

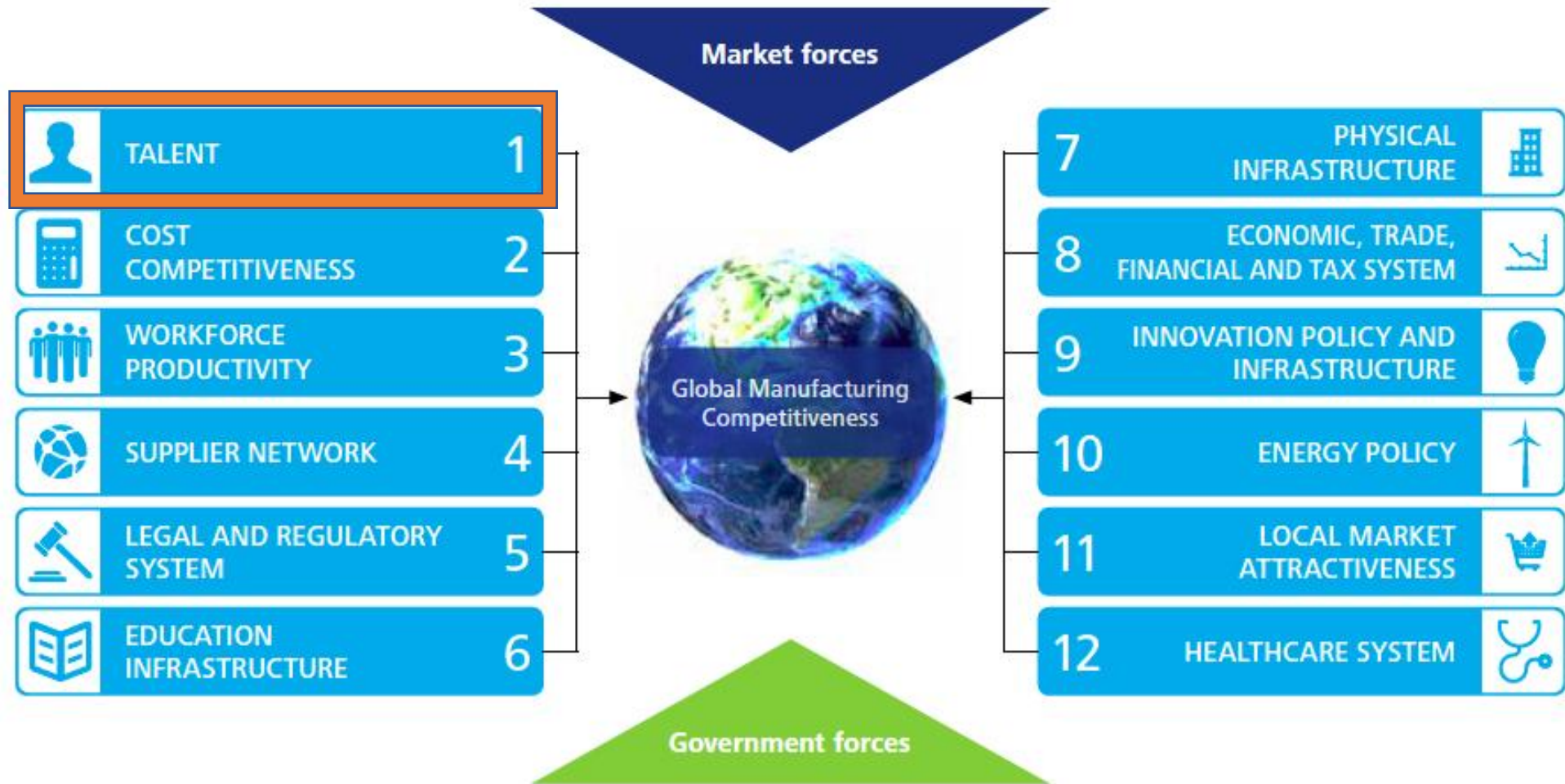
Education Projects on IE&M @ AIM

- 1. New Higher Education Model in IE&M**
- 2. The European Graduate School of IE&M**



International Survey on 500 + CEO and Senior Manager

Human Capital: the Most Important Factor for Manufacturing Competitiveness

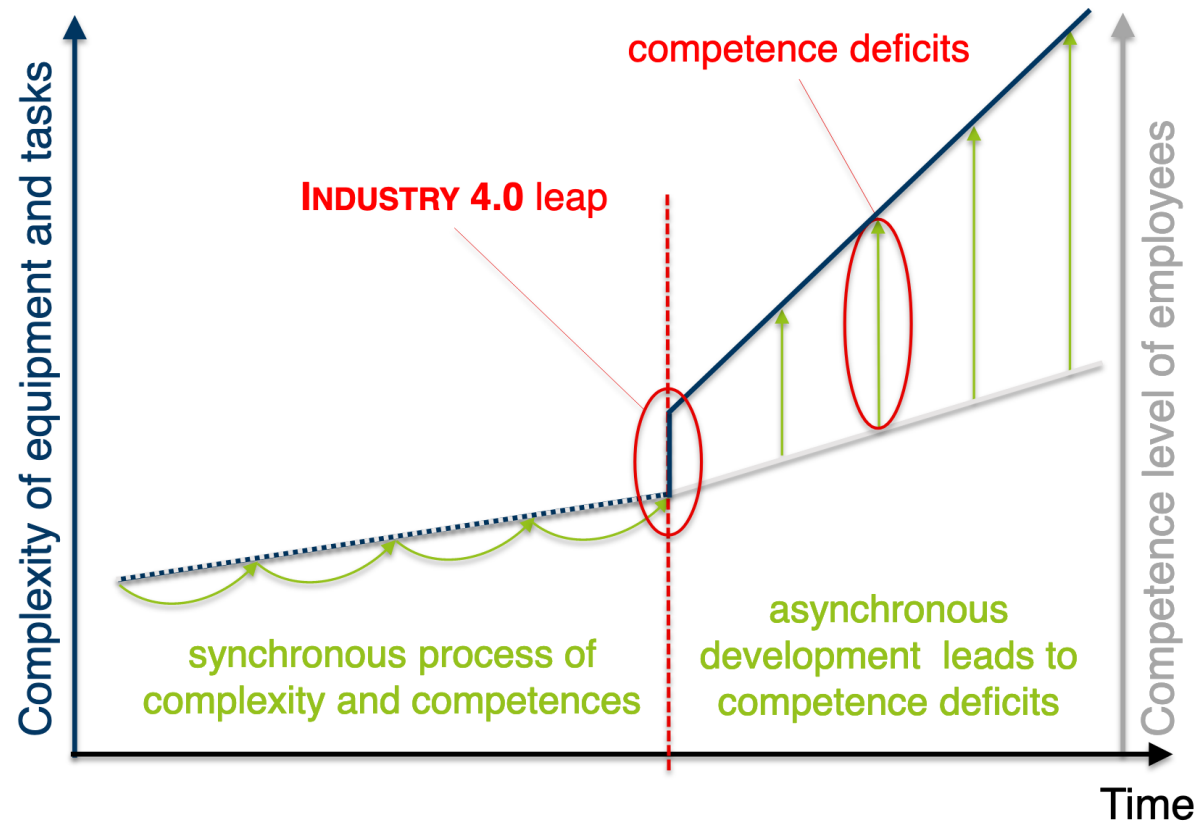


Source: Deloitte Touche Tohmatsu Limited and US Council on Competitiveness, 2016 Global Manufacturing Competitiveness Index

Re-Industrialization of Europe by Industry 4.0: The Ongoing Paradox

Physical Assets

Human Capital



Increasing complexity of plants, as a result of the use of flexible automation-systems within the production by using cyber-physical systems

The ability to manage these activities by staff does not increase simultaneously

Accrue ment of competence deficits, which are to be balanced by an appropriate assistance-system!

From: Horst Meier Presentation
36th AIM Conference - St. Petersburg,
18-21th September 2014

FRAUNHOFER AUSTRIA RESEARCH

Industry 4.0 – Smart Production and Services

Human Centered Production in Cyber-Physical Production Systems

37th AIM Conference, Vienna

17-20th September 2015

Prof. Dr. Wilfried Sihh

Fraunhofer Austria Research GmbH
Division

Production and Logistics Management

Vienna University of Technology

Institute for Management Science

Department

Industrial and Systems Engineering



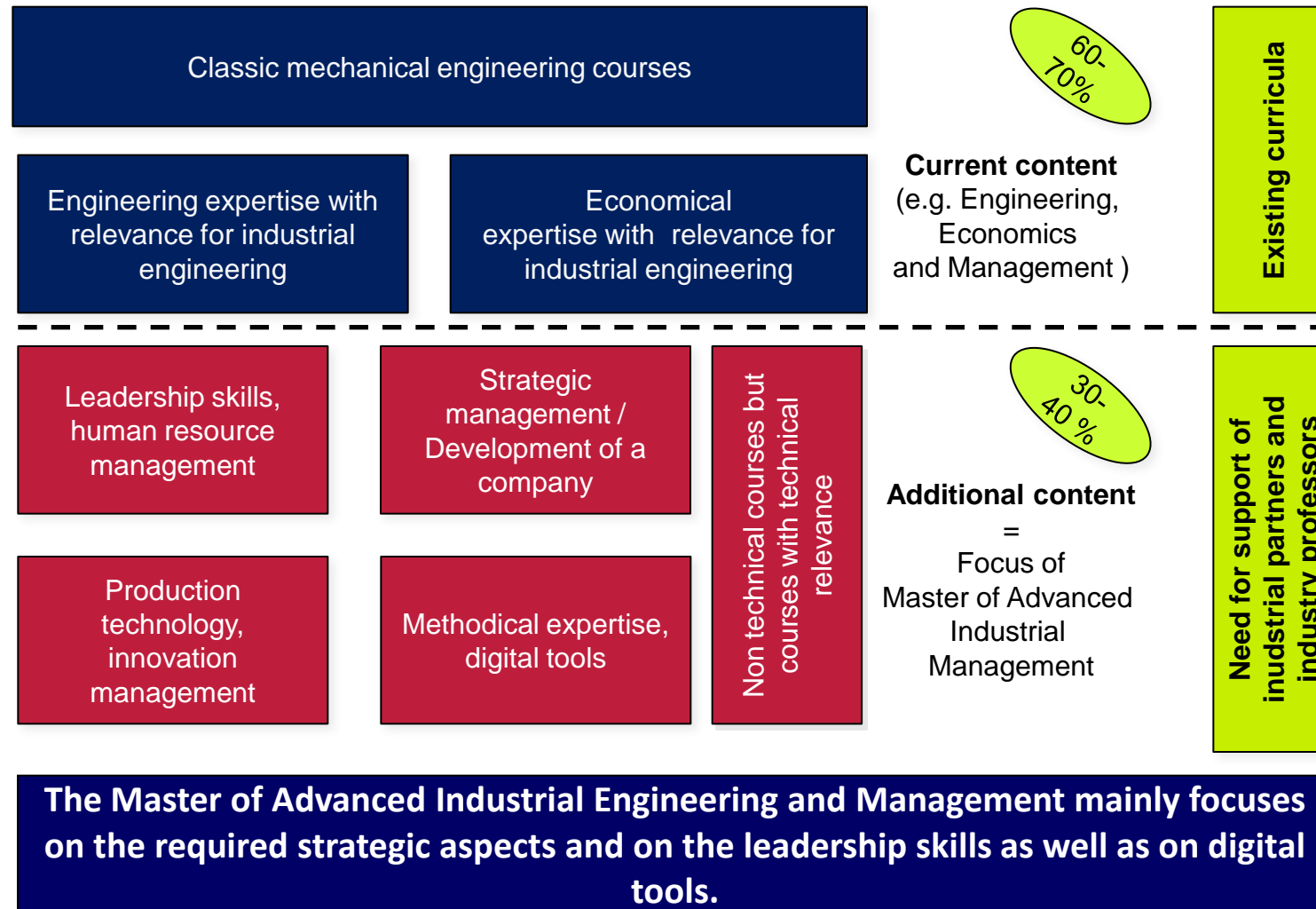


First Certified European Master Program of AIM

Univ.-Prof. Dr.-Ing. Uwe Dombrowski
Dipl.-Wirtsch.-Ing. Constantin Malorny

Dombrowski presentation at
36th AIM Conference - St. Petersburg, 18-21th Sept. 2014

Additional content of a Master in Advanced Industrial Engineering and Management



Requirements of leading enterprises and organizations

Necessary requirements of industry are:

- ➡ Possibility to study at different European universities with the same quality level of teaching staff and content
- ➡ Modular, certificated education and training on the job as further qualification for the employees
- ➡ Flexible opportunities to study (e.g. evening courses, part-time study)

The survey shows that there are huge gaps in the European higher education, e.g. missing transfer of methodological knowledge, digital tools or leadership skills. These requirements have to be learnt on the job.





Deficit of Knowledge Workers increases in Europe due to:

- **Workforce Aging**
- ● **International Competition for Knowledge Workers**
- ● ● **Limits & Constraints of European University System**

Limits & Constraints of University System Higher Education

- A Body of Knowledge on IE&M is still missing
- ● Capacity constraints of many Universities in bridging quantitative / qualitative gaps in education
- ● ● ‘Publish-or-Perish’ recruiting mechanism

Academic Curricula are diverging from Industry needs

The Big Challenge of Higher Education in Europe

Educate a critical mass of Knowledge Workers

meeting constraints of

European Universities and Companies

The Strategy

- **Involving Schools of Engineering (IE&M) throughout Europe**
- **Referring to available Resources for Higher Education**

The Key Drivers

- A New Model of Higher Education in IE&M
- University / Industry European Organization

Actions

- The Erasmus + Project
- The European Graduate School of Industrial Engineering & Management

Key Driver # 1: A New Model of Higher Education in IE&M

Action: Erasmus + Project

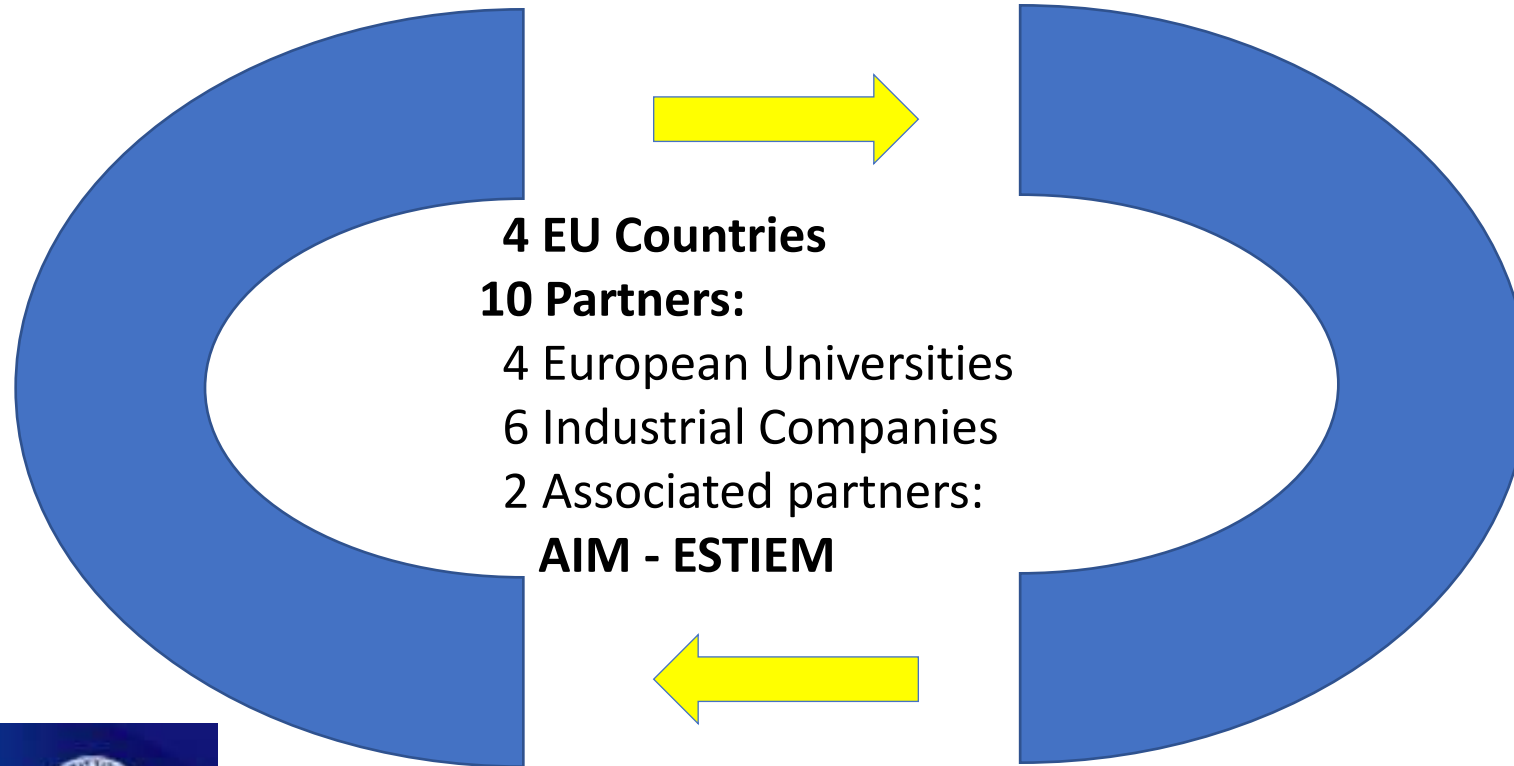
KA2: Cooperation for innovation and the exchange of good practices - Knowledge Alliances

***“Industrial Engineering and Management of
European Higher Education / IE³”***

Selected for co-funding by EU Commission



Erasmus Plus 2018 – KA2 ‘Knowledge Alliance’
*IE&M HE (IE³): Industrial Engineering and Management
of European Higher Education / IE3*



WP number	WP title
WP1	Researching HEI training offer and company good practices in the field of IE&M
WP2	Training need analysis and definition of the BoK on IE&M
WP3	Designing new training courses and internal testing within partner universities
WP4	Turning training courses into e-Learning courses and application to other partner universities
WP5	Revising a new educational pathway of IE&M
WP6	Project Management
WP7	Quality Assurance
WP8	Project Evaluation
WP9	Dissemination and Exploitation of results

Body of Knowledge in IE & M

Design 4 MS Courses

Course Digitalization

Test & Validation

Define New IE&M Education Path (2° level)

- ✓ 3 years project
- ✓ ≈ 850 k€
- ✓ Rate of success:
33 / 195 = 17 %
- ✓ Ranked top 10 %

[illegible]

Key Driver 1: A New Model of Higher Education in IE&M
Action: Erasmus + Project

Key Driver # 2: The European Graduate School of IE&M

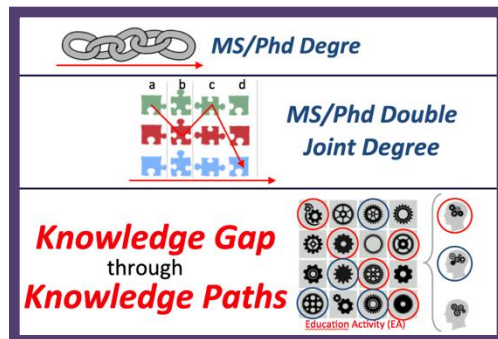
A University / Industry Organization



Founded in 1987

Prof. Ing. Giovanni Mummolo
AIM President

Professor of Polytechnic University of Bari



<http://www.europe-aim.eu/>



Founded in 1987

Prof. Ing. Giovanni Mummolo

AIM President

Professor of Polytechnic University of Bari

Main Goal of the School

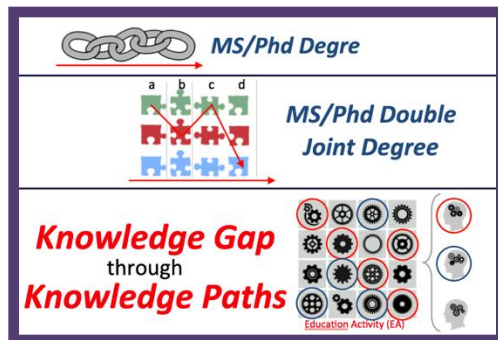
To Implement New Models of Higher Education in IE&M to meet Companies' Knowledge Needs, and replicate them throughout Europe

<http://www.europe-aim.eu/>

EU –AIM Meeting

Brussels, EU Parliament, January 13, 2016

The European Graduate School of Industrial Engineering and Management



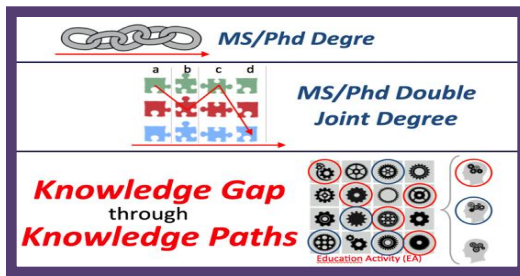
Giovanni Mummolo

New 'Academic – Industry' HE Models for Industrial Engineering & Management:
Towards the Foundation of a “University – Industry” European Graduate School
Bari, May 17th - 2017

The European Graduate School of Industrial Engineering and Management

Proposal of Foundation (Feasibility Study)

Giovanni Mummolo





European Forum

Towards the Foundation of the European Academy for Industrial

Management

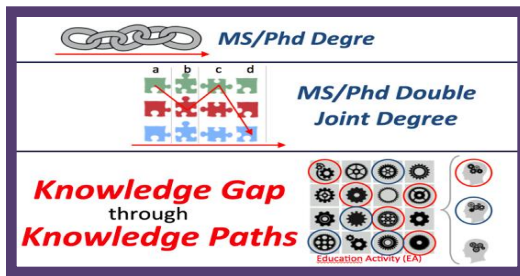
Bari may 17, 2017

New 'Academic – Industry' HE Models for Industrial Engineering & Management:
Towards the Foundation of a “University – Industry” European Graduate School
Bari, May 17th - 2017

The European Graduate School of Industrial Engineering and Management

Memorandum of Commitment

Giovanni Mummolo





President: Prof. Giovanni Mummolo, Polytechnic University of Bari (Italy)
 Vice-president: Prof. Uwe Dombrowski, Technical University of Braunschweig (Germany)
 Vice-President: Prof. Krzysztof Santarek, Warsaw University of Technology (Poland)
 Secretary/Treasurer: Prof. Hendrik Van Landeghem, Ghent University (Belgium)

Memorandum of Cooperation and Commitment for founding the 'European Graduate School of Industrial Engineering and Management' (ESIEM)

Political representatives, Universities, Companies, Associations and AIM attending the European Forum of Bari on May 20th 2017 throughout their representatives, having considered:

1. the strategic role of higher and lifelong learning education in Industrial Engineering and Management (IE&M) for EU economic growth and jobs' creation;
2. the ongoing process of re-industrialization of Europe consistent with its sustainability pillars and the implementation of Industry 4.0 technologies;
3. the lack of talented and skilled human resources in the IE&M competence area and the strong international competition for human capital;
4. the aging of skilled workforce in Europe;
5. the high rate of youth unemployment mainly in EU areas with low technology-intensive production;
6. the need to coordinate educational efforts of EU academic institutions and industry in view of unifying the European body of knowledge of IE&M;
7. the need to renew the curricula currently offered by EU Universities in order to increase the average level of IE&M higher education Europe-wide;
8. the constraints of many European Universities in offering updated IE&M higher education curricula consistent with Industry needs;
9. the need to increase the current share of industry research workforce in EU;
10. the need to offer lifelong learning curricula for the industry workforce;
11. the expected benefits from synergic actions by educational and research University/Industry networks;
12. the strategic role of networking in actuating industrial and educational policies in EU

declare their support of the initiative to found the "European Graduate School of Industrial Engineering and Management" and agree to a sustained support within their powers of the quest for founding and supporting it through economic, human, and structural resources in order to offer higher education for both talented young people and skilled industry workforce,

Contact address: Hendrik Van Landeghem, Ghent University, Dept. of Industrial Management, Technologiepark, 903, B-9052 GENT, Belgium. Tel:+32 (475) 25 94 43. e-mail: hendrik.vanlandeghem@ugent.be

AIM is registered as non-profit organization in The Netherlands under nr. 40238814.
 Bank account: IBAN BE46 0016 5801 4936 - BIC GEBABEBB

and propose:

- a. EU Member States to sign the Convention for setting up the European Graduate School of Industrial Engineering and Management, asking the Italian Govern to start and lead the process;
- b. EU Commission to promote the School within the European Higher Education Area (EHEA) to enlarge the cooperation and commitment to further academic and industry partners here not represented;
- c. The European Academy for Industrial Management to follow the progress of works concerning the Convention of States, as per the previous point a), and to assess any further legal option useful to finalize the School foundation project.

Antonio Decaro
 Mayor Bari Città Metropolitana

Bari, May 20th 2017

Giovanni Mummolo
 President European Academy
 for Industrial Management

Francesco Paolo Sisto
 Deputy of the
 Italian Parliament

Domenico De Bartolomeao
 President, Confindustria Bari

(Signatures)
 Giovanni Mummolo
 U. Thy Burmeister
 Bern. Huck
 Aytac Isik
 Lorenzo Desantis
 Vito Pertosa
 H. Van Landeghem

Bernhard Huck
 Head of IE & and Production
 Systems - Volkswagen

Eugenio Di Sciascio
 Rector
 University P. of Bari

Aytac Isik
 VP, ESTIEM

Lorenzo Desantis
 CEO, AQP

Vito Pertosa
 President
 Mermec Group

H. Van landeghem
 On behalf of the Rector
 University of Ghent

Contact address: Hendrik Van Landeghem, Ghent University, Dept. of Industrial Management, Technologiepark, 903, B-9052 GENT, Belgium. Tel:+32 (475) 25 94 43. e-mail: hendrik.vanlandeghem@ugent.be

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**Warsaw University
of Technology**

RECTOR

Warsaw, 5 September 2017

European Academy for Industrial Management
Hendrik Van Landeghem
Gebroeders Nachtergackestraat 23 bus 3
B-9800 Deinze
Belgium

To whom it may concern

Letter of support

I, Professor Jan Schmidt, PhD, DSc Rector of Warsaw University of Technology endorse an idea and strategic aims of European Graduate School of Industrial Engineering and Management and personal engagement in this initiative Prof. Krzysztof Santarek, PhD, DSc of the Faculty of Production Engineering, Institute of Production Systems Organisation.

In particular I express my support to co-operate to its foundation and operations within our capabilities and resources offering higher education for students and industry employees.

Yours Sincerely,

Prof. Jan Schmidt, PhD, DSc



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e-mail: jms@pkekt.pw.edu.pl

TU TECHNISCHE
WIEN UNIVERSITÄT
WIEN
TU Wien | Institut of Management Science
Theresianumgasse 27 | 1040 Vienna, Austria

To:
Prof. Ing. Gianni Mummolo,
President of European Academy for Industrial
Management, Politecnico di Bari - Italy
Viale Japigia 182
70126 Bari
ITALY

Fraunhofer
AUSTRIA

Fraunhofer Austria Research GmbH
Theresianumgasse 27
1040 Wien
<http://www.fraunhofer.at> | www.tuwien.ac.at

Univ.-Prof. Dr. Ing. DI Prof. eh.
Dr. h.c. Wilfried Sihn
Tel.: +43-1-58801-33041
Fax: +43-1-58801-33054
sihn@fraunhofer.at | sihn@imw.tuwien.ac.at

Vienna, 12 April 2017

Subject: Letter of Support for the Project of European School in IE&M

Dear Prof. Mummolo,

I would like to take this opportunity to express my full support, on behalf of Vienna University of Technology and Fraunhofer Austria, for initiating and pursuing the project of European School in IE&M.

Upon completion, the European School in IE&M will be a gathering place for young talents and professional educators towards training new generation of highly skilled industrial engineers and managers. In fact, the core concept of the European School in IE&M is well aligned with the Bologna Process and the European Higher Education strategies for Europe-wide cooperation of universities, industries and stakeholders towards enhancing the quality and relevance of learning and teaching, and fostering the employability of graduates throughout their working lives. Moreover, the movement towards Industry 4.0 arises new demands to highly educated industrial engineers and managers who could contribute in the advancement and acceleration of digital transformation and realization of smart industries, which definitely requires systematic and interdisciplinary training and education programs.

Again, we deeply value the collaboration with AIM and fully support you in your endeavour to establish the European School in IE&M.

I wish you all the very best in this important effort.

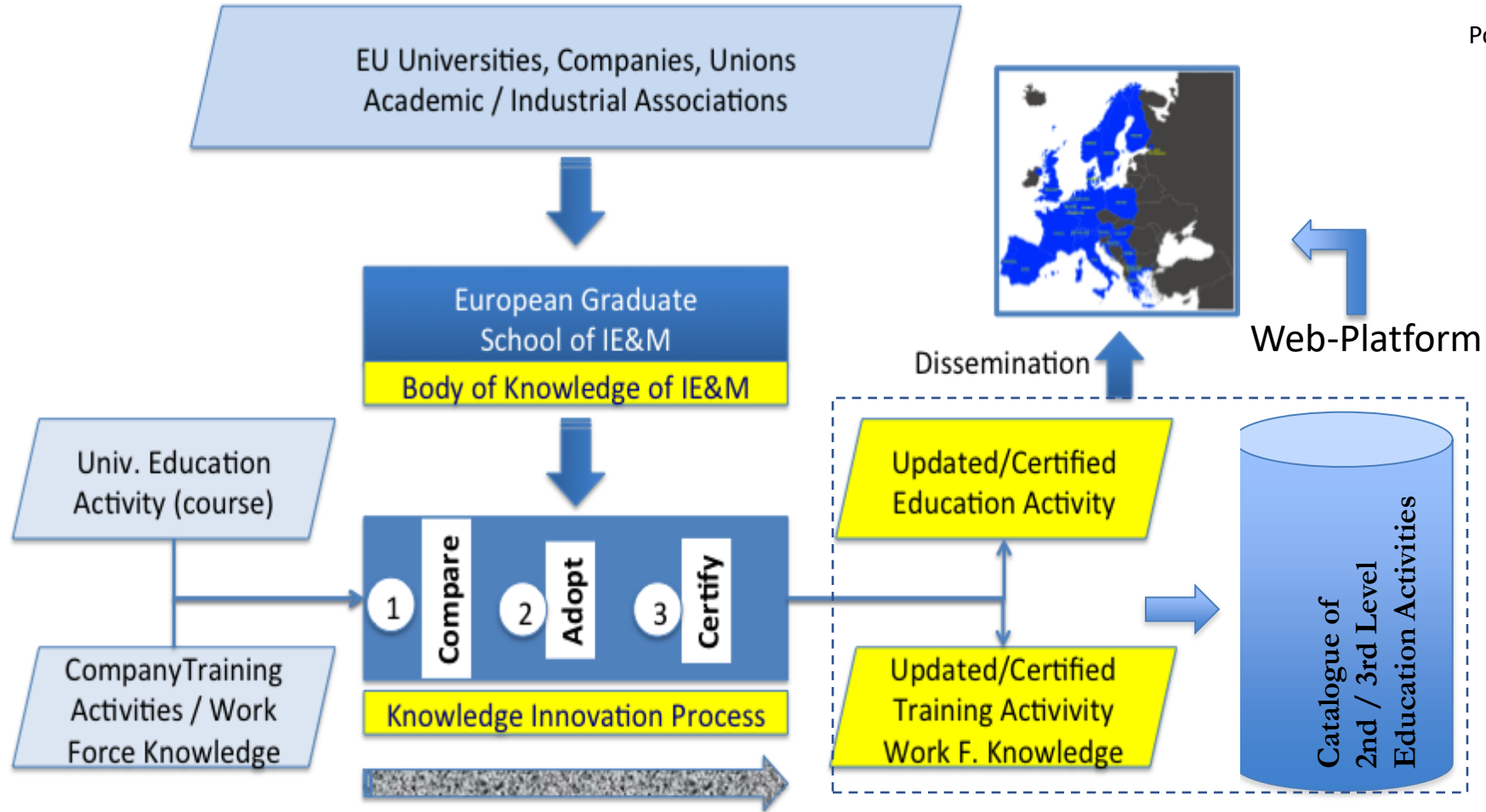
Sincerely yours,

Univ.-Prof. Dr. Wilfried Sihn

(CEO of Fraunhofer Austria Research GmbH / Chair of Institute of Management Science, Vienna University of Technology)

The Role Model of the European Graduate School of IE&M

The Role Model of the European Graduate School of IE&M



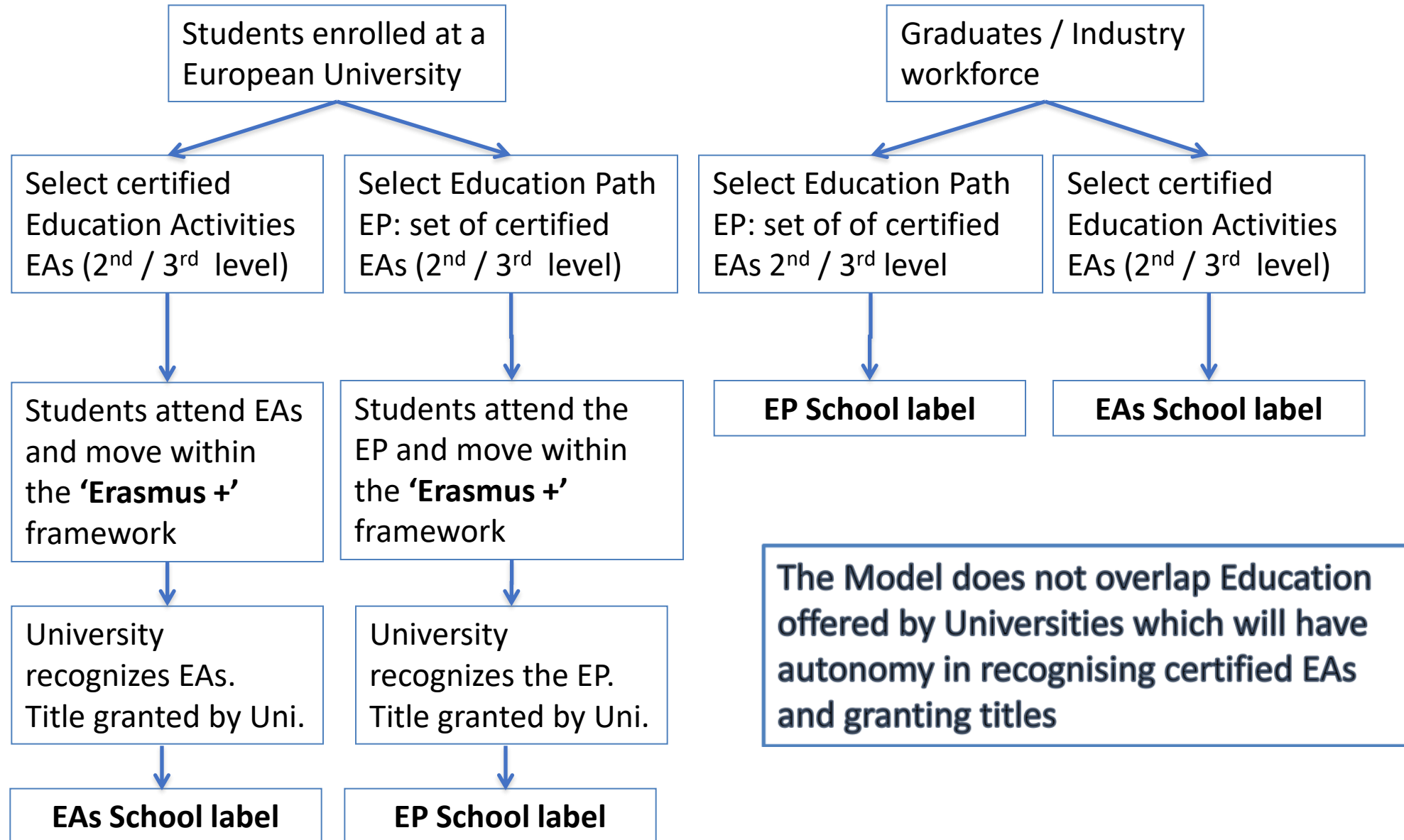
A Win-Win University / Industry Strategy

Founded in 1987

Prof. Giovanni Mummolo
AIM President
Polytechnic University of Bari

Who will Benefit from the School: University Students and Industry Staff

Who will benefit from a New Model

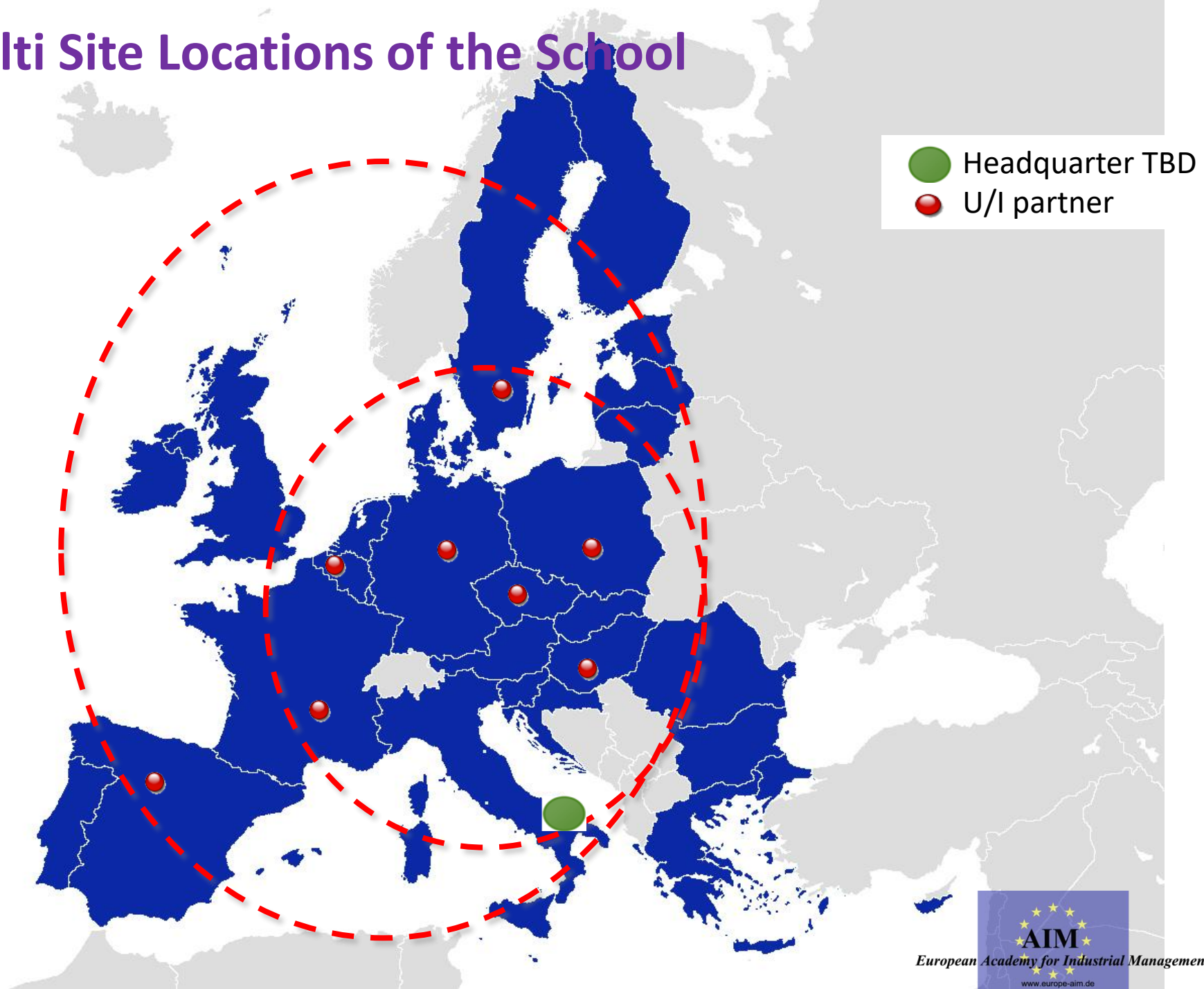


Founded in 1987

Prof. Giovanni Mummolo
AIM President
Polytechnic University of Bari

Logistics of the School

Multi Site Locations of the School



The 2019 Financial Law of the Italian Govern

Law n. 145 –
30.12.2018
(2 M€ - 2019)

Supplemento ordinario alla "Gazzetta Ufficiale", n. 302 del 31 dicembre 2018 - Serie generale

Spedite: abb. post. - art. 1, comma 1
Legge 27-02-2004, n. 46 - Filiale di Roma

GAZZETTA UFFICIALE DELLA REPUBBLICA ITALIANA

PARTI PRIMA

Roma - Lunedì, 31 dicembre 2018

SI PUBBLICA TUTTI I
GIORNI NON FESTIVI

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AMMINISTRAZIONE PRESSO L'ISTITUTO POLIGRAFICO E ZECCA DELLO STATO - VIA SALARIA, 891 - 00186 ROMA - CENTRALINO 06-68001 - LIBRERIA DELLO STATO
PIAZZA S. VERDI, 1 - 00186 ROMA

N. 62/L

LEGGE 30 dicembre 2018, n. 145.

**Bilancio di previsione dello Stato per l'anno
finanziario 2019 e bilancio pluriennale per il
triennio 2019-2021.**



Art. 1, c. 244. Per la promozione del progetto della Scuola europea di industrial engineering and management è autorizzata la spesa di 2 milioni di euro per l'anno 2019 per il finanziamento di progetti innovativi di formazione in industrial engineering and management in Italia.



Location of The Graduate School of IE&M at the Historical Center of Bari

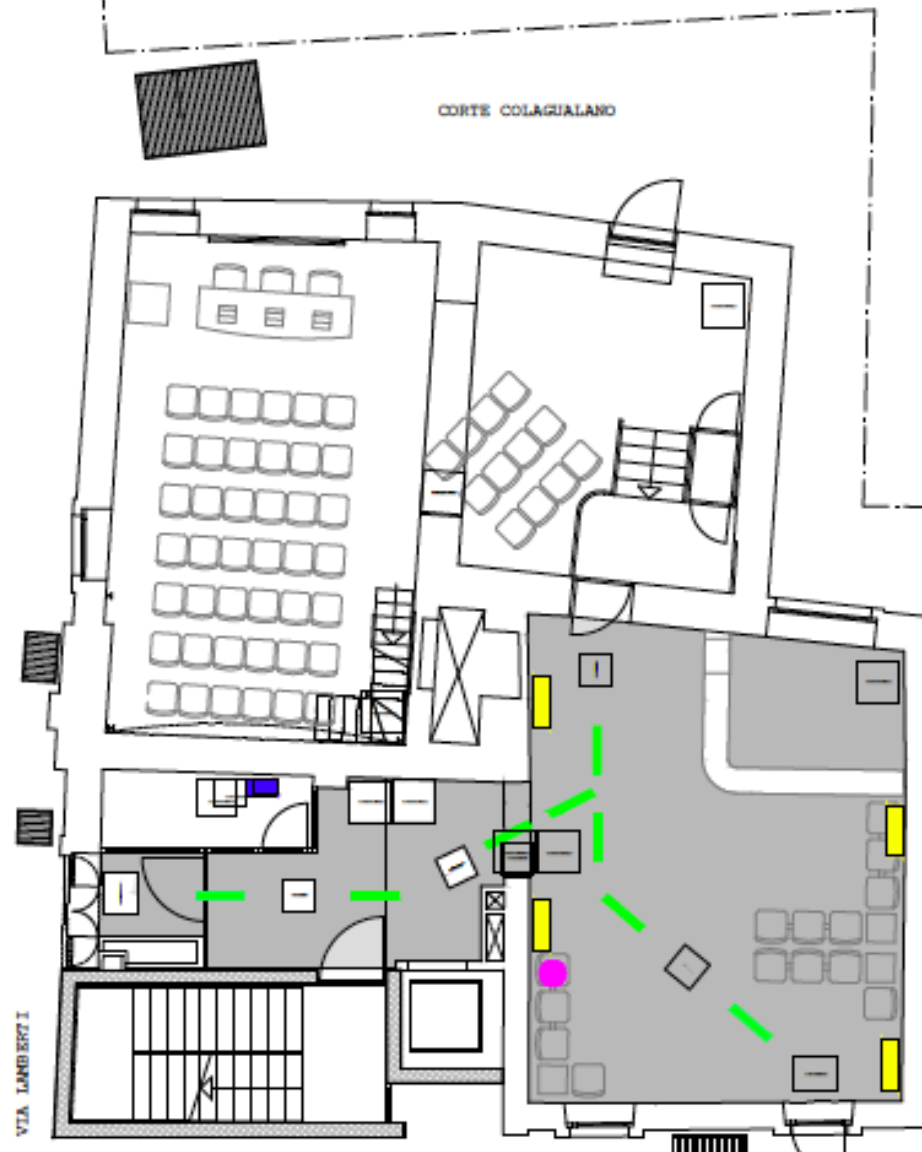


Location of The Graduate School of IE&M at the Historical Center of Bari

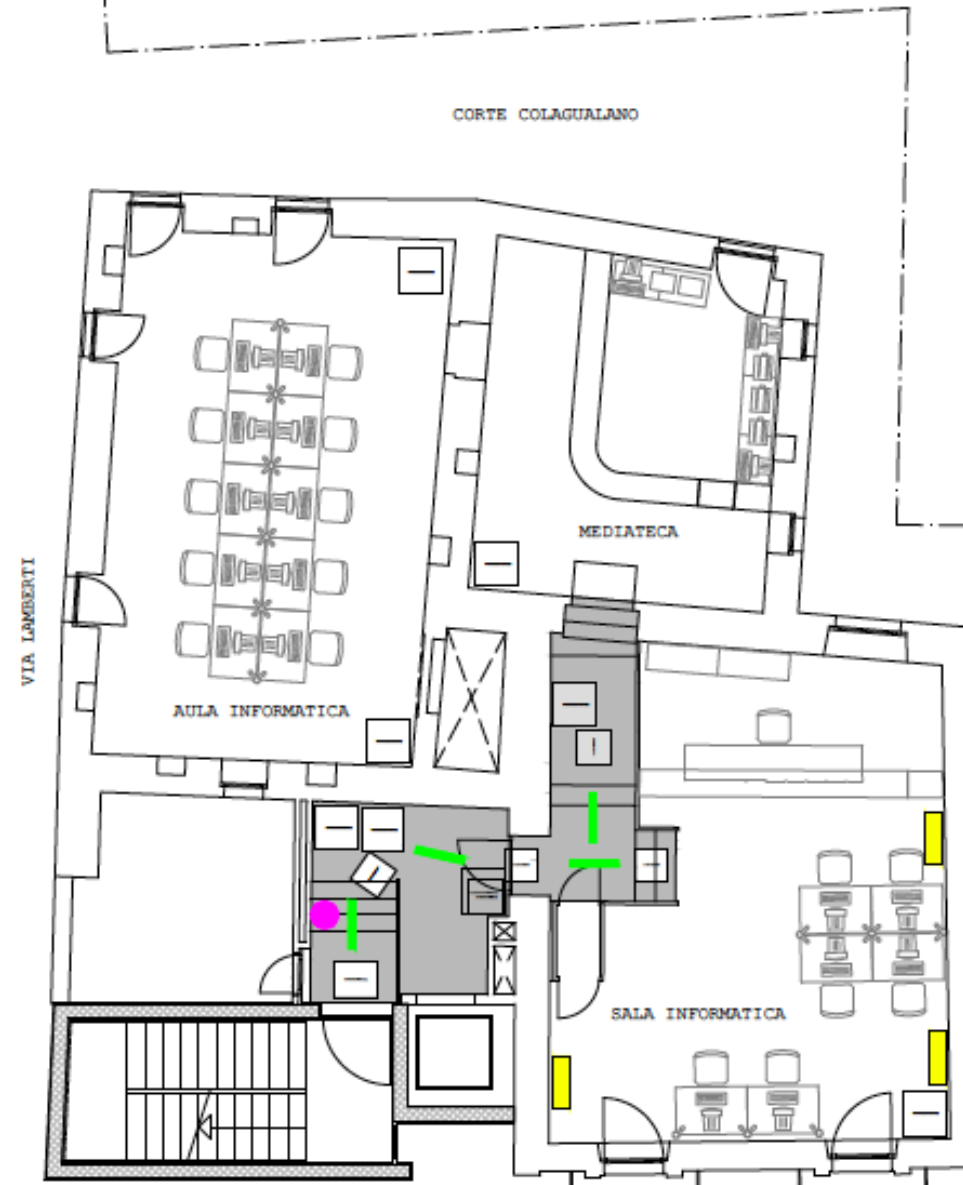


Location of The Graduate School of IE&M at the Historical Center of Bari 'Isolato 47'

POLITECNICO DI BARI
ISOLATO 47
PLANIMETRIA PIANO TERRA



POLITECNICO DI BARI
ISOLATO 47
PLANIMETRIA PIANO PRIMO



Layout of the Poliba-Site planned to locate The Graduate School (Bari Historical Center)

Founded in 1987

Prof. Ing. Giovanni Mummolo

AIM President

Professor of Polytechnic University of Bari

A Governmental / University / Industry ‘Participative Foundation’ to manage ‘The European Graduate School of IE&M’

Italian Ministries of Economic Development, University & Research, Economy & Finance

Political Strategies on 'University/Industry'
Higher Education to generate Human Capital
for Growth and Competitiveness of Companies

Reports on Human Capital generated
Consulting Body to Innovate HE in IE&M
according to International Standards of
Excellence in Higher Education

Foundation (F) 'European Graduate School of IE&M'

1

Define

Innovative Higher
Education BoK &
Curricula in IE&M
consistent with
Education needs of
Companies

2

Offer

Education Curricula / Courses in
IE&M by University / Companies to
Accademic or Vocational Education
Paths.

3

**Finance /
Certify**

Innovative Education
Curricula or Courses
consistent with the BoK
as per (1).

4

Disseminate

Innovative Education
Products, also in digital form,
by specific agreements, also of
economic nature, between the
Foundation & University
/Industry Partners.

Founding Members of the Governmental Foundation

Founding Members

- Presidency of the Italian Ministries Council
- Minister of Economic Development
- Minister of Education, University and Research
- Minister of Economy and Finance

Endowment Fund (Financial Law)

Supporting Members of the Foundation

Supporting Industry Members

- European Large Enterprises
- SMEs
- Enterprises' Foundations
- Employers / Employees Industrial Association
- Industrial Unions
- ...

Endowment Fund + People /
Equipment / Facilities / Network

Supporting Institutional Members

At current:

- Polytechnic University of Bari
- Polytechnic of Milan
- University of Bologna
- Polytechnic University of 'Marche'
- European Academy for Ind. Management
- European Students of Ind. Eng. & Manag.
- European Universities ...

People / Equip./ Facilities / Netw

Benefits for Companies as 'Supporting Members' of the Foundation

- ✓ Involvement in identifying the BoK in IE&M
- ✓ Knowledge of Available Human Capital in IE&M
- ✓ Academic / Training Programs for Company Employees
- ✓ Internships (Master – PhD Thesis) on Company Subject
- ✓ Public Co-financing of the Foundation



Summary



1.The Erasmus + project

- Define, Test and Validate ‘A New Model of Higher Education in IE&M’
- Ready to start (next Nov 1st)

2. The European Graduate School of IE&M

- Organization able to operate / replicate the new model
- Co-financed by the Italian Govern by the 2019 Financial law
- The Statute of the Foundation is under preparation (role & requirements for Universities, Associations, and Companies)

I expect AIM and ESTIEM will fully get involved in both Projects !



‘Non Scholae sed Vitae Discimus’

Epistulae ad Lucillum, Epistula CVI

Lucius A. Seneca (Cordoba 4 b.c. – Rome 65 AD)