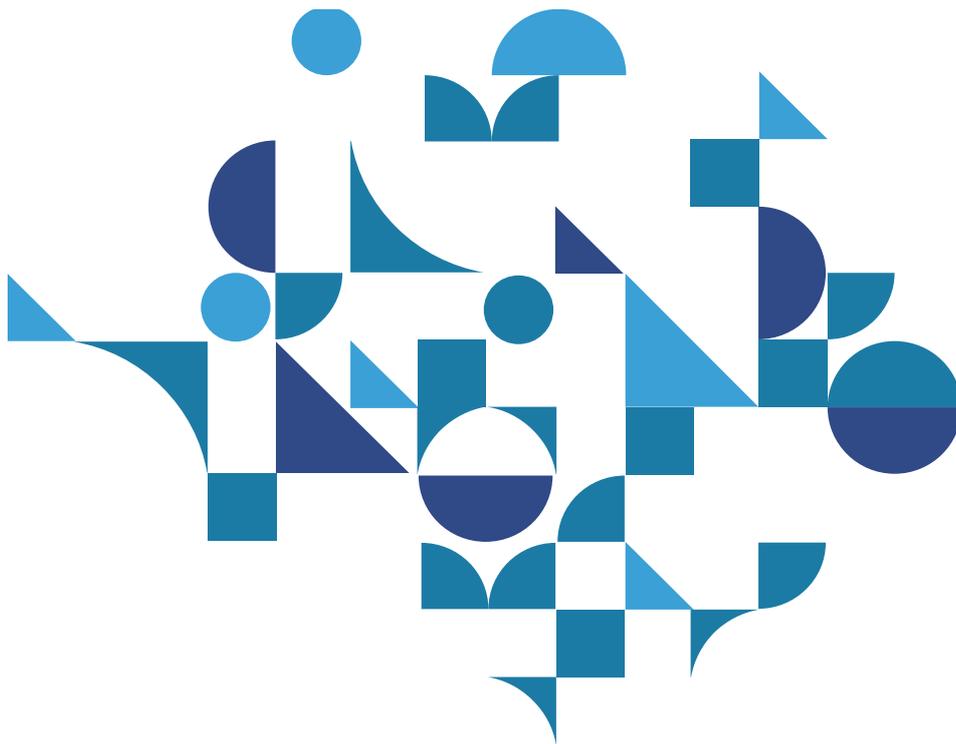




Industrial Engineering and
Management of European
Higher Education



R9.5 IE3 Final Dissemination Report



Co-funded by the
Erasmus+ Programme
of the European Union

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Deliverable R9.5; Work package 9; Dissemination level PU (Public)

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Summary

Introduction	4
WP9 Dissemination	5
Dissemination Strategy	5
Objectives, principles and target groups	5
Dissemination Tools	7
WEBSITE	8
SOCIAL MEDIA	16
FACEBOOK	16
LinkedIn	17
YouTube channel	19
PR material	20
Flyer	20
Project templates.....	23
WP9 Dissemination for next duration of the project.....	25
The IE3 community	26

Introduction

Industrial Engineering and Management of European Higher Education (IE3) is a three years EU Erasmus+ project (Key Action 2) aiming at assessing the gap between industry needs in implementing I4.0 paradigm and the Master Level Academic Programs offered by European Universities. The project goal is to design, test, and validate new higher education models in the framework University – Industry Knowledge Alliance.

The IE3 main goals may be summarized as follows:

- Build-up the Body of Knowledge of Higher Education in Industrial Engineering and Management (IE&M) for implementing I4.0 paradigm;
- Design a New Model and Best Practices on Higher Education in IE&M;
- Disseminate Project findings to replicate Best Practices and innovate IE&M Master Programs throughout Europe.

IE3 targets academics and students dealing with Industrial Engineering and Management from higher educational institutions, and industrial companies.

The project spans four European countries (IT, ES, PL, SE) and from each partner country one university and one private company dealing with industrial engineering have been involved.

IE3 intends to systematize approaches for bringing key skills to University students, companies involved in the field of IE&M. The project sustains the collaboration of partner Universities expertise adopting successful business models inspired by IE&M to create educational pathways aimed at reducing key skills fragmentation, overcoming the detachment between theoretical training (learned at the University) and practical experience (acquired on the field). It develops a path composed of four steps:

- I. Knowledge Needs and Gap Analyses of Higher Education in EM&S
- II. Body of Knowledge (BoK)
- III. Courses and e-learning Modules renewed upon the BoK Guidelines
- IV. Best Practices for renewing IE&M Master Programs

Several key deliverables deserve strong consideration. Firstly, a BoK, aimed at delivering key knowledge conveyed by up to date state of the art of the scientific literature. The BoK is a result that is exploitable itself by end-users. It is the fruit of a primary data collection (survey throughout academics, students and companies) and secondary data by desk research on the current educational offer in the field of IE&M. Secondly, an IE&M e-learning course, aimed at providing the learners with an up to date course delivering competencies close to the job market in the field of IE&M. The materials provided with the course have been being developed based on the knowledge extracted by the BoK. Therefore, the BoK is a key tool to catch information useful to design a course and build up training materials. Finally, it based on the lesson learnt with the investigation and the pilot test of the course supply, IE3 has revised a Master course at HEI partner level to deliver an innovative program expendable at HEI level in a broad sense: within and outside the IE3 consortium.

WP9 Dissemination

This WP has the aim of ensuring that the project, its milestones and results will be spread to all the relevant stakeholders and to the scientific community through coordinated actions and in the most effective way. The main objective of this dissemination is to be able to bring the results of the IE3 project on the table of each actor involved and interested along the entire process of construction and evolution of the project. Its success depends on how far the results are disseminated, which in turn are the starting point for concrete changes. The exchange of information, the sharing of experiences and skills, the contamination of visions of different targets for training and employment, the elaboration of shared models, are at the base of the strategic objectives of the IE3 project and are all united by the necessity to communicate. As general performance indicator that is considered in the project:

- Number of entities not involved directly in the project reached;
- Number of views of public project results;
- Number of publications on other websites;
- Number of publication on newspapers or other media;
- Number of people attending the conferences and meetings where the project results will be presented;
- Performance of the social media strategy;
- Number of visits to the website.

Dissemination Strategy

Objectives, principles and target groups

Infotech leads WP9, coordinating the dissemination activities and providing the partnership with the main tools for carrying them out (logo, website, template for .ppts and .docs, social media accounts, PR materials, etc.).

However, all partners have an active role in disseminating project results through their networks, as well to other target groups, in order to produce a multiplier effect. Partners contribute to raise awareness about project aims and results. Each partner has appointed a person responsible (Dissemination Manager) for planning activities, acting as contact person for the WP Leader Dissemination Manager, keeping record on target audience, impact made and for collecting feedback. The partners disseminate and exploit results by project website and social media, public events and conferences, meetings and visits to key stakeholders, written material, scientific articles in relevant journals, existing contacts and networks.

The project is also published on the EU Dissemination Platform and main results are being uploaded during the project's lifetime. A particular attention is paid to make EU support visible during events and in all materials disseminated. The name and logo of the European Commission and the name and logo of the Erasmus + on all the information and promotional materials has been provided. Dissemination activities are done during the whole lifetime of the project. Conferences, events are communicated by the organizer/participant to the WP leader, in order to let coordinator have an overall view on all activities.

The project partners have the commitments of providing periodically, in turn, one article (max 2.000 characters) and one image. The article is shared on the website (www.ie3.eu), and it is also adapted to the following social, depending on the nature of the content:

- post on Facebook (max. 300 characters)
- article for LinkedIn (max. 500 characters)

The strategy goals are determined by and dependent of the main objectives of the project. However, despite not being the same, the communication objectives are designed to help achieve IE3's goals. The objectives of the dissemination and exploitation strategy are the following:

- Enhancing the skills of territorial actors meant as IE&M stakeholders;
- Reaching as much as possible stakeholders in each initiatives of the project;
- Engaging current students, new entrants, companies and other stakeholder In the field;
- Creating flows of exchange of information between stakeholders, stimulating debate and putting into practice the results;
- Showing short and long-term benefits for HEIs, students and entrepreneurs;
- Providing visibility to entrepreneurs working In the field of Industrial engineering, universities and entities already carrying out IE&M training;
- Contributing to the development of a network in which information can be transferred in a clear, fluid and secure way - between HEIs-students-companies;
- Promoting IE3 through creating the possibility for Universities and companies to cooperate, share knowledge and create innovative training materials, meeting theoretical knowledge with practical experience;
- Making known and usable the materials produced and the results achieved through the project IE3, using innovative tools (Training needs analysis, e-learning courses) and the contribution of the new curricula of IE&M.

The target groups individualized in the project are:

1. Academic community
2. Students
3. Companies dealing with industrial engineering
4. Public Bodies (EU bodies, National Governments, Regional entities, etc.)
5. Other stakeholders

In order to make effective the communication activities, IE3 exploits several communication methods that will be selected from the options reported in Table 1.

Table 1. IE3 Channels for Dissemination

Examples of <i>non-media communication</i>	Examples of <i>media communication</i>
Face-to-face conversation	Newspapers and magazines
Group discourses	Press releases
Conferences	Newsletters
Round tables	Manuals
Exhibitions	Brochures

Meetings Workshops Open days Skype calls E-mail Policy brief	Video Posters Banners Website Blogs Social media
Smaller audience, lower costs, more effort. Interactive, good for acquiring input Flexible (easy to change tone, strategy, and content)	Potentially large audience. Uses the credibility of the mass media

Dissemination Tools

Infotech has developed a unique logo for the IE3 project. This is the heart of the project **visual identity**, helping to support visual communication and social branding. The project’s visual identity authenticates and strengthens the communication and dissemination of IE3 messages, and it ensures that all communication and dissemination products, including reports, the website, flyers, posters, presentation slides and promotional banners have a professional and uniform look. IE3 logo concept development and its finalized versions are shown in Figures 1, 2, and 3. Figure 1 shows the alternatives that have been developed.

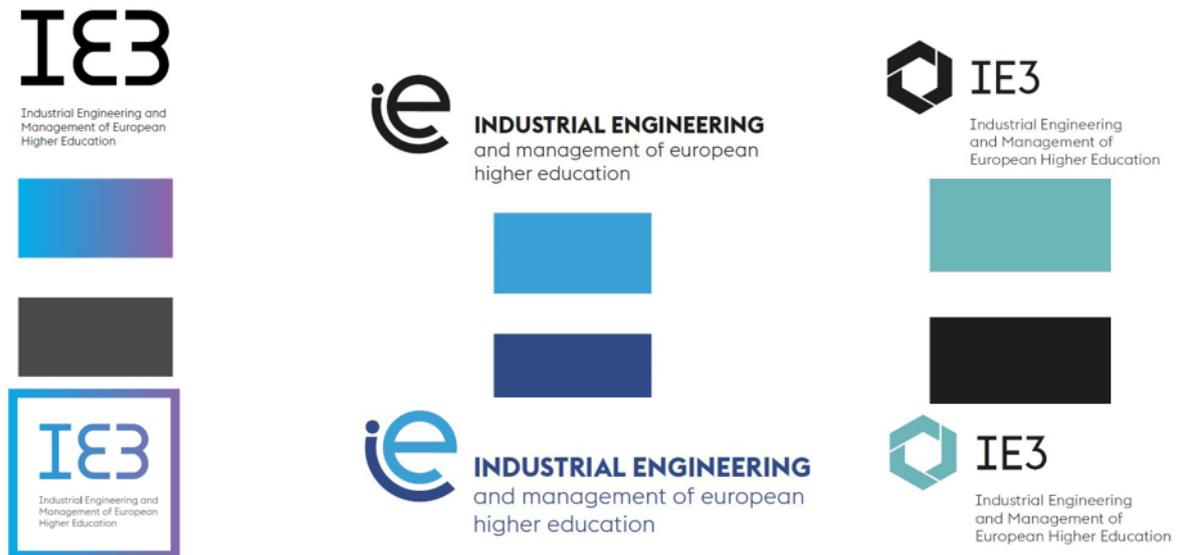
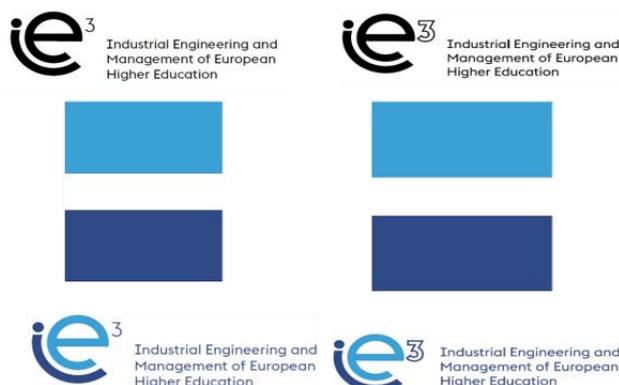


Figure 1 - IE3 logo's alternatives among which the partners made the choice

The first choice made by the consortium led to focus on the second version (the one placed in the middle in the above picture). However, this version underwent further revision processes before delivering the next two versions (Figure 2):



The final choice was made on the right version shown in the above picture. It stemmed from the idea of having a compact form of the restricted version of the logo so that recalling the three “e” standing for “European Engineering Education”:



Figure 3 - Final IE3 logo

Using this visual identity, a general outline for the website, the Facebook page, and the project business card were proposed.

WEBSITE

Here below the visual graphics of the website which was developed on the visual identity:



The IE3 website is a key element of the intended dissemination and outreach strategy. It contains all relevant information about the project, as well as an easy access to the resources and the outcomes of the project. It also provides a centralized access to the various publicly available

deliverables, publications and/or articles related to the project. The website is an important communication tool so it is constantly developed, updated and improved, according to the IE3 visual profile.

The project's website is published under the URL: <https://ie3.eu/>. It provides access to social and it is divided into the following main sections and subsections:

Home

- Home – it summarizes general and short information of the projects; show latest news and partner' logos
- About – It provides highlights on the project outline (general goals, target groups and milestones) and the partner's team involved
- Consortium – It provides highlights on the organization partners
- Results – It is envisaged to upload all the project results, also not indicated in the proposals, such as scientific publication from the project cooperation
- News – it is set up to upload the periodic news
- Contact - it is set up to get in contact with IE3 project by emailing at info@ie3.eu

The website has undergone a long phase of revisions since its inception in January 2019. Indeed, the consortium has continuously looked for an improved version so that being aligned to high-qualitative standards recognised by the EACEA. Therefore, the strategy adopted led to look for good practices already implemented awarded in successful European projects: the IE3 partners decided to exploit the success gained by the experience of the Erasmus project beFORE (Knowledge Alliance Project - 575842-EPP- 1-2016- 1-PL- EPPKA2-KA) whose website (futureoriented.eu/) was elected "good practice" by the EACEA. Accordingly, the IE3 website [<http://ie3.eu/>] was delivered in the final version showing the following sections:

Home – As reported in the below picture, one finds the visual identity of the IE3 project in the upper part; the highlights about the partnership composition in the upper part (10 partners, 4 EU countries, 4 HEIs), the three latest news and the spot for subscribing the newsletter in the middle part, and the partner logos in the bottom part.

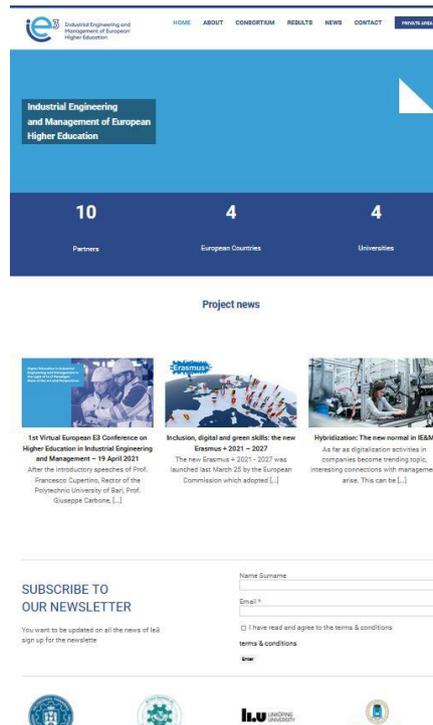


Figure 4 - Home page of the IE3 website

ABOUT – Here one finds summarized the key points describing the project: general outline, objectives, milestones, target groups to reach, geographical distribution of the partner countries and some representatives of the team brought by each IE3 partner and associate partner.

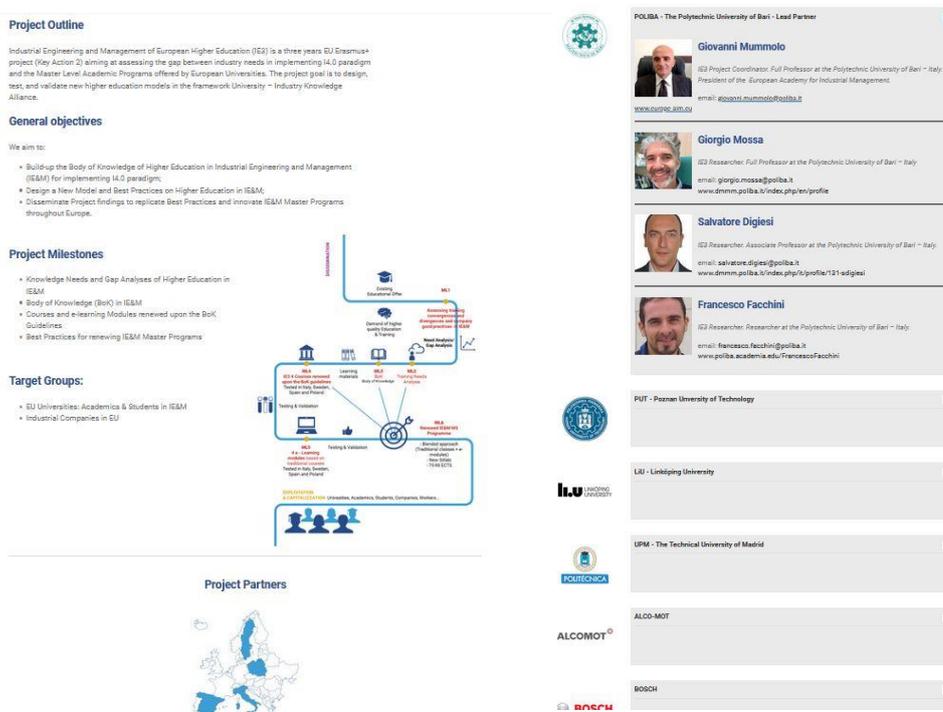


Figure 5 - About page of IE3 website

CONSORTIUM – In this page, one finds the short description of each partner and associate partner organization

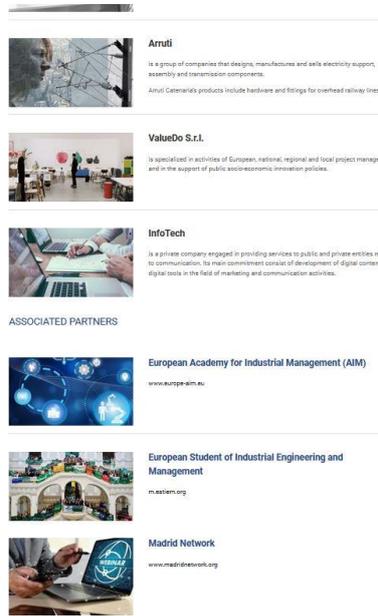


Figure 6 - Consortium page of IE3 website

RESULTS – this page is of paramount importance as it collects all the project outputs.



Figure 7 - Result page of IE3 website

In particular, it provides access to three main pages:

- Scientific publications – for each publication, it is possible to download the document, and take the reference in three different forms that are BibTex, Plaintext, RIS

J. Ordieres-Meré, G. Morales-Alonso, M. Gutiérrez, G. Mossa, J. Lundquist, G. Mummolo, J. Oleśków-Szlapka (2022) ASYNCHRONOUS MICROLEARNING EXPERIENCE IN INDUSTRIAL MANAGEMENT MASTER COURSE, INTED2022 Proceedings, pp. 8598-8603. ISBN: 978-84-09-37758-9.

[Bibtex](#) [Ris](#) [Plain text](#)

Mossa G, Digiesi S, Facchini F, Lundquist J, Mummolo G, Oleśków-Szlapka J, Ordieres-Meré J (2022), The Body of Knowledge for Higher Education in Industrial Engineering and Management: experiences from the Erasmus+ IE3 Project. In: INTED2022 Proceedings, 7-8 March 2022 Online Conference, Volume 1, 2022, 7973-7982.

[Bibtex](#) [Ris](#) [Plain text](#)

Oleśków Szlapka, J., Ortega-Mier, M., Ordieres-Meré, J., Facchini, F., Mossa, G., and Lundquist, J. (2020). Innovative methodologies and digital tools for higher education in industrial engineering and management. In INTED2020 Proceedings, 14th International Technology, Education and Development Conference, pages 1019–1027. IATED.

[Bibtex](#) [Ris](#) [Plain text](#)

Stachowiak, A., Digiesi, S., Mummolo, G., Fertsch, M., and Ortega-Mier, M. (2020). Knowledge gap and innovative models for higher education in industrial engineering and management. In INTED2020 Proceedings, 14th International Technology, Education and Development Conference, Valencia, Spain, 2-4 March 2020, pages 2778–2784. IATED.

[Bibtex](#) [Ris](#) [Plain text](#)

Ordieres-Meré, J., Ortega-Mier, M., Morale Alonso, G., and Grijalvo Martin, M. (2020). DIGITALIZATION CHALLENGES FOR INDUSTRIAL MANAGEMENT EDUCATION IN EUROPE. In AEIPRO2020 Proceedings, 24th International Congress on Project Management and Engineering, pages 2104 – 2113. AEIPRO.

[Bibtex](#) [Ris](#) [Plain text](#)

Figure 8 - Scientific publication and related references available at the IE3 website

All the works addressed the content of IE3 and the innovativeness being introduced by the IE3 teaching approaches to Industrial Engineering.

By accessing the Results page, one finds the other relevant project results:

- R1.3 – European Educational offer in the framework of Industry 4.0
- R2.1 – Action plan for the survey for students and academics
- R2.2 – Action plan for the semi-structured interview for companies
- R2.3 – Training needs analysis
- R2.4 – Body of Knowledge (BoK)
- Renewed course materials
- IE3 course modules
- IE&M New Master Program
- IE3 Handbook

NEWS – in this section all the news that have been produced and uploaded during the IE3 experience:

http://ie3.eu/2020/01/30/the-kickoff-meeting-of-ie3-project/
http://ie3.eu/2020/01/31/integration-of-digital-tools-in-industrial-management/
http://ie3.eu/2020/02/08/presentation-ie3-project-in-new-jersey-usa/
http://ie3.eu/2020/05/19/scientific-studies-for-educational-purposes-on-iem/
http://ie3.eu/2020/05/20/today-is-the-questionnaire-day-q-day/

http://ie3.eu/2020/07/07/ie3-general-meeting-29-30-june-2020/
http://ie3.eu/2020/07/17/ie3-dissemination-at-the-cidip-2020-international-conference/
http://ie3.eu/2020/07/23/ie3-work-being-done/
http://ie3.eu/2020/07/27/last-update-before-summer-break/
http://ie3.eu/2020/10/06/ie3-project-speech-at-the-42nd-aim-conference-berlin-3-6-september-2020/
http://ie3.eu/2020/11/06/ie3-project-lxi-council-meeting-of-estiem/
http://ie3.eu/2020/12/10/the-ie3-team-moves-virtually-to-madrid-for-the-3rd-project-meeting/
http://ie3.eu/2020/12/16/the-official-ie3-youtube-channel-is-being-set-up/
http://ie3.eu/2020/12/19/press-note-for-the-madrid-ie3-meeting/
http://ie3.eu/2020/12/22/merry-christmas-and-happy-new-year/
http://ie3.eu/2021/01/04/new-years-goals/
http://ie3.eu/2021/01/08/the-importance-of-soft-skills-in-engineering-education/
http://ie3.eu/2021/01/15/master-of-science-in-industrial-engineering/
http://ie3.eu/2021/01/27/phd-course-human-based-smart-manufacturing-systems-the-skills-and-competences-required-by-operators-in-smart-work-environments/
http://ie3.eu/2021/01/29/microlearning-more-useful-than-ever/
http://ie3.eu/2021/02/03/digital-revolution-and-industry-4-0/
http://ie3.eu/2021/02/05/from-project-output-to-project-outcome-the-role-of-the-communication-task/
http://ie3.eu/2021/02/10/alco-mot-team-skills/
http://ie3.eu/2021/02/15/why-transferring-good-practices-is-important/
http://ie3.eu/2021/02/17/ie3-covid-19-and-industry-4-0/
http://ie3.eu/2021/02/20/what-about-the-associate-partners/
http://ie3.eu/2021/02/24/ie3-communication-channels/
http://ie3.eu/2021/02/26/virtual-reality-and-training/
http://ie3.eu/2021/03/03/data-quality-into-industry-4-0/
http://ie3.eu/2021/03/05/decision-making-and-machine-learning/
http://ie3.eu/2021/03/08/disseminating-the-ie3-project-results-at-the-iem-conference-5-6-march-2021/
http://ie3.eu/2021/03/12/last-updates-of-the-project-and-preparation-of-the-international-conference/
http://ie3.eu/2021/03/22/ie3-supports-developments-for-a-better-future/
http://ie3.eu/2021/03/25/hybridization-the-new-normal-in-iem/
http://ie3.eu/2021/04/10/inclusion-digital-and-green-skills-the-new-erasmus-2021-2027/
http://ie3.eu/2021/06/15/1st-virtual-european-e3-conference-on-higher-education-in-industrial-engineering-and-management-19-april-2021/
https://ie3.eu/2021/06/15/1st-virtual-european-e3-conference-on-higher-education-in-industrial-engineering-and-management-19-april-2021/
https://ie3.eu/2021/09/28/you-can-meet-with-triumph-and-disaster-and-treat-those-two-impostors-just-the-same-part-3-3/
https://ie3.eu/2021/09/23/you-can-meet-with-triumph-and-disaster-and-treat-those-two-impostors-just-the-same-part-2-3/

https://ie3.eu/2021/09/17/43rd-aim-annual-conference/
https://ie3.eu/2021/09/13/you-can-meet-with-triumph-and-disaster-and-treat-those-two-impostors-just-the-same-part-1-3/
https://ie3.eu/2021/11/14/ie3-at-the-63rd-council-meeting-of-estiem/
https://ie3.eu/2021/11/17/digitalization-of-managerial-processes-the-pending-revolution/
https://ie3.eu/2021/11/19/about-cooperation-between-academia-and-industry/
https://ie3.eu/2021/11/26/industry-4-0-technologies-to-combat-climate-change/
https://ie3.eu/2021/12/21/merry-christmas-and-happy-new-year-2/
https://ie3.eu/2022/01/14/the-importance-of-dissemination-activities-in-european-projects/
https://ie3.eu/2022/01/26/tracking-of-projects-an-elearning-module/
https://ie3.eu/2022/01/31/how-digitalization-will-affect-the-teaching-in-operations-management/
https://ie3.eu/2022/02/11/digital-transition-closing-the-new-skills-gaps/
https://ie3.eu/2022/02/15/ie3-project-good-vibes-for-2022/
https://ie3.eu/2022/02/18/the-importance-of-dissemination-activities-in-european-projects-2/
https://ie3.eu/2022/03/07/industry-4-0-and-the-protection-of-the-natural-environment/
https://ie3.eu/2022/03/14/i-used-a-machine-learning-model-to-autogenerate-the-outline-of-an-article/
https://ie3.eu/2022/03/18/use-omnidirectional-robots-for-material-handling-in-the-factory-the-omniagv-4-0-project/
https://ie3.eu/2022/03/22/ie3-project-developments-from-spanish-partner-universidad-politecnica-de-madrid-upm-explained-by-spanish-industrial-partner-arruti-catenaria/
https://ie3.eu/2022/03/29/tracking-of-projects-an-elearning-module-2/
https://ie3.eu/2022/10/13/ie3-stockholm-meeting/
https://ie3.eu/2022/10/14/ie3-team-meets-microsoft-team/
https://ie3.eu/2022/10/24/meeting-in-stockholm/
https://ie3.eu/2022/10/28/how-change-the-maintenance-in-the-fourth-industrial-era/
https://ie3.eu/2022/10/31/general-purpose-ml-models/
https://ie3.eu/2022/11/11/eits-hei-initiative-unlocking-the-potential-of-higher-education-institutions-for-innovation-and-entrepreneurship/
https://ie3.eu/2022/11/14/extended-higher-education-more-needed-than-ever-industry-5-0/
https://ie3.eu/2022/11/16/the-digital-evolution-of-waste/
https://ie3.eu/2022/11/22/employees-in-industry-4-0/
https://ie3.eu/2022/12/05/discussion-panel-on-industry-4-0-perspective/
https://ie3.eu/2023/02/01/final-meeting-in-bari/
https://ie3.eu/2023/02/02/final-ie3-conference/

The section “news” takes the following view:



Figure 9 - News section of IE3 website

It allows the visitors to find the article from the archive where the articles are stored and sorted by month and year.

CONTACT – in this page one finds a box to fill in case any external stakeholder would be interested in posing questions and/or somehow get in touch with the IE3 team.

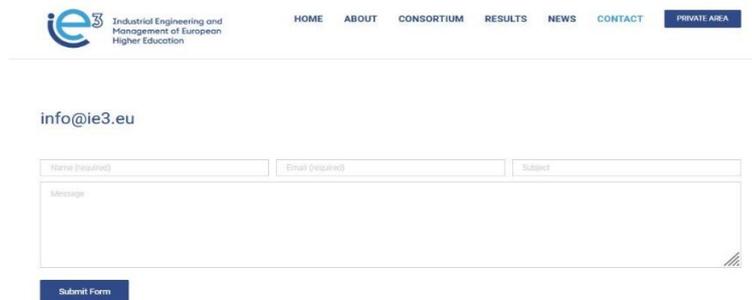


Figure 10 - Contact section of IE3 website

In the upper right part of the website, there are the icons linking the Facebook and LinkedIn social pages:



Figure 11 - Links to social media from IE3 website

Finally, at the bottom of each page of the website, it is shared the disclaimer for the content and the information provided through this communication channel:

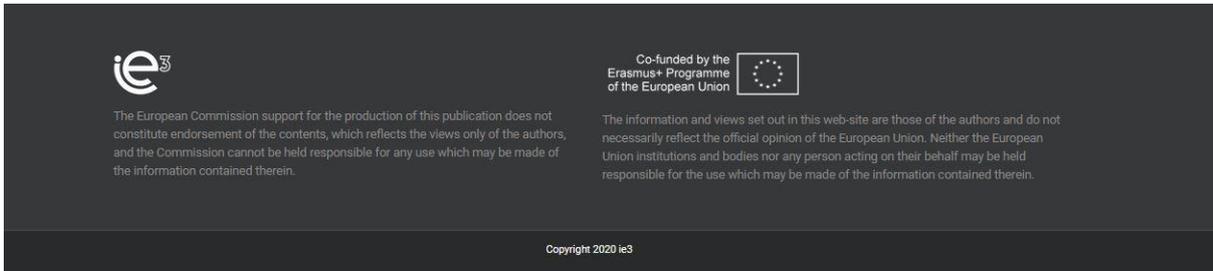


Figure 12 - EU disclaimer at IE3 website

Analytics of the IE3 website

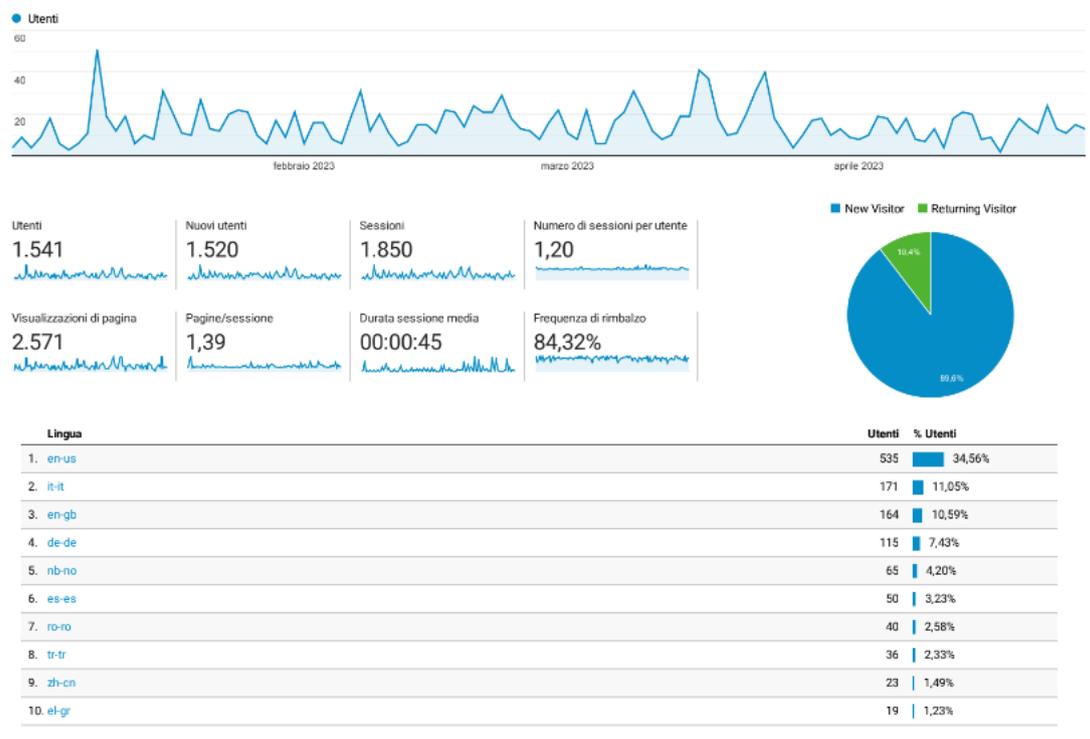


Figure 13 - Analytics of the IE3 website

SOCIAL MEDIA

FACEBOOK

This page was mostly thought for young stakeholders not being already professionals in the field of Industrial Engineering. It looks as follows:

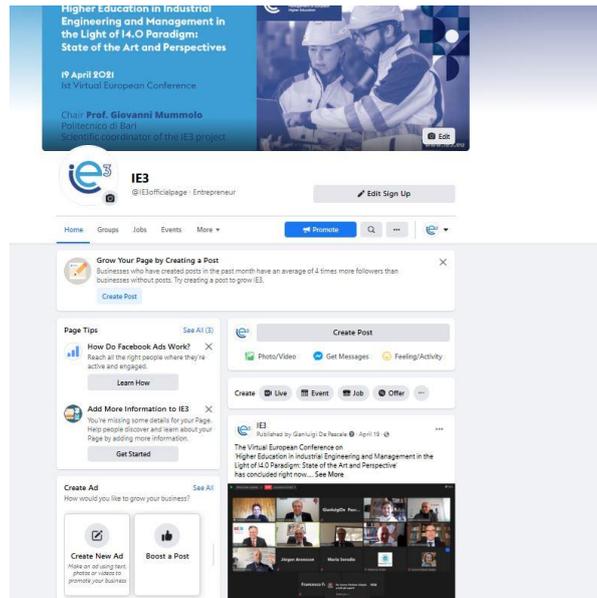


Figure 14 - IE3 facebook page

This page is exploited to share the links of the news published in the website and provide the audience with the link to access the news itself. Moreover, to engage stakeholders, the page was linked to thematic groups involving numerous participants being interested in the subject:

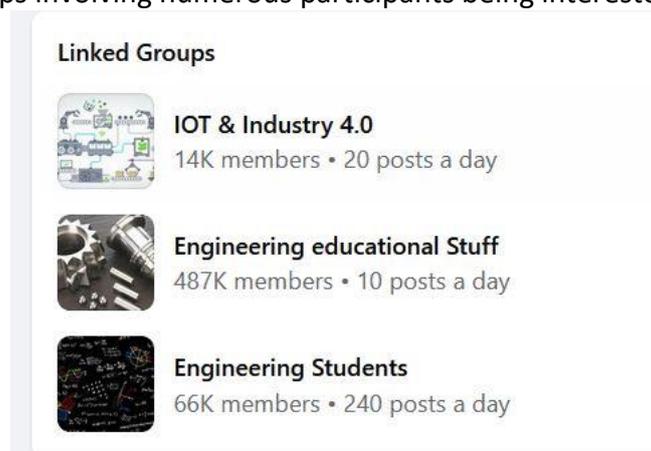


Figure 15 - IE3 linked thematic groups to repost news

As one can learn from the above screenshot, the groups count up to about 500,000 subscriptions, this being indicative of the size of the parterre of stakeholders that can be achieved. These groups have been exploited when promoting the international event held the 19 April in virtual mode. The Facebook social media page counts 167 likes and 170 followers. We aim at significantly increase this numbers until the end of the project since we deem that high visibility, awareness and attractiveness will be gained during the second part of the project, when the course will be launched.

LinkedIn

The LinkedIn social page looks as follows:

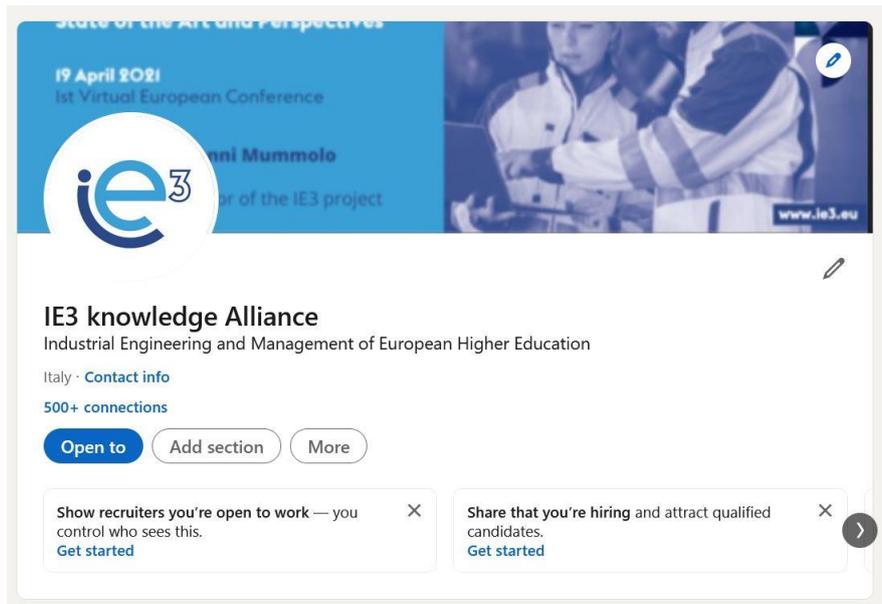


Figure 16 - IE3 LinkedIn page

Compared to the IE3 Facebook official page, it has gained much more success so far, thus suggesting that the topic is of paramount interest for professionals and whoever actively deals with Industrial Engineering and related subjects. Indeed, we count the following figures displaying more than a thousand connections and, importantly, twelve thematic groups.

Manage my network		
	Connections	1,203
	Contacts	655
	Following & followers	
	Groups	11
	Events	23
	Pages	49
	Newsletters	10
	Hashtags	

Figure 17 - IE3 LinkedIn figures

With reference to the groups, they have been exploited to share the news and sponsor the IE3 dissemination initiatives, such as the Q-Day and the first international event held on the 19th April 2021. The visibility gained by this connection with other thematic groups was guaranteed by the high number of member joined to the groups, as shown below:

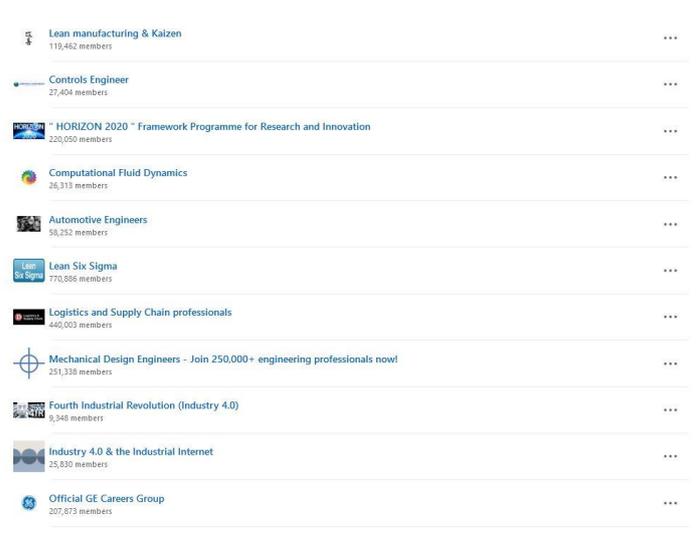


Figure 18 - IE3 LinkedIn groups to repsts news

YouTube channel

During the IE3 meeting held in two sessions on the 9th and 15th December 2020, it was agreed to create a YouTube channel, although it was not outlined in the project proposal. Indeed, the consortium has thought to exploit this channel to cope with the distance and inability of meeting the stakeholders due to the restrictions imposed by the pandemic and to capitalize all the videos being recorded during the project from that point on. The first video has been produced to introduce the general outline of the project [<https://www.youtube.com/watch?v=dWm8T6MIBoA>], and with the first international conference which was entirely recorded [<https://youtu.be/iaJUh3DS2CY>]. Further products will come when the class will take place in virtual mode and, therefore, recorded. This will allow to increase the accessibility to the training material so that stimulating knowledge spreading and course replicability. For the time being we are fine with the setting of this tool, and the next step is to boost as much as possible subscriptions to the channel, views of the videos and comments to the videos which would mean animating the stakeholder debate and raise their interest,

The YouTube channel looks as follows:

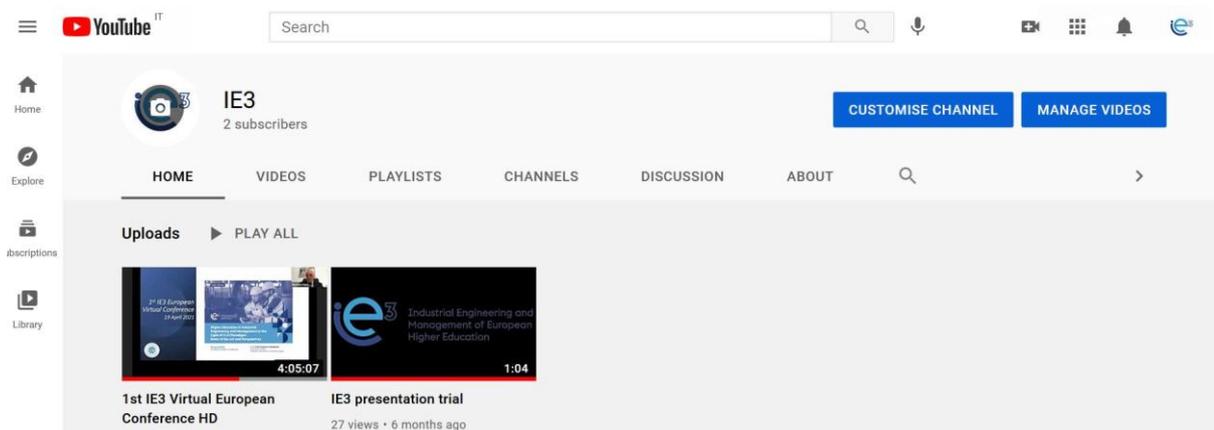


Figure 19 - IE3 YouTube channel



Figure 22 - Flyer for IE3 Christmas wishes

- 1st International Conference



Figure 23 - Flyer for IE3 first international conference

For this event also other materials has been developed:

19 April 2021
1st Virtual European Conference
Higher Education in Industrial Engineering and Management in the Light of I4.O Paradigm: State of the Art and Perspectives

The Conference presents contributions by academia and industry to analyze current situation and future perspectives of Higher Education in Industrial Engineering and Management in Europe.

First results of the 'Industrial Engineering and Management of European Higher Education' IE3 Erasmus Plus Project are presented by invited speakers. Professors, students and representatives of Companies will contribute by providing different points of views.

Finally, experts from Academia and Companies will debate on SWOT features in the renewal processes of higher education in Industrial Engineering and Management.



www.ie3.eu



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Virtual conference access instruction

1. Fill the registration form at www.t.ly/3jxi or use QR code



2. Receive by email the link to the Zoom meeting

3. Connect to the meeting via Zoom or via YouTube

19 April 2021
1st Virtual European Conference
Higher Education in Industrial Engineering and Management in the Light of I4.O Paradigm: State of the Art and Perspectives

Chair **Prof. Giovanni Mummolo**
Politecnico di Bari
Scientific coordinator of the IE3 project

Join the event www.t.ly/3jxi

9:00 - 9:15
Opening and Introduction to the IE3 Project
Prof. Giovanni Mummolo,
Politecnico di Bari
Coordinator of the IE3 Erasmus Plus Project. President of the European Academy for Industrial Management

9:15 - 11:00
Session 1
Offer vs. Demand of Higher Education in Industrial Engineering and Management: the IE3 Erasmus Plus Project

Survey on the Need-Gap Analysis and Body of Knowledge of Higher Education in IE&M
Prof. Salvatore Digiesi and
Prof. Giorgio Mossa Politecnico di Bari

Teaching / Learning Digital Tools for Higher Education in IE&M
Prof. Joaquín Ordieres
Universidad Politécnica de Madrid
Ass. Prof. Joanna Oleśków-Szłapka
Poznan University of Technology

Demand of Competence and Skill: the Perspective of Companies
Jörgen Aronsson
CEO Implema
Hanna Gołaś
CEO Alcomot

Expectations from Higher Education by European Students in IE&M
Maria Serodio
Vice-President Education of the European Students of Industrial Engineering and Management (ESTIEM)

Break 11:00 - 11:15

11:15 - 12:50
Panel on
'SWOT Analysis to Renew Higher Education Industrial Engineering & Management',
Chair: **Jan Erik Lundquist**, Professor,
Linköping University

Panelists

Antonio Fabio Giuliani
General Manager Bosch Italy & Greece

Peter Plapper
Professor, Manufacturing Engineering
Course Director,
Université du Luxembourg

Marco Taisch
Professor, Politecnico di Milano, President
of the Competence Center 'MADE'

Carlos Urueña
CEO Suhalar, Advisor R&D Arruti Catenaria

Luis Viudez
President of the European Students of Industrial Engineering and Management (ESTIEM).

Roberto Zecchino
Vice President Human Resources and Organization South Europe, Robert Bosch

12:50 - 13:15 Questions & Answers

13:15 Closing

IE3 Project Partners



Associated Partners



Figure 25 - Instructions to handle the Conference participation

- Final Conference in IE3 Bari

2 February 2023
 Location: Conference Hall, Polytechnic University of Bari via Amendola 124/D
 On-site: POLIBA YouTube channel

REGISTRATION FOR THE CONFERENCE
 QR Code: [QR Code]

9:00 - 9:30
 Welcome

9:00 - 9:30
Prof. Francesco Paolo Sisto
 Deputy Minister of Justice, Italian Government

Prof. Francesco Cupertino
 Rector of the Polytechnic University of Bari

Prof. Giuseppe Carbone
 Head of the Dept of Mechanics, Mathematics and Management, Polytechnic University of Bari
 'Aldo Moro', Chairman

9:30 - 10:30
 The IE3 Erasmus Plus Project: Outcomes & Lesson Learned

Prof. Agnieszka Stachowiak
 Poznan University of Technology

Prof. Joaquin Ordieres-Meré
 Universidad Politécnica de Madrid

Prof. Giorgio Mossa
 IE3 Project Coordinator, Polytechnic University of Bari

11:00 - 11:00
 Coffee Break 10:30 - 11:00

11:00 - 12:30
 Round table - Beyond the IE3 Project
 Chairmen:
Prof. Janerik Lundquist
 Linköping University

Prof. James J. Browne Emeritus Professor of Production Engineering and Former President of the University of Galway

Dr. Alessandro Guadagni EU Project Consultant, Project Manager at Veludo srl

Dr. Eng. Renato Lastaria General Manager Robert Bosch Italy

Prof. Wilfried Sihm Managing Director of Fraunhofer Austria and Prof. i.R. TU Wien

Ms. Francisca Trigueiros VP Education of the 'European Students of Industrial Engineering and Management'

Dr. Roberto Zecchino Deputy General Manager & Corporate VP Human Resources Bosch Group South Europe

12:30-12:45 Conclusions

Project Partners:
 The Polytechnic University of Bari, Poznan University of Technology, KOSMONOVA The Technical University of Madrid, ILU INSTITUTE FOR INNOVATION Linköping University, The University of Bari Aldo Moro, ValueD, info@ecp, ALCOMOT, BOSCH, Implema, Alcomot, European Academy for Industrial Management, European Student of Industrial Engineering and Management, Madrid network

PURPOSE
 The Conference is the final event of the three-years Erasmus Plus Project Knowledge Alliance KA2 Higher Education in Industrial Engineering and Management (IE&M).
 The project moved from what is worldwide recognized Higher Education in IE&M is the major key success factor for the new production paradigm shortly referred to as Industry 4.0. However, since the paradigm originated in Germany around ten years ago, criticalities emerged, and a technological paradox occurred: a higher rate of investments in R&D production assets is not counterbalanced by a correspondent higher education rate of knowledge workers able to design, operate, and manage them. The University-industry partnership of the IE3 project has been fully engaged to address limits of higher education in IE&M in generating or re-qualifying human capital by academic programs.
 Consistently, the Conference has a twofold aim also reflecting the program schedule:
 In the first session, IE3 Project academic and industry Partners will present the main project findings.
 In the second session, external experts from European Academia and industry, highly involved in IE&M Education, will debate on how to prolong the activities of the project beyond its end and increase its impacts on Academia and industry. Two main streams will be followed to identify actions to spread results achieved by the IE3 project across Europe and explore further opportunities for future European University-industry partnerships in Higher Education in IE&M.

Dissemination CONFERENCE
 Polytechnic University of Bari
 2 February - 2023

Co-funded by the Erasmus+ Programme of the European Union

With the Final Dissemination Conference, distinguished speakers have been invited and participated addressing the topic and the results achieved. Their speeches have been recorded and edited by InfoTech that have uploaded any single speech on the IE3 website. They are available at this link:

<https://ie3.eu/video/>

The distinguished speakers involved national and local authorities:

- **Dr. Francesco Paolo Sisto** - the vice-Ministry of Law and Justice
- **Prof. Francesco Cupertino** – Rector of the Polytechnic of Bari
- **Prof. Giuseppe Carbone** – Dean of the Department of Mechanical Engineering, Polytechnic of Bari

Other distinguished speakers from IE3 outside organizations are:

- **Prof. Wilfried Sihm** - *Managing Director of Fraunhofer Austria and Prof. i.R. TU Wien*
- **Prof. James J. Browne** - *Emeritus Professor of Production Engineering and Former President of the University of Galway*
- **Dr. Eng. Renato Lastaria** - *General Manager Robert Bosch Italy*
- **Dr. Roberto Zecchino** - *Deputy General Manager & Corporate VP Human Resources Bosch Group South Europe*
- **Ms. Francisca Trigueiros** - *VP Education of the 'European Students of Industrial Engineering and Management'*

Project templates

Along with these tools, the templates for reports, essays and other documents to be outlined during the project development in doc (word) format, and for presentations in power point format.

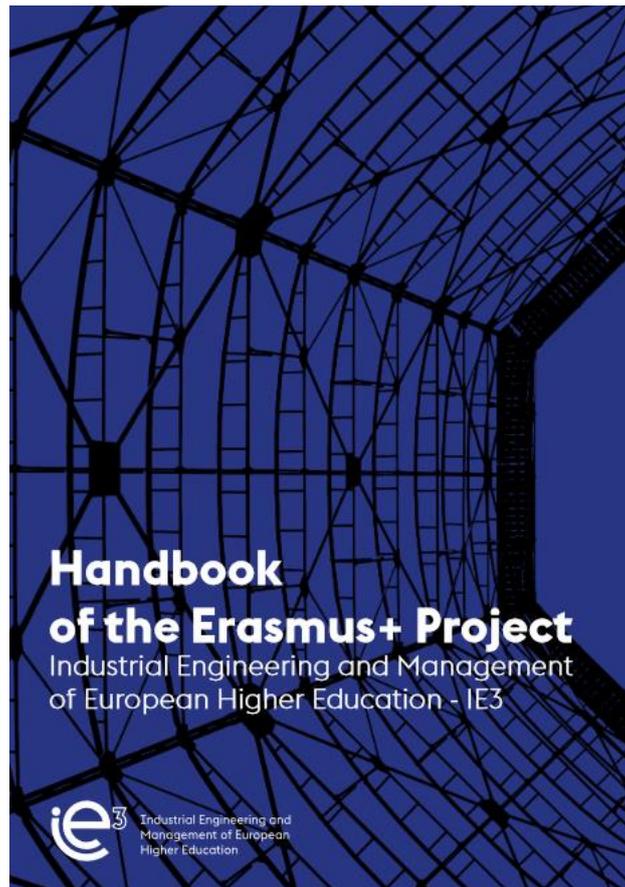


Figure 29 - Graphics of the template for the IE3 Handbook

WP9 Dissemination for next duration of the project

The key performance indicators for the first half of the project have suffered from the long pandemic period (the project started in the November 2019, and the outbreak came to Europe in January 2020 that is still ongoing). Therefore, for the next period, hoping to return to a more active social life as soon as possible, the following corrective actions will be taken, with the goal of reaching the set number:

- Organizing major in-person meetings with project stakeholders.
- Continuing to promote the website through the project and partner social media accounts;
- Establishing relationships with other similar Erasmus+ funded projects and promoting the project and website through their websites and social media accounts;
- Continue to regularly update the content of the website and add new sections, such as project videos, video lectures, video interviews, scientific publications, etc.; and
- Promote and apply the results obtained from the Training Need Analysis and the Body of Knowledge, along with the development of e-learning courses on the Moodle platform.

Entering the second half of project's implementation, WP9 will continue to plan, implement, coordinate and report dissemination activities for the period M18-M36. During this period, the project enters "Phase2 - Targeted awareness market phase" and it will aim at: Creating more

“targeted awareness” regarding the IE3 courses to targeted stakeholders and groups; Informing target market about the topics and potential of the IE3 results.

Infotech will also take into account the proper implementation of the measures to secure privacy and log-ins for teachers and students on the e-Learning platforms.

The IE3 community

Partners have put into practice efforts in approaching and contacting stakeholders, and as the pandemic was over, they got back to take meeting in attendance and meet the stakeholder communities.

The Table below is the network of Associated Partners outlined in the Dissemination Plan and established in this first half of the project's lifetime that the project will continue to rely on to carry on and effectively implement activities after the project ends. The associated partners have allowed the IE3 project to reach out a wide community of stakeholder. Indeed, the ESTIEM associations counts more than 10,000 students in the network, and they actively participated in the project development, attending meeting and providing insights and recommendations based on the student views. This led to a constant flow of IE3 information/news to the network whose interest raised progressively.

Name of the Associated Partner	Country	Contact person	Organization type
EASC Pescara – Emergency Advanced Simulation Center	European network Belgium-based	Duarte João Oliveira (https://m.estiem.org/)	European student association in the field of Industrial Engineering
European Academy for Industrial Management (AIM)	European network Belgium-based	Prof. Giovanni Mummolo (https://europe-aim.eu/)	European scientific association of Industrial Engineering
Madrid network	Spain	Prof. Joaquín Ordieres-Meré (www.madridnetwork.org)	Online training center

The targets reached during dissemination activities

Based on what addressed in the IE3 project proposal, the target grouped reached may be summarized as follows (All expected and desired impacts will be achieved at local (L), regional (R), national (N) and European (E) level by ensuring periodical activities). These are the target groups to be reached for accomplishing short term impacts:

- **PROJECT PARTNER UNIVERSITIES**
 - Definition of EU educational good practices (EU level) has been successfully implemented in WP1
 - Definition of BoK (EU level) has been successfully implemented in WP2

- Promotion and use of the training material for 4 courses (EU level) has been successfully implemented in WP3
- Open access to the 4 e-learning modules (EU level) has been successfully implemented in WP4
- Definition of a new IE&M Master course, including at least 8 courses redesigned has been successfully implemented in WP5
- **STUDENTS**
 - 200 students (50 per each Uni) attending the 4 pilot courses to develop new skills (L, R) has been partially accomplished since the student distribution across the partners has been not homogeneous. However, the overall target has been achieved
 - 45 students (15 per each Uni) attending the 4 pilot e-learning modules to develop new skills (L, R) has been achieved
 - At least 800 students will gain awareness about the renewed IE&M training offer and the open-access e-learning modules. The evaluation has been done considering: the mailing lists of the universities partner and the student orientation activities that represent a prominent pool of potential end-users of the project outputs. (E) -> **This target has been widely accomplished sine the only ESTIEM associated partner counts more than 10,000 students and they have constantly informed the community. Others have been informed through communication channels**
- **PARTNER COMPANIES**
 - Participation to the 4 courses organized by the Universities (N) has been accomplished by all the partner companies
 - Testing the 4 e-learning materials developed by the Universities (N) has been accomplished
- **OTHER COMPANIES**
 - Testing the 4 e-learning materials developed by the Universities, after validation (E) this has not fully achieved so far. However, companies such as Microsoft (from Sweden) have taken part to the IE3 meeting and their interest was raised
- **TEACHING STAFF**
 - Development of skills of building e-learning modules: at least 2 staff members per partner (L, R) – this has been fully accomplished, and with more than two expertise per partner
 - Availability of 4 courses materials and 4 open access e-learning modules (E) – they are available open access at the IE3 website <https://ie3.eu/results/>. They have been followed by more than two staff members per organization partner
- **ORGANIZATIONS SUPPORTING ENTREPRENEURSHIP**
 - Availability of 4 courses materials and 4 open access e-learning modules (E) – we do not have precise information on that point. We only know that several organizations have took the materials, but no other information are available