

# BRIDGING THE GAP BETWEEN RESEARCH AND ENTREPRENEURIAL ACTIVITIES THROUGH EDUCATION

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UZDOC 2.0

Knowledge Sharing event

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# PhD students and entrepreneurship

- ▶ PhD/post-doctoral students are an important asset on the pathways of technology transfer because they are familiar with the technology and are often highly motivated to work in an academic spinoff (Boh et al., 2016).
- ▶ The student's role in academic spinoffs is becoming increasingly important (Hayter et al., 2017).
- ▶ Graduate students are frequently engaged in the research effort within an academic spinoff context (Hayter, 2016).
- ▶ However PhDs face relevant challenges related to substantial lack of knowledge and skills related to the transformation of technological and scientific results into innovations with a market potential.

# Entrepreneurship Education for PhD students: objectives and challenges

- Experiencing the challenges of transferring the outputs of scientific research from University labs to the world.
- Understanding the key economic aspects of research, innovation and technology transfer in a systemic approach.
- Learning and apply tools for the assessment of a business opportunity or a start-up starting from research results or from a specific patent.
- Learning IPR management practises and the strategies for the protection of the value of innovation.



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# Intellectual Property Rights, Technology Transfer and High-Tech Entrepreneurship

Course offered to all PhD students in any research field

Edition 2017/18: 47 PhD students enrolled



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# Teaching method

- *Work based on patented technologies of Politecnico di Torino*
- International and interdisciplinary teams
- Blended approach (theoretical lectures + case discussion + project work application)
- Support by the inventors' and potential external mentors.
- Workshops on patent database searching.
- Strong collaboration with the local entrepreneurial ecosystem

# Teaching method

- Duration 9 months (split into 2 subsequent courses)
  - Course 1: focus on the patented invention
  - Course 2: focus on the start-up creation / commercialisation options
- Teams of 5 students
- Substantial effort by the teams for the collection of primary/secondary data for the definition of the patent landscapes and the business plan.

# Overview of contents

## I. Research to Business

- From Research to Business: General Introduction
- Technology Transfer at a Glance
- An Overview on “Innovation”

## II. Intellectual Property Rights

- Economic characteristics and contents of patent documents.
- International patent systems and patent filing routes
- Patent searching: methods and databases
- Technology assessment through patent landscaping techniques

# Overview of contents

## III. Business Model Canvas

- Definition of a Business Model
- The concept of Value Proposition vs. Idea/technology
- Customer Segments
- The Channels
- Industry and Market Analysis



# Overview of contents

## IV. Economics and Financial Projections

- The basics of economics and financials for a startup
- Life cycle stages and cash flow needs
- Business Angeles and Venture Capital Market
- Alternative sources of finance

# An example of our case study: ERMES

In 2017, PhD students worked on real academic spinoff of Politecnico di Torino: ERMES. ERMES was also founded by a PoliTO PhD student.

Ermes is a spinoffs of PoliTO. It is a method for detecting web tracking services

Inventors: **Metwalley Hassan (PhD student)**, Traverso Stefano, Mellia Marco

This allowed PhD students to better understand how to create an academic spinoffs.



## Crowdfunding ERMES 2017: 310 K€



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# Other initiatives and projects related to entrepreneurial education for PhD students

# European Innovation Academy

EUROPEAN  
INNOVATION  
ACADEMY

Global large “extreme” entrepreneurship program offered at all PoliTO students

From an idea to a tech start-up in 15 days, especially focused on ICT

EDITION 2017 (9-28 July):  
4 teams of the Politecnico among the 10 selected for the final pitch

600 STUDENTS  
50 MENTORS  
50 SPEAKERS



**FCA**  
FIAT CHRYSLER AUTOMOBILES

**FERRERO**

**INTESA**



**SANPAOLO**



POLITECNICO  
DI TORINO

**Berkeley** **Google**  
UNIVERSITY OF CALIFORNIA



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FURTHERING THE QUALITY OF DOCTORAL  
EDUCATION IN UZBEKISTAN



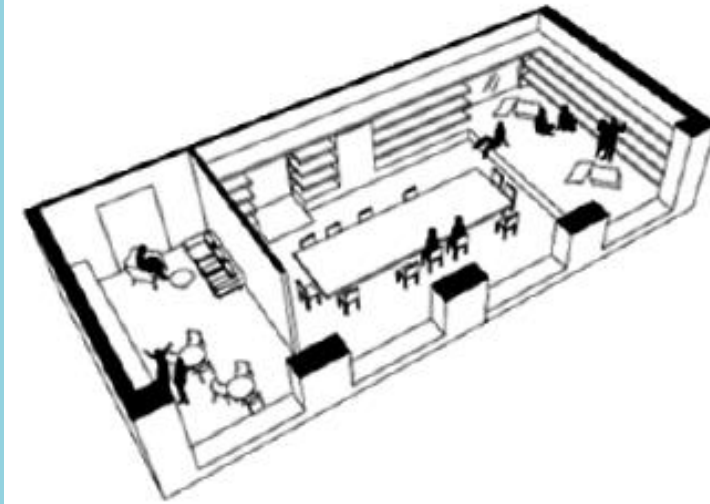
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# CLICK



Contamination Lab  
& Innovation Kitchen

Coworking and learning space, open to **all PoliTO students and researchers** to foster the exchange of ideas between transversal and complementary skills.



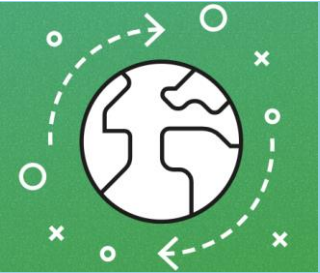
## GOALS:

- Supporting new ideas and the realization of it
- Hackathons
- Foster collaborations



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# Innovation For Change (I4C)



## Ideas and Tech to Tackle Global Challenges

**200+** hours

of training, workshop, testimonials, mentoring and teamwork

**10+** workshop

about visioning, ideation, digital fabrication, prototyping and impact innovation

**10+** teachers

Trainers and Experts coming from Politecnico of Turin, CERN and from CDI network



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# Innovation For Change (I4C)

- I4C is a **five-month impact entrepreneurship program** in which interdisciplinary teams work to solve global challenges by building scalable projects based on CERN and PoliTO technologies.
- The aim of the whole program is to apply the most advanced technologies to help solve problems of social interest, with the ambition to generate a significant impact on the world in a medium-long term perspective.



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# Innovation For Change (I4C)

- ▶ Each year, this project involves 50 young talents, 35 MBA students from CDI Italia and **15 PhD students from PoliTO**, divided into groups and supported by researchers from CERN and the PoliTO.
- ▶ From I4C, **each year 8 business ideas** capable of positively impacting the challenges linked to the United Nations Sustainable Development Goals (UN SDG) are created.
- ▶ The results are presented each year to an audience of companies, entrepreneurs and investors, during a demo-day.



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# Innovation For Change (I4C)

EDITION 2017, 8 team:

- Fish to Fish
- Hestia
- Higea
- Life Patch
- Save3
- SeedLife
- SoundBubble
- The Game of Food



# Successful cases from I4C for PoliTO PhD students

## SoundBubble

- ▶ Created at PoliTO I4C course in 2017
- ▶ An innovative solution to solve the problem of noise pollution in open-space environments! Let us be the Bubble of your Sound!
- ▶ SoundBubble has arrived among the 10 finalist projects on over 130 participants at start cup Piemonte 2017
- ▶ SoundBubble parteciped at MUST Summit in Munich in 2018



SoundBubble

# Successful cases from I4C for PoliTO PhD students

## AquaSmart

- ▶ Created at PoliTO I4C course IN 2016
- ▶ AquaSmart is a start-up company born within the PoliTO with the aim to empower utilities to manage their networks efficiently.
- ▶ AquaSmart won the "Innovation Award" – from Department for International Trade (DIT) in 2017 organized by PNICube at Naples.
- ▶ AquaSmart participated the 7th #UKItalySpringboard Bootcamp in 2018





# PoliTO PhD students results

# Feedbacks from our PhD students

«I applied to this course principally due to a **poor knowledge about IPR and TT. Patents and spinoffs are two important activities today** (from both economic and technologic point of view). I think **is important to have these skills** to improve my professional path.» (Anonymous PhD student)



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# Results

- ▶ Out of the 10 teams admitted to the final stage of the StartCup Piemonte 2017 (resulting from a selection starting from 128 participants), 5 are spin-offs of the Politecnico.
- ▶ Each spinoff included PhDs and students from Polito, 4 of them were based on patents developed by Polito research and 3 participated to the Proof of Concept program.
- ▶ The number of PhD students involved in entrepreneurial activities are growing.
- ▶ The number of PhD students' patents and spinoffs are increasing.
- ▶ PhD are more interested in entrepreneurship courses.



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