Unicità degli Studi di Torino
Direzione Ricerca e Terza Missione

La presenza di contaminanti metallici e di composti solforati negli isolanti fluidi e solidi usati in trasformatori di potenza ha causato

Marcello Baricco - Unito & Industry 4.0
among all universities, why partner with us?

**facts & figures about Unito**

**Research and technology transfer (2015)**
- Over 950 projects presented in competitions (2016)
- 20 registered patents (2014-16)
- € 18 million earned through research and consultancy activities (2016)*

* 2016 figures are currently being updated

**Students (a.y. 2016-17)**
- 70,500 students
- 61% women
- 20% from outside Piedmont Region
- Over 3,900 international students (5.7% of total)
- Over 20,800 first-year students
- Just over 6% international students
- Around 1,400 students enrolled on master’s 1st and 2nd level (a.y. 2016-17)
- Over 1,200 PhD students (as of 21st December 2016)

**International networks (a.y. 2016-17)**
- 30 binational double degree programmes
- Around 600 international cooperation agreements with other universities (a.y. 2015-2016)
- 7 programmes fully in English

**International rankings**
- 3rd in Italy* and among the top 300 Universities worldwide, for ARWU Shanghai
- 12th in Italy for Times Higher Education
- 6th in Italy per US News Best Global
an exploitable research cannot be just academic

**main sectors**
- aerospace automotive
- industrial
- manufacturing
- energy
- food farming
- health

**main partners**
- aerospace-automotive
- IT-digital
- agro-industry
- energy-environment
- electrical
a multifaceted approach to innovation

research not only technology-driven

soft skills

- Design Thinking
- New Organizational Models
- Smart HR Management & Skills reconfiguration

hard skills

- Ergonomics
- Security & Risk Management and assessment
- Innovation and financial planning
- Wearable Technologies
- Big data, IoT, sensors and devices
- Smart Materials, Smart Prototyping, Additive manufacturing
- Artificial intelligence

Big data, IoT, sensors and devices
case study #1

| smart materials |

**Automotive**

**Smart materials:** Pressure sensors of polymeric nano-composites with carbon nanotubes

**Application:** Car dashboard

**Impact:** Reduction of weight, costs, energy consumption, environmental impact

**Vibration-acoustic optimization**

**Application:** Braking systems

**Impact:** Reduction of noise, vibrations
physical medicine: spinal pain assessment and treatment

application: intelligent chair for movement detection during driving activity

impact: prevention and management of spinal pain of drivers
case study #3

_intelligent systems for farming_

**Advanced technologies:** decision-making support tools, optimized real-time data, simulation tools

**application:** early detection of pathogens; inspection of propagation material at borders and at production level

**impact:** mitigate risks and facilitate decision-making in food protection

**Diagnostics**

**Agricultural machines**

**industrial automation:** crop sensing, optimal spraying profile

**application:** precision spraying

**impact:** reduction of spray losses and environmental contamination
data analysis for selection of $k$ products that should be sold with a discount in a supermarket to each specific customer with a fidelity card

**application**: ad-hoc collaborative recommender system

**impact**: customer tailor-made recommendation

Use of **Artificial Intelligence**, (Statistical) **Machine Learning** and **statistical techniques** to develop models for fashion retail

**application**: forecast of future market; decisions about pricing

**impact**: development of data driven models for pricing and planning; possible development of joint patents
case study #5

| Human & Organization 4.0 |  

industry automation: human-automation interaction; people motivation; leadership and management style

application: introduction of technological innovation and change management

impact: improve human-workplace fit

“Learning Factory”:  
• digital transformation readiness analysis
• digitalization impact on processes, operation, management, HR competencies and practice
• management and organization model

impact: transformation awareness and managerial competencies improvement
case study # 6

big data analysis

banking

platform development, datastreaming, geo-spatial algorithm for machine learning

application: automated report generation with geolocalised analysis and prediction

impact: tremendous improvement in process management and business intelligence
case study #7

| Cross-approach to innovation |

consumer goods

PARTNERS: TIM| Byters /Newbiquity |HG Consulting

pilot platform for data management and integration with sensors
+ SW development + data cloud

skills: data scientists, chemists, economists, sociologists, process management

application: assembly machinery

impact: reduction of costs, improvement in manufacturing efficiency, predictive maintenance
working together in the laboratories

**Nanostructured Interfaces And Surfaces Centre**
Focus on energy, sustainability of industrial processes, environment, cultural heritage and biomaterials.

**Competency Centre for Scientific Computing**
High-Performance Computing and cloud engineering, and their technological application. Focus on scientific computing, big data and machine learning.

**Innovation Center for Territory**
Multidisciplinary research centre (9 dept.). Support industrial projects until they reach the market (e.g. Business Models and Innovation Management; Smart Manufacturing and Factory; Big Data Analytics: Law technological intelligence
innovation driven by new generations  

training the new talents

Master: Data Science for Complex Economic Systems

Master: Data analysis for business intelligence and data science

Master: Marketing, sales & digital communication

Master: Artificial Intelligence

PhD in
- Natural Sciences and innovative technologies
- Life and Health Sciences
- Human and Social Sciences
- Humanities

Industrial PhD: Modeling and Data science /circular economy for company staff

Master: Industria 4.0
University Spin off 2009 - 2014

innovation generated by new ideas

| startups of the Business Incubator |

Designing and manufacturing ionization chambers for advanced radiotherapy to monitor charged particle therapeutic beams, both during treatments and for daily quality assurance procedures and particle accelerator calibration

NOW APPLIED in DIFFERENT APPLICATIONS

- METALS INDUSTRY
- AUTOMOTIVE INDUSTRY
- AGRIFOOD INDUSTRY
- CHILDCARE INDUSTRY
- CULTURAL HERITAGE
- ENVIRONMENT

www.detector-group.com
your time matters

| dedicated industrial liaison officer |

to make navigation within the university fast and effective

Silvia Forno
+ 25 years in University Technology Transfer, International Relations, EU project management

Catyuscya Forestello
+ 13 years in management consulting, start ups operations and EU project management

Francesca Natale
+ 20 years in SMEs support to international business development