PLACIS

International Collaborative Training Platform for Systems Engineering

PLACIS AND SYSTEMS ENGINEERING

Systems Engineering and PLACIS

"Systems engineering" : one of the most requested profiles for engineers.

Systems engineers master a variety of technical and human-centered disciplines. They are members or managers of international teams in charge of complex engineering projects.

PLACIS is an innovative training scheme for future Systems Engineers as realistic as possible :

Based on the concept of Problem Based Leaning (PBL), PLACIS projects are proposed by industrial companies and are carried out by a team composed of students from two universities in two countries.

PROJECT FORMAT

Format of PLACIS projects -1-

- PLACIS projects offer most of the elements cited by Ward (1) in his paper "Common elements of capstone projects in the world's top ranked engineering universities":
  - strong group project emphasis,
  - emphasis on applied design projects,
  - active involvement of an industry stakeholder.

1. *Common elements of capstone projects in the world's top ranked engineering universities. Thomas A. Ward, European Journal of Engineering Education, Vol. 38, Number 2, Page 211, May 2013*

PROJECT FORMAT

Format of PLACIS projects -2-

- In addition, for each project, two universities in two countries are involved and the student team is international and is based in two different locations : the students collaborate at distance.
- The format is flexible and depends on the stakeholders involved in the projects : HEI's, Industry, …
- PLACIS projects are part of the curriculum and generally placed in the fifth year of higher studies – second year of the master - and correspond to an amount of 4 to 15 ECTS credits.

GOUVERNANCE

Management of PLACIS

SUPMECA coordinates PLACIS, in the framework of Collegium Ile-de-France, an Institute in the Paris area composed of 3 Engineering Schools: SUPMECA (mechanical and industrial engineering), EISTI (Computer science engineering) and ENSEA (Electronic engineering).

COLLEGIUM ÎLE-DE-FRANCE

- 2400 students
- 5 research labs
- More than 100 foreign academic partners
- More than 400 academic partners

SUPPORT

PLACIS is supported by the French Agence Nationale de la Recherche under « Investments for the future » program with the reference ANR-11-IDFI-0029.

ONGOING PROJECTS

Automotive Industry
Modelling of hybrid vehicle

BOSCH
Invented for life

Hochschule Esslingen
University of Applied Sciences

Automotive Industry
Modelling of a test bench for electric or hybrid vehicle

Consiglio Nazionale delle Ricerche

Automatics
Modelling of an automation system

FESTO

Hochschule Esslingen
University of Applied Sciences

ONGOING PROJECTS

Aeronautics
Design of de-icing system for aircraft wing

Aeronautics/Energy
High altitude airborne wind turbine

Aeronautics

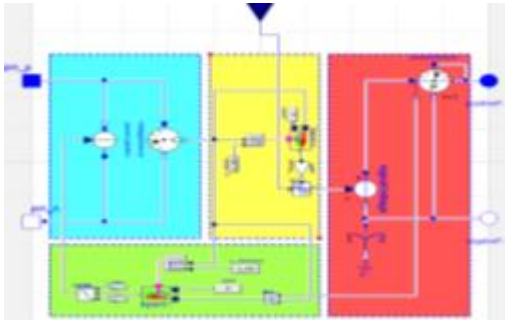
ONGOING PROJECTS

ONE EXAMPLE FROM A PROJECT

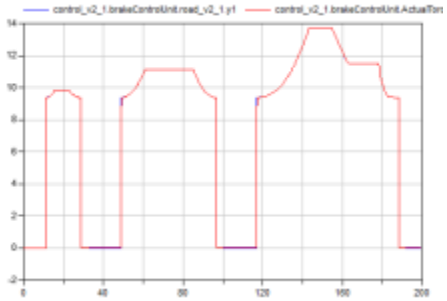
- **Modelling of a test bench for electric or hybrid vehicle**

SysML (Artisan studio)

Functional Model (CATIA V6)



Modelica (Dymola)



Simulation a driving cycle (Dymola)

TOOLS OF COLLABORATIVE ENGINEERING

Working communities and file management

Microsoft SharePoint 2010

3DSWYM

3DSwYm (See What You Mean) is a collaborative platform 2.0 : each PLACIS Project group has a dedicated SwYm community.

Each community manages the documents of the project, has a dedicted Sharepoint (Microsoft), and can organize meetings, videoconferences, launch discussions…

webex

skype

MODELLING TOOLS

All staff and students working on a PLACIS project can have access to Catia V6 including all 4 levels : « Requirements, Functional, Logical et Physical »

Other tools are available if required by the project :

INTENDED LEARNING OUTCOMES

The intended learning outcomes - LO's - are both technical and non technical (transferable skills). They are in line with those listed in the EUR-ACE Framework Standards and with the standards of the French Accreditation Agency CTI – Commission des Titres d'Ingénieur.

INTENDED LEARNING OUTCOMES

from CTI's standards:

"Understanding of engineering methods and tools: identification and resolution of problems, … collection and interpretation of data, use of computing tools, analysis and design of systems,

Capacity to join an organization, … self-awareness, team spirit, commitment and leadership, project management, project coordination, communication with specialists and non-specialists alike,

Aptitude to work in an international context"

INTENDED LEARNING OUTCOMES

PLACIS projects are expected to contribute to the acquisition of the following skills: intercultural communication and language skills, ability to plan, to work in teams, to collect, interpret and use data, practical experience with simulation tools and the most novel tools of systems engineering (CATIA V6, Dymola, Artisan Studio, ANSYS, Matlab Simulink, Modelica…), with the tools of collaborative engineering (3DSwYm, Sharepoint, Webex, Skype). Of course the students also gain experience in interdisciplinary communication as well as scientific and technical knowledge in the area of their specific project.

FIRST FEEDBACKS OF THE STUDENTS

In the first student surveys the students quoted the following benefits:

- An opportunity to develop autonomous-learning
- An opportunity to work with foreign partners having different approaches
- An opportunity to learn and take advice from foreign students, teachers and industrial partners

PRESENT ASSESSMENT STANDARDS

- Assessment - by teaching staff and industrial partner - of commitment, motivation, autonomy, organization skills and management of the project
- Deliverables
    * Technical report
    * Final presentation
    * Models developped
    * Gantt diagrams
    * Minutes of intermediate meetings
    * Posters
-ECTS Credits
    * 4 for small projects, 100 hours per student
    * 15 for long projects, more than 300 hours

PRESENT AND FUTURE

From PLACIS inception, a total number of 70 students, 12 teaching staff and 9 supervisors from industry were involved in 6 PLACIS projects.

In parallel, discussions and trials are in progress regarding in particular the integration of the projects in the curricula, the assessment methods of the achievement of the LO's and the surveys of all stakeholders.

THE FUTURE

More projects. More partners, academic and industrial.

New assessment methods, including individual and team self-assessment.

CONTACT US

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