

Knowledge Alliance “IE3 – Industrial Engineering and Management of European Higher Education”

Stockholm meeting; 13-14.10.2022

DAY1 – 13.10.2022

Timing	Activity	Partner responsible
09:00 – 09:40	Welcome and presentation of the agenda	LiU and PoliBa
09:40 – 10:45	WP4: presentation of the final e-learning courses uploaded on the Moodle Platform	UPM
10:45 – 11:15	<i>Coffee break</i>	
11:15 – 12:30	WP5 “The Hallmark of Higher Education Programs in Industrial Engineering and Management”. Agreement on the final text. Proposal from each university partner the revised list of course modules in the revised MSc programme in IE3	LiU and partners
12:30 – 14:00	<i>Lunch</i>	
14:00 – 16:45	WP5 Presentation of the knowledge blocks to be represented in the revised MSc programme in IE3. Designing the first draft of a revised MSc programme in IE3	LiU and all partners
16:45 – 17:00	Conclusions of day 1 and preparations for day 2	LiU and PoliBa

List of participants

- Politecnico di Bari (**POLIBA**) represented by Giorgio Mossa;
- Univesiy of Bari (**UNIBA**) represented by Giovanni Mummolo;
- Linköping University (**LIU**) represented by Janerik Lundquist and Mathias Henningsson;
- Universidad Politécnica de Madrid (**UPM**) represented by Joaquín Ordieres
- Poznań University of Technology (**PUT**) represented by Joanna Oleśków-Szłapka;
- ValueDo (**VALUE**) represented by Alessandro Guadagni;
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- Implema (**IMPLE**) represented by Jens Wallgreen and Joergen Aronsson;
- Arruti (**ARRU**) represented by Carlos J. Urueña (virtual);
- Technologie Diesel (**BOSCH**) represented by Vincenzo Paolo Ciannamea

WP4: presentation of the final e-learning courses uploaded on the Moodle Platform

Ordieres (UPM) recaps the work done in WP4 ([here](#)). LiU should report on the difficulties they encountered in testing the e-learning courses with their students for the final report. The link to the e-learning course will be included in the project platform.

For completing the website the next steps are:

WP3 Designing new training courses and internal testing within partner Universities

- All the University partners are to collect the **learning materials of the renewed courses: WP3 report, and training materials** (all slides and any other educational material prepared for the project). On all the training materials there should be the IE3 logo, the EU logo and the

disclaimer, example template for the slides [here](#). The documents should be uploaded in a folder created to InfoTech ([here](#)) by 04.11.2022.

- Guadagni (Valuedo) to send the partners what should be on the slides (**EU logo, disclaimer, format**, etc.). This information can be found [here](#).

WP4 Turning training courses into E-learning courses and application to other partner universities

- All the universities to prepare a **short description** of the e-learning materials content to deliver to InfoTech (10 lines) by 04.11.2022
- UPM to prepare short instructions to download and upload the compressed Moodle by 04.11.2022
- InfoTech to upload the compressed Moodle of the e-learning modules on the website by 30.11.2022

For what concerns the revision of the e-learning modules, all the Universities – except for PoliBa/UniBa – have completed the revision. PoliBa and UniBa will complete the revision on the UPM Moodle platform by 21.10.2022.

The partners agree also that UPM will put on the cover page of the Moodle platform the EU logo and disclaimer. The e-learning courses will be downloadable for any educational providers to download and then upload on other Moodle platforms. Also, the students would be able to download it and take the course.

Also, the partnership agrees to inform ESTIEM that the training materials are available to share this information with their associates.

Finally, InfoTech will install a counter on the project website to monitor the number of visitors to the learning material (WP3 and WP4 in two different sub-section of the website).

InfoTech will organize a separate call for discussing exploitation and sustainability activities to be completed by the end of the project.

WP5 “The Hallmark of Higher Education Programs in Industrial Engineering and Management”. Agreement on the final text. Proposal from each university partner on the revised list of course modules in the revised MSc programme in IE3

Janerik (LiU) asks the partners whether they have additional feedback on the Hallmark document that was shared in August. All the partners validate the document, which will be included in the Handbook ([LINK?](#)).

Henningsson (LiU) presents the summary of the work done by LiU starting from the written contributions shared by all the Universities. The complete presentation is [here](#).

Starting from the contents of the presentation given, the partners decide that the R5.1 should not only reflect how the partnership evaluate the work done, but it should give information to the other organizations, accommodating the needs of the readers. Also, the partners should take into consideration that they should focus on the European approach. The handbook (R5.2) should refer to

R5.1 and it should contain the approach for allowing any organization to have its own proposal. LiU would decide whether to present one or more examples of Master's program to be included in the R5.1.

During the discussion, the partners address also the following points:

- The R5.1 and the R5.2 should be written in a way that anybody, also outside the partnership and outside the IE&M field, could understand the IE3 messages.
- In the handbook, there should be a short introduction to presenting how the partners addressed the main results of the BoK.
- Soft skills: in the BoK the partners identified that soft skills are missing in the academic programs. However, the partners agree that it is not useful to include in the program's courses that are dedicated solely to developing some soft skills, but it is much more important than the soft skills that would be addressed in the whole learning environment. One good example of this is following the good practice of UPM, which included in one course a competition for the students to solve a challenge proposed by a company. This activity allowed the students to practice several soft skills, such as teamwork, problem-solving, communication, etc.
- It is not possible to create a way for certifying the courses that are compliant with the IE3 approach. However, showing the specialization that the students reached in the final degree document (diploma) would help the companies to see more in detail the kind of academic background that the students have. Nevertheless, complying with the Guidelines could be helpful in the Program design and self-assessment processes of the HEIs.

Modifications to the guidelines presented by LiU:

The partners revise the guidelines that would be part of the handbook.

The Guidelines are not mandatory rules. Instead, they represent a set of advice stemming from IE3 Partners' experience and IE3 project results.

Guidelines should be personalized considering University / Country rules and constraints.

Guidelines support Universities / Companies in the self-assessment of the IE&M Program.

- Yellow: proposed changes
- Green: brandnew points
- Red: major rephrasing required

Guidelines

1. Structure:
 - a. 2 years; 4 semesters
 - b. T-shape structure:
 - i. 1st + 2nd Semesters on transversal common hard/soft issues
 - ii. 3rd Semester on specialty area + 4th Semester for Internship and MS thesis
 - iii. Each Semester in the span of 25 % of the overall Program duration and Students' efforts.
2. Language: English (as it would facilitate promoting the course in other countries and attracting students and professors from abroad).

3. ~~Industrial Engineering Context~~ Sector: Technology and engineering with management subjects.
4. Defining expected students' knowledge and abilities consistently with main industrial and social challenges.
5. Multi-disciplinarity (knowledge) and Inter-disciplinarity (with methods and skills).
6. ~~Knowledge Clustering~~-defining knowledge areas.
7. Course contents and teaching methodologies/learning tools derived from a preliminary/periodic assessment on Need / Gap Analysis (Body of Knowledge). **ANNEX from WP2 – both questionnaires and the IE3 BoK**
8. Continuous review of the program contents every 5 years.
9. Integrating synchronous and asynchronous training. **Annex from WP4**
10. Knowledge pre-requisite for entering the Master's Program: defined in an official document of the Master's Program, Bachelor's degree in Engineering (recommended) or other STEM degrees
11. "Learning" instead of "Teaching" is the privileged point of view. Experiential Learning / Learning by doing / Teaching – Learning Factories approaches / Learning Labs.
 - a. ~~'Learning' instead of 'Teaching' is the privileged point of view.~~
12. Detailing Courses' Syllabi Presentation according to the ECTS Guide (Guidelines 4 and 7) Educational Tools, Classroom Organization consistent with Guideline 4 (expected Knowledge and Abilities acquired by students) **ANNEX from WP3 Reports and new Syllabi (as an example)**
13. Integration of Course Syllabi in the view of the whole program, avoiding overlaps and missing knowledge areas
14. Personalization of learning path Ensuring Flexibility in the program structure to fulfill the personal and career path objectives.
15. Organizing the first semester second year with different special sessions for promoting flexibility and internationalization and giving the possibility of recognizing learning from other Universities to stimulate the internationalization of students and Professor's Internationalization: Stimulate Incoming / Outcoming Students' and Professors' Mobility.
16. Companies' involvement in:
 - a. Contents and Methods definition
 - b. Industry Professors' involvement (based on University / Country constraints) mainly in soft skill lecturing and co-tutoring internship and MS Thesis. Preliminary / Periodic assessment (Guideline 5)
 - c. Industry Association interface.

ANNEX FROM WP1
17. Students' Involvement in:
 - a. Learning assessment
 - b. Educational tools effectiveness
 - c. Key drivers' Motivation

Check Annex X: questionnaires for students and employers
18. Starting with common modules in the first year and specializing in the second year

The partners agree that, as Annexes to the Handbook, would attach:

- The templates of the questionnaires that were prepared in WP1.
- The templates of the questionnaires that were prepared in WP2.
- The reports and syllabus from WP3 as examples from the IE3 experience
- The pedagogical and technical guidelines from WP4

- Any other document that is considered relevant by the WP Leaders.

LiU will revise the **guidelines** for the handbook by 21.10.2022 and share them with the partnership.

Also, the partners discuss and revise the Global Learning Objectives proposed by LiU that would lead to the definition of the examples of the revised IE3 Master's programs. The partners agree to call them "Program Learning Outcomes" (PLOs) and they should be revised in terms of "be able to". It is important to stress that the outcomes are referring to the industry sector, otherwise, the risk is that the PLOs could be referred, for instance, to Business and Administration courses. Also, what we write under PLOs should be understood and survived for at least 5 years from now.

The partners agree to revise again these PLOs the following day.

DAY2 - 14.10.2022

Timing	Activity	Partner responsible
09:00 – 09:30	Microsoft presentation of Industry 4.0 services	Microsoft
09:30 – 10:45	WP5 Designing the final draft of a modern European MSc programme in IE3; Writing Aim and Learning outcomes for the new programme and its course modules. Division of work.	LiU and all partners
10:45 – 11:15	<i>Coffee break</i>	
11:15 – 12:30	WP5 Preparation of the IE3 Handbook. Design and content. Discussion and final decision.	INFOTECH
12:30 – 14:00	<i>Lunch</i>	
14:00 – 14:30	WP8: Planning the evaluation of the R5.1 IE3 Master's Programme based on the BoK guidelines	UPM
14:30 – 15:00	WP9: Organization of the Final Conference in Bari to be held on Tuesday 02.02.2023 – definition of the date for the final meeting (the day after or the day before the Conference)	PoliBa
15.00 – 15.30	Recap on the project work plan (task and deadlines) and closure of the meeting; Conclusions and greetings	PoliBa and Valuedo

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Microsoft presentation of Industry 4.0 services

Microsoft gives a presentation on the services they offer to companies for boosting digitalization. The full presentation is [here](#). The video is available [here](#).

WP5 Designing the final draft of a modern European MSc program in IE3; Writing Aim and Learning outcomes for the new program and its course modules. Division of work.

Janerik (LiU) presents a revised version of the Programme Learning Outcomes. During the discussion, the partners propose to improve the list by adopting the following suggestions:

- including references to ethical aspects and security issues
- stressing the concept of innovation (“be innovative”)
- erasing the word “management” in the sentence “Management software tools”
- including also the concepts of being an autonomous learner and stressing the importance of continuous learning
- including the concepts of data, big data and taking decisions starting from data and analytical skills
- erasing the word “useful” before “solutions” (in the second statement)
- adding “to implement” after “to find” (in the second statement)
- adding a statement similar to the following "Be able to demonstrate risk-based thinking relating to operational risk management and information security"

The revised version of the PLOs will be shared by LiU by 21.10.2022

Work plan for the development of R5.1 “IE3 Master’s Programme based on the BoK guidelines”

- LiU to prepare the **program aim** by 21.10.2022
- LiU to provide the partners with the revised version of the **PLOs** by 21.10.2022
- All the partners to provide feedback on the PLOs by 28.10.2022
- LiU to check if all the partners provided all the **syllabi** in the proper format by 21.10.2022
- All the partners to provide quickly the missing syllabi asap after the LIU check
- LiU to send the first draft of the R5.1 “IE3 Master’s Programme based on the BoK guidelines” proposal in Word format (including, among the others, the course aim, the PLOs, the program structure and courses, syllabi, etc.) by 15.11.2022
- All the partners to revise the proposed draft version R5.1 by 22.11.2022
- LiU to provide feedback and an updated version of R5.1 by 29.11.2022
- Final check and revisions should be done by 06.12.2022
- January to double-check the R5.1 to be ready for the conference

WP5 Preparation of the IE3 Handbook. Design and content. Discussion and final decision.

De Pascale (UniFg) gives a presentation on the R5.2 design. The full presentation is [here](#). To create the Handbook and include there the links we need first to have all the public documents for WP3 and WP4 on the website. Valuedo will manage with the WP leader the collection of the materials. InfoTech will extend the duration of the website from 3 to 5 years.

Workplan for the development of R5.2 “IE3 model Courses Handbook”:

- LiU to revise the guidelines for the handbook by 21.10.2022
- InfoTech to share some graphical proposals for the final version of the Handbook by 28.10.2022
- Valuedo to share the results and supporting documents already prepared for the Interim Report with the partners to allow them to select all the sources and documents they are interested in by 20.10.2022
- Each WP Leader to prepare a **short introduction (up to one page) to the WP** they led and provide the **links** of the documents they want to share in the Handbook by 04.11.2022. In case the documents are not already uploaded online (website), they should ask InfoTech to upload them.
- PoliBa to prepare a couple of pages on the **introduction to the Handbook** (a sort of preamble) by 04.11.2022
- LiU to revise the work prepared by the partners and propose the first draft of the handbook by 18.11.2022
- All the partners to revise the Handbook by 25.11.2022
- All the partners to have a virtual meeting if needed
- All the partners to release the final version of the Handbook by 15.12.2022.
- InfoTech to edit and complete the Handbook by 15.01.2023
- All the partners to provide the final suggestions to Infotech by 22.01.2023

WP8: Planning the evaluation of the “R5.1 IE3 Master’s Programme based on the BoK guidelines”

The external revision of R5.1 depends on the completion of this document by LiU. So all the next steps depend on the work in WP5. Considering the deadlines agreed upon for the development of R5.1, the partners define the following tasks. The External evaluation on R5.1 (which goes under WP8 – responsible: UPM) should be concluded by 31.12.2022

- UPM to prepare the first draft of the evaluation survey by 22.11.2022
- All the partners to revise the evaluation survey by 29.11.2022
- UPM to contact the external evaluators from 06.12.2022 asking for completing the evaluation by 31.12.2022
- UPM to prepare the evaluation report by 15.01.2023
- If any changes are needed, they should be done by 22.01.2023

For what concerns **WP6 Project Management**, Guadagni (ValueDo) reminds the following deadlines:

- Next in-person project meeting: 01.02.2022 (full day, from 9.00 to 17.00). The day after (02.02.2022) the IE3 partnership will attend the IE3 Final Conference in the morning (09.00 – 13.00), in the afternoon the conference follow-up will take place at the presence of the whole partnership (15.00 – 17.00).
- End of the project: 28.02.2023
- Submission of the final report: 30.04.2023
- Starting the preparation of the Final report: 01.01.2023: Valuedo to send an email asking for technical information on the activities performed and the full collection of Results and Supporting documents; a collection of the time sheets and other supporting documents. The work will be done mainly by PoliBa and Valuedo, with partners' contributions.

WP9: Organization of the Final Conference in Bari to be held on Thursday 02.02.2023.

PoliBa is in charge of the organization of the Final conference, which will be hosted on PoliBa premises. The conference consists in a morning session, with the presentation of IE3 results, a round table and lunch. The full presentation is [here](#).

In the afternoon of the conference, there will be a follow-up meeting of the project partners.

The partners will share the stage for presenting the IE3 results:

- Gap Analysis
- Body of Knowledge
- E-learning experience
- A New European Master in IE&M

In the round table, the partners agree to invite representatives from both AIM and ESTIEM. The partnership proposes to Lundquist to chair the round table and he agrees.

The partners plan to spread the news of this conference to the Italian and EU network, including academics, representatives of companies, business associations, trade unions, and students. The Conference will be physical, but the conference will be also streamed through WebEx. The conference will be also recorded.

Workplan:

- PoliBa to finalize the program of the conference, contacting the panellists by 07.12.2022