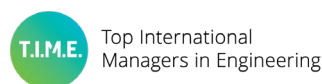


# T.I.M.E. Projects 2022-2023



## Application Form

Deadline for submission: **December 14<sup>th</sup>, 2021**

Please submit the completed form to: ***gwenaelle.guillerm@time-association.org***

Applications must be submitted by e-mail only. You are required to attach a scanned copy of a Letter of Support signed by the Head of your Institution.

Please remember that T.I.M.E. promotes international cooperation and therefore only applications from consortia of at least three T.I.M.E. members in three different countries can be accepted.

You will be notified of the results of the selection after the Advisory Committee meeting on **February 2022**. Projects run from February 2022 to January 2023.

Title of Project	
Collaborative Projects for Top Industrial Managers in Sustainable Industry 4.0	
Acronym (if any)	
Time2Go4.0	
Details of the Applicant	
<b>Name of Institution(s)</b>	University of Mons (Belgium)
<b>Faculty/Department/Office</b>	Faculty of Engineering Department of Machine Design and Production Engineering
<b>Contact Person/s and Details</b>	Prof. Pierre Dehombreux pierre.dehombreux@mons.ac.be Rue du Joncquois 53 B7000 Mons (Belgium) +32 499779900
Summary of the Project (max. 2000 characters)	
<p>The training of engineering students with respect to product design and management of production systems is challenged with technological and societal breakthroughs:</p> <ul style="list-style-type: none"><li>- industry 4.0 has induced fundamental changes into industrial practices, regarding performance of their assets;</li><li>- the sustainability development objectives have emerged as the major planetary outcome; they are integrated more and more in the engineering curricula</li></ul> <p>Project-based learning in engineering is not new: most of product design projects still rely on a strong “classical” technological basis (selection and dimensioning of elements, manufacturing constraints, performance analysis, ...). Multidisciplinary approaches for complex systems have emerged (see <a href="https://mupic.eu">https://mupic.eu</a>) to include additional aspects as market analysis, industrial design, team management in the concurrent design process.</p> <p>The teaching methods have been turned upside down with the coronavirus pandemic: project-based learning with distance constraints has demonstrated limits but also a new perspective with the need to be more focused on this mode of interaction as telework will not be the exception from now.</p>	

**This project aims to focus on how design projects for products, machines and production systems should be redefined in this new hybrid context, integrating the new opportunities of the 4.0 industry and the challenges of sustainable development.**

To contribute to this objective, a limited group of labs involved in design is willing to collaborate onto the following objectives:

- identification of new skills and original training activities for master's students in this new context, with keeping in mind that we focus on the fundamentals of our association Top International Managers in Engineering, that is that science, technology and management must be balanced or, at least, represented)
- organizing design challenges on basis of industrial proposals with possible different training activities:
  - o definition of collaborative design challenges for students in multicultural teams
  - o definition of an offer of internships in industry with a local academic supervision with topics related to 4.0/ sustainable objectives (each partner should provide 2 "top level" internships in industry)
  - o offer of internships in university labs to support research profiles as well.

#### **Reason for applying for T.I.M.E. funding (max. 2000 characters)**

The objective is to contribute to the objectives of the T.I.M.E. network, that is the training of "Top International Managers in Engineering". We need to develop specific learning pathways to allow our best students to undertake top international careers in management with a strong engineering background. The 4.0 and sustainable dimensions must now be embedded in our learning activities. Within T.I.M.E. members, we all need to discuss about the right "science/technology/management" balance to train our champion engineering students in this multidisciplinary design project. New activities enriching our programmes through international collaborations must be developed. The international dimension of engineering activities is supported through collaborative, intercultural, design projects. International engineering projects require the ability to work remotely, using modern means of communication and concurrent design tools.

As subjects will be proposed by our industrial partners, these enterprises will have the opportunity to know much more about the T.I.M.E. association and are expected to interact with us to welcome our students and graduates for international challenges, during internships or recruitments.

This project is closely related to the core business of our association, and this objective must be instructed as a proposal for further dissemination for all members of our network. A limited number of institutions which have some experience in project-based learning on product design in a context of 4.0 industry will foster a better efficiency before launching a general proposal, with inclusion of non-European members as well. Added value for academic and research collaboration in this group of 6 institutions is obvious since all are involved in design and manufacturing of industrial products, motivated by project-based learning activities and will share their own peculiarities (CVUT was a pioneer in mechatronics 4.0, Politecnica Madrid has a wide offer of learning activities in relation with sustainability, ...).

This will be a long-term impact for our association as the internet platform that will be opened to all T.I.M.E. members at the end of the project in January 2023 to facilitate the definition of collaborative projects.

#### **Expected outputs of the project**

##### **Main outputs:**

- a) A framework for organizing design projects among students from different universities, in a multidisciplinary approach, with 4.0 and sustainable challenges in perspective. How to efficiently implement such hybrid multicultural projects? Which are the new skills and

outcomes for project-based learning activities due to the 4.0 evolution and sustainability issues?

- b) The feasibility of blended mobility (a combination of physical mobility (kick-off week, presentation of the final results, ...) with a virtual component (distance based design projects) facilitating a collaborative online learning exchange and teamwork will be established, with a special attention to the new fundings capabilities of the Erasmus+ program (Intensive Hybrid Programme under the Erasmus +Higher Education Mobility action).

A conference will be organized at the end of the project (January 2023) to enlarge the participation of T.I.M.E. members.

### **Secondary outputs**

A identification of courses or programs available in T.I.M.E. institutions in relation to 4.0/sustainable production (short term)

An increase in staff and student mobility between the partners (mid term);

A shared analysis of local industrial needs from the internship experience (mid term)

An increased visibility of T.I.M.E. students and institutions in companies (mid term)

A first return of experience of top "T.I.M.E." internships in industry organized for our students in an international mobility (mid and long term)

A limited number of design projects could be launched during the academic year 2022-2023 before getting the fundings from Erasmus+ for academic years from 2023-2024.

### **Target group/s and expected impact**

Master's degrees students, in mechanical, electromechanical, computer science, data sciences project would lead to new ce, economics, design, industrial engineering, sustainable development, project management. Students involved in double degrees programmes are concerned but other students as well.

If Centrale Nantes, CVUT and Politecnica Madrid have already taken part in many T.I.M.E. projects, this will be a first participation for TU Riga and UMONS.

As far as we are informed, the student mobility between the 6 institutions is rather limited, if not null. This activity putting students and their supervisors in interaction will lead to a significant increase in mobility which will increase the efficiency of the T.I.M.E. membership.

### **Sustainability of the programme**

This project will instruct further Erasmus programmes for capacity building and should be self-supporting after one year, with the initial support of the T.I.M.E. association.

As local industries will be implied with an offer of engineering/management subjects, this initiative will last as being possibly supported by the enterprises themselves.

The staff and student mobility would be supported by Erasmus+ as far as it is possible. The support of the T.I.M.E. association is necessary for the first year as the identification of the collaborative modes must be done within this project.

### **Specific deliverables**

Reports on main outputs a) and b) will be written and presented during the GA in October 2022. This should encourage to join other T.I.M.E. members to join our project.

Updated versions of these "practical guidelines" for a) and b) will be available for an open conference organized in January 2023. At that time, an electronic platform will be accessible for interested T.I.M.E. members to share their ideas, contributions and proposals for collaborative design projects.

## Total duration of the project

A general overview of the activities, outcomes and deliverables is provided on Appendix.

From February 2022 till January 2023, members will share information to prepare their common learning activities from the academic year 2023-2024.

A two-day meeting will be organized on 6<sup>th</sup> and 7<sup>th</sup> April 2022 in Mons with on the agenda:

- exchange of information about current mechanical design projects and teaching courses in relation with 4.0 and sustainable objectives;
- identification of new skills for top industrial managers in mechanical engineering;
- identification of time constraints (compatibility of periods for the learning activities)
- definition of the proposals of learning activities for students in terms of collaborative design projects, industrial traineeships or research internships for the academic year 2022-2023

(The discussion between the participating members will enable the tuning of a form to collect data for the organization of collaborative projects within the T.I.M.E. network).

A guide to ensure quality of preparation and execution of collaborative projects for engineering students including 4.0 and sustainability aspects will be written. A guide to facilitate the identification of fundings of short period mobility projects will be available. These deliverables will be presented during the T.I.M.E. G.A. in October 2022. It will be an opportunity for new members to joint this TIME2Go4 initiative and to prepare Erasmus projects for collaborative design projects.

In addition to electronic exchanges, videoconference meetings will be planned to ensure the advances of the project.

First results could be presented during the next T.I.M.E. GA. in 2022.

A web-based platform (Moodle-type) will be used to exchange course contents and project proposals between partners. An Erasmus Intensive Blended Proposal for collaborative design projects to be realized from 2023-2024 would be defined among confirmed partners.

This platform will be open to all interested T.I.M.E. members in January 2023 as the final deliverable produced during the duration of the project.

A closing session would be scheduled in January 2023 to ensure dissemination. A paper could be submitted for a Conference and published in a Open Access Journal.

## Planned budget

The budget is devoted to :

- the travel, accommodation, catering expenses for a two-day meeting in April 2022 in Mons (10260€, for 12 travelling colleagues and 5 local colleagues)
- the travel, accommodation, catering expenses for a one-day conference meeting in January 2023 in Europe (8040€, for 12 travelling colleagues and 5 local colleagues)
- the overhead imposed by the administration of UMONS (15% of any grant)
- dissemination expenses (3200€, cost related to open access publication fee, if the final budget allows it)

Total budget is 23 000 €

					Accommodation	Catering	Travel	Overhead	Dissemination
10 260 €	Meeting in Mons in April 2022								
	2 days of meeting								
	3 hotel nights								
	12 travelling colleagues								
	5 non travelling colleagues								
	100 € / accommodation [hotel night]				3 600 €				
	60 € / day. catering (lunch, dinner, coffee break, ...)					3 060 €			
	300 € / travel cost [flights, train, taxi transfers...]						3 600 €		
8 040 €	One-day conference in January 2023								
	1 days of meeting								
	2 hotel nights								
	12 travelling colleagues								
	5 non travelling colleagues								
	100 € / accommodation [hotel night]				2 400 €				
	60 € / day. catering (lunch, dinner, coffee break, ...)					2 040 €			
	300 € / travel cost [flights, train, ...]						3 600 €		
1 500 €	University of Mons overhead (15% of any grant received)							1 500 €	
3 206 €	Open access publishing charge (estimation for European Journal of Engineering Education) (if budget allows it)								3 206 €
23 006 €				TOTAL	6 000 €	5 100 €	7 200 €	1 500 €	3 206 €

The use of Erasmus mobility grants (13000 €) for staff members is required to cover most of the travel and accommodation expenses.

A financial balance will be established after the meeting in April 2022 in order to adjust the financial support to the members.

The expectation of financial support per institution member is about 1400 € (the distribution will take into account the number of effective participants and travel costs (tourist class for flights).

All money that would not be used would be sent back to the T.I.M.E. association

### Requested financial support from T.I.M.E.

10 000 €

### Other sources of funding

Erasmus Mobility grants will be used extensively where possible.

### Members of the consortium

1. Université de Mons (Project leader)
2. Riga Technical University
3. České Vysoké Učení Technické v Praze
4. Universidad Politécnica Madrid
5. École Centrale de Nantes
6. Brandenburg University of Technology Cottbus-Senftenberg, as invited engineering school

All members have confirmed their commitment on Monday 13<sup>th</sup> December, 2021

### Key Staff (Name, Position, E-mail)

One academic representative of each member of the consortium (1-6 above) is listed:

1. Pierre Dehombreux, Full Professor, Head of Machine Design and Production Engineering, T.I.M.E. coordinator, [pierre.dehombreux@umons.ac.be](mailto:pierre.dehombreux@umons.ac.be)
2. Marina Čerpinska, Associate Professor, Department of Theoretical Mechanics and Strength of Materials, [Marina.Cerpinska@rtu.lv](mailto:Marina.Cerpinska@rtu.lv)
3. Michael Valasek, Dean, Head of Division of Mechanics and Mechatronics, [michael.valasek@fs.cvut.cz](mailto:michael.valasek@fs.cvut.cz)
4. Juan J. Marquez, Full Professor, Head of Education Innovation Group of Manufacturing Engineering, T.I.M.E. coordinator, [juandejuanes.marquez@upm.es](mailto:juandejuanes.marquez@upm.es)
5. Pascal Cosson, Associate Professor, Mechanics, Materials and Civil Engineering, [Pascal.Cosson@ec-nantes.fr](mailto:Pascal.Cosson@ec-nantes.fr)
6. Matthias Ziegenhorn, Full Professor, Head of Department of Applied Mechanics, [Matthias.Ziegenhorn@b-tu.de](mailto:Matthias.Ziegenhorn@b-tu.de)

***Appendix: global timetable (next page)***

### Check List

- ***Attach a signed Letter of Support from the Head of the Applicant Institution*** ·

***Send this form and supporting documents by e-mail only to:***

**[gwenaelle.guillerme@time-association.org](mailto:gwenaelle.guillerme@time-association.org)**

**THE DEADLINE FOR THE SUBMISSION OF APPLICATIONS IS *DECEMBER 14<sup>th</sup> 2021***

	Feb, 2022	Mar, 2022	Apr, 2022	May, 2022	Jun, 2022	Jul, 2022	Aug, 2022	Sep, 2022	Oct, 2022	Nov, 2022	Dec, 2022	Jan, 2023	Feb, 2023 and after	Sep, 2023 and after	
Management for TIME2Go4.0 partners	Information Exchange through electronic platform; identification of industrial subjects for projects		Face-to-face meeting in Mons (April 6,7)	Information Exchange through electronic platform					Presentation of TIME2Go4.0 project at GA - Call for extended partnerships among T.I.M.E. association	Information Exchange through electronic platform	Hybrid mode 1-day T.I.M.E. seminar	Information Exchange through electronic platforms			
Management for T.I.M.E members											Extension of TIME2Go4.0 to other interested TIME members				
Common teaching activities for TIME2Go4.0 partners	Disseminating the project in our respective faculties and schools Sharing the current learning activities and existing resources related to design projects		Definition of common learning activities (constraints related to learning periods) and resources	(Possible definition of distance projects involving partners students)					Web-based platform to exchange course contents, project proposals, offer of research internships and traineeships in industry between partners (1st stage)		Web-based platform to exchange proposals between T.I.M.E. members (2nd stage)	(Possible small projects between members)	Effective hybrid design projects involving students		
International Relations Outcomes	Identification of Erasmus Opportunities			Writing a Guide to facilitate fundings of (short period) mobility collaborative projects					Writing Erasmus Intensive Blended Proposal for 2023-2024 among members					Writing Erasmus Intensive Blended Proposal for 2023-2024	Writing Erasmus Proposals for next years
Deliverables for T.I.M.E. Association									Intermediate Report			Guide for collaborative engineering design projects including 4.0 and sustainability aspects	Erasmus proposals	Effective execution of collaborative projects within T.I.M.E. members	

Mons, November 16<sup>th</sup> 2021

Université de Mons

**The Rector**

Place du parc 23  
7000 Mons  
+32(0)65 37 30 01  
rectorat@umons.ac.be  
www.umons.ac.be

Mrs. Gwenaëlle Guillerme  
Secretary General of the T.I.M.E. Association

gwenaelle.guillerme@time-association.org

Subject : Letter of Support for the Project TIMEtoGo4.0 coordinated by the Faculty of Engineering of the University of Mons


Dear Mrs. Guillerme,

The object of this letter is to inform you that I fully support as Head of the Applicant Institution the proposal submitted in the context of the T.I.M.E. Call for Projects 2022 by Prof. Pierre Dehombreux (Faculty of Engineering), whose subject is “*Collaborative Projects for Top Industrial Managers in Sustainable Industry 4.0*”.

It is well understood, if the project is selected, that an interim report will be addressed to the Advisory Committee in June 2022. A report on outcomes will be presented to the 2022 General Assembly in Brisbane. The final report will be due for the end of the contractual period in January 2023.

We thank you very much for the positive impact of the T.I.M.E. projects on the internationalization of our University.

Best regards,



Prof. Philippe DUBOIS,  
Rector of UMONS