIs x 3 CEL projects).

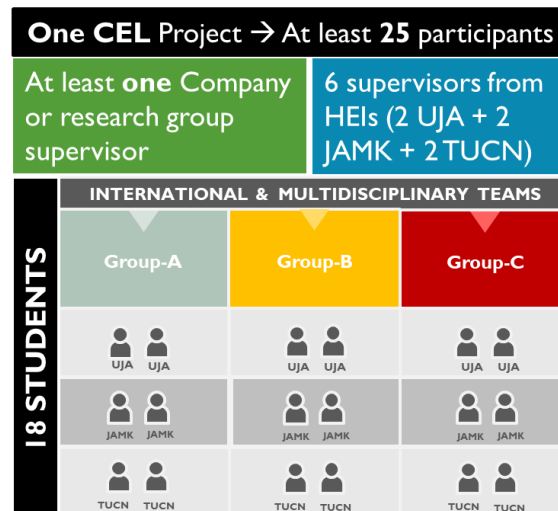


Figure 2. CEL project participants

4. CEL3 seminar proposals for the intensive week

The intensive week integrates a mix of academic, laboratory/company visits, experiential and project work activities that involve students, teachers and company/research group experts. Regarding academic activity the following seminars are proposed for the intensive week:

- Test object solutions for a pressing-based manufacturing process
- 3D models and/or concept-level solutions
- Low- to medium-fidelity physical prototype solutions