

R8.2 Overall Evaluation Report



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1. PROJECT PARTNER EVALUATION

WP ANALYSIS

I QUARTERLY REPORT

Period: November 2019 – January 2020

During the first quarter, all partners took part in the kick-off meeting held in Bari hosted by the project coordinator, the Polytechnic of Bari (November 2019). The meeting was a very important and significant moment for the start of the project and the mutual knowledge of all the team members.

The university partners - mainly PUT and PoliBa - worked hard on the activities of WP1 and WP2. Work has been carried out in WP1 and initial exploratory analyzes for WP2 have been completed. Mostly, most of the work consisted of exploring the relevant master programs offered nationally to identify common elements and gaps. The result, according to the specific reporting structure adopted by the WP leader, was provided for further analysis.

The partners also wrote two articles to be presented during the INTED2020 international conference in Valencia, which was expected to take place in March 2020 (the event was canceled due to the restrictive measures taken across Europe due to the covid19). Arriving just to the collection of syllabi provided by PUT.

University partners – mainly PUT and PoliBa – worked hard on WP1 and WP2 activities. Works in WP1 were conducted and initial exploratory analysis for WP2 have been accomplished. Mainly, the biggest part of the work was to explore the relevant master programs being offered country wide to identify commonalities and gaps. The outcome, according to the specific structure for reporting adopted by the WP leader, was delivered for further analysis.

The partners wrote also two full papers to be presented during the International Conference INTED2020 in Valencia, that should have took place in March 2020 (the event has been cancelled due to covid19 emergency).

EFFECTIVENESS AND EFFICIENCY OF THE PARTNERSHIP
<p>Results of the internal consultation: All the partners think that the meeting in Bari has been a success because it allowed to have a clear view of the whole project and the next results to accomplish. The partnership is working very well and cooperation was performed properly as expected.</p> <p>Corrective measures to be adopted: At the moment nothing to add on this.</p>

COMMUNICATION WITHIN THE PARTNERSHIP
<p>Results of the internal consultation: The communication has been very effective.</p> <p>Corrective measures to be adopted: Some of the partners suggest having more monthly skype meetings.</p>

WP1 – Researching HEI training offer and company good practices in the field of IE&M**WP LEADER: PUT**

Schedule

Expected start date	M1
Expected end date	M9
Actual start date	M2
Actual end date	M9

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:

Developing action plans: (1) for desk research on the educational offer of HEIs and (2) company good practices, (3) for Alumni, and (4) Students concerning assesment of education offer of HEIs (extra activity).

Developing questionnaires (google forms) for: Companies, Alumni, Student, Academic teachers, Administrative responsible for educational offer.

Main suggestions to the WP Leader:

Poliba: After the kickoff and further clarifications carried out by the skype meeting, the assigned work was carried out. The main problems are linked to the scarcity of Syllabi found (42 from 13 programmes).

UPM: After the kickoff and further clarifications carried out by the skype meeting, the assigned work was carried out before 30/1/2020 according to the request. Advice was requested to the WP leader.

Deviation from the workplan:

The activities started at M2, instead of M1.

Problems experienced during the WP implementation:

Nothing to add on this point.

Corrective measures to be adopted:

Poliba: Most of the master programs were conducted in Italian and it required extra work for selection. Moreover sometimes the syllabi weren't available neither in Italian nor in English.

UPM: It was found that most of the master programs were conducted in Spanish and it required extra work for selection.

Expected problems and envisaged solutions:

Nothing to add on this point.

Corrective measures to be adopted:

Poliba: It was found a limited focus for the combination between i4.0 technical topics and management.

UPM: It was found a limited focus for the combination between i4.0 technical stuff and management. It was interesting as it was not expected and hopefully it will help to identify a relevant gap for the next WPs.

WP2 – Training need Analysis and definition of the BoK

WP LEADER: PoliBa

Schedule

Expected start date	M2
Expected end date	M12
Actual start date	M2
Actual end date	M12

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:

Early phases of the Development of the survey for students and academics (contents + samples) and of the Development of semi-structured interviews for entrepreneurs.

Main suggestions to the WP Leader:

Contributions to the initial discussions about company survey were given.

Deviation from the workplan:

No deviation at this point.

Problems experienced during the WP implementation:

Nothing to add on this point.

Corrective measures to be adopted:

Nothing to add on this point.

Expected problems and envisaged solutions:

Nothing to add on this point.

Corrective measures to be adopted:

Nothing to add on this point

WP6 – Project Management

WP LEADER: PoliBa

Schedule

Expected start date	M1
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Expected end date	M36
Actual start date	M1
Actual end date	M36

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:</p> <p>Kick - Off Meeting held in Bari November 21-22, 2019. Welcome of the project partners and associate partner. Work packages WP1 and WP2 approval of new calendar of activities (Gantt chart): schedule, milestones, and expected results.</p> <p>Main suggestions to the WP Leader:</p> <p>Nothing to add.</p>
<p>Deviation from the workplan:</p> <p>No deviation at this point.</p>
<p>Problems experienced during the WP implementation:</p> <p>No problems occurred so far. POLIBA will be at partners' disposal for supporting them for the PM activities.</p> <p>Corrective measures to be adopted:</p> <p>Nothing to add on this point.</p>
<p>Expected problems and envisaged solutions:</p> <p>No problems are expected.</p> <p>Corrective measures to be adopted:</p> <p>Nothing to add on this point</p>

WP7 – Quality Assurance

WP LEADER: ValueDo

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	M1
Actual end date	M36

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:</p>
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<p>VALUEDO presented during the kick-off meeting the main tools for ensuring the quality of processes and results. The QAP and first QR were sent by the deadline of the first quarter. Valuedo will check if all the partners have clearly understood how to use the quality tools in next quarter and through this QR.</p> <p>Main suggestions to the WP Leader: Nothing to add.</p>
<p>Deviation from the workplan: No deviation at this point.</p>
<p>Problems experienced during the WP implementation: No problems occurred so far. Valuedo will be at partners' disposal for supporting them adopt the QA tools.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>
<p>Expected problems and envisaged solutions: No problems are expected, as the tools are easy to adopt. If problems will have doubts or encounter problems, ValueDo is ready to support them.</p> <p>Corrective measures to be adopted: Nothing to add on this point</p>

WP8 – Project Evaluation

WP LEADER: UPM

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	M4
Actual end date	M36

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements: The effective work will start on next quarter.</p> <p>Main suggestions to the WP Leader: Nothing to add.</p>
<p>Deviation from the workplan: No deviation at this point.</p>
<p>Problems experienced during the WP implementation:</p>

<p>Nothing to add on this point.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>
<p>Expected problems and envisaged solutions: Nothing to add on this point.</p> <p>Corrective measures to be adopted: Nothing to add on this point</p>

WP9 – Dissemination and Exploitation of results

WP LEADER: Infotech

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	M1
Actual end date	M36

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:</p> <ul style="list-style-type: none"> - Development of the IE3 website; - Development of the project visual identity +logo - Development of the Action Plan for Dissemination and Results Exploitation - IE3 Social media official pages; - Articles collection by each project partner. <p>Poliba: January 23, 2020. Professor Mummolo presented IE3 project at the Department of Mechanical and Industrial Engineering - New Jersey Institute of Technology, New Jersey, USA.</p> <p>Main suggestions to the WP Leader: Nothing to add.</p>
<p>Deviation from the workplan: No deviation at this point.</p>
<p>Problems experienced during the WP implementation: Nothing to add on this point.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>
<p>Expected problems and envisaged solutions: Nothing to add on this point.</p>

Corrective measures to be adopted:

Nothing to add on this point

RESULTS EVALUATION**R1.1 – Desk Research on HEI educational offer Action Plan****RESPONSIBLE: PUT**

Schedule

Expected start date	M1
Expected end date	M4
Actual start date	M2
Actual end date	M3

Percentage of completion

Percentage of completion	100%	PUT prepared R1.1 jointly with Poliba.
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Partner evaluation

1. Does the document contain all the reference aspects for the implementation of each desk research?	<i>Yes – all the partners</i>
2. Is the methodology of the research clear?	<i>Yes – all the partners</i>
3. Are the specific tasks to be undertaken by the researchers properly described?	<i>Yes – all the partners</i>

R1.2 – Company education and training good practices collection Action Plan**RESPONSIBLE: PUT**

Schedule

Expected start date	M1
Expected end date	M4

Actual start date	<i>M2</i>
Actual end date	<i>M5</i>

Percentage of completion

Percentage of completion	90%	PUT prepared R1.2 jointly with Poliba. The result will be ready next quarter.
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R2.1 – Action plan for the survey for students and Academics

RESPONSIBLE: PoliBa

Schedule

Expected start date	<i>M2</i>
Expected end date	<i>M5</i>
Actual start date	<i>M2</i>
Actual end date	<i>M5</i>

Percentage of completion

Percentage of completion	50%	POLIBA started working on the identification of the key topics of the survey. The national coordinator for each partner country has been identified. Targets have been identified.
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R2.2 – Action plan for semi-structured interviews for entrepreneurs

RESPONSIBLE: PoliBa

Schedule

Expected start date	<i>M2</i>
Expected end date	<i>M5</i>
Actual start date	<i>M2</i>
Actual end date	<i>M5</i>

Percentage of completion

Percentage of completion	50%	POLIBA started working on the identification of the key topics of the survey. The national coordinator for each partner country has been identified.
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R6.1 – Partners Agreement

RESPONSIBLE: PoliBa

Schedule

Expected start date	M1
Expected end date	M1
Actual start date	<i>M1</i>
Actual end date	<i>M1</i>

Percentage of completion

Percentage of completion	100%	All the undersigned agreements have been collected during the Kick-off meeting.
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Partner evaluation

1. Is the Partners Agreement exhaustive in all parts?	<i>Yes – all the partners</i>
2. Are duties and rights of each partner clearly explained?	<i>Yes – all the partners</i>
3. Are the Financial rules (periodical payments from the Beneficiary to the partners) clear?	<i>Yes – all the partners</i>

R7.1 – Quality Assurance Plan

RESPONSIBLE: ValueDo

Schedule

Expected start date	M1
Expected end date	M2

Actual start date	<i>M1</i>
Actual end date	<i>M2</i>

Percentage of completion

Percentage of completion	100%	VALUEDO presented during the kick-off meeting in Bari the main tools for ensuring the quality of processes and results, specifically the QAP and the first QR. The QAP has been completed with the support of all partners and now is available in the official folder of the project.
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Partner evaluation

1. Is the QA plan well-structured and clear in all the sections?	<i>Yes – all the partners</i>
2. Is the QA plan explaining clearly the activity to perform in order to ensure the highest quality of processes, results and Milestones?	<i>Yes – all the partners</i>
3. Are the responsibilities of each partner clearly explained and is the management structure effective to reach the project results?	<i>Yes – all the partners</i>

R7.2 – Quarterly Project Report**RESPONSIBLE: ValueDo**

Schedule

Expected start date	<i>M3</i>
Expected end date	<i>M3</i>
Actual start date	<i>M3</i>
Actual end date	<i>M3</i>

Percentage of completion

Percentage of completion	100%	ValueDo provides the whole partnership with guidelines for completing the quarterly report (they are also described in the Quality Assurance Plan developed by ValueDo).
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Partner evaluation

1. Are the formats for the quality assurance clear and complete?	<i>Yes – all the partners</i>
2. Are the responsibilities of Leader and other partners clear?	<i>Yes – all the partners</i>
3. Is the division of the QR in a Google spreadsheet and of the uploadable file effective?	<i>Yes – all the partners</i>

R9.2 – IE3 website

RESPONSIBLE: Infotech

Schedule

Expected start date	M1
Expected end date	M2
Actual start date	M1
Actual end date	M3

Percentage of completion

Percentage of completion	100%	<p>The website is ready, but Infotech informs the partners that some updates are upcoming. Specifically, the name of each organization partner will be listed in the home page beside the an enhanced introduction to the project outline as well as general objectives.</p> <p>Appended to institutions name, a drop down menu will be created. Dropping down this menu, the pictures of the IE3 team components and related project position will be displayed.</p>
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Partner evaluation

1. Is the website well-structured in all the sections and does it contain all the relevant information?	<i>Many partners find the website incomplete: the panel related to each partner (staff and organization information) is still missing</i>
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2. Is the website user-friendly and usable?	<i>Yes – all the partners</i>
3. Are the text clear and easy to understand also for the stakeholders (language easy to understand, no technical words, etc.)	<i>Yes – all the partners</i>

II QUARTERLY REPORT

Period: February – April 2020

During the second quarter, the biggest part of the work has been the analysis of the initial design of surveys and the carrying out of the initial qualitative tests with companies. In this phase, both University and Company partners have had a key role.

Particularly, PUT completed the desk research on Industry 4.0 elements (systemic literature review) and on the offer of HEI concerning programmes within Industrial Engineering and Management; IT developed the report on convergences and divergences between the knowledge available and offered; and it developed and validated the questionnaires to be used in further steps of the research.

All the company partners had tight collaborations with the University belonging to the same country, supporting them in the analysis of the questionnaires for stating the main needs of manufacturing companies when hiring new potential workforce. The geographical and qualitative variety of the consortium allowed investigating a representative sample of different entrepreneurship ecosystems and applications of the I4.0 paradigm.

PoliBa, as project Leader and WP2 Leader, developed the Action plan for the survey for students and Academics (R2.1) and the Action plan for semi-structured interviews for entrepreneurs (R2.2), finalizing both of them in M5 (March 2020).

During this quarter, the partnership kept working actively together, also thanks to the three virtual meetings organized by PoliBa with the technical support of ValueDo.

EFFECTIVENESS AND EFFICIENCY OF THE PARTNERSHIP
<p>Results of the internal consultation: The partners find the cooperation among them good and they have proved to be able to work efficiently together.</p> <p>Corrective measures to be adopted: Some partners point out that a feedback on completed activities would be appreciated in the pursuit of excellence (some partners do not hesitate to contact, while others do not leave comments).</p>

COMMUNICATION WITHIN THE PARTNERSHIP
<p>Results of the internal consultation: All the partners find the communication good and effective.</p> <p>Corrective measures to be adopted: Some partners would like to know more about other's partners activities (even if the deadline sheet shared among them is useful).</p>

WP ANALYSIS

WP1 – Researching HEI training offer and company good practices in the field of IE&M**WP LEADER: PUT**

Schedule

Expected start date	M1
Expected end date	M9
Actual start date	M2
Actual end date	M9

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:

PUT conducted desk research on HEIs offer, analysed syllabi collected by Partners, developed the Report on research results and the research tools with cooperation with Partners.

Main suggestions to the WP Leader:

No suggestion.

Deviation from the workplan:

No deviation at the moment.

Problems experienced during the WP implementation:

There were some problems caused by Pandemic situation but thanks to continuous and efficient communication they were solved.

Corrective measures to be adopted:

Nothing to add on this point.

Expected problems and envisaged solutions:

It will depend on restrictions and limitations caused by Pandemic situation.

Corrective measures to be adopted:

Nothing to add on this point.

WP2 – Training need Analysis and definition of the BoK**WP LEADER: POLIBA**

Schedule

Expected start date	M2
Expected end date	M12

Actual start date	<i>M2</i>
Actual end date	<i>M12</i>

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:

POLIBA focused on the development of the Action plan for the survey for students and Academics (R2.1) and of the Action plan for semi-structured interviews for entrepreneurs (R2.2). The requested survey to companies was carried out covering different company sizes and sectors.

Main suggestions to the WP Leader:

No suggestions provided.

Deviation from the workplan:

No deviation at the moment.

Problems experienced during the WP implementation:

There were some problems caused by Pandemic situation but thanks to continuous and efficient communication they were solved.

Corrective measures to be adopted:

Nothing to add on this point.

Expected problems and envisaged solutions:

It will depend on restrictions and limitations caused by Pandemic situation.

Corrective measures to be adopted:

Nothing to add on this point.

WP6 – Project Management

WP LEADER: POLIBA

Schedule

Expected start date	<i>M1</i>
Expected end date	<i>M36</i>
Actual start date	<i>M1</i>
Actual end date	<i>M36</i>

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:

<p>POLIBA kept on working on the project management aspects of the project, providing support to the partners in all the organizational tasks required. Thanks to the great support from ValueDo, all the partners have a clear idea of the activities they need to carry out.</p> <p>Main suggestions to the WP Leader: No suggestions.</p>
<p>Deviation from the workplan: No deviation, but all the partners experienced some difficulties because of the restrictions.</p>
<p>Problems experienced during the WP implementation: No problems occurred so far. POLIBA will be at partners' disposal for supporting them for the PM activities.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>
<p>Expected problems and envisaged solutions: No problems are expected.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>

WP7 – Quality Assurance

WP LEADER: VALUEDO

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	M1
Actual end date	M36

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements: During the II quarter ValueDo kept on checking on the quality of processes, results and activities. ValueDo organized a partnership meeting for discussing WP1 and WP2 activities on the 27 of April. ValueDo kept on checking partners financial documents and supporting PoliBa for financial issues; furthermore, Valuedo kept updating the Quality Assurance Plan and the Overall evaluation Plan according to partners' contributions.</p> <p>Main suggestions to the WP Leader: No suggestion for the moment.</p>

Deviation from the workplan: No deviation at this point.
Problems experienced during the WP implementation: No problems occurred so far. Valuedo will be at partners' disposal for supporting them adopt the QA tools. Corrective measures to be adopted: Nothing to add on this point.
Expected problems and envisaged solutions: No problems are expected, as the tools are easy to adopt. If problems will have doubts or encounter problems, ValueDo is ready to support them. Corrective measures to be adopted: Nothing to add on this point

WP8 – Project Evaluation

WP LEADER: UPM

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	M1
Actual end date	M36

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements: UPM carried out the analysis of the way to conduct the external reviewing process and discussed with ValueDo about how to handle the internal one. Main suggestions to the WP Leader: Nothing to add on this point.
Deviation from the workplan: No deviation for the moment.
Problems experienced during the WP implementation: No special problems were found. Corrective measures to be adopted: Nothing to add on this point.
Expected problems and envisaged solutions: In the next quarter a proposal will be made to partners.

Corrective measures to be adopted:

Nothing to add on this point.

WP9 – Dissemination and Exploitation of results**WP LEADER: INFOTECH**

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	M1
Actual end date	M36

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:

The Dissemination report has been finalized. The ie3 official website has been revised by introducing the project team components, the sections home and about. In the section about a graphical workflow to present the project, has been added. The social media official pages have been updated.

The Q-Day and the IE3-ESTIEM-AIM flyers have been developed to support the data collection through the survey conducted within WP2 activities. A document to keep track of the dissemination activities has been developed.

Also, the ppt presentation for the second meeting have been prepared.

Main suggestions to the WP Leader:

Nothing to add on this point.

Deviation from the workplan:

There has been some deviation due to covid19 lockdown.

Problems experienced during the WP implementation:

During the development of the WP9, Infotech suffered from the situation occurred with the COVID-19 outbreak. Explicitly, due to the lack of prompt organization for carrying out the smart working, the lockdown slowed down the finalization of the Dissemination Plan and the website updating. From beginning of May, Infotech has restarted fully working, so it fulfilled what was on hold and has completely overcome the problems.

Corrective measures to be adopted:

Nothing to add on this point.

Expected problems and envisaged solutions:

Nothing to add on this point.

Corrective measures to be adopted:

Nothing to add on this point.

RESULTS EVALUATION

R1.2 – Company education and training good practices collection Action Plan

RESPONSIBLE: PUT

Schedule

Expected start date	M1
Expected end date	M4
Actual start date	M2
Actual end date	M5

Percentage of completion

Percentage of completion	100%	PUT completed the Action Plan on company education and training good practices collection. PUT team designed a questionnaire to identify size and range of educational offer provided by manufacturing companies of different sizes. The aim of this survey is to identify good practices in use within the companies involved in the IE&M field, with particular attention to Industry 4.0-related topics.
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Partner evaluation

1. Are the specific tasks to be undertaken by researchers properly explained?	<i>Yes – all the partners</i>
2. Are the templates for reporting the results of each national research effective for their purposes?	<i>Yes – all the partners</i>
3. Is the methodology of the research clear?	<i>Yes – all the partners</i>

R1.3 – Report on education and training convergences and divergences and company good practices in IE&M

RESPONSIBLE: PUT

Schedule

Expected start date	M3
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Expected end date	M9
Actual start date	M3
Actual end date	M9

Percentage of completion

Percentage of completion	85%	The report will be finalized in next quarter. PUT is working on the development of the report on convergencies and divergencies between the knowledge available and offered
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R2.1 – Action plan for the survey for students and Academics

RESPONSIBLE: POLIBA

Schedule

Expected start date	M2
Expected end date	M5
Actual start date	M2
Actual end date	M5

Percentage of completion

Percentage of completion	100%	POLIBA finalized the Action plan for the survey for students and Academics. The document has been prepared in order to provide partners a reference for carrying out the surveys and to summarize key information concerning the tasks.
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Partner evaluation

1. Is the methodology of the research clear?	<i>Yes – all the partners</i>
2. Are the questionnaires developed by PoliBa effective for their purpose (gathering the perceptions of students and academics to identify the most requested methodologies?)	<i>Yes – all the partners</i>
3. Are there any relevant information not considered in the Action Plan?	<i>No – all the partners</i>

R2.2 – Action plan for semi-structured interviews for entrepreneurs**RESPONSIBLE: POLIBA**

Schedule

Expected start date	M2
Expected end date	M5
Actual start date	M2
Actual end date	M5

Percentage of completion

Percentage of completion	100%	POLIBA finalized the Action plan for the survey for semi-structured interviews for entrepreneurs.
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Partner evaluation

1. Is the methodology of the research clear?	<i>Yes – all the partners</i>
2. Are the questionnaires developed by PoliBa effective for their purpose (gathering the perceptions of students and academics to identify the most requested methodologies?)	<i>Yes – all the partners</i>
3. Are there any relevant information not considered in the Action Plan?	<i>No – all the partners</i>

III QUARTERLY REPORT**Period: May - July 2020**

The most significant project accomplishments during this quarter has been the results from the extensive surveys that partners have carried out. This information will be crucial for the rest of the project and it's soothing that the consortium managed to reach almost all of our targets for an extensive data collection. PUT finalized the *Report on education and training convergences and divergences and company good practices in IE&M* in July 2020. After analysis of the courses the following conclusions can be drawn:

- There are no substantial divergencies between topics of academic research and educational offer of HEIs,
- Both academic research and educational offer refer to managerial and technical aspects of Industry4.0
- Importance of manufacturing technologies is stressed together with importance of data processing technologies
- Companies develop educational offer based on their needs
- Companies develop educational offer with respect to resources available.

The company partners supported Universities to reach the following achievements:

- Report on education and training convergences/divergences and company good practices.
- Conducting the semi-structured interviews to entrepreneurs
- Definition of the training needs

Validations of deliverables from WP1 and internal preparation for the Wp2 deliverable have been carried out. Indeed, initial plan to accomplish the WP8 activities was also performed.

Infotech has accomplished the development of the Questionnaire-Day (Q-Day) flyer for advertising the data collection of the WP2. Beside this, a flyer for stimulating the students engagement was framed together with the Associated partner ESTIEM. The Dissemination Plan was refined and eventually presented to the partners. An extraordinary plan for coping with the COVID-19 pandemic has been outlined. The article production schedule was rearranged and website, as well as the IE3 official social pages were fed.

EFFECTIVENESS AND EFFICIENCY OF THE PARTNERSHIP
<p>Results of the internal consultation: The partners find the cooperation among them good and they have proved to be able to work efficiently together.</p> <p>Corrective measures to be adopted: Some partners point out that a feedback on completed activities would be appreciated in the pursuit of excellence (some partners do not hesitate to contact, while others do not leave comments).</p>

COMMUNICATION WITHIN THE PARTNERSHIP
<p>Results of the internal consultation: All the partners find the communication good and effective.</p> <p>Corrective measures to be adopted: Some partners would like to know more about other's partners activities (even if the deadline sheet shared among them is useful).</p>

WP ANALYSIS

WP1 – Researching HEI training offer and company good practices in the field of IE&M

WP LEADER: PUT

Schedule

Expected start date	M1
Expected end date	M9
Actual start date	M2
Actual end date	M10

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:

PUT finalized the Report on education and training convergences and divergences and company good practices in IE&M in July 2020. After analysis of the courses the following conclusions can be drawn:

- There are no substantial divergences between topics of academic research and educational offer of HEIs,
- Both academic research and educational offer refer to managerial and technical aspects of Industry4.0
- Importance of manufacturing technologies is stressed together with importance of data processing technologies
- Companies develop educational offer based on their needs
- Companies develop educational offer with respect to resources available.

Main suggestions to the WP Leader:

No suggestion.

Deviation from the workplan:

No deviation at the moment.

Problems experienced during the WP implementation:

There were some problems caused by Pandemic situation but thanks to continuous and efficient communication they were solved.

Corrective measures to be adopted:

Nothing to add on this point.

Expected problems and envisaged solutions:

It will depend on restrictions and limitations caused by Pandemic situation.

Corrective measures to be adopted:

Nothing to add on this point.

WP2 – Training need Analysis and definition of the BoK

WP LEADER: POLIBA

Schedule

Expected start date	M2
Expected end date	M12
Actual start date	M2
Actual end date	M12

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:

<p>POLIBA worked on the Training Needs Analysis. The document will be ready in M10 and it will be structured as follows: in the first section, results of the qualitative semi-structured interviews are presented; in the second section, the structure of the quantitative questionnaires designed for the different stakeholders is illustrated; results obtained from the questionnaires are in the third section; finally, conclusion are in the final section.</p> <p>Main suggestions to the WP Leader: No suggestions provided.</p>
<p>Deviation from the workplan: No deviation at the moment.</p>
<p>Problems experienced during the WP implementation: Nothing to add on this point.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>
<p>Expected problems and envisaged solutions: Nothing to add on this point.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>

WP6 – Project Management

WP LEADER: POLIBA

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	<i>M1</i>
Actual end date	<i>M36</i>

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements: POLIBA kept on working on the project management aspects of the project, providing support to the partners in all the organizational tasks required. Thanks to the great support from ValueDo, all the partners have a clear idea of the activities they need to carry out.</p> <p>Main suggestions to the WP Leader: No suggestions.</p>

Deviation from the workplan: No deviation, but all the partners experienced some difficulties because of the restrictions.
Problems experienced during the WP implementation: No problems occurred so far. POLIBA will be at partners' disposal for supporting them for the PM activities. Corrective measures to be adopted: Nothing to add on this point.
Expected problems and envisaged solutions: No problems are expected. Corrective measures to be adopted: Nothing to add on this point.

WP7 – Quality Assurance

WP LEADER: VALUEDO

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	M1
Actual end date	M36

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements: During the III quarter ValueDo kept on checking on the quality of processes, results and activities. ValueDo kept on checking partners financial documents and supporting PoliBa for financial issues; furthermore, Valuedo kept updating the Quality Assurance Plan. Main suggestions to the WP Leader: No suggestion for the moment.
Deviation from the workplan: No deviation at this point.
Problems experienced during the WP implementation: No problems occurred so far. Valuedo will be at partners' disposal for supporting them adopt the QA tools. Corrective measures to be adopted: Nothing to add on this point.

Expected problems and envisaged solutions:

No problems are expected, as the tools are easy to adopt. If problems will have doubts or encounter problems, ValueDo is ready to support them.

Corrective measures to be adopted:

Nothing to add on this point

WP8 – Project Evaluation**WP LEADER: UPM**

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	<i>M1</i>
Actual end date	<i>M36</i>

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:

UPM worked on Internal and External assessment of the quality control processes.

Main suggestions to the WP Leader:

Nothing to add on this point.

Deviation from the workplan:

No deviation for the moment.

Problems experienced during the WP implementation:

No special problems were found.

Corrective measures to be adopted:

Nothing to add on this point.

Expected problems and envisaged solutions:

In the next quarter a proposal will be made to partners.

Corrective measures to be adopted:

Nothing to add on this point.

WP9 – Dissemination and Exploitation of results**WP LEADER: INFOTECH**

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	<i>M1</i>
Actual end date	<i>M36</i>

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:

Development of the engagement strategy for data collection within the WP2 through the "Q-Day" flyer. Refinement of the Dissemination Plan, by taking into consideration the pandemic conditions to plan the development of the activities for such extraordinary situation. Presentation of the Dissemination Plan to the partners. Updating the website and the official social pages. Addressing the weekly article production.

Main suggestions to the WP Leader:

Nothing to add on this point.

Deviation from the workplan:

There has been some deviation due to covid19 lockdown.

Problems experienced during the WP implementation:

During the development of the WP9, Infotech suffered from the situation occurred with the COVID-19 outbreak. Explicitly, due to the lack of prompt organization for carrying out the smart working, the lockdown slowed down the finalization of the Dissemination Plan and the website updating. From beginning of May, Infotech has restarted fully working, so it fulfilled what was on hold and has completely overcome the problems.

Corrective measures to be adopted:

Nothing to add on this point.

Expected problems and envisaged solutions:

Nothing to add on this point.

Corrective measures to be adopted:

Nothing to add on this point.

R1.3 – Report on education and training convergences and divergences and company good practices in IE&M

RESPONSIBLE: PUT

Schedule

Expected start date	M3
Expected end date	M9
Actual start date	M3
Actual end date	M9

Percentage of completion

Percentage of completion	100%	<p>PUT finalized the Report on education and training convergences and divergences and company good practices in IE&M in July 2020. After analysis of the courses the following conclusions can be drawn:</p> <ul style="list-style-type: none"> • There are no substantial divergencies between topics of academic research and educational offer of HEIs, • Both academic research and educational offer refer to managerial and technical aspects of Industry4.0 • Importance of manufacturing technologies is stressed together with importance of data processing technologies • Companies develop educational offer based on their needs • Companies develop educational offer with respect to resources available.
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Partner evaluation

1. Is structure of the Report well designed?	Yes – all the partners
2. Are all the expected contents clearly encompassed in the Report?	Yes – all the partners
3. Are the convergences and divergencies among the different educational systems clearly identified?	Yes – all the partners
4. Can the Report be the basis for next steps of the project?	Yes – all the partners
5. Do you officially approve this public result to be published on the project website?	Yes – all partners

R2.3 – Training needs analysis**RESPONSIBLE: POLIBA**

Schedule

Expected start date	M5
Expected end date	M9
Actual start date	M8
Actual end date	M10

Percentage of completion

Percentage of completion	80%	The document will be ready in M10 and it will be structured as follows: in the first section, results of the qualitative semi-structured interviews are presented; in the second section, the structure of the quantitative questionnaires designed for the different stakeholders is illustrated; results obtained from the questionnaires are in the third section; finally, conclusion are in the final section.
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IV QUARTERLY REPORT**Period: August - October 2020**

Partners came into the final stages of WP2 and the Training Need Analysis has been completed successfully. PoliBa delivered R2.3 in M10 and the document is structured as follows: in the first section, results of the qualitative semi-structured interviews are presented; in the second section, the structure of the quantitative questionnaires designed for the different stakeholders is illustrated; results obtained from the questionnaires are in the third section; finally, conclusion are in the final section. Thanks to the analysis, the partners made some interesting insights into the gaps between the industry and educational offer in the I.4.0 framework. The partners had fruitful discussions on the drafts of the BoK and are now ready to start actively working on WP3 activities.

EFFECTIVENESS AND EFFICIENCY OF THE PARTNERSHIP
<p>Results of the internal consultation:</p> <p>The partners find the cooperation among them good and they have proved to be able to work efficiently together.</p> <p>Corrective measures to be adopted:</p> <p>Some partners point out that a feedback on completed activities would be appreciated in the pursuit of excellence: they would like to receive some monthly updates from the WP leaders.</p>

COMMUNICATION WITHIN THE PARTNERSHIP
<p>Results of the internal consultation: All the partners find the communication good and effective.</p> <p>Corrective measures to be adopted: Some partners would like to know more about other's partners activities (even if the deadline sheet shared among them is useful). Implema suggests having monthly updates on the status of the activities.</p>

WP ANALYSIS

WP2 - Training need Analysis and definition of the BoK**WP LEADER: POLIBA**

Schedule

Expected start date	M2
Expected end date	M12
Actual start date	M2
Actual end date	M12

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements: The BoK composition was a real challenge, but thanks to the meeting on open discussion, POLIBA finds the results are more than satisfactory. The discussions held regarding the shared drafts for BoK were very constructive.</p> <p>Main suggestions to the WP Leader: LIU finds the discussions on the outcomes and on the BoK very useful and professional. TDIT, on the other hand, adds that the discussion had during the BoK composition was very satisfactory. Each and every contribution was really effective.</p>
<p>Deviation from the workplan: There has not been any delay; the BoK was initially foreseen as an end-up product, but because of the discussions, it was understood to better keep it active throughout the whole project, delivering several releases.</p>
<p>Problems experienced during the WP implementation: Partners have not experienced any specific problems besides what is induced by Covid 19 (travel restrictions).</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>
Expected problems and envisaged solutions:

Partners do not expect any specific problems; WP3 will now take-off from the outcomes of WP2 and try to implement as much as possible of its result and recommendations.

Corrective measures to be adopted:

Nothing to add on this point.

WP3 - Designing new training courses and internal testing within partner universities

WP LEADER: LIU

Schedule

Expected start date	M12
Expected end date	M22
Actual start date	M11
Actual end date	M22

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:

The requested deliverables were fulfilled and communicated. Special attention was given to the contributions requested from WP2. LIU started putting together the action plan for WP3. LIU arranged a kick-off meeting with all participants on 14 October and a coordination meeting on 26 October.

Main suggestions to the WP Leader:

All the partners agreed that the scheduled meetings were an excellent tool to define expectations and to adopt deadlines.

Deviation from the workplan:

The activities related to WP3 started one month earlier than what stated in the project description and Gantt.

Problems experienced during the WP implementation:

The partners have not experienced any specific problems.

Corrective measures to be adopted:

Nothing to add on this point.

Expected problems and envisaged solutions:

Partners do not expect any specific problems. Even if there is some pending work, all the partners find the route clear.

Corrective measures to be adopted:

Nothing to add on this point.

WP6 – Project Management**WP LEADER: POLIBA**

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	<i>M1</i>
Actual end date	<i>M36</i>

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:

POLIBA kept on working on the project management aspects of the project, providing support to the partners in all the organizational tasks required. Thanks to the great support from ValueDo, all the partners have a clear idea of the activities they need to carry out.

Main suggestions to the WP Leader:

No suggestions.

Deviation from the workplan:

No deviation, but all the partners experienced some difficulties because of the restrictions.

Problems experienced during the WP implementation:

No problems occurred so far. POLIBA will be at partners' disposal for supporting them for the PM activities. The discrepancies due to Covid19 have been managed with virtual meetings.

Corrective measures to be adopted:

Nothing to add on this point.

Expected problems and envisaged solutions:

No problems are expected.

Corrective measures to be adopted:

Nothing to add on this point.

WP7 – Quality Assurance**WP LEADER: VALUEDO**

Schedule

Expected start date	M1
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Expected end date	M36
Actual start date	M1
Actual end date	M36

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:</p> <p>During the IV quarter ValueDo kept on checking on the quality of processes, results and activities.</p> <p>ValueDo kept on checking partners financial documents and supporting PoliBa for financial issues; furthermore, Valuedo kept updating the Quality Assurance Plan.</p> <p>Main suggestions to the WP Leader:</p> <p>No suggestion for the moment.</p>
<p>Deviation from the workplan:</p> <p>No deviation at this point.</p>
<p>Problems experienced during the WP implementation:</p> <p>No problems occurred so far. Valuedo will be at partners' disposal for supporting them adopt the QA tools.</p> <p>Corrective measures to be adopted:</p> <p>Nothing to add on this point.</p>
<p>Expected problems and envisaged solutions:</p> <p>No problems are expected, as the tools are easy to adopt. If problems will have doubts or encounter problems, ValueDo is ready to support them.</p> <p>Corrective measures to be adopted:</p> <p>Nothing to add on this point</p>

WP8 – Project Evaluation

WP LEADER: UPM

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	M1
Actual end date	M36

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:</p> <p>UPM worked on Internal and External assessment of the quality control processes.</p> <p>Main suggestions to the WP Leader:</p> <p>Nothing to add on this point.</p>
<p>Deviation from the workplan:</p> <p>No deviation for the moment.</p>
<p>Problems experienced during the WP implementation:</p> <p>No special problems were found.</p> <p>Corrective measures to be adopted:</p> <p>Nothing to add on this point.</p>
<p>Expected problems and envisaged solutions:</p> <p>In the next quarter a proposal will be made to partners.</p> <p>Corrective measures to be adopted:</p> <p>Nothing to add on this point.</p>

WP9 – Dissemination and Exploitation of results

WP LEADER: INFOTECH

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	<i>M1</i>
Actual end date	<i>M36</i>

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:</p> <p>Development of the engagement strategy for data collection within the WP2 through the "Q-Day" flyer. Refinement of the Dissemination Plan, by taking into consideration the pandemic conditions to plan the development of the activities for such extraordinary situation. Presentation of the Dissemination Plan to the partners. Updating the website and the official social pages. Addressing the weekly article production.</p> <p>Main suggestions to the WP Leader:</p> <p>Nothing to add on this point.</p>

Deviation from the workplan: There has been some deviation due to covid19 lockdown.
Problems experienced during the WP implementation: During the development of the WP9, Infotech suffered from the situation occurred with the COVID-19 outbreak. Explicitly, due to the lack of prompt organization for carrying out the smart working, the lockdown slowed down the finalization of the Dissemination Plan and the website updating. From beginning of May, Infotech has restarted fully working, so it fulfilled what was on hold and has completely overcome the problems. Corrective measures to be adopted: PUT declared that they would like to get more information what kind of data are published on website and social pages.
Expected problems and envisaged solutions: Nothing to add on this point. Corrective measures to be adopted: Nothing to add on this point.

RESULTS EVALUATION

R2.3 – Training needs analysis

RESPONSIBLE: POLIBA

Schedule

Expected start date	M5
Expected end date	M9
Actual start date	M8
Actual end date	M10

Percentage of completion

Percentage of completion	100%	The document has been delivered in M10 and it is structured as follows: in the first section, results of the qualitative semi-structured interviews are presented; in the second section, the structure of the quantitative questionnaires designed for the different stakeholders is illustrated; results obtained from the questionnaires are in the third section; finally, conclusion are in the final section.
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Partner evaluation

1) Does the analysis conducted provide interesting results? and such research could be repeated periodically to observe the changes	Yes – all the partners
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2) Do you think it would be useful to repeat such research periodically to observe the changes?	Yes – <i>all the partners</i>
3) Does the analysis provide a clear picture on expectations for IE&M?	Yes – <i>all the partners</i>

V QUARTERLY REPORT

Period: November 2020 – January 2021

POLIBA is conducting the ultimate task of WP2: "T2.6 - Conducting the GAP analysis and development of the BoK. The BoK has been validate by all partners and it is available on IE3 website: <https://ie3.eu/wp-content/uploads/2022/11/Body-of-Knowledge.pdf>

WP3 has now been launched among the academic partners and the local industry participants in order to revise and/or renew one or more course modules in their current MSc programme(s) in Industrial Engineering and Management in line with the recommendations given in the BoK. None of the partners has reported problems or significant delays in the accomplishment of decided outcomes.

Important tasks have been carried out within dissemination:

- 1) Creation of the YouTube channel and the "zero video" to introduce the IE3 project;
- 2) Collection and publication of 14 weekly articles (news).
- 3) Feeding the website and the Facebook and LinkedIn pages.
- 4) Figuring out the management and the use of the identity tools of Bosch partner.
- 5) Development of the citation code and publication of the scientific article received by UMP;
- 6) Preparation of the first draft of the template for the slides of the IE3 course.
- 7) Introduction of the dates to all the news published on the website.
- 8) Introduction of social "stories" along with the news sharing.

EFFECTIVENESS AND EFFICIENCY OF THE PARTNERSHIP

Results of the internal consultation:

The partners find the cooperation among them good and they have proved to be able to work efficiently together.

Corrective measures to be adopted:

Some partners point out that a feedback on completed activities would be appreciated in the pursuit of excellence: they would like to receive some monthly updates from the WP leaders.

COMMUNICATION WITHIN THE PARTNERSHIP

Results of the internal consultation:

All the partners find the communication good and effective.

Corrective measures to be adopted:

Some partners would like to know more about other's partners activities (even if the deadline sheet shared among them is useful). Implema suggests having monthly updates on the status of the activities.

WP2 - Training need Analysis and definition of the BoK

WP LEADER: POLIBA

Schedule

Expected start date	M2
Expected end date	M12
Actual start date	M2
Actual end date	M14

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:

WP2 concluded with creative stage - BoK definition - well led by the Poliba, giving all the partners chance to contribute. Confrontation of various experiences synergistically contributed to high quality outcome

Main suggestions to the WP Leader:

No suggestion from partners. Everybody is satisfied by the final result.

Deviation from the workplan:

The work on the BoK required a lot of effort and time and the result has been delivered two months later than expected.

Problems experienced during the WP implementation:

Various universities define their programmes in different ways - from formal perspective it is difficult to implement the same approach, but the partners managed to develop common and flexible approach to BoK definition.

Corrective measures to be adopted:

Nothing to add on this point.

Expected problems and envisaged solutions:

The problems could emerge from unsatisfactory (low) number of students enrolled for the second cycle programs, but by promoting development opportunities the partners believe that they will get the groups to cooperate with when testing new courses delivered as the outcomes of the project

Corrective measures to be adopted:

Nothing to add on this point.

WP3 - Designing new training courses and internal testing within partner universities**WP LEADER: LIU**

Schedule

Expected start date	M12
Expected end date	M22
Actual start date	M11
Actual end date	M22

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:

WP3 was launched successfully.

Main suggestions to the WP Leader:

No suggestion.

Deviation from the workplan:

The activities related to WP3 started one month earlier than what stated in the project description and Gantt.

Problems experienced during the WP implementation:

Changes in programme should be consistent with graduate profile and university profile so they need to be designed carefully.

Corrective measures to be adopted:

Nothing to add on this point.

Expected problems and envisaged solutions:

Changes in programme require formal acceptance, which can be difficult (decision chain, time required for acceptance).

Corrective measures to be adopted:

Nothing to add on this point.

WP6 – Project Management**WP LEADER: POLIBA**

Schedule

Expected start date	M1
Expected end date	M36

Actual start date	<i>M1</i>
Actual end date	<i>M36</i>

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:</p> <p>POLIBA kept on working on the project management aspects of the project, providing support to the partners in all the organizational tasks required. Thanks to the great support from ValueDo, all the partners have a clear idea of the activities they need to carry out.</p> <p>Main suggestions to the WP Leader:</p> <p>No suggestions.</p>
<p>Deviation from the workplan:</p> <p>No deviation, but all the partners experienced some difficulties because of the restrictions.</p>
<p>Problems experienced during the WP implementation:</p> <p>No problems occurred so far. POLIBA will be at partners' disposal for supporting them for the PM activities. The discrepancies due to Covid19 have been managed with virtual meetings.</p> <p>Corrective measures to be adopted:</p> <p>Nothing to add on this point.</p>
<p>Expected problems and envisaged solutions:</p> <p>No problems are expected.</p> <p>Corrective measures to be adopted:</p> <p>Nothing to add on this point.</p>

WP7 – Quality Assurance

WP LEADER: VALUEDO

Schedule

Expected start date	<i>M1</i>
Expected end date	<i>M36</i>
Actual start date	<i>M1</i>
Actual end date	<i>M36</i>

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:</p>
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<p>During the V quarter ValueDo kept on checking on the quality of processes, results and activities. ValueDo kept on checking partners financial documents and supporting PoliBa for financial issues; furthermore, Valuedo kept updating the Quality Assurance Plan.</p> <p>Main suggestions to the WP Leader: No suggestion for the moment.</p>
<p>Deviation from the workplan: No deviation at this point.</p>
<p>Problems experienced during the WP implementation: No problems occurred so far. Valuedo will be at partners' disposal for supporting them adopt the QA tools.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>
<p>Expected problems and envisaged solutions: No problems are expected, as the tools are easy to adopt. If problems will have doubts or encounter problems, ValueDo is ready to support them.</p> <p>Corrective measures to be adopted: Nothing to add on this point</p>

WP8 – Project Evaluation

WP LEADER: UPM

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	M1
Actual end date	M36

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements: UPM worked on the proposal for methodology to be used at the external assessment procedure for the BoK.</p> <p>Main suggestions to the WP Leader: Nothing to add on this point.</p>
<p>Deviation from the workplan: No deviation for the moment.</p>

<p>Problems experienced during the WP implementation: No problems were found, thanks to the partner's proactivity.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>
<p>Expected problems and envisaged solutions: No problems are expected, as the methodology was agreed and it's going to be implemented.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>

WP9 – Dissemination and Exploitation of results

WP LEADER: INFOTECH

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	M1
Actual end date	M36

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:</p> <p>INFOTECH carried out the following activities:</p> <ol style="list-style-type: none"> 1) Creation of the YouTube channel and the "zero video" to introduce the IE3 project; 2) Collection and publication of 14 weekly articles (news). 3) Feeding the website and the Facebook and LinkedIn pages. 4) Figuring out the management and the use of the identity tools of Bosch partner. 5) Preparation of the cover pages for both R1.3 and R2.4. 6) Development of the citation code and publication of the scientific article received by UMP; 7) Preparation of the first draft of the template for the slides of the IE3 course. 8) Introduction of the dates to all the news published on the website. 9) Introduction of social "stories" along with the news sharing." <p>Main suggestions to the WP Leader: Nothing to add on this point.</p>
<p>Deviation from the workplan: There has been some deviation due to covid19 lockdown. Three out of four weekly article were missed during November.</p>
<p>Problems experienced during the WP implementation: No problems experienced in this quarter.</p>

Corrective measures to be adopted: No measures to be adopted.
Expected problems and envisaged solutions: Nothing to add on this point. Corrective measures to be adopted: Nothing to add on this point.

RESULTS EVALUATION

R2.4 – Body of Knowledge

RESPONSIBLE: POLIBA

Schedule

Expected start date	M10
Expected end date	M12
Actual start date	M10
Actual end date	M14

Percentage of completion

Percentage of completion	100%	<p>The BoK is the reference document to support conceptual and implementation processes of designing, updating or re-designing of university master level programs or course modules in IE&M with the aim of educating a critical mass of university students or companies' personnel.</p> <p>The BoK defines Guidelines supporting the renewal processes of IE&M master level education in Europe. The document disseminates IE3 project outcomes across Europe giving value to practical experience carried out by project partners during the project development.</p>
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Partner evaluation

1. Is the ambition of the document clear enough?	Yes (all partners)
2. Is the structure of the document appropriate in your opinion?	Yes (all partners)
3. Section A: Do you consider the adopted process oriented structure appropriate?	Yes (all partners)
4. Section A: Is the set of considered processes enough? Otherwise, what do you suggest?	Yes (all partners)
5. Is the Section A clear and effective in describing the process adopted?	Yes (all partners)
6. Section B: Are the provided Guidelines for planning course/program renewal adequate?	Yes (all partners)

7. Section B: Is the proposed Competence Matrix adequate?	Yes (all partners)
8. Is the Section C clear and effective in describing the results of the training need analysis (key knowledge, skills, and competences)?	Yes (all partners)
9. Is the Section C clear and effective in describing the results of the training need analysis (Educational Tools)?	Yes (all partners)
10. Do you officially validate ML3?	Yes (all partners)

R3.1 – IE3 Course Action Plan

RESPONSIBLE: LIU

Schedule

Expected start date	M12
Expected end date	M13
Actual start date	M12
Actual end date	M14

Percentage of completion

Percentage of completion	100%	During the Coordination meeting on 9 December 2020, it was decided which course module(s) each academic partner in the IE3 project would target for revision in line with the BoK within the frame of WP3. LIU has developed, to achieve this goal and facilitate the activities, R3.1 Course Action Plan. All the University partners have actively collaborated for the preparation of the guidelines.
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Partner evaluation

1. Is the Action Plan containing clear and plausible deadlines for the listed activities?	Yes – <i>all the partners</i>
2. Are the guidelines for describing the course(s) to be improved clear and detailed?	Yes – <i>all the partners</i>
3. Are the guidelines for describing the improved course(s) clear and detailed?	Yes – <i>all the partners</i>

VI QUARTERLY REPORT

Period: February 2021 – April 2021

WP3 has now got off the ground among the academic partners and the local industry participants and they are revising and/or renewing one or more course modules in their current MSc programme(s) in Industrial

Engineering and Management in line with the recommendations given in the BoK. None of the partners has reported problems or significant delays in the accomplishment of decided outcomes.

PoliBa took part into the organization of the 1st Virtual European Conference on 'Higher Education in Industrial Engineering and Management in the Light of I4.0 Paradigm: State of the Art and Perspectives' (9 April 2021) (<https://ie3.eu/2021/06/15/1st-virtual-european-e3-conference-on-higher-education-in-industrial-engineering-and-management-19-april-2021/>)

PoliBa, supported by Valuedo, started working on the Interim Report, asking the partners their contribution for the preparation of the document that will be delivered by June 2021.

IE3 project has strongly acted to disseminate the result of the Body of Knowledge, discussing on the main findings and how the educational offer should be improved at European level. This has been strengthened by exchanging with distinguished stakeholders among academics and professionals.

EFFECTIVENESS AND EFFICIENCY OF THE PARTNERSHIP
<p>Results of the internal consultation:</p> <p>The partners find the cooperation among them good and they have proved to be able to work efficiently together.</p> <p>Corrective measures to be adopted:</p> <p>Some partners point out that a feedback on completed activities would be appreciated in the pursuit of excellence: they would like to receive some monthly updates from the WP leaders.</p>

COMMUNICATION WITHIN THE PARTNERSHIP
<p>Results of the internal consultation:</p> <p>All the partners find the communication good and effective.</p> <p>Corrective measures to be adopted:</p> <p>Some partners would like to know more about other's partners activities (even if the deadline sheet shared among them is useful). Implema suggests having monthly updates on the status of the activities.</p>

WP3 - Designing new training courses and internal testing within partner Universities

WP LEADER: LIU

Schedule

Expected start date	M12
Expected end date	M22
Actual start date	M11
Actual end date	M22

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:</p> <p>WP3 has now got off the ground and the academic partners with support of the local industry participants are revising and/or renewing one or more course modules in their current MSc programme(s) in Industrial Engineering and Management in line with the recommendations given in the BoK. None of the partners has reported problems or significant delays in the accomplishment of decided outcomes.</p> <p>Main suggestions to the WP Leader:</p> <p>No suggestion from partners.</p>
<p>Deviation from the workplan:</p> <p>No deviation.</p>
<p>Problems experienced during the WP implementation:</p> <p>UPM experienced some difficulties in finding/creating proper contents</p> <p>Corrective measures to be adopted:</p> <p>Nothing to add on this point.</p>
<p>Expected problems and envisaged solutions:</p> <p>No expected problems.</p> <p>Corrective measures to be adopted:</p> <p>Nothing to add on this point.</p>

WP6 – Project Management

WP LEADER: POLIBA

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	M1
Actual end date	M36

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:</p> <p>Poliba kept following all the managerial and organizational aspects of the project, supporting the partners in case of need. PoliBa, together with ValueDo, is preparing the Interim Report to be delivered by the end of June 2021. The report will represent a crucial point for the project and PoliBa asked all the partners to actively contribute.</p>
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Main suggestions to the WP Leader: No suggestions.
Deviation from the workplan: No deviation, but all the partners experienced some difficulties because of the restrictions.
Problems experienced during the WP implementation: PoliBa experienced no problem during this quarter, also thanks to the technical assistance by ValueDo for all the management, organizational and bureaucratic aspects. Corrective measures to be adopted: Nothing to add on this point.
Expected problems and envisaged solutions: No problems are expected, the partners have a clear idea on the contribution they need to give for the preparation of the Interim Report. Corrective measures to be adopted: Nothing to add on this point.

WP7 – Quality Assurance

WP LEADER: VALUEDO

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	<i>M1</i>
Actual end date	<i>M36</i>

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements: During the VI quarter ValueDo kept on checking on the quality of processes, results and activities. ValueDo kept on checking partners financial documents and supporting PoliBa for financial issues; furthermore, Valuedo started working on the Interim Report, supporting PoliBa in the preparation of the documents and the collection of all the contributions from the partners. Together with InfoTech, ValueDo will create a repository (private section) on the IE3 official website where all the results and supporting documents will be uploaded. Main suggestions to the WP Leader: No suggestion for the moment.
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Deviation from the workplan: No deviation at this point.
Problems experienced during the WP implementation: No problems occurred so far. Valuedo will be at partners' disposal for supporting them adopt the QA tools. Corrective measures to be adopted: Nothing to add on this point.
Expected problems and envisaged solutions: No problems are expected, as the tools are easy to adopt. If problems will have doubts or encounter problems, ValueDo is ready to support them. Corrective measures to be adopted: Nothing to add on this point

WP8 – Project Evaluation

WP LEADER: UPM

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	M1
Actual end date	M36

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements: UPM worked on the effective external assessment process and analysis of the findings Main suggestions to the WP Leader: Nothing to add on this point.
Deviation from the workplan: UPM experienced just a minor delay, adjusting to the BoK availability. The good quality feedback from partners improved the BoK and it took a bit longer to get it ready.
Problems experienced during the WP implementation: No problems were found, thanks to the partner's proactivity. Corrective measures to be adopted: Nothing to add on this point.
Expected problems and envisaged solutions: No problems are expected, as the methodology was agreed and it's going to be implemented.

Corrective measures to be adopted:

Nothing to add on this point.

WP9 – Dissemination and Exploitation of results**WP LEADER: INFOTECH**

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	M1
Actual end date	M36

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:

INFOTECH carried out the following activities:

- 1) Creation of the repository (private section) on the website to upload all the results and supporting documents;
- 2) Collection and publication of 14 weekly articles (news).
- 3) Feeding the website and the Facebook and LinkedIn pages.
- 4) Figuring out the management and the use of the identity tools of Bosch partner.
- 5) Preparation of the cover pages for both R1.3 and R2.4.
- 6) Development of the citation code and publication of the scientific article received by UMP;
- 7) Preparation of the first draft of the template for the slides of the IE3 course.
- 8) Introduction of the dates to all the news published on the website.
- 9) Introduction of social "stories" along with the news sharing."

Main suggestions to the WP Leader:

Nothing to add on this point.

Deviation from the workplan:

There has been some deviation due to covid19 lockdown. Three out of four weekly article were missed during November.

Problems experienced during the WP implementation:

No problems experienced in this quarter.

Corrective measures to be adopted:

No measures to be adopted.

Expected problems and envisaged solutions:

Nothing to add on this point.

Corrective measures to be adopted:

Nothing to add on this point.

VII QUARTERLY REPORT

Period: May 2021 – July 2021

Within this quarter, the partners have worked on the following activities:

- T3.2 - Developing new learning materials with the support of all partners and companies' formal review
- T3.4 - Piloting and peer-evaluation of the new course
- T3.5 - Follow-up and revision of the training materials
- T4.1 - Setup the technical environment for the e-learning system, including serious gaming and learning routes extensions

UPM, as WP4 leader, has carried out the following tasks: development of the Pedagogical Model, after publishing some related papers; disseminating the model in an international congress (CIDIP 2021); development of the course materials to be implemented in the next academic course; implementation of the LMS server.

All partners took part to the 10th Virtual Meeting on 6th May 2021 and 11th Virtual Meeting on 11th June 2021.

EFFECTIVENESS AND EFFICIENCY OF THE PARTNERSHIP

Results of the internal consultation:

The partners find the cooperation among them good and they have proved to be able to work efficiently together.

Corrective measures to be adopted:

Some partners point out that a feedback on completed activities would be appreciated in the pursuit of excellence: they would like to receive some monthly updates from the WP leaders.

COMMUNICATION WITHIN THE PARTNERSHIP

Results of the internal consultation:

All the partners find the communication good and effective.

Corrective measures to be adopted:

Some partners would like to know more about other's partners activities (even if the deadline sheet shared among them is useful).

WP3 - Training need Analysis and definition of the BoK

WP LEADER: LIU

Schedule

Expected start date	M12
Expected end date	M22

Actual start date	<i>M11</i>
Actual end date	<i>M22</i>

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements: LiU worked mainly on the design of new training courses and the planning of the internal testing.</p> <p>Main suggestions to the WP Leader: No suggestion from partners.</p>
<p>Deviation from the workplan: No deviation.</p>
<p>Problems experienced during the WP implementation: PUT tried to meet the deadlines with testing but it was difficult because of availability of students. The biggest difficulty was getting feedback from students and tried to encourage them as much as possible.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>
<p>Expected problems and envisaged solutions: No expected problems.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>

WP4 - Turning training courses into e-learning courses and application to other partner Universities

WP LEADER: UPM

Schedule

Expected start date	<i>M18</i>
Expected end date	<i>M30</i>
Actual start date	<i>M18</i>
Actual end date	<i>M30</i>

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:</p>
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<p>UPM started working on WP4. The LMS server was set up: https://apii01.etsii.upm.es/moodle/.</p> <p>Main suggestions to the WP Leader: PUT: "New skills were required - we do work with Moodle, yet making courses interactive and attractive was challenging".</p>
<p>Deviation from the workplan: No deviation.</p>
<p>Problems experienced during the WP implementation: WP4 has just started, so no difficulties have been found yet.</p> <p>Corrective measures to be adopted: No technical problems - some organizational issues but it was possible to be flexible in organizing tasks execution.</p>
<p>Expected problems and envisaged solutions: They could appear depending on the expectations that different stakeholders want to cover. High level of dialog will be maintained with the different stakeholders.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>

WP6 – Project Management

WP LEADER: POLIBA

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	M1
Actual end date	M36

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements: Poliba kept following all the managerial and organizational aspects of the project, supporting the partners in case of need. PoliBa, together with ValueDo, finalized the Interim Report delivered by the end of June 2021 as requested. All the partners actively contributed to finalize the Interim Report.</p> <p>Main suggestions to the WP Leader: PUT: "Thanks to well designed project and Poliba and Valuedo support management was not a problem".</p>
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<p>Deviation from the workplan: No deviation, but all the partners experienced some difficulties because of the restrictions.</p>
<p>Problems experienced during the WP implementation: PoliBa experienced no problem during this quarter, also thanks to the technical assistance by ValueDo for all the management, organizational and bureaucratic aspects.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>
<p>Expected problems and envisaged solutions: No problems are expected, the partners gave an effective contribution to the finalization of the Interim Report.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>

WP7 – Quality Assurance

WP LEADER: VALUEDO

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	M1
Actual end date	M36

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements: During the VII quarter ValueDo kept on checking on the quality of processes, results and activities. ValueDo kept on checking partners financial documents and supporting PoliBa for financial issues; furthermore, Valuedo kept updating the Quality Assurance Plan.</p> <p>Main suggestions to the WP Leader: PUT: "Cooperation was smooth and the work-package was perfectly managed".</p>
<p>Deviation from the workplan: No deviation at this point.</p>
<p>Problems experienced during the WP implementation: No problems occurred so far. Valuedo will be at partners' disposal for supporting them adopt the QA tools.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>

<p>Expected problems and envisaged solutions: No problems are expected, as the tools are easy to adopt. If problems will have doubts or encounter problems, ValueDo is ready to support them.</p> <p>Corrective measures to be adopted: Nothing to add on this point</p>
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WP8 – Project Evaluation

WP LEADER: UPM

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	<i>M1</i>
Actual end date	<i>M36</i>

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements: UPM is driving the effective external assessment process and analysis of the findings.</p> <p>Main suggestions to the WP Leader: Nothing to add on this point.</p>
<p>Deviation from the workplan: UPM experienced just a minor delay, adjusting to the BoK availability. The good quality feedback from partners improved the BoK and it took a bit longer to get it ready.</p>
<p>Problems experienced during the WP implementation: No problems were found, thanks to the partner's proactivity.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>
<p>Expected problems and envisaged solutions: No problems are expected, as the methodology was agreed and it's going to be implemented.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>

WP9 – Dissemination and Exploitation of results**WP LEADER: INFOTECH**

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	<i>M1</i>
Actual end date	<i>M36</i>

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:

INFOTECH carried out the following activities:

- Updating the YouTube channel;
- Updating the social media pages;
- Collecting the contributions from partners for the website.

Main suggestions to the WP Leader:

PUT: "Social media is important and we tried to prepare as much feedback and supporting information as possible".

Deviation from the workplan:

No deviation.

Problems experienced during the WP implementation:

No problems experienced in this quarter.

Corrective measures to be adopted:

Nothing to add on this point.

Expected problems and envisaged solutions:

Nothing to add on this point.

Corrective measures to be adopted:

Nothing to add on this point.

RESULTS EVALUATION**R3.2 – Renewed courses learning materials****RESPONSIBLE: LIU**

Schedule

Expected start date	M13
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Expected end date	M16
Actual start date	M13
Actual end date	M21

Percentage of completion

Percentage of completion	100%	The partner Universities, with the support of the other HEI and the companies, renewed one (or more) course selected among the ones active. The renewed course was drafted upon the guidelines set in the BoK and a plethora of different tools to be used (slides, reference documents, exercises, quizzes...) to make lessons more entertaining and immersive and increase the attractiveness of the project in potential new partners.
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Partner evaluation

Did the partner universities renew one or more courses according to the guidelines set in the BoK?	<i>Yes – all the partners</i>
Did the renewed course include different tools such as slides, reference documents, exercises, and quizzes?	<i>Yes – all the partners</i>
Did the renewal of the course aim to increase its attractiveness for potential new partners?	<i>Yes – all the partners</i>

R3.3 – Renewed IE&M Course evaluation report

RESPONSIBLE: LIU

Schedule

Expected start date	M17
Expected end date	M20
Actual start date	M17
Actual end date	M20

Percentage of completion

Percentage of completion	100%	This document reports the feedback concerning all Pilot Actions carried out. Each University Partner will analyse all the data and suggestions provided by participants in questionnaires along with the results tables of the Pilot Actions. All the National evaluation will feed the Renewed IE3 Course Evaluation Report.
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Partner evaluation

1) Did the "Renewed IE&M Course evaluation report" present new content in an interesting way?	<i>Yes – all the partners</i>
2) Did the students' perspective provide new lessons learned for the "Renewed IE&M Course evaluation report"?	<i>Yes – all the partners</i>
3) Did the "Renewed IE&M Course evaluation report" indicate that students acquired new skills?	<i>Yes – all the partners</i>

VIII QUARTERLY REPORT

Period: August 2021 – October 2021

WP3 is ongoing, and WP4 has commenced with the completion of the two related deliverables.

All partners contributed to the following activities:

- T3.4 - Piloting and peer-evaluation of the new courses
- T3.5 - Follow-up and revision of the training materials
- T4.1 - Setup the technical environment for the e-learning system, including serious gaming and learning routes extensions
- T4.2 - Defining pedagogical and technical criteria for the e-learning courses and development of a Pilot Action Plan

Professor Giovanni Mummolo presented the first results of the project at the 43rd AIM Conference 2021: «Facing Uncertainty in Higher Education in IE&M due to Pandemic Crisis: Towards a New Education Paradigm» that was held Novi Sad 17 September 2021 (<https://ie3.eu/2021/09/17/43rd-aim-annual-conference/>).

All partners took part in the 12th Virtual Meeting on September 30th, 2021, and the 13th Virtual Meeting on October 21st, 2021.

Starting from September 2021 the University of Bari joined the consortium. UniBa will take part into the “WP4 - Turning training courses into e-learning courses and application to other partner Universities” activities, collaborating with the lead partner PoliBa in designing the e-learning course starting from the already redesigned and piloted course “Operations Management in Advanced Lean Systems” in WP3. Moreover, UniBa will collaborate in the preparation of the asynchronous training materials that will be piloted with the students of both the Universities, contributing to reaching the expected target of students that will test the e-learning courses. As far as “WP5 - Revising a new educational pathway of IE&M” is concerned, UniBa will contribute to the activities providing a new perspective and approach to the revision of a full IE&M Master course. As UniBa has not taken part directly to the first tasks related to the definition of the Body of Knowledge (which was defined by the partnership as a “living document” that should be adapted and revised according to both WP4 and WP5 activities), it will contribute into the development of the revised Master course. Finally, UniBa will take part to the dissemination activities (WP9) to be carried out. Also, UniBa will carry out all the activities related to WP6 – Project Management, WP7 – Quality assurance and WP8 - Evaluation, respecting the procedures already defined by the partnership.

EFFECTIVENESS AND EFFICIENCY OF THE PARTNERSHIP
Results of the internal consultation:

The partners find the cooperation among them good and they have proved to be able to work efficiently together.

Corrective measures to be adopted:

Some partners point out that a feedback on completed activities would be appreciated in the pursuit of excellence: they would like to receive some monthly updates from the WP leaders.

COMMUNICATION WITHIN THE PARTNERSHIP

Results of the internal consultation:

All the partners find the communication good and effective.

Corrective measures to be adopted:

Some partners would like to know more about other's partners activities (even if the deadline sheet shared among them is useful).

WP3 - Training need Analysis and definition of the BoK

WP LEADER: LIU

Schedule

Expected start date	M12
Expected end date	M22
Actual start date	M11
Actual end date	M22

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:

When selected the courses and defined the new syllabus, the partner University will start developing the training materials and the methodologies to apply in the courses. Partner companies will support also this phase, providing materials and feedback on the materials prepared, including also exercises and test o real cases for the attendees. The learning materials of the prototype renewed IE&M course will have the following essential characteristics: I) clear division of topics; II) all materials in English; III) materials will be composed of various media (texts, infographics, PowerPoint slides, tests and quizzes, tests to verify learning effects related to the contents of each module).

Main suggestions to the WP Leader:

No suggestion from partners.

Deviation from the workplan:

No deviation.

Problems experienced during the WP implementation:

<p>PUT tried to meet the deadlines with testing but it was difficult because of availability of students. The biggest difficulty was getting feedback from students and tried to encourage them as much as possible.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>
<p>Expected problems and envisaged solutions: No expected problems.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>

WP4 - Turning training courses into e-learning courses and application to other partner Universities

WP LEADER: UPM

Schedule

Expected start date	M21
Expected end date	M30
Actual start date	M19
Actual end date	M35

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements: UPM carried out T4.1 and T4.2, which are connected to R4.1 and R4.2.</p> <p>Main suggestions to the WP Leader: PUT: "New skills were required - we do work with Moodle, yet making courses interactive and attractive was challenging".</p>
<p>Deviation from the workplan: UPM started ahead to have enough time for implementation.</p>
<p>Problems experienced during the WP implementation: WP4 has just started, so no difficulties have been found yet.</p> <p>Corrective measures to be adopted: No technical problems - some organizational issues but it was possible to be flexible in organizing tasks execution.</p>
<p>Expected problems and envisaged solutions: No, as the work was carefully planned and actions are undergoing.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>

WP6 – Project Management**WP LEADER: POLIBA**

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	<i>M1</i>
Actual end date	<i>M36</i>

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:

POLIBA kept on working on the project management aspects of the project, providing support to the partners in all the organizational tasks required. POLIBA took care of the amendment request to allow UNIBA to join the consortium.

Main suggestions to the WP Leader:

PUT: "Thanks to well designed project and Poliba and Valuedo support management was not a problem".

Deviation from the workplan:

No deviation, but all the partners experienced some difficulties because of the restrictions.

Problems experienced during the WP implementation:

PoliBa experienced no problem during this quarter, also thanks to the technical assistance by ValueDo for all the management, organizational and bureaucratic aspects.

Corrective measures to be adopted:

Nothing to add on this point.

Expected problems and envisaged solutions:

No problems are expected, the partners gave an effective contribution to the finalization of the Interim Report.

Corrective measures to be adopted:

Nothing to add on this point.

WP7 – Quality Assurance**WP LEADER: VALUEDO**

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	<i>M1</i>
Actual end date	<i>M36</i>

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:

uring the VIII quarter ValueDo kept on checking on the quality of processes, results and activities. ValueDo kept on checking partners financial documents and supporting PoliBa for financial issues; furthermore, Valuedo kept updating the Quality Assurance Plan. ValueDo supported PoliBa for the amendment request for the to allow UNIBA to join the consortium.

Main suggestions to the WP Leader:

PUT: "Cooperation was smooth and the work-package was perfectly managed".

Deviation from the workplan:

No deviation at this point.

Problems experienced during the WP implementation:

No problems occurred so far. Valuedo will be at partners' disposal for supporting them adopt the QA tools.

Corrective measures to be adopted:

Nothing to add on this point.

Expected problems and envisaged solutions:

No problems are expected, as the tools are easy to adopt. If problems will have doubts or encounter problems, ValueDo is ready to support them.

Corrective measures to be adopted:

Nothing to add on this point

WP8 – Project Evaluation**WP LEADER: UPM**

Schedule

Expected start date	M1
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Expected end date	M36
Actual start date	M1
Actual end date	M36

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements: UPM is driving the effective external assessment process and analysis of the findings.</p> <p>Main suggestions to the WP Leader: Nothing to add on this point.</p>
<p>Deviation from the workplan: No deviation.</p>
<p>Problems experienced during the WP implementation: No problems were found, thanks to the partner's proactivity.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>
<p>Expected problems and envisaged solutions: No problems are expected, as the methodology was agreed and it's going to be implemented.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>

R3.4 – IE3 courses final version

RESPONSIBLE: LIU

Schedule

Expected start date	M20
Expected end date	M22
Actual start date	M20
Actual end date	M24

Percentage of completion

Percentage of completion	100%	<p>The University partners delivered the final version of the courses, taking into consideration their own experience in the piloting of the courses and the feedback collected from the participants. The renewed IE3 course (syllabi, training materials, other relevant documents) are available on IE3 website for all the other Universities that are interested in adopting them: https://ie3.eu/renewed-course-materials/</p>
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Partner evaluation

1) Did the University partners take their own experience into consideration while delivering the final version of the courses?	Yes – <i>all the partners</i>
2) Are the renewed IE3 course materials available on IE3 website for all the other Universities?	Yes – <i>all the partners</i>
3) Did the University partners collect feedback from the participants before delivering the final version of the courses?	Yes – <i>all the partners</i>

R4.1 – Memorandum on technical criteria for the development of e-learning modules and requirements of the technical environment

RESPONSIBLE: UPM

Schedule

Expected start date	M21
Expected end date	M23
Actual start date	M19
Actual end date	M23

Percentage of completion

Percentage of completion	100%	Deliverable produced, including the test bed created and maintained. Exposed to the partner assessment.
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Partner evaluation

Will the memorandum provide a document that describes the main technical requirements and features for both the e-learning modules to be developed by partners and the environment where to store them?	Yes – <i>all the partners</i>
Will a common live-testbed for implementation be provided with access rights to the partners according to their profile?	Yes – <i>all the partners</i>
Will the memorandum cover ways for exchanging and delivering courses, including considering delivering a Shareable Content Object Reference Model (SCORM) package that provides universities with a product easy to integrate into their running systems?	Yes – <i>all the partners</i>

R4.2 – E-learning Pedagogical Strategy

RESPONSIBLE: UPM

Schedule

Expected start date	M23
Expected end date	M24
Actual start date	M20
Actual end date	M24

Percentage of completion

Percentage of completion	100%	Report oriented to provide context and guidance to the partners to prepare their modules was delivered and discussed with partners.
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Partner evaluation

1) Does the report describe the best pedagogical practices to be followed for the preparation of e-learning modules and contain guidelines and practical information for partners to develop e-learning modules based on traditional course training materials?	Yes – all the partners
2) Does the report pay special attention to the learning paths, connecting contents with skills, and developing specific assessment techniques, including potentially the use of serious gaming?	Yes – all the partners
3) Based on R4.1, does the report give recommendations for implementation?	Yes – all the partners

IX QUARTERLY REPORT

Period: November 2021 – January 2022

UPM dedicated to the development of eLearning modules and assessment for quality. All universities contributed to T4.3 - Preparation of e-learning modules starting from the training materials prepared.

Professor Giovanni Mummolo has participated to the 63rd Council meeting of ESTIEM where also met the AIM board in Seville on the 11th November 2021. Preliminary results of the Project were presented and discussed (<https://ie3.eu/2021/11/14/ie3-at-the-63rd-council-meeting-of-estiem/>). The consortium submitted two full papers to the 2022 INTED conference.

The company partners carried out the internal review of the IE3 virtual modules prepared by the universities.

INFOTECH carried out the following activities:

- Coordinating the weekly article collection
- Writing articles when had come the turn of Infotech
- Managing the website and social media (Facebook, LinkedIn and Youtube)
- Uploading videos on the YouTube channel received by UPM

All partners participated to the 14th Virtual Meeting on 30th November 2021.

EFFECTIVENESS AND EFFICIENCY OF THE PARTNERSHIP
<p>Results of the internal consultation:</p> <p>The partners find the cooperation among them good and they have proved to be able to work efficiently together.</p> <p>Corrective measures to be adopted:</p> <p>Some partners point out that a feedback on completed activities would be appreciated in the pursuit of excellence: they would like to receive some monthly updates from the WP leaders.</p>

COMMUNICATION WITHIN THE PARTNERSHIP
<p>Results of the internal consultation: All the partners find the communication good and effective.</p> <p>Corrective measures to be adopted: Some partners would like to know more about other's partners activities (even if the deadline sheet shared among them is useful).</p>

WP3 - Training need Analysis and definition of the BoK

WP LEADER: LIU

Schedule

Expected start date	M12
Expected end date	M22
Actual start date	M11
Actual end date	M22

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:</p> <p>When selected the courses and defined the new syllabus, the partner University will start developing the training materials and the methodologies to apply in the courses. Partner companies will support also this phase, providing materials and feedback on the materials prepared, including also exercises and test o real cases for the attendees. The learning materials of the prototype renewed IE&M course will have the following essential characteristics: I) clear division of topics; II) all materials in English; III) materials will be composed of various media (texts, infographics, PowerPoint slides, tests and quizzes, tests to verify learning effects related to the contents of each module).</p> <p>Main suggestions to the WP Leader: No suggestion from partners.</p>
<p>Deviation from the workplan: No deviation.</p>
<p>Problems experienced during the WP implementation: PUT tried to meet the deadlines with testing but it was difficult because of availability of students. The biggest difficulty was getting feedback from students and tried to encourage them as much as possible.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>
<p>Expected problems and envisaged solutions: No expected problems.</p>

Corrective measures to be adopted:

Nothing to add on this point.

WP4 - Turning training courses into e-learning courses and application to other partner Universities**WP LEADER: UPM**

Schedule

Expected start date	M21
Expected end date	M30
Actual start date	M19
Actual end date	M35

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:

UPM carried out T4.1 and T4.2, which are connected to R4.1 and R4.2.

Main suggestions to the WP Leader:

PUT: "New skills were required - we do work with Moodle, yet making courses interactive and attractive was challenging".

Deviation from the workplan:

UPM started ahead to have enough time for implementation.

Problems experienced during the WP implementation:

WP4 has just started, so no difficulties have been found yet.

Corrective measures to be adopted:

No technical problems - some organizational issues but it was possible to be flexible in organizing tasks execution.

Expected problems and envisaged solutions:

No, as the work was carefully planned and actions are undergoing.

Corrective measures to be adopted:

Nothing to add on this point.

WP6 – Project Management**WP LEADER: POLIBA**

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	<i>M1</i>
Actual end date	<i>M36</i>

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:

POLIBA kept on working on the project management aspects of the project, providing support to the partners in all the organizational tasks required. POLIBA took care of the amendment request to allow UNIBA to join the consortium.

Main suggestions to the WP Leader:

PUT: "Thanks to well designed project and Poliba and Valuedo support management was not a problem".

Deviation from the workplan:

No deviation, but all the partners experienced some difficulties because of the restrictions.

Problems experienced during the WP implementation:

PoliBa experienced no problem during this quarter, also thanks to the technical assistance by ValueDo for all the management, organizational and bureaucratic aspects.

Corrective measures to be adopted:

Nothing to add on this point.

Expected problems and envisaged solutions:

No problems are expected, the partners gave an effective contribution to the finalization of the Interim Report.

Corrective measures to be adopted:

Nothing to add on this point.

WP7 – Quality Assurance**WP LEADER: VALUEDO**

Schedule

Expected start date	M1
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Expected end date	M36
Actual start date	M1
Actual end date	M36

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:</p> <p>uring the VIII quarter ValueDo kept on checking on the quality of processes, results and activities. ValueDo kept on checking partners financial documents and supporting PoliBa for financial issues; furthermore, Valuedo kept updating the Quality Assurance Plan. ValueDo supported PoliBa for the amendment request for the to allow UNIBA to join the consortium.</p> <p>Main suggestions to the WP Leader: PUT: "Cooperation was smooth and the work-package was perfectly managed".</p>
<p>Deviation from the workplan: No deviation at this point.</p>
<p>Problems experienced during the WP implementation: No problems occurred so far. Valuedo will be at partners' disposal for supporting them adopt the QA tools.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>
<p>Expected problems and envisaged solutions: No problems are expected, as the tools are easy to adopt. If problems will have doubts or encounter problems, ValueDo is ready to support them.</p> <p>Corrective measures to be adopted: Nothing to add on this point</p>

WP8 – Project Evaluation

WP LEADER: UPM

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	M1
Actual end date	M36

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:</p> <p>UPM is driving the effective external assessment process and analysis of the findings.</p> <p>Main suggestions to the WP Leader:</p> <p>Nothing to add on this point.</p>
<p>Deviation from the workplan:</p> <p>No deviation.</p>
<p>Problems experienced during the WP implementation:</p> <p>No problems were found, thanks to the partner's proactivity.</p> <p>Corrective measures to be adopted:</p> <p>Nothing to add on this point.</p>
<p>Expected problems and envisaged solutions:</p> <p>No problems are expected, as the methodology was agreed and it's going to be implemented.</p> <p>Corrective measures to be adopted:</p> <p>Nothing to add on this point.</p>

R4.1 – Memorandum on technical criteria for the development of e-learning modules and requirements of the technical environment

RESPONSIBLE: UPM

Schedule

Expected start date	M21
Expected end date	M23
Actual start date	M19
Actual end date	M23

Percentage of completion

Percentage of completion	100%	Deliverable produced, including the test bed created and maintained. Exposed to the partner assessment.
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Partner evaluation

4)	Will the memorandum provide a document that describes the main technical requirements and features for both the e-learning modules to be developed by partners and the environment where to store them?	<i>Yes – all the partners</i>
5)	Will a common live-testbed for implementation be provided with access rights to the partners according to their profile?	<i>Yes – all the partners</i>
6)	Will the memorandum cover ways for exchanging and delivering courses, including considering delivering a Shareable Content Object Reference Model (SCORM) package that provides universities with a product easy to integrate into their running systems?	<i>Yes – all the partners</i>

R4.2 – E-learning Pedagogical Strategy**RESPONSIBLE: UPM**

Schedule

Expected start date	M23
Expected end date	M24
Actual start date	M20
Actual end date	M24

Percentage of completion

Percentage of completion	100%	Report oriented to provide context and guidance to the partners to prepare their modules was delivered and discussed with partners.
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Partner evaluation

4) Does the report describe the best pedagogical practices to be followed for the preparation of e-learning modules and contain guidelines and practical information for partners to develop e-learning modules based on traditional course training materials?	Yes – all the partners
5) Does the report pay special attention to the learning paths, connecting contents with skills, and developing specific assessment techniques, including potentially the use of serious gaming?	Yes – all the partners
6) Based on R4.1, does the report give recommendations for implementation?	Yes – all the partners

X QUARTERLY REPORT**Period: February 2022 – April 2022**

The university partners contributed to the following activities:

- T4.3 - Preparation of e-learning modules starting from the training materials prepared.
- T4.4 - Pilot test of the e-learning modules within the partner Universities.

The pilot test have been carried out according to **this calendar**:

The number of participants are indicated in the table below:

	Name of the module	POLIBA	UNIBA	LIU	UPM	PUT
POLIBA/UNIBA	Lean Systems and Continuous Improvement	not compulsory, but in case you recruited students please specify the number.	not compulsory, but in case you recruited students please specify the number.	1	21	17
LIU	Machine Learning in Operations Management	22	3	not compulsory, but in case you recruited students please specify the number.	26	30
UPM	Project Monitoring	15	1		not compulsory, but in case you recruited students please specify the number.	33
PUT	Supply Chain Management	13 (19 completed)	0		8	not compulsory, but in case you recruited students please specify the number.
		50	4	1	55	80

The course has been tested also by the company workers:

	Name of the module	Bosch (IT)	IMPLEMA (SW)	Arruti (SP)	ALCO-MOT (PL)
POLIBA/UNIBA	Lean Systems and Continuous Improvement	1	1	1	1
LIU	Machine Learning in Operations Management	1	1	1	1
UPM	Project Monitoring		1	1	1
PUT	Supply Chain Management		1	1	1
		2	4	4	4

The consortium presented two papers at 2022 INTED conference (7-9 March 2022). They are available on the project website: <https://ie3.eu/scientific-publications/>.

EFFECTIVENESS AND EFFICIENCY OF THE PARTNERSHIP

Results of the internal consultation:

The partners find the cooperation among them good and they have proved to be able to work efficiently together.

Corrective measures to be adopted:

Some partners point out that a feedback on completed activities would be appreciated in the pursuit of excellence: they would like to receive some monthly updates from the WP leaders.

COMMUNICATION WITHIN THE PARTNERSHIP

Results of the internal consultation:

All the partners find the communication good and effective.

Corrective measures to be adopted:

Some partners would like to know more about other's partners activities (even if the deadline sheet shared among them is useful).

WP4 - Turning training courses into e-learning courses and application to other partner Universities

WP LEADER: UPM

Schedule

Expected start date	M21
Expected end date	M30
Actual start date	M19
Actual end date	M35

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:

UPM carried out T4.3 and T4.5, which are responsible for R4.3 and R4.5

Main suggestions to the WP Leader: PUT: "New skills were required - we do work with Moodle, yet making courses interactive and attractive was challenging".
Deviation from the workplan: UPM started ahead to have enough time for implementation.
Problems experienced during the WP implementation: There were not specific issues because the excellent contribution from the partners. Corrective measures to be adopted: No technical problems - some partners experienced some organizational issues but it was possible to be flexible in organizing tasks execution.
Expected problems and envisaged solutions: No, as the work was carefully planned and actions are undergoing. Corrective measures to be adopted: Nothing to add on this point.

WP6 – Project Management

WP LEADER: POLIBA

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	M1
Actual end date	M36

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements: Poliba kept following all the managerial and organizational aspects of the project, supporting the partners in case of need. Main suggestions to the WP Leader: UPM: "Thanks to well designed project and Poliba and Valuedo support management was not a problem".
Deviation from the workplan: No deviation, but all the partners experienced some difficulties because of the restrictions.
Problems experienced during the WP implementation: PoliBa experienced no problem during this quarter, also thanks to the technical assistance by ValueDo for all the management, organizational and bureaucratic aspects. Corrective measures to be adopted: Nothing to add on this point.
Expected problems and envisaged solutions:

No problems are expected, the partners gave an effective contribution to the finalization of the Interim Report.

Corrective measures to be adopted:

Nothing to add on this point.

WP7 – Quality Assurance

WP LEADER: VALUEDO

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	M1
Actual end date	M36

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:

During the 10th quarter ValueDo kept on checking on the quality of processes, results and activities. ValueDo kept on checking partners financial documents and supporting PoliBa for financial issues; furthermore, Valuedo kept updating the Quality Assurance Plan.

Main suggestions to the WP Leader:

PUT: "Cooperation was smooth and the work-package was perfectly managed".

Deviation from the workplan:

No deviation at this point.

Problems experienced during the WP implementation:

No problems occurred so far. Valuedo will be at partners' disposal for supporting them adopt the QA tools.

Corrective measures to be adopted:

Nothing to add on this point.

Expected problems and envisaged solutions:

No problems are expected, as the tools are easy to adopt. If problems will have doubts or encounter problems, ValueDo is ready to support them.

Corrective measures to be adopted:

Nothing to add on this point

WP8 – Project Evaluation

WP LEADER: UPM

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	M1

Actual end date	<i>M36</i>
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<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements: UPM is working on the preparation for external review of ML6.</p> <p>Main suggestions to the WP Leader: Nothing to add on this point.</p>
<p>Deviation from the workplan: No deviation.</p>
<p>Problems experienced during the WP implementation: No problems have been found in the first part of this activity before.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>
<p>Expected problems and envisaged solutions: No additional problems are expected because the external reviewers will be the same than those already used for the ML3 assessment.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>

R4.3 – Prototype of e-learning modules

RESPONSIBLE: UPM

Schedule

Expected start date	<i>M25</i>
Expected end date	<i>M28</i>
Actual start date	<i>M25</i>
Actual end date	<i>M28</i>

Percentage of completion

Percentage of completion	100%	The prototyped e-learning course will receive feedback from all partners, once completed by universities and validated by partner companies. The e-learning modules will be kept at a restricted dissemination level, waiting to receive validation in order to constitute the project main final result.
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Partner evaluation

1. Do you agree with the topics selected for the course?	<i>Yes – all the partners</i>
2. Do you think the materials created are stimulating the interest and interaction of the learners?	<i>Yes – all the partners</i>

3. Did you identify any technical issues preventing the learners to exploit the training materials?	<i>No – all the partners</i>
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R4.4 – ELearning modules Implementation Action plan

RESPONSIBLE: UPM

Schedule

Expected start date	M28
Expected end date	M31
Actual start date	M28
Actual end date	M31

Percentage of completion

Percentage of completion	50%	The Action Plan will take describe how the testing phase of the e-learning modules should be implemented in the 4 partner countries.
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XI QUARTERLY REPORT

Period: May 2022 – July 2022

All partners participated to the meeting in Madrid, hosted by UPM. During the meeting, several items were discussed across various work packages. Under WP6, the extension of the project duration and impacts were reviewed. Moving on to WP4, updates on the pilot courses conducted by Universities were presented, including feedback received on the evaluation questionnaires by students and companies. University teachers and company partners provided general remarks on the courses, and proposals for e-learning course improvements were made. Ideas for sustaining the use of e-learning modules and creating more modules using the IE3 approach were also discussed. Pending elements to end WP4 were also reviewed. In WP5, the brainstorming on the design of the Handbook for IE3 courses and possible contents was conducted, with INFOTECH and LIU presenting their proposals. The proposal for a renewed MSc program in IE&M was presented by each university partner, and an open discussion was held. An action plan for the finalization of the MSc program was also presented, and the planning of the evaluation of the R5.1 IE3 Master's Program was discussed under WP8. Finally, an overview of the dissemination activities conducted and planning for new activities was provided under WP9. The final dissemination conference, expected to be held in late January 2023, was also discussed, including the possible format, draft agenda, possible contents, and invited speakers.

Within this period, on May 2022, the consortium asked for an extension of the eligibility period of 4 months. The main motivation for this request was that, due to the COVID19 pandemic, it had not been possible to fulfil all the project activities during the time-span described in the project description, particularly for WP4 and WP5. In particular, the partners felt the need to organise a couple of additional in-person project meetings before the end of the project to get the best out of the partnership and prepare the project's final output (IE3 Master's Programme based on the BoK guidelines). Due to the COVID19 pandemic, the partnership had had the chance of meeting just once (November 2019), while all the other meetings had taken place online. Also, the deadline extension allowed the consortium to organise and implement the Final conference, which took place in February 2023.

In this period, the university partners gave a contribution to the following activities:

- Pilot testing of the e-learning modules within the partner Universities (WP4 T4.4)
- Analyzing the feedback received by the users (WP4 T4.5)

- Development of the required improvements (WP4 T4.6)

WP4 is on-going and T4.4 and T4.5 are under development. The university partners analysed feedback received from users during the pilot testing phase, as part of WP4 T4.5. They also collaborated in redesigning the Syllabi and evaluated the progress of the project. Additionally, the university partners participated in the preparation of a presentation for an upcoming meeting in Madrid, which is related to activities under WP4/WP5.

EFFECTIVENESS AND EFFICIENCY OF THE PARTNERSHIP
<p>Results of the internal consultation:</p> <p>The partners find the cooperation among them good and they have proved to be able to work efficiently together.</p> <p>Corrective measures to be adopted:</p> <p>Some partners point out that a feedback on completed activities would be appreciated in the pursuit of excellence: they would like to receive some monthly updates from the WP leaders.</p>

COMMUNICATION WITHIN THE PARTNERSHIP
<p>Results of the internal consultation:</p> <p>All the partners find the communication good and effective.</p> <p>Corrective measures to be adopted:</p> <p>Some partners would like to know more about other's partners activities (even if the deadline sheet shared among them is useful).</p>

WP4 - Turning training courses into e-learning courses and application to other partner Universities

WP LEADER: UPM

Schedule

Expected start date	M21
Expected end date	M30
Actual start date	M19
Actual end date	M35

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:</p> <p>University partners had the first test of implemented modules.</p> <p>Main suggestions to the WP Leader:</p> <p>No suggestions.</p>
<p>Deviation from the workplan:</p> <p>Delay in recruitment of participants in some partners.</p>
<p>Problems experienced during the WP implementation:</p> <p>Difficulties in enrolling students in some cases were handled by extending the tests and implementing improvements.</p>

<p>Corrective measures to be adopted: In some cases, students needed additional motivation to join testing (extra points or rewards).</p>
<p>Expected problems and envisaged solutions: No, UPM is confident about the adopted contingency measures.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>

WP5 - Revising a new educational pathway of IE&M

WP LEADER: LIU

Schedule

Expected start date	M32
Expected end date	M36
Actual start date	M32
Actual end date	M40

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements: LIU started working on the design of a new educational programme for IE&M.</p> <p>Main suggestions to the WP Leader: No suggestions.</p>
<p>Deviation from the workplan: The duration of WP5 has been extend until the end of the project, which now is set on February 2023.</p>
<p>Problems experienced during the WP implementation: At the moment, LiU experienced no problems.</p> <p>Corrective measures to be adopted: Nothing to add on this.</p>
<p>Expected problems and envisaged solutions: No problems experienced.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>

WP6 – Project Management

WP LEADER: POLIBA

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	M1

Actual end date	<i>M40</i>
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<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:</p> <p>Poliba kept following all the managerial and organizational aspects of the project, supporting the partners in case of need. PoliBa took care of the amendment request for the extension of the project up to 4 months.</p> <p>Main suggestions to the WP Leader:</p> <p>UPM: "Thanks to well designed project and Poliba and Valuedo support management was not a problem".</p>
<p>Deviation from the workplan:</p> <p>No deviation, but all the partners experienced some difficulties because of the restrictions.</p>
<p>Problems experienced during the WP implementation:</p> <p>PoliBa experienced no problem during this quarter, also thanks to the technical assistance by ValueDo for all the management, organizational and bureaucratic aspects.</p> <p>Corrective measures to be adopted:</p> <p>Nothing to add on this point.</p>
<p>Expected problems and envisaged solutions:</p> <p>No problems are expected.</p> <p>Corrective measures to be adopted:</p> <p>Nothing to add on this point.</p>

WP7 – Quality Assurance

WP LEADER: VALUEDO

Schedule

Expected start date	<i>M1</i>
Expected end date	<i>M36</i>
Actual start date	<i>M1</i>
Actual end date	<i>M40</i>

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:</p> <p>During the 11th quarter ValueDo kept on checking on the quality of processes, results and activities. ValueDo kept on checking partners financial documents and supporting PoliBa for financial issues; furthermore, Valuedo kept updating the Quality Assurance Plan. ValueDo helped PoliBa for the amendment request for the extension of the project up to 4 months.</p> <p>Main suggestions to the WP Leader:</p> <p>PUT: "Cooperation was smooth and the work-package was perfectly managed".</p>

Deviation from the workplan: No deviation at this point.
Problems experienced during the WP implementation: No problems occurred so far. Valuedo will be at partners' disposal for supporting them adopt the QA tools. Corrective measures to be adopted: Nothing to add on this point.
Expected problems and envisaged solutions: No problems are expected, as the tools are easy to adopt. If problems will have doubts or encounter problems, ValueDo is ready to support them. Corrective measures to be adopted: Nothing to add on this point

WP8 – Project Evaluation

WP LEADER: UPM

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	M1
Actual end date	M40

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements: UPM is working on the design of the external assessment to be developed. Main suggestions to the WP Leader: Nothing to add on this point.
Deviation from the workplan: No deviation.
Problems experienced during the WP implementation: No problems have been found in the first part of this activity before. Corrective measures to be adopted: Nothing to add on this point.
Expected problems and envisaged solutions: No additional problems are expected because the external reviewers will be the same than those already used for the ML3 assessment. Corrective measures to be adopted: Nothing to add on this point.

R4.4 – ELearning modules Implementation Action plan**RESPONSIBLE: UPM**

Schedule

Expected start date	M28
Expected end date	M31
Actual start date	M30
Actual end date	M34

Percentage of completion

Percentage of completion	90%	Some delays have been handled, but the document is almost ready.
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XII QUARTERLY REPORT**Period: August 2022 – October 2022**

In this quarter, the University partners contributed to the Development of the required improvements (WP4 T4.6), to the redesign of the Syllabi (WP5 T5.2) as well as to the exploitation the new courses and capitalization (WP5 T5.3). The company partners supported the academic partners in all these tasks and contributed to the dissemination of the project through their project website.

The partners met in Stockholm for the 5th official in person meeting. The meeting has been a fruitful occasion to plan the last months of the project (whose end is now located at February 2023, after the amendment request presented in May 2022). The partners agreed that the last months of the IE3 project will be dedicated mainly to the WP5 results and to the exploitation and dissemination activities to promote all the deliverables of the project.

The partners are working on the organization of the Final Conference in Bari to be held on Tuesday 02.02.2023. The partners agreed to have the last consortium meeting the day before.

EFFECTIVENESS AND EFFICIENCY OF THE PARTNERSHIP
<p>Results of the internal consultation:</p> <p>The partners find the cooperation among them good and they have proved to be able to work efficiently together.</p> <p>Corrective measures to be adopted:</p> <p>Some partners point out that a feedback on completed activities would be appreciated in the pursuit of excellence: they would like to receive some monthly updates from the WP leaders.</p>

COMMUNICATION WITHIN THE PARTNERSHIP
<p>Results of the internal consultation:</p> <p>All the partners find the communication good and effective.</p> <p>Corrective measures to be adopted:</p>

Some partners would like to know more about other's partners activities (even if the deadline sheet shared among them is useful).

WP4 - Turning training courses into e-learning courses and application to other partner Universities

WP LEADER: UPM

Schedule

Expected start date	M21
Expected end date	M30
Actual start date	M19
Actual end date	M35

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:

During this quarter, UPM contributed to the WP4 as requested, taking care of the deliverables for WP4 (R4.4, R4.5 and R4.6).

Main suggestions to the WP Leader:

No suggestions.

Deviation from the workplan:

UPM has enlarged the end-up phase to accommodate all the module improvements and reporting data.

Problems experienced during the WP implementation:

Some partners have found difficulties in providing enough students to validate the e-modules.

Corrective measures to be adopted:

Nothing to add on this point.

Expected problems and envisaged solutions:

We have extended the initial dates and additional; efforts were carried out to motivate participation.

Corrective measures to be adopted:

Nothing to add on this point.

WP5 - Revising a new educational pathway of IE&M

WP LEADER: LIU

Schedule

Expected start date	M32
Expected end date	M36
Actual start date	M32
Actual end date	M40

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:</p> <p>LIU is working on the design of a new educational programme for IE&M and on the Handbook.</p> <p>Main suggestions to the WP Leader:</p> <p>No suggestions.</p>
<p>Deviation from the workplan:</p> <p>The duration of WP5 has been extend until the end of the project, which now is set on February 2023.</p>
<p>Problems experienced during the WP implementation:</p> <p>The implementation of WP5 has been delayed due to unforeseen technical challenges and staffing issues, which have since been resolved. Despite our efforts to catch up, we have fallen behind schedule, and additional time is required to complete WP5 to the expected standard.</p> <p>Corrective measures to be adopted:</p> <p>Request for extension of the project duration.</p>
<p>Expected problems and envisaged solutions:</p> <p>Therefore, we requested a project extension to allow us to deliver the desired results. We believe that this extension is necessary to ensure that we can provide high-quality outcomes that meet the expectations of the project and stakeholders.</p> <p>Corrective measures to be adopted:</p> <p>The request of extension of the project has been approved.</p>

WP6 – Project Management

WP LEADER: POLIBA

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	M1
Actual end date	M40

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:</p> <p>Poliba kept following all the managerial and organizational aspects of the project, supporting the partners in case of need. Poliba, supported by Valuedo, started planning the final Conference, to be held on February 2023.</p> <p>Main suggestions to the WP Leader:</p> <p>All partners: "WP6 has been conducted very well".</p>
<p>Deviation from the workplan:</p> <p>WP6 will end in M40, instead of M36.</p>

<p>Problems experienced during the WP implementation: PoliBa experienced no problem during this quarter, also thanks to the technical assistance by ValueDo for all the management, organizational and bureaucratic aspects.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>
<p>Expected problems and envisaged solutions: No problems are expected.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>

WP7 – Quality Assurance

WP LEADER: VALUEDO

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	M1
Actual end date	M40

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements: During the 12th quarter ValueDo kept on checking on the quality of processes, results and activities. ValueDo kept on checking partners financial documents and supporting PoliBa for financial issues; furthermore, Valuedo kept updating the Quality Assurance Plan. ValueDo supported LiU for the organization of the meeting in Stockholm (preparation of the agenda, corodination with partners) and PoliBa with the planning of the Final Conference in Bari, to be held in February 2023.</p> <p>Main suggestions to the WP Leader: PUT: "Cooperation was smooth and the work-package was perfectly managed".</p>
<p>Deviation from the workplan: No deviation at this point.</p>
<p>Problems experienced during the WP implementation: No problems occurred so far. Valuedo will be at partners' disposal for supporting them adopt the QA tools.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>
<p>Expected problems and envisaged solutions: No problems are expected, as the tools are easy to adopt. If problems will have doubts or encounter problems, ValueDo is ready to support them.</p> <p>Corrective measures to be adopted: Nothing to add on this point</p>

WP8 – Project Evaluation**WP LEADER: UPM**

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	M1
Actual end date	M40

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:

UPM is working on the preparation plan for the assessment of the WP5 deliverables.

Main suggestions to the WP Leader:

Nothing to add on this point.

Deviation from the workplan:

No deviation.

Problems experienced during the WP implementation:

No problems have been found in the first part of this activity before.

Corrective measures to be adopted:

Nothing to add on this point.

Expected problems and envisaged solutions:

No problems are expected, as the partners have agreed to use the same external reviewers than for the BoK, therefore the methodology is already known.

Corrective measures to be adopted:

Nothing to add on this point.

R4.4 – E-learning modules Implementation Action plan**RESPONSIBLE: UPM**

Schedule

Expected start date	M28
Expected end date	M31
Actual start date	M30
Actual end date	M34

Percentage of completion

Percentage of completion	100%	The result has been delivered and validated by all partners
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Partner evaluation

1) Is the description on how the testing phase of the e-learning modules should be implemented clear?	Yes (all partners)
2) Did you find the detailed workflows, information exchange methods and procedures well explained?	Yes (all partners)
3) Would you suggest any improvements?	No (all partners)

R4.5 – E-learning modules evaluation

RESPONSIBLE: UPM

Schedule

Expected start date	M31
Expected end date	M32
Actual start date	M31
Actual end date	M32

Percentage of completion

Percentage of completion	100%	The purpose of this report is to present the feedback concerning all Pilot Actions carried out in each partner country. Each University has analyzed all the data and suggestions provided by participants (students and partner companies). The general adopted methodology and the guidelines for conducting the reflective analysis, after the first implementation of the e-learning modules has been provided in the IE3 - E-learning modules Action plan (R4.4).
--------------------------	------	--

Partner evaluation

1. Was R4.5 helpful for reporting the feedback concerning all Pilot Actions carried out in each partner country?	Yes (all partners)
2. Is the analysis of the suggestions provided by participants clear?	Yes (all partners)
3. Is the described methodology, according to the project proposal, fully operational and positive?	Yes (all partners)

R4.6 – Final version of e-learning modules

RESPONSIBLE: UPM

Schedule

Expected start date	M33
Expected end date	M35
Actual start date	M33

Actual end date	M36
------------------------	-----

Percentage of completion

Percentage of completion	100%	<p>The purpose of this report is to introduce the digital objects produced as the final delivery of the eLearning modules created inside the IE3 project, after experiencing them throughout their usage in real environments (academic and professional), and after collecting the comments, the reflective analysis and the implementation of improvements. Coherently with the R4.3 of this project, it does include a single module developed by each academic partner of IE3, according the BoK framework and related to complementary areas of Industrial Engineering and Management.</p> <p>R4.6 is freely available on IE3 website: https://ie3.eu/e-learning-modules/</p>
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Partner evaluation

Did UPM assemble the improved materials as described in T4.6, and did the companies ensure coherence of the overall output?	Yes (all partners)
Did each of the modules reflect the main features described in R4.2, in addition to the improved parts developed in T4.5?	Yes (all partners)
Was the result released online by UPM on the IE3 website platform for wide public access after ultimate validation by all partners, and was information spread to associated partners and relevant stakeholders, according to the Dissemination and Exploitation Plan?	Yes (all partners)

LAST QUARTERLY REPORT

Period: November 2022 – February 2023

EFFECTIVENESS AND EFFICIENCY OF THE PARTNERSHIP
<p>Results of the internal consultation:</p> <p>The partners find the cooperation among them good and they have proved to be able to work efficiently together.</p> <p>Corrective measures to be adopted:</p> <p>Some partners point out that a feedback on completed activities would be appreciated in the pursuit of excellence: they would like to receive some monthly updates from the WP leaders.</p>

COMMUNICATION WITHIN THE PARTNERSHIP
Results of the internal consultation:

All the partners find the communication good and effective.

Corrective measures to be adopted:

Some partners would like to know more about other's partners activities (even if the deadline sheet shared among them is useful).

WP5 - Revising a new educational pathway of IE&M

WP LEADER: LIU

Schedule

Expected start date	M32
Expected end date	M36
Actual start date	M32
Actual end date	M40

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:

Completion of WP5 tasks and official release of R5.1 and R5.2.

Main suggestions to the WP Leader:

No suggestions.

Deviation from the workplan:

The duration of WP5 has been extend until the end of the project, which now is set on February 2023.

Problems experienced during the WP implementation:

The implementation of WP5 has been delayed due to unforeseen technical challenges and staffing issues, which have since been resolved. Despite our efforts to catch up, we have fallen behind schedule, and additional time is required to complete WP5 to the expected standard.

Corrective measures to be adopted:

Request for extension of the project duration.

Expected problems and envisaged solutions:

Therefore, we requested a project extension to allow us to deliver the desired results. We believe that this extension is necessary to ensure that we can provide high-quality outcomes that meet the expectations of the project and stakeholders.

Corrective measures to be adopted:

The request of extension of the project has been approved.

WP6 – Project Management

WP LEADER: POLIBA

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	M1

Actual end date	<i>M40</i>
------------------------	------------

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:</p> <p>Poliba kept following all the managerial and organizational aspects of the project, supporting the partners in case of need. Poliba, supported by Valuedo, organized the final Conference in Bari in February 2023. PoliBa started preparing the Final Report.</p> <p>Main suggestions to the WP Leader: All partners: "WP6 has been conducted very well".</p>
<p>Deviation from the workplan: WP6 ended in M40, instead of M36.</p>
<p>Problems experienced during the WP implementation: PoliBa experienced no problem during this quarter, also thanks to the technical assistance by ValueDo for all the management, organizational and bureaucratic aspects.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>
<p>Expected problems and envisaged solutions: No problems are expected.</p> <p>Corrective measures to be adopted: Nothing to add on this point.</p>

WP7 – Quality Assurance

WP LEADER: VALUEDO

Schedule

Expected start date	<i>M1</i>
Expected end date	<i>M36</i>
Actual start date	<i>M1</i>
Actual end date	<i>M40</i>

<p>Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements:</p> <p>During last period, ValueDo kept on checking on the quality of processes, results and activities. ValueDo kept on checking partners financial documents and supporting PoliBa for financial issues; furthermore, Valuedo kept updating the Quality Assurance Plan. ValueDo supported PoliBa for the organization of the final conference and the final report.</p> <p>Main suggestions to the WP Leader: PUT: "Cooperation was smooth and the work-package was perfectly managed".</p>

Deviation from the workplan: No deviation at this point.
Problems experienced during the WP implementation: No problems occurred so far. Valuedo will be at partners' disposal for supporting them adopt the QA tools. Corrective measures to be adopted: Nothing to add on this point.
Expected problems and envisaged solutions: No problems are expected, as the tools are easy to adopt. If problems will have doubts or encounter problems, ValueDo is ready to support them. Corrective measures to be adopted: Nothing to add on this point

WP8 – Project Evaluation

WP LEADER: UPM

Schedule

Expected start date	M1
Expected end date	M36
Actual start date	M1
Actual end date	M40

Detailed description of the activities conducted and the achievements reached by the Lead partner and the partnership during this Quarter of the main WP achievements: UPM prepared the plan for the assessment of the WP5 deliverables. Main suggestions to the WP Leader: Nothing to add on this point.
Deviation from the workplan: No deviation.
Problems experienced during the WP implementation: No problems have been found in the first part of this activity before. Corrective measures to be adopted: Nothing to add on this point.
Expected problems and envisaged solutions: No problems are expected, as the partners have agreed to use the same external reviewers than for the BoK, therefore the methodology is already known. Corrective measures to be adopted: Nothing to add on this point.

R5.1 - IE3 Master's Programme based on the BoK guidelines**RESPONSIBLE: LIU**

Schedule

Expected start date	M34
Expected end date	M35
Actual start date	M34
Actual end date	M40

Percentage of completion

Percentage of completion	100%	Thanks to the knowledge and the experience developed during the project implementation, the project partners managed to redesign, according to the BoK, a full Master's Programme in the field of IE&M: the IE3 Master's Programme
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Partner evaluation

1) Based on the knowledge and experience gained during the project implementation, were LiU able to redesign a full Master's Programme in the field of IE&M according to the BoK?	Yes (all partners)
2) Is the number of courses to be redesigned equivalent to the number of ECTS necessary for completing a master's degree without considering the preparation of the master thesis and the compulsory traineeship period?	Yes (all partners)
3) Will the renewed IE&M course have the following essential characteristics: syllabus redesigned on the BoK guidelines, duration of two years, and teaching language of English?	Yes (all partners)

R5.2 - IE3 model Courses Handbook**RESPONSIBLE: LIU**

Schedule

Expected start date	M35
Expected end date	M36
Actual start date	M36
Actual end date	M40

Percentage of completion

Percentage of completion	100%	The Handbook will sum up the experiences collected in the 4 partner countries and address key points to facilitate the adoption of the IE3 methodologies by non-partner HEI and companies.
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Partner evaluation

1) Does the handbook provide clear and detailed guidelines for transferring the project results to other organizations or contexts?	Yes (all partners)
2) Does the handbook include practical examples and case studies that illustrate how the project results can be transferred effectively?	Yes (all partners)
3) Has the handbook been distributed to relevant stakeholders and organizations, according to the Dissemination and Exploitation Plan, to promote the transferability of project results?	Yes (all partners)

2. EXTERNAL EVALUATION

OUTLINE

Introduction	Errore. Il segnalibro non è definito.
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Conclusions	108

INTRODUCTION

The main goal of this report is to present the outcome for the external assessment foreseen after the delivery of Body of Knowledge (BoK) and the IE3 master program. The BoK emerged right from the gap analysis, by comparing thus the finding of WP1 (offer side) and the findings of the training need analysis (demand side). The BoK was conceived as a conceptual framework but also as a set of technical guidelines for designing renewed courses in IE&M. This document includes, among others:

- An in-depth cross analysis of both the educational offer and the training needs identified;
- a summary of the contents to be included in the (new or restructured) courses;
- A set of guidelines to reshape/create from scratch new university courses;
- The educational techniques and tools to achieve the result listed above;

The delivery time for the BoK was the end of 2020, after internal discussions and improvements, and after the formal release and on line publication the process for external assessment can be launched.

This report will present the timeline and actions carried out to,

- a) Define the specific steps for the assessment process,
- b) Identify a tentative list of potential reviewers,
- c) Define the set of relevant questions,
- d) Refine the reviewers' list to be presented,
- e) Discuss and select the list of reviewers,
- f) Conduct the assessment,
- g) Derive conclusions and provide feedback,
- h) Elaborate this report

The whole process started early in September 2020 and finished by the end of March 2021.

ASSESSMENT PROCESS

The adopted process steps have been presented in the following schema (see Figure 1),

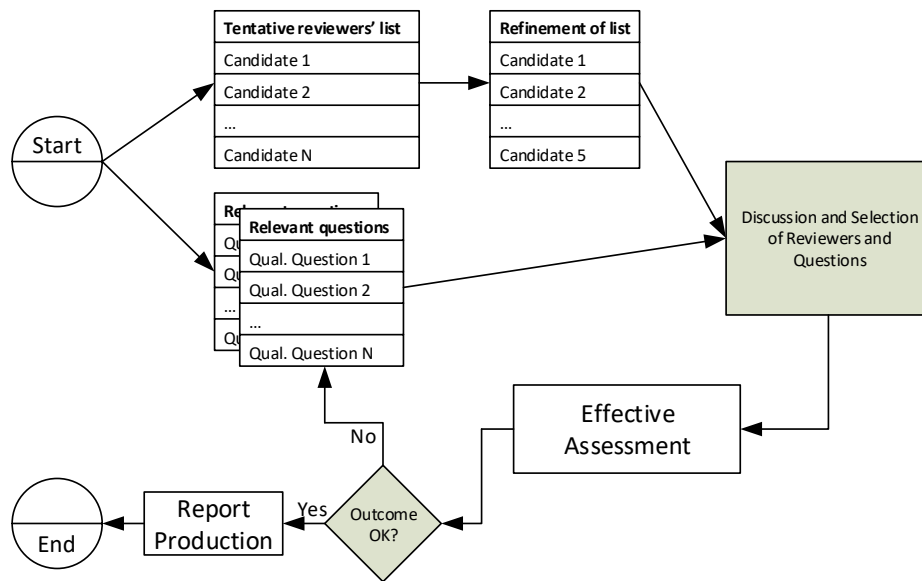


Figure 1.- Assessment Process Schema.

The effective assessment involved different specific steps, such as

- To prepare a digital version for questionnaires,
- To test the digital version,
- To contact the selected reviewers looking for their agreement,
- To support the reviewers when needed,
- To collect and analyze the outcome,
- To further continue the analysis by means of semi-structured interviews when needed.

After the initial list configuration and BoK analysis the first draft for both, qualitative and quantitative questions have been prepared.

When both products were ready, refinement of the reviewer list was carried out, trying to balance country aspects as well as academic and professional experience from the list members. Finally, a list of five people was synthesized and both aspects were included in the general project meeting held on Dec 9th and 13th 2020.

The general procedure for assessing the proper milestone (ML3) during the meeting was outlined and the whole process was approved as depicted in Figure 2,

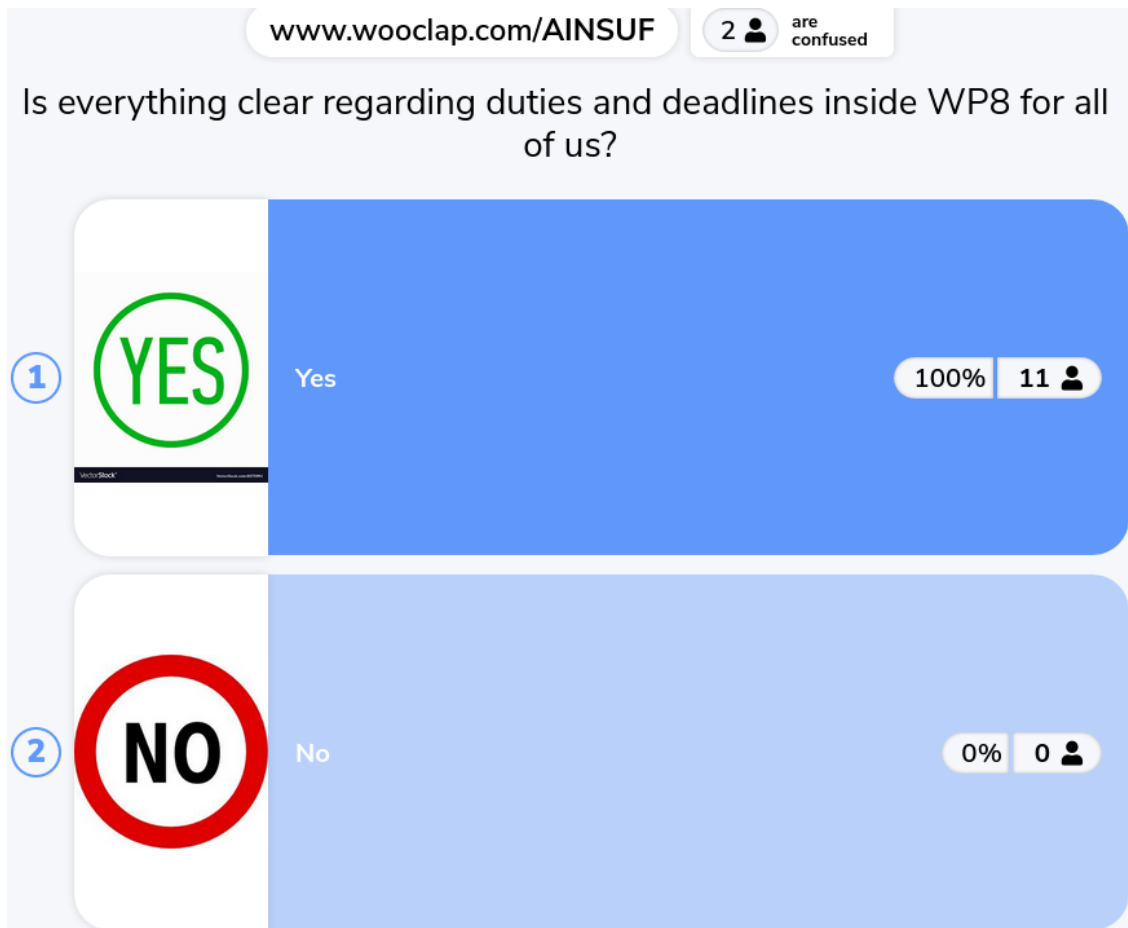


Figure 2.- Assessment for the general procedure.

In the general meeting, a presentation for the whole assessment was conducted and questions were introduced and deeply discussed.

In the end, the team agreed on a subset of questions and it was granted an extra period of time for potentially suggesting additional questions to be agreed later on (see Figure 3).

Do you agree in adding questions (both Qualitative and Quantitative) to those already in the GSheet by Jan 15th 2021 to		
Choice	Number of votes	%
Yes	12	100
No	0	0
By SMS	0	
By web	12	

Figure 3.- Analysis of the presented questions and open space for considering new ones.

As the project proposal (Task 8.3) request that the external evaluation by three independent evaluators.

The external assessors were ranked by the project team as presented in the meeting and the three most voted ones were retained.

After the 15th of January 2021 the list of questions became consolidated and an electronic form

[IE3] Assessment of Body of Knowledge

This form aims to assist the external reviewers in providing feedback to the IE3 partners regarding present status for the Course renewal Body of Knowledge.

* Obligatorio

1. [General] Is the ambition of the document clear enough? *

☐ Yes

☐ No

2. [General] Is the structure of the document appropriate in your opinion? *

☐ Yes

☐ No

3. [General] Is the purpose and overview adequate? *

☐ Yes

☐ No

4. [Gen1-N] Please explain why?

Ambition of the document not clear enough in the General Section

Figure 4.- Example of page of the electronic form used.

from Microsoft Forms (see Figure 4, Figure 5, Figure 6, Figure 7, Figure 8).

5. [Gen2-N] Please explain why?

Structure of the document not clear enough in the General Section

6. [Gen3-N] Please explain why?

Purpose and Overview not clear enough in the General Section

7. [Section A] Do you consider the adopted process oriented structure appropriate? *

☐ Yes

☐ No

8. [Section A] Is the set of considered processes enough? *

☐ Yes

☐ No

9. [Section A] Is the Section A clear and effective in describing the process adopted? *

☐ Yes

☐ No

10. [A1-N] Please explain why?

Adopted process oriented structure not appropriate enough in the Section A

Figure 5.- Example of page of the electronic form used (cont.).

11. [A2-N] Please explain why?

The considered set of processes is not appropriate in the Section A

12. [A3-N] Please explain why?

The Section A is not clear and effective in describing the processes

13. [Section B] Are the provided Guidelines for planning course/program renewal adequate? *

☐ Yes

☐ No

14. [Section B] Do you consider the provided examples from the IE3 as use cases helpful? *

☐ Yes

☐ No

15. [Section B] Is the proposed Competence Matrix adequate? *

☐ Yes

☐ No

16. [B1-N] Please explain why?

The provided Guidelines for planning course/program renewal are not adequate

Figure 6.- Example of page of the electronic form used (cont.).

17. [B2-N] Please explain why?

Examples provided as use cases are not helpful

18. [B3-N] Please explain why?

The Competence Matrix is not adequate

19. [Section C] Is the Section C clear and effective in describing the results of the training need analysis (key knowledge, skills, and competences)? *

☐ Yes

☐ No

20. [Section C] Is the Section C clear and effective in describing the results of the training need analysis (Educational Tools)? *

☐ Yes

☐ No

21. [C1-N] Please explain why?

Section C does not clearly and effectively describe the results of the training need analysis (key knowledge, skills, and competences)

Figure 7.- Example of page of the electronic form used (cont.).

22. [C2-N] Please explain why?

Section C does not clearly and effectively describe the results of the training need analysis (Educational Tools)

23. [Closing] Any additional feedback you want to provide on the BoK *

24. Foreseen applicability for the renewal of existing IE&M master programs *

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

Low Probability High Probability

25. Foreseen applicability for design of new IE&M master programs *

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

Low Probability High Probability

26. Probability, in your opinion, of requiring additional tools to accomplish renewals *

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

Low Probability High Probability

27. Probability, in your opinion, of requiring additional tools to accomplish new designs *

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

Low Probability High Probability

Figure 8.- Example of page of the electronic form used (cont.).

RESULTS

After getting the agreement from two reviewers they filled the electronic forms (as requested by the project proposal, where it requires two answers). We can see the results in the Figure 9.

[illegible]

ID	3
Start time	2/24/21 9:31:38
Completion time	2/24/21 9:51:25
Email	anonymous
[General] Is the ambition of the document clear enough?	Yes
[General] Is the structure of the document appropriate in your opinion?	Yes
[General] Is the purpose and overview adequate?	Yes
[Section A] Do you consider the adopted process oriented structure appropriate?	Yes
[Section A] Is the set of considered processes enough?	Yes
[Section A] Is the Section A clear and effective in describing the process adopted?	Yes
[Section B] Are the provided Guidelines for planning course/program renewal adequate?	Yes
[Section B] Do you consider the provided examples from the IE3 as use cases helpful?	Yes
[Section B] Is the proposed Competence Matrix adequate?	Yes
[Section C] Is the Section C clear and effective in describing the results of the training need analysis?	Yes
[Section C] Is the Section C clear and effective in describing the results of the training need analysis?	Yes
	After the experience of designing and implementation of two new master IE&M master programs in previous decade, the overall impression is that the success directly and mostly depend (99%) on strength, dedication and determination of the steering committee. Theses two master programs were were developed and implemented in several countries simultaneously and the success was directly in correlation with the strength of the SC.
[Closing] Any additional feedback you want to provide on the BoK	
Foreseen applicability for the renewal of existing IE&M master programs	9
Foreseen applicability for design of new IE&M master programs	7
Probability, in your opinion, of requiring additional tools to accomplish renewals	5
Probability, in your opinion, of requiring additional tools to accomplish new designs	5

Figure 9.- Results retrieved from the process

As far as the assessment was very positive without specific remarks needing clarification, it was decided not to continue with semi-structured interviews.

In addition, it was decided to keep the BoK ready but also to maintain the BoK upgrading process running during the project (see Figure 10).

Do you agree with the proposed change, keeping alive the BoK and still matching to the requested		
Choice	Number of votes	%
Yes	10	100
No	0	0
By SMS	0	
By web	10	

Figure 10.- Opinion about the continuation of the BoK improvement process.

ASSESSMENT OF THE IE3 MASTER PROGRAM

Using the same external reviewers previously selected to assess the BoK, the external assessment process was carried out according to the following list of questions:

[IE3] Assessment of the Proposed Master Programme (R5.1)

This form aims to assist the external reviewers in providing feedback to the IE3 partners regarding present status for the IE3 Proposal of Master Programme in IE&M.

1. [General] Is the ambition of the document clear enough? *

☐ Yes

☐ No

2. [General] Is the structure of the document appropriate in your opinion? *

☐ Yes

☐ No

3. [General] Is the purpose and overview adequate? *

☐ Yes

☐ No

4. [Gen1-N] Please explain why?

Ambition of the document not clear enough in the General Section

Escriba su respuesta

5. [Gen2-N] Please explain why?

Structure of the document not clear enough in the General Section

Escriba su respuesta

6. [Gen3-N] Please explain why?

Purpose and Overview not clear enough in the General Section

Figure 11.- First page of the questionnaire for the external assessment, including conditional questions when No is answered to any of the first three questions.

7. [Structure] Do you consider the adopted programme structure appropriate? *

☐ Yes

☐ No

8. [Structure] Is the set of considered modules coherent? *

☐ Yes

☐ No

9. [Structure] Is in your opinion the combination of modules clear and aligned with the modern IE&M? *

☐ Yes

☐ No

10. [A1-N] Please explain why?
Adopted programme structure not appropriate enough in the Section Structure

Escriba su respuesta

11. [A2-N] Please explain why?
The considered set of processes is not appropriate in the Section Structure

Escriba su respuesta

12. [A3-N] Please explain why?
The combination of modules is not clear or aligned with the modern IE&M

Escriba su respuesta

Figure 12.- Second page of the questionnaire for the external assessment, including conditional questions when No was answered to questions 7-9.

13. [Content] Are the Program aims per Module adequate and consistent? *

☐ Yes

☐ No

14. [Content] Do you consider Learning Outcomes per Module adequate and consistent? *

☐ Yes

☐ No

15. [B1-N] Please explain why?

Provided module aims are not consistent or adequate

Escriba su respuesta

16. [B2-N] Please explain why?

...

Learning Outcomes per Module are not adequate or consistent

Escriba su respuesta

Figure 13.- Third page of the questionnaire for the external assessment, including conditional questions when No was answered to questions 13-14.

17. [Overview] Is the proposed Programme Aim adequate and coherent with the configured modules? *

☐ Yes

☐ No

18. [Overview] Is the proposed Programme Learning Outcome adequate and coherent with the configured modules? *

☐ Yes

☐ No

19. [C1-N] Please explain why?

The proposed Programme Aim is not adequate or coherent with the configured modules

Escriba su respuesta

20. [C2-N] Please explain why?

The proposed Programme Learning Outcome is not adequate or coherent with the configured modules

Escriba su respuesta

21. [Closing] Any additional feedback you want to provide on the IE3 Master Programme in IE&M *

Escriba su respuesta

Figure 14.- Fourth page of the questionnaire for the external assessment, including conditional questions when No was answered to questions 17-18.

22. Foreseen applicability for the renewal of existing IE&M master programs *

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

Low Probability High Probability

23. Foreseen applicability for design of new IE&M master programs *

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

Low Probability High Probability

24. Probability, in your opinion, that some components can help in the design of new Master programs in the field of IE&M *

0	1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	---	----

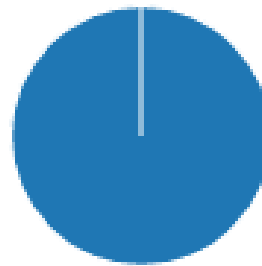
Low Probability High Probability

Figure 15.- Fifth page of the

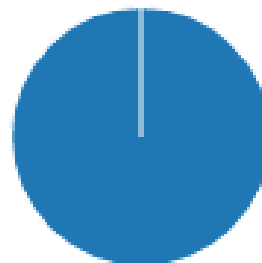
questionnaire for the external assessment with quantitative questions.

The assessment carried out looks as presented in the following Figures.

1. [General] Is the ambition of the document clear enough? (0 punto)

[Más detalles](#)

2. [General] Is the structure of the document appropriate in your opinion? (0 punto)

[Más detalles](#)

3. [General] Is the purpose and overview adequate? (0 punto)

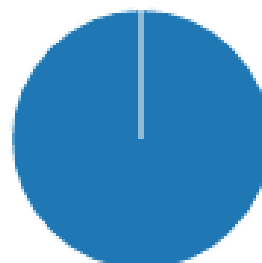
[Más detalles](#)

Figure 16.- Collected answers for the first three questions inside the General section.

7. [Structure] Do you consider the adopted programme structure appropriate? (0 punto)

[Más detalles](#)

8. [Structure] Is the set of considered modules coherent? (0 punto)

[Más detalles](#)

9. [Structure] Is in your opinion the combination of modules clear and aligned with the modern IE&M?

[Más detalles](#)

Figure 17.- Collected answers for the questions related to the Structure section.

13. [Content] Are the Program aims per Module adequate and consistent? (0 punto)

[Más detalles](#)

14. [Content] Do you consider Learning Outcomes per Module adequate and consistent? (0 punto)

[Más detalles](#)

Figure 18.- Collected answers for the questions related to the Content section.

No additional comments have been provided, and positive answer for applicability and usage of the proposed master.

CONCLUSIONS

Based on the described processes the conclusion is that the support for all their sections is well based and aligned between the qualitative and quantitative components.

And additional interviews were carried out looking at deepening the general framework for the BoK usage some aspects were highlighted, which are not centric with the BoK itself but more related to the context or institutional framework. Fortunately, such aspects have been now better understood when application to the IE3 master program was considered.

Then, the external assessment process ends up with a satisfying consideration from the independent reviewers identified.