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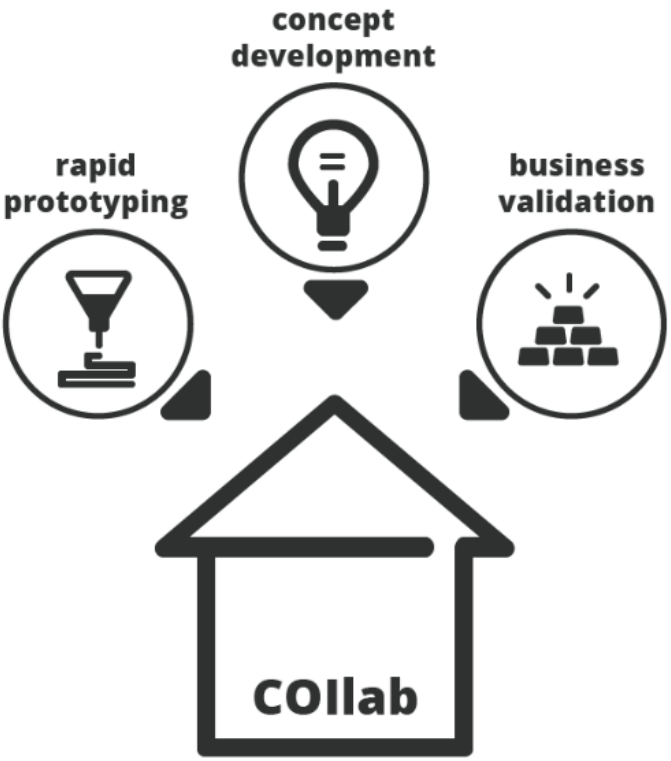
OIPEC
Open Innovation Platform
university - enterprise
collaboration

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



COILabs Handbook

How to deliver training to your target group?

(For Universities)

Contents

Overview of Program

OIPEC is a capacity building project, co-funded by the Erasmus+ Programme of the European Union, which aims at transferring the best European practices in university-enterprise collaborations to Russian and Chinese partners.

Nowadays, bridges between universities and enterprises are needed in order to capitalize the innovation potential of all the actors; thus, it is crucial to promote strategies to approach and form durable relationships with enterprises.

The seven partners in the consortium will cooperate in order to share the experience in open innovation and set up an international platform of collaborative laboratories, places where professionals, students and researchers can work together and innovate products and services

|| Operations of "Collaborative Open Innovation Labs" for multi-country co-creation activities in developing, validating concept and management of new product/service at other (means cross-border) markets. ||

The goals of the project were:

- The creation of a platform that supports partnerships between universities and enterprises by providing easy access to

universities' expertise for small and medium enterprises

- The increase of the collaborative activities between universities and enterprises, with the aim of generating novel products/services or improving existing ones.

Our Mission

Our mission is to improve intensity and scope of universities' local and international relations with enterprises by expanding collaboration to mutual partnerships in new product/services development. This type of partnership are align with most SMEs business objectives and require intensive exchange of expertise between parties along collaboration.

Our objective is to create a new type of platform for university-industry partnership based on collaborative open innovation paradigm and design management practices to develop new or improved customer desired product/services. Collaborative management model, co-creation in new products/service/business model and network of OIPEC Partner University COILabs provide a new and unique competitive advantage for university-industry partnership.

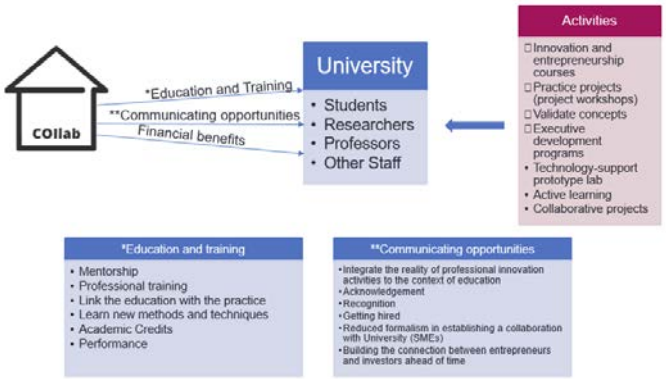


Figure 1 What COILabs offers to a university?

Participant Profile

1. *Company Profile:* The COILabs relies on in depth analysis, profiles development, and step by step relationship building with stakeholders among whom there are sources of sustainability resources and potential clients: federal and regional governments, corporations and SMEs, wealthy entrepreneurs. Provision is that the outcomes with the OIPEC will be designed to reflect stakeholders/clients' needs.
   The market sectors focused in COILabs are: Manufacturing,Service/Utilities,Agriculture/Food, ResearchSector, Mechatronics and other Technology-related.
   This innovation platform provides comprehensive support for enterprises in NPD in R & D, Product Planning and Innovation departments of a company.

   The 'Executive curriculum' (seen later), is for professionals in product development, junior management, Mid-level management, high level management and business development.

2. *Students' profile:* The curriculum is designed keeping in mind the diverse needs. Therefore, students from business, management, engineering/ design and marketing could take part in COILab projects.

OIPEC curriculum overview

The platform consists of three focus areas shown in Figure 2. For full curriculum see *Appendix A: COILabs Curriculum*.

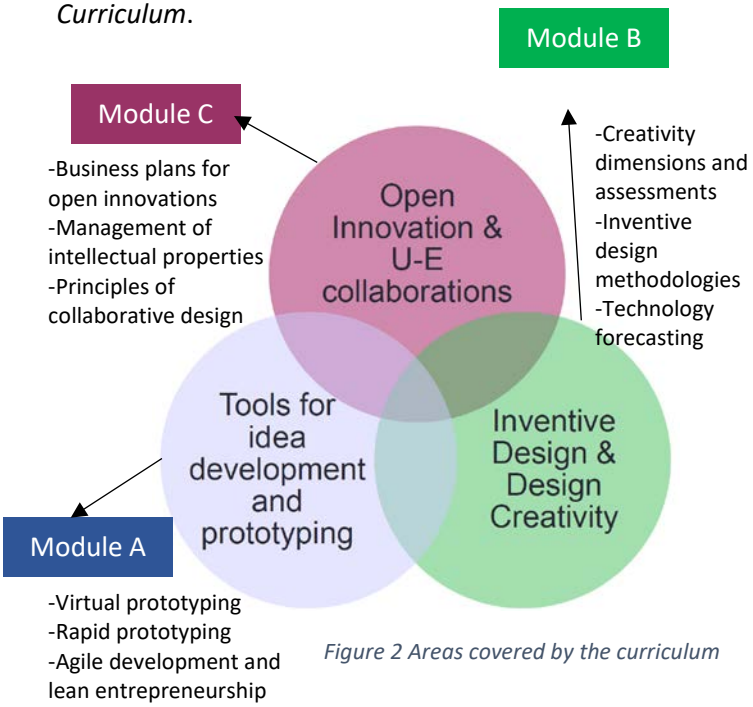


Figure 2 Areas covered by the curriculum

Concept development area (Module B): cantered on design thinking and raw prototyping.

Rapid prototyping area (Module A): providing both design and operational skills.

Entrepreneurial area (Module C): to support the development and validation of business concepts

Going through the curriculum

Structure

The structure of the curriculum follows the areas defined by OIPEC consortium members. The main module (A,B,or C) with the sub module and learning units are given. The curriculum also consists of ETCs, knowledge and skills related to that learning unit.

R1= OIPEC internal reference (R) and the reference number

Rex95= External Reference and the reference number

A1.1= Unit of sub module and the learning outcome number

A1= Module alphabet and the unit of sub module in that module

A= Module alphabet

	Sub module	Learning Outcome	ECTS	Knowledge	Skills	References
Additive Manufacturing						
Module A: Tools for idea development and prototyping		A1.1 Definition and history of AMT	0,5 (EP)	• S/he knows the definition of AMT. • S/he knows the essential historical milestones of AMT development. • S/he knows the current AMT technology principles. • S/he knows the differences between AMT and CNC machining.	• S/he can compare AMT to classical production. • S/he can illustrate the historical development of AMT.	R1,R23,R29 ,R30,Rex9, Rex10, Rex11, Rex12, Rex13, Rex14, Rex15, Rex16, Rex18, Rex19
	A1 Basic principles of additive manufacturing technologies (AMT)	A1.2 Analysis of the product drawing (detail), the possibility of achieving the quality requirements of parts, assessment of subsequent machining.	0,5	• S/he knows Main documents of the ISO, regulations and standards of the organization for the development of design and technological documentation; Computer software, including computer-aided design and manufacturing	S/he identifies • To design digital models of products • To review problematic elements of the design model and fix the mistakes	R2, Rex17, Rex94, Rex95 Rex100
		A1.3 Introduction to 3D scanning	1	• S/he applies types of contactless digitizing systems and their applications; the principle of operation of the various systems contactless digitizing; rules for the implementation of works on contactless digitalization for industrial purposes; • S/he prepares requirements for computer models intended for production in plants-synthesis	S/he selects • the desired non-contact digitization, in accordance with the task; • to carry out preparatory work, commissioning, calibration systems, contactless digitizing; S/he analyses • proofreading and correction of errors in digital models; • the accuracy of digitizing by comparison with object; • to model the required objects intended for the subsequent	R2, R31, R32 Rex96, Rex96

Figure 3 Curriculum structure details

References in the Curriculum

The references are named *Rex or R followed by a number* as given in the curriculum while uploading on beep.

- Only 'R' followed by a number means the references are internal, made and shared within OIPEC consortium. Materials made by EU partners for Non EU partners), see Figure 3.
- Whereas 'Rex ' means external reference, books, papers articles having public, private, limited access or need to be purchased)
- Both internal and external available references are uploaded on the beep portal of PoliMi.

Executive program

Developed education materials provide competences for enterprise managers in new product development and in managing university-enterprise relationships in open innovation platform paradigm. See Appendix B: Executive COILabs Curriculum.

This course provides the following:

- Most suited collection of the modules for the new product/service development and product/service improvements;
- COILabs develop and run trainings in the areas of management and prototyping methodologies.
- To provide a collaborative universities - enterprises platform at partner university country.

The above approach oriented to engage enterprises from the beginning of the project using bootstrapping strategy of their involvement and commitment.

Building a course

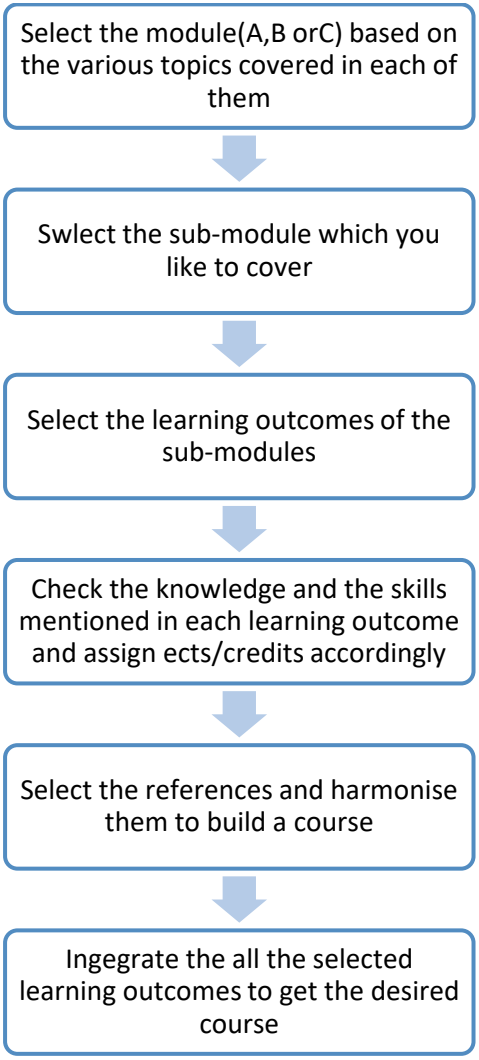


Figure 4 How to build a course

Local COILab details

Different combinations of lecture hours, practice time and self-study time could be applied as required.

The organisation of training is according to the needs of local SMEs. If you want to know more or you're interested to replicate COILabs, contact the local representatives.

COILab China

Tianjin

COILab aims at transferring the best European practices in university-enterprise collaborations to Tianjin partners. It works to provide the solutions of problems from the enterprises, and training for generating novel products or improving existing ones for the enterprises.

COILab in Tianjin aims the question-oriented collaborative activities for small and medium enterprises.

COILab in Tianjin provide "Developing the control setup additive manufacturing", "TRIZ based ideation and problem solving" and "systematic innovation" modules of curriculum.

Success story

Training targets: Teachers and students from Hebi career college

Training objectives: teachers and students are able to come up with new ideas about technical innovation during Innovation thinking training. Meanwhile, teachers and students could understand Invention patents can be presented in quantifiable, logical training methods.

Training time: beginning from 16, June, 2018, 2days.

Training contents: Quantifiable innovation and invention patents、Innovative thinking and methods

Training venue: Hebi Career College

Hebei

The National Engineering Research Center for Technological Innovation Method and Tool of Hebei University of Technology, located in Tinjin City, is authorized by Ministry of Science and Technology, China. Its objective is to enhance their innovation ability on new technology and new products, and make them have the ability to define and solve engineering problems based on innovation methodologies from the training course. We can provide:

Training teachers for universities: The training will be last around one week with the contents of TRIZ and its application. The attended teachers can open TRIZ-related courses for undergraduates (major is not limited).

Success story

Training targets: teachers from Qingdao University of Technology, China

Training objective: the attended teachers can open TRIZ-related courses for undergraduates (major is not limited), not training for innovation engineer and certificate of innovation engineer.

Training time: beginning from 14, Aug. 2017, 5 days.

Training contents: TRIZ and its application

Training venue: Qingdao University of Technology

COILab Russia

Moscow

Lomonosov Moscow State University (MSU) is the largest self-governing (autonomous) public Russian university includes 41 Faculties (14 natural-science) and 29 Research Centres, 6 000 professors&lecturers, 5 000 researchers and about 50 000 students. MSU is multidisciplinary research hub plays a key role in Russian scientific/educational network, interacts with RAS institutes, industry research centers and business directly. The development of the triangle (education-research-innovation), and in particular, innovation system is one of the MSU priorities.

COILab Moscow provides competitive advantage for MSU-industry partnership by managing of collaborative model, co-creation in new products/service/business model and network of OIPEC partner university COILabs.

COILab Moscow will carry out their activities on the base of innovationStudio Lab and provide high quality services in the three following areas:

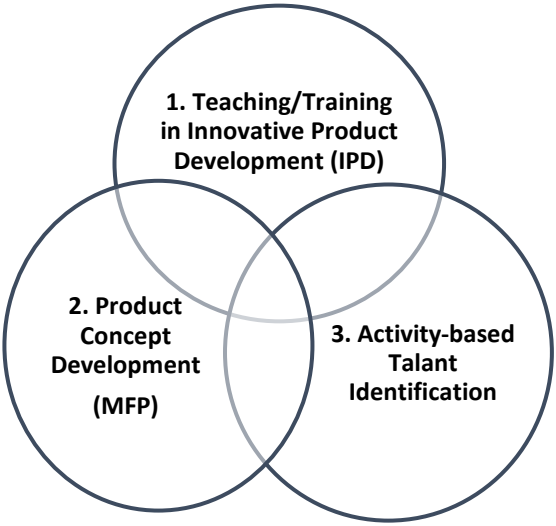


Figure 5 COILab Moscow carry out their activities in these areas

1. Teaching/Training in Innovative Product Development (IPD)

Project based learning with innovation tools Lean Startup, Customer Development, Business Model Canvas, User-Centric Design allows entrepreneurs, managers learning from critical incidents in the process of innovation product/service creation and enhance innovation and entrepreneurial competencies. COILab Moscow will teach Technology Forecasting, Design Thinking, TRIZ, Additive Technology and Prototyping, NPD and open mind and provide key entrepreneurial and manager's competencies for success in innovation development.

2. Product Concept Development (MFP)

COILab Moscow will provide high quality services for entrepreneurial teams, SMEs, mature companies based on expertise in co-creation NPD, using modern facilities with digital equipments (3D printers, milling and cutting machines, etc) for prototyping MFP (minimum feature set product). The focus of the COILab Moscow activities will be on the early (fuzzy front-end) stage of innovation product development and crossing the chasm.

3. Activity-based Talent Identification

Identifying talented and motivated students for the future job offering is an important task for companies. Innovative workshops organized by COILab Moscow uses PBL and creative techniques will enable its participants and potential employers who took part in PPPPP events to identify and select talented young generation.

Examples of project based learning activities at COILab Moscow (Russia)

OZON: Fresh cold chain development.

https://innovationstudio.ru/inside/Article.20180713084404_8490/

ROLD:Reducing humaninvolvement in dangerous and annoying interactions with household appliances

https://innovationstudio.ru/inside/Article.20180219205420_7217/

Vladimir

COILab at Vladimir State University was established on July, 12 2018. This laboratory are oriented to use resources of several scientific and researches centers of University (Additive Technology Centre, Centre of Collective Using, Student Design Bureau etc.).

The main target groups for VlSU COILab are small and medium innovative enterprises of Vladimir region. Also VlSU COILab involve in innovation process academic staff of University, PhD and master students.

VlSU COILab make two options for it's client - the customer pays for the service on their own or reimbursement is carried out through the Fund to support small and medium-sized enterprises of the Vladimir region.

The main services of VlSU COILab are development of new products/services, rapid prototyping, development of business models and business plans, consulting services.

The most important for VlSU COILab in OIPEC curriculum are Module A and Module C.

A training was offered to Pro Technologies. Attendees from the company took a course offered from 24 Dec18 to 27 Dec 18. The training took place at the campus of VlSU. The module A,B and C were covered where the overall course content was related to New Product Development and teamwork.

The largest PLM & IOT implementation projects in Russia and CIS (more than 1500 users) was done at VISU.

The schemes for future collaborations were made where Pro Technologies are proposing a project to VISU to develop with their students.

Given in figure 7, is the scheme to show the IOT connection to show various control and diagnostic equipment at different labs at VISU. The plan is to replicate this model with different enterprises.

Figure 6 Pro Technologies and VISU team

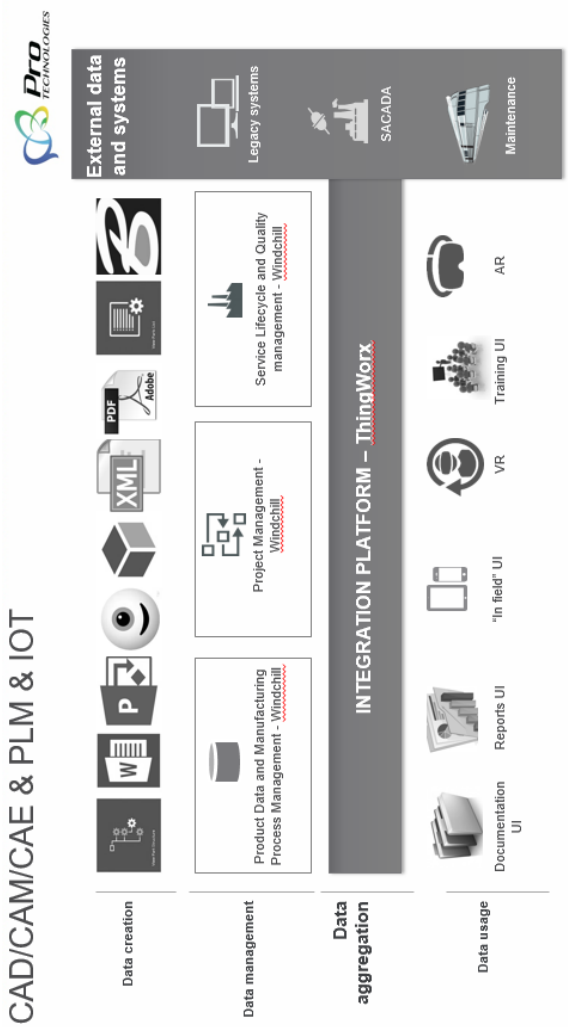


Figure 7 IOT connection to show various control and diagnostic equipment at different labs at VISU

COILab Lappeenranta

COILab Lappeenranta is a leverage for collaboration between universities and companies not only on regional level but also on global.

The core movement we try to make is to make education available and flexible using digital education technologies and to make the learning experience real, reality based, that's why teaching on corporate level or collaborating with companies to teach students is essential for digital LUT COILab. The modules offered in LUT involve:

Systematic creativity and TRIZ basics

Start Online

Inventive Product Design and Advanced TRIZ Start Online

Systematic Creativity and TRIZ- 2 days training, 1 week training (in blended form) or 2 weeks training in online format. Level Basic	Inventive Product Design and Advanced TRIZ. Advanced part of Systematic Creativity

Elements of Technology forecasting

Elements of Open Innovation

6 hours module

6 hours module

COILab LUT is a part of LUT environment where there are different collaboration models with companies:

- Industry and University develop the training together for students or company employers
- Companies get the trainings through the COIL LUT, Creativity school LUT (possibly online) or CEPHEI LUT (possibly online)
- Companies can collaborate with other universities though COILab LUT.

Collaborations vary from short consultations to longer teaching periods.

Success story

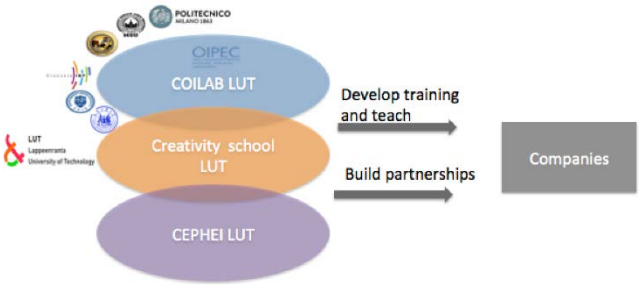


Figure 8 COILab LUT is a part of LUT environment where there are different collaboration models with companies

In the LUT Summer school-2018, Creativity school of LUT and COILab LUT offered two courses: a) ***Systematic Creativity TRIZ- Basics,*** b) ***Inventive Product Design, & Advanced TRIZ*** from **July 16, 2018 to July 30, 2018.** The courses were organized in both online and blended

format. The objective of the courses were to equip students with the systematic process of creativity and provide both theoretical competences and practical skills to generate new ideas, formulate the model of inventive (to be) solution and organize effective search/adaptation of the inventive solution.

Participants: To our surprise, ***37 learners*** from ***10 different nationalities*** ranging from various professions: from students to industry engineers, consultants, innovation managers and bankers actively participated in the courses.

Course Organization: ***Professor Leonid Chechurin with his team*** organized the course in an engaging and interactive way. The courses were divided into different modules. In the **blended format** course, short video lectures of the concepts were shared with the students before the class so that they could become familiarize with the concepts. In class, application and real life examples of concepts were discussed and demonstrated in form of games, case solving, ideathon (idea generation challenge) and team challenges. The participants were divided into small teams and assigned real life systems to improve by applying TRIZ methodologies. Four mentors helped the teams to come up with the solutions. As a final requirement of fulfillment of the course, each team presented their solution with interactive video presentation/report.

In online format, the learners' enjoyed bit more flexibility to adapt the learning process with their

schedule. TRIZ Thinkific platform was used as the learning platform. Similar like the blended format, the participants were divided into groups and the mentors assist the learners' via chat group & forums.

The students had exciting learning opportunities through a walk into the biotrail of LUT to understand the concepts of "Biomimetics" and be inspired by the design & solution in the nature as well as transfer of ideas from biology to technology. The walk was funpacked with Sunshine, swimming, boat trial and of course lots of inspiration from the nature! This time we did an experiment with a pinecone right there in the forest. We put several dry open pinecones into a plastic glass with water from the lake and in about an hour, they were already closed!

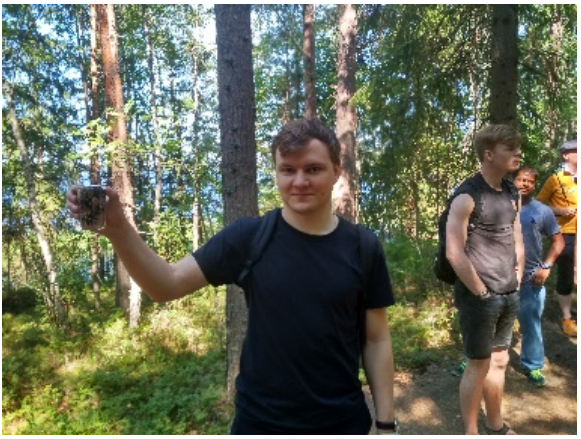


Figure 9 Students taking part in LUT COILab activity

Feedback: The final survey results illustrates, average students' satisfaction index was 4.8. 58.3% of students agreed that the course videos increased their learning performance. 27.3% students mentioned their final comments as ***"Wonderful Course Ever!"*** Most agreed that the learning outcome met their expectation.

COILab Grenoble

COILab at Grenoble Institute of Technology is a longstanding practice of company-university collaboration that take roots in the close collaboration the institute has with the highly dynamic local ecosystem of the Grenoble's area.

Thanks to our technological platform the Industrial Engineering School delivers high level training based on manufacturing and prototyping, allowing small companies and start-ups to benefit from our experience, which gives our students the opportunity to work on real cases in a win-win situation. This includes:

- Project-based learning with industrial projects

Co-innovation involving groups of students and a company in close collaboration. This can range from concept generation to design and manufacture of prototypes.

- Intensive innovation through rapid prototyping

Intensive 4-5 days sessions on an industrial topic, with problem framing, idea generation, prototyping.

- Training on additive technologies

This teaching can include realisation of 3D printers or more focused lectures on metallic additive technology.

Examples of collaboration and success stories:

MagIA diagnostics and Grenoble INP génie industriel

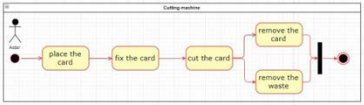
1. Collaborate to design a prototype a fast, easy and cheap chip production process

Start-Up located in Grenoble aiming at delocalising blood testing
At local medical centres, physicians in remote places or at home

A patented breakthrough innovation
Optical detection and magnetic detection of pathological markers

Advantages:
- reduction of the blood volume (5 µl)
- acceleration of test (5-15 minutes instead of 4 h)
- simplification and integration into a portable and automated device

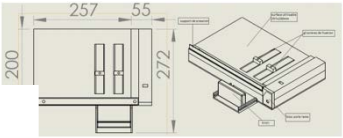
Multidisciplinary team, a dynamic environment
Students will be accompanied by several researchers, (ex-) post-docs and PhD students from several disciplines



Understand, Model

Grenoble INP

6 students worked jointly with MagIA over the academic year, for about 300 hours per student, to come up with this innovative solution.



Design, Prototype

Test

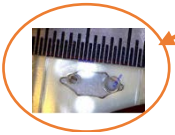


Figure 10 Design process followed in GINP COILab

2. Collaboration with Chabloz Orthopedie Company that makes prostheses for a variety of disabled people, and particularly for sportsmen.

Project: Knee prosthesis for cyclist do not allow standing position.

Goal: Design a prosthesis that allow both sitting and standing pedaling configurations and making a prototype for validation.

Means & resources:

-An existing knee prosthesis

-Experience and support of Chabloz Company

-A motivated cyclist as the final user

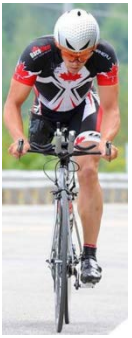


Figure 11 Final user testing of the product

COILab Milan

COIlab Milan leverages the 10+ year experience of the Italian Centre of Competence on Systematic Innovation, a centre that delivers training and coaching services on engineering methods and tools for supporting innovation.

All modules are derived from research projects at Politecnico di Milano and partner universities; after achieving a suitable maturity stage, research achievements are transformed in training modules and services for industry.

The offered training modules are depicted in the figure below.

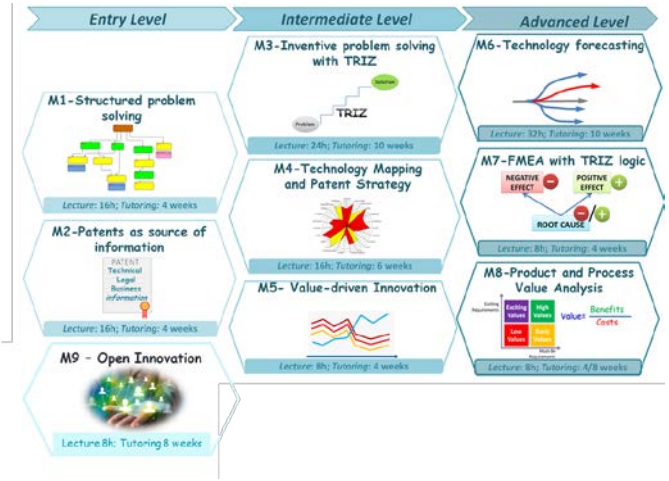


Figure 12 Offered training modules at COILab Milan

Besides the regular training modules offered by the IS centre of competence, COILab Milan offers the opportunity to start win-win collaborations with Politecnico di Milano, Dept. of Mechanical Engineering, through Open Innovation projects involving students and possibly other industrial partners according to the scheme below.

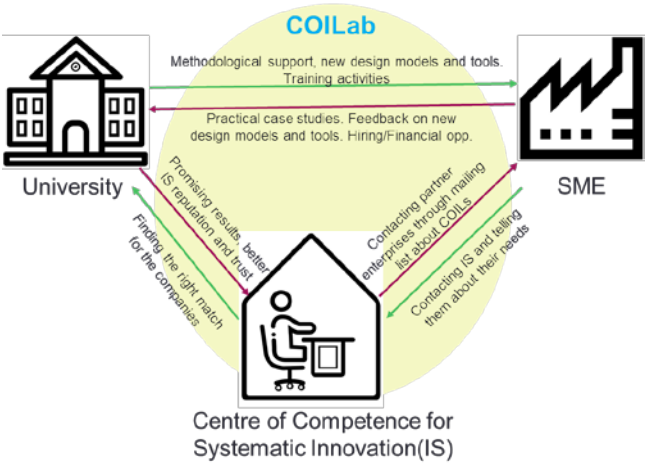


Figure 13 COILab Milan as a part of Italian Centre of Competence on Systematic Innovation

In the course of Open Innovation projects, according to the specific competencies and technological needs, the COILab Milan team will involve other departments from Politecnico di Milano, as well as the other COILabs established by OIPEC partners.

An example of one such case study

One such example of COILab activity in Milan was done between Politecnico di Milano and the ROLD Group. During the course of "Methods and Tools for Systematic Innovation" (duration: 13 weeks), the attending students had the opportunity to put into practice and deepen the theoretical elements through regular design activities on topics of industrial interest for the group Rold. This project was also extended to the Lomonosov Moscow State University students.

The collaborative activities between the technical and managerial staff of the company and students took place in the form of 13 weeks course, 3 workshops and 4 intermediate reviews. The high corporate involvement played an active role towards improving the motivation of the participants and their familiarity with the design tools learnt. The activity was also satisfactory from the industrial point of view, since some design ideas in the form of early prototypes by the groups of students, were taken into consideration by the ROLD Company for a possible industrialization.

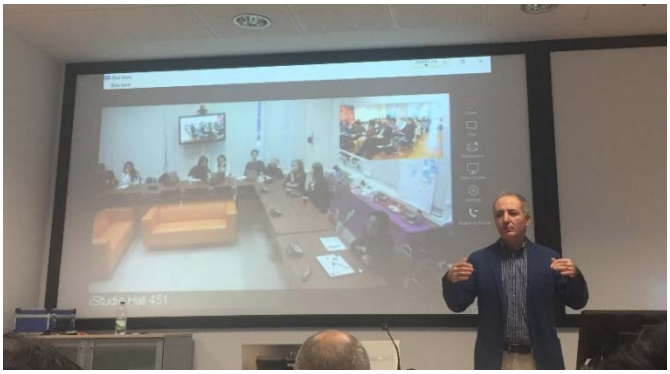


Figure 14 Prof Cascini opening the final presentation session between students of PoliMi, LMSU and ROLD company representatives

Figure 15 the best idea team being awarded by the ROLD CEO

Quality assessment

The activity of assessing the quality of COILabs experiences is a fundamental part of the COILAbs activities. As any other service offered in the market, COILabs need to give an added value to the beneficiaries and answer proficiently to their needs. Regular COILabs Quality Assessment allows to estimate the efficacy of the COILabs experience and allows to better understand specific needs of COILabs users/beneficiaries and their profiles, aiming to tailor these collaborative activities to the expected needs of their beneficiaries (companies, students).

During the OIPEC project, the following templates have been proposed to assess the efficacy of COILab activity:

- A template (*Evaluation Questionnaire*) tailored for collecting feedbacks from training activities and one template slightly different intended for collaborative workshop activities;
- A template to summarize the results of the single event (*Report Template*), filled by organizers through processing data from the collected evaluation questionnaires and data available to the organizers.

The Evaluation Questionnaires aim to collect direct insights from the participants on the just performed activity and they are organized into the following parts:

- A personal data part, in order to get the profile (gender, age, working experience, affiliation, and education) of the attendee);

- An evaluation part of the main elements of the event.

The Report Template aims to get a general overview of the performances of the activity and, in particular to monitor some Key Performance Indicators-KPIs (Total Attendees, Level of Satisfaction of participants on content, program and organization, OIPEC Curriculum elements used, Cost) related to the feedbacks of participants and to the involved resources needed to establish the event.

Hereafter, some data concerning the reports on COILabs activities carried out in the OIPEC project in Russia and China are provided in order to provide some practical references.

The summary of the of the Evaluation Questionnaire and Reports collected for collaborative workshop activities are shown in Appendix C and D

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Appendix A: COILabs Curriculum

Module	Sub module	Learning Outcome	ECTS
Module A	Tools for idea development and prototyping		
Additive Manufacturing	A1 Basic principles of additive manufacturing technologies (AMT)	A1.1 Definition and history of AMT	0.5
		A1.2 Analysis of the product drawing (detail), the possibility of achieving the quality requirements of parts, assessment of subsequent machining.	0.5
		A1.3 Introduction to 3D scanning	1
	A2 Developing the control setup additive manufacturing	A2.1. The programming modes, the trajectory of motion, the linkage of trajectories of coordinate system CNC setup additive manufacturing	0.5
		A2.2. The split three-dimensional geometric model of the digital parts section	0.5
		A2.3. Conducting a virtual simulation of product manufacturing	1
	A3 Development of individual technological processes and new business opportunities of AMT	A3.1 Designing a single technological process of manufacturing test equipment (experimental batch) according to standard	2
		A3.2 Development of l modes of technological operations of manufacture of the product and design documentation	2
		A3.3 Business model for AMT	2
		Total ECTS	10
Module B	Inventive Design and Design Creativity		
Technology Forecasting	B1 Basic principles of Technology Forecasting (TF)	B1.1 Introduction to Forecasting methods and Technology Forecasting	0.5
		B1.2 Contemporary Methods of technology forecasting	0.5
		B1.3 Forecasting – its Application, advantages and limitations, case studies	1
	B2 Practice on techniques for support Technology Forecasting process	B2.1 The use of forecasting methods in practice and B2.1 B2.1 FORMAT methodology (Managerial part and research part).	3
		B2.2 Researching Future methodology	1
		Total ECTS	6

Innovative Design Methods	B3 Design creativity and innovation	B3.1 Introduction to design creativity and innovation	0.5
		B3.2 Design Models	0.5
	B4 Design methods and techniques	B4.1 Introduction to design thinking.	0.5
		B4.2 Exemplary design methods and tools	2
	B5 TRIZ based ideation and problem solving	B5.1 Introduction to the basic concepts of TRIZ	0.5
		B5.2 TRIZ Methods for problem analysis	1
		B5.3 Resources and analytical methods	0.5
		B5.4 Conflict resolution theory	0.5
		B5.5 Substance-field analysis	0.5
		B5.6 ARIZ algorithm	0.5
	B6 Patent Analysis	B6.1 Patent around technology separate	2
		Total ECTS	9
Module C	**Open Innovation and U-E collaboration**		
Innovation and entrepreneurship	C1 Basic knowledge of applied innovation	C1.1 Introduction of opportunity identification and creation	1
		C1.2 Approaches and models of innovation opportunities identification	1.5
		C1.3 Product service system design	1.5
	C2 Entrepreneurship management	C2.1 Business modelling	3
		Total ECTS	7
Innovation engineering	C3 Basic contents of innovation process	C3.1 Technology innovation process and application	1
	C4 Innovation Management	C4.1 User experience integration for OI and sociological approach for UX	1.5
		Total ECTS	2.5
Open Innovation management	C5 Crowdsourcing for OI management	C5.1 General overview of crowdsourcing.	1.5
		C5.2 Derived values and contributions from the crowd.	1
		C5.3 Managing the crowds - cost/revenue structures, coefficients	0.5
		C5.4 Practical teaching on implementing crowd-based business models based on case studies	0.5

	C6 Management of customer co-creation: tools and methods	C6.1 Basic definitions of collaborative design, participatory design and co-creation with customers and clients.	0.5
		C6.2 Setting up the collaboration	0.5
	C7 Management of collaborative innovation development with external partners:	C7.1 Knowing the external stakeholders	0.5
		C7.2 Understanding the motivation of the external partners	0.5
		Total ECTS	**5.5**
Total ETCS			40

Appendix B: Executive COILabs Curriculum

Module	Sub module	Learning Outcome	ECTS
Module A	Tools for idea development and prototyping		
Additive Manufacturing	A1 Basic principles of additive manufacturing technologies (AMT)	A1.1 Definition and history of AMT	0.5
	A3 Development of individual technological processes and new business opportunities of AMT	A3.3 Business model for AMT	0.5
		Total ECTS	1
Module B	Inventive Design and Design Creativity		
Technology Forecasting	B1 Basic principles of Technology Forecasting (TF)	B1.1 Introduction to Forecasting methods and Technology Forecasting	0.5
		B1.2 Contemporary Methods of technology forecasting	0.5
		B1.3 Forecasting – its Application, advantages and limitations, case studies	0.5
		Total ECTS	1.5
Innovative Design Methods	B3 Design creativity and innovation	B3.1 Introduction to design creativity and innovation	0.5
	B4 Design methods and techniques	B4.1 Introduction to design thinking.	0.5
	B5 TRIZ based ideation and problem solving	B5.1 Introduction to the basic concepts of TRIZ	0.5
		Total ECTS	1.5
Module C	Open Innovation and U-E collaboration		
Innovation and entrepreneurship	C1 Basic knowledge of applied innovation	C1.1 Introduction of opportunity identification and creation	1
		C1.2 Approaches and models of innovation opportunities identification	0.5
		C1.3 Product service system design	0.5
	C2 Entrepreneurship management	C2.1 Business modelling	1
		Total ECTS	3
Innovation engineering	C3 Basic contents of innovation process	C3.1 Technology innovation process and application	0.5
		Total ECTS	0.5
Open Innovation management	C5 Crowdsourcing for OI management	C5.1 General overview of crowdsourcing.	0.5
	C6 Management of customer co-creation: tools and methods	C6.1 Basic definitions of collaborative design, participatory design and co-creation with customers and clients.	0.5
		C6.2 Setting up the collaboration	0.5
	C7 Management of collaborative innovation development with external partners: tools and methods	C7.1 Knowing the external stakeholders	0.5
		C7.2 Understanding the motivation of the external partners	0.5
		Total ECTS	2.5
Total ETCS			10

Appendix C: Evaluation Questionnaire

OIPEC

COILABS EVALUATION QUESTIONNAIRE_

COILab Action Title: _____ OIPEC year 2019

STARTING DATE/CLOSING DATE ; LOCATION:_____

Your responses to this survey will help to improve the quality of OIPEC COILab actions. Freely give your personal opinion.

This survey is anonymous and the personal data hereafter requested will be used only and strictly with the objective to improve the quality of OIPEC COILab actions according to your educational level and your professional profile.

PERSONAL DATA PART

GENEDER	AGE'	NUMBER OF WORKING EXPERIENCE	COUNTRY OF ORIGIN
☐ MALE ☐ FEMALE	.....	.....	.....

AFFILIATION:

- ☐ Small or Medium Enterprise (SME)
- ☐ Large Company
- ☐ Public Entities,
- ☐ Technology Transfer Office/Start-up Incubator,
- ☐ University-Researchers & Professors,
- ☐ University Students, Master students or PhD students,
- ☐ Others (Specify in English Language_____)

EDUCATION AND INSTRUCTION

- ☐ Degree in Enginneering; specify ☐Bachelor's Degree ☐ Master Degree ☐Doctorate Degree
- ☐ Degree in Architecture/Desing; specify ☐Bachelor's Degree ☐ Master Degree ☐Doctorate Degree
- ☐ Master degree in Scientific Studies;
- ☐ Master degree in Humanistic Studies ;
- ☐ Master degree in Economics
- ☐ High School Diploma

EVALUATION PART

Circle the number that corresponds to your response to each statement :

Totally Agree 4, Partially Agree 3, Partially Disagree 2, Totally Disagree 1, No Opinion 0.

General:					
1 The workshop is rich and interesting.	4	3	2	1	0
2. I understand the importance of this methods/techniques/approaches for my professional competences.	4	3	2	1	0
3. The number of hours of this workshop seems to me appropriate to the objectives.	4	3	2	1	0
4. The current time seems appropriate to me to objectives.	4	3	2	1	0
5. English is good enough to allow the cooperation during the workshop.	4	3	2	1	0
6. The evaluation allowed me to show my knowledge.	4	3	2	1	0
7. I participated this workshop with pleasure.	4	3	2	1	0
The workshop:					
8. The level of difficulty is adequate allowing an understanding of the problem.	4	3	2	1	0
9. Facilitators supported the working team in a clear and structured way.	4	3	2	1	0
10. Facilitators use teaching materials efficiently (table, video projector ...).	4	3	2	1	0
11. The atmosphere foster participation.	4	3	2	1	0

OIPEC

COILABS EVALUATION QUESTIONNAIRE_

COILab Action Title: _____ OIPEC year 2019

STARTING DATE/CLOSING DATE ; LOCATION:_____

The practical problem:

12. The description of the problem and information provided seem adequate and appropriate for understanding the contents.	4	3	2	1	0
13. The problem is well suited in content and degree of difficulty.	4	3	2	1	0
14. The ambience favors the work.	4	3	2	1	0
15. The support material offered is satisfactory (organization, availability, advice, expertise).	4	3	2	1	0
16. The feedback provided by facilitators is sufficient and allow to check my progress.	4	3	2	1	0

17. Overall, you feel that this workshop is:

excellent 6 ❍, good 5 ❍, sufficient 4 ❍, inadequate 3 ❍, very inadequate 2 ❍, bad 1 ❍

With the following main reasons:

highlights:

weaknesses:

Your suggestions for improvements:

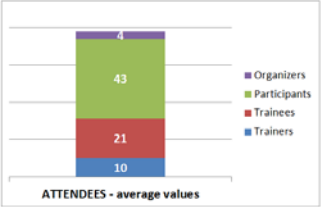
Thank you for your contribution!

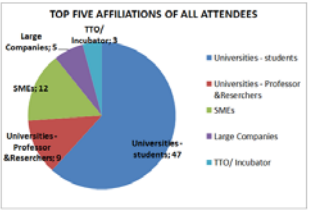
Appendix D: Quality Assurance summary in China

Quality Assurance summary for COIL Pilot Actions in CHINA (Hebut and Tianjin Universities)

- Number of COIL Pilot Action Events carried out: **8**
- Total Attendees: **487**;
- Average n° of attendees for CHINA COILab events: **78**
  (some attendees could have registered in more than one profile, ex. organizer and trainer)

COIL Pilot Action event performed by Chinese OIPEC Partners ***(average values)*:***





EVALUATION QUESTIONNAIRES	AVERAGE VALUES	
	Participants (in %) that have stated an opinion of *4-Totally Agree*	Average Value of opinions *(1-Totally Disagree; 4-Totally Agree)*
COIL pilot Action content *(Questions 1-8)*	33,3%	3,00
COIL pilot Action program *(Questions 9-12)*	51,8%	3,72
COIL pilot Action organization *(Questions 13-17)*	45,6%	3,71
	How many participants (in %) have stated an opinion of *6-Excellent or 5-Good*	Average Value of opinions *(1-Bad; 6-Excellent)*
Benefits/positive effects of the workshop *(Question n° 21)*	61,5%	5,36

	AVERAGE VALUE
Duration (h)	40
Number of people reached by dissemination	147
COSTS: Involved persons hours	6 organizers for 24 hours each one; total
COSTS: other items	€ 2.000

COIL curriculum elements used		
		C7
	B6	C6
	B5	C5
	B4	C4
A3	B3	C3
A2	B2	C2
A1	B1	C1
Tools for idea development and prototyping	Inventive Design and Design Creativity	Open Innovation and U-E collaboration

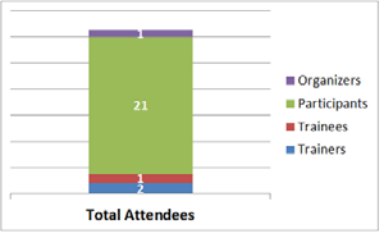
*based on the number of Evaluation Questionnaires collected, about 68% of total attendees for each event

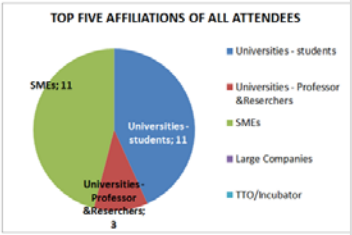
Appendix E: Quality Assurance summary in Russia

Quality Assurance summary for COIL Pilot Actions in RUSSIA (Moscow and Valdimir Universities)

- Number of COIL Pilot Action Events carried out: **3**
- Total Attendees: **74**;
- Average n° of attendees for RUSSIA COILab events: **25**
  (some attendees could have registered in more than one profile, ex. organizer and trainer)

COIL Pilot Action event performed by Russia OIPEC Partners ***(average values)*:***





RESULTS FROM EVALUATION QUESTIONNAIRES	AVERAGE VALUES	
	Participants (in %) that have stated an opinion of *4-Totally Agree*	Average Value of opinions *(1-Totally Disagree; 4-Totally Agree)*
COIL pilot Action content *(Questions 1-8)*	**91%**	**3,91**
COIL pilot Action program *(Questions 9-12)*	**100%**	**4,00**
COIL pilot Action organization *(Questions 13-17)*	**93%**	**3,88**
	How many participants (in %) have stated an opinion of *6-Excellent or 5-Good*	Average Value of opinions *(1-Bad; 6-Excellent)*
Benefits/positive effects of the workshop *(Question n° 21)*	**100%**	**5,92**

	AVERAGE VALUE
Duration (h)	55
Number of people reached by dissemination	175
COSTS: Involved persons hours	100 hours (1 person* 50 hours, 2 people* 25 hours)
COSTS: other items	6 coffee breaks for 25 participants classware, flipcharts, videoconference equipment 1 room

COIL curriculum elements used		
		C7
	B6	C6
	B5	C5
	B4	C4
A3	B3	C3
A2	B2	C2
A1	B1	C1
Tools for idea development and prototyping	Inventive Design and Design Creativity	Open Innovation and U-E collaboration

*based on the number of Evaluation Questionnaires collected, about 80% of total attendees for each event