Scuola universitaria professionale della Svizzera italiana
Dipartimento tecnologie innovative

SUPSI

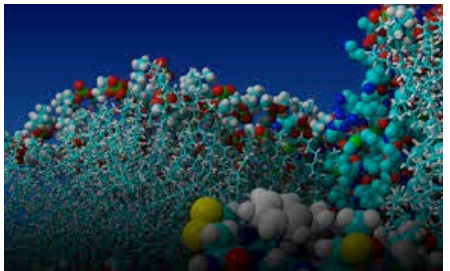
CONFINDUSTRIA BERGAMO

GREATER ZURICH AREA

Il Dipartimento Tecnologie Innovative SUPSI

Prof. Dr. **Emanuele Carpanzano**



Il Dipartimento Tecnologie Innovative della SUPSI

La nostra ***missione per il territorio***: contribuire e supportare la capacità di innovazione del sistema regionale

Table 8: Top-25 Regional Innovation Leaders

	2011 (RII 2011)	2013 (RII 2013)	2015 (RII 2015)	2017 (RII 2017)	2019 (RII 2019)	RII 2019
1	Zürich (CH04)*	Hovedstaden (DK01)*	Hovedstaden (DK01)*	Zürich (CH04)*	Zürich (CH04)*	160.1
2	Nordwestschweiz (CH03)*	Zürich (CH04)*	Zürich (CH04)*	Stockholm (SE11)*	Ticino (CH07)*	156.8
3	Hovedstaden (DK01)*	Stockholm (SE11)*	Nordwestschweiz (CH03)*	Nordwestschweiz (CH03)*	Helsinki-Uusimaa (FI1B)*	156.0
4	Stockholm (SE11)*	Nordwestschweiz (CH03)*	Stockholm (SE11)*	Hovedstaden (DK01)*	Stockholm (SE11)*	153.8
5	Zentralschweiz (CH06)*	Oberbayern (DE21)*	Västsverige (SE23)*	Sydsverige (SE22)*	Hovedstaden (DK01)*	151.0
6	Sydsverige (SE22)*	Helsinki-Uusimaa (FI1B)*	Sydsverige (SE22)*	Zentralschweiz (CH06)*	Ostschweiz (CH05)*	150.2
7	Oberbayern (DE21)*	Sydsverige (SE22)*	Helsinki-Uusimaa (FI1B)*	Helsinki-Uusimaa (FI1B)*	Nordwestschweiz (CH03)*	149.6
8	Karlsruhe (DE12)*	Zentralschweiz (CH06)*	Oberbayern (DE21)*	Ticino (CH07)*	Zentralschweiz (CH06)*	146.1
9	Helsinki-Uusimaa (FI1B)*	Karlsruhe (DE12)*	Karlsruhe (DE12)*	Ostschweiz (CH05)*	Berlin (DE30)*	145.4
10	Tübingen (DE14)	Östra Mellansverige (SE12)*	Zentralschweiz (CH06)*	Oberbayern (DE21*)	Région lémanique (CH01)*	140.7

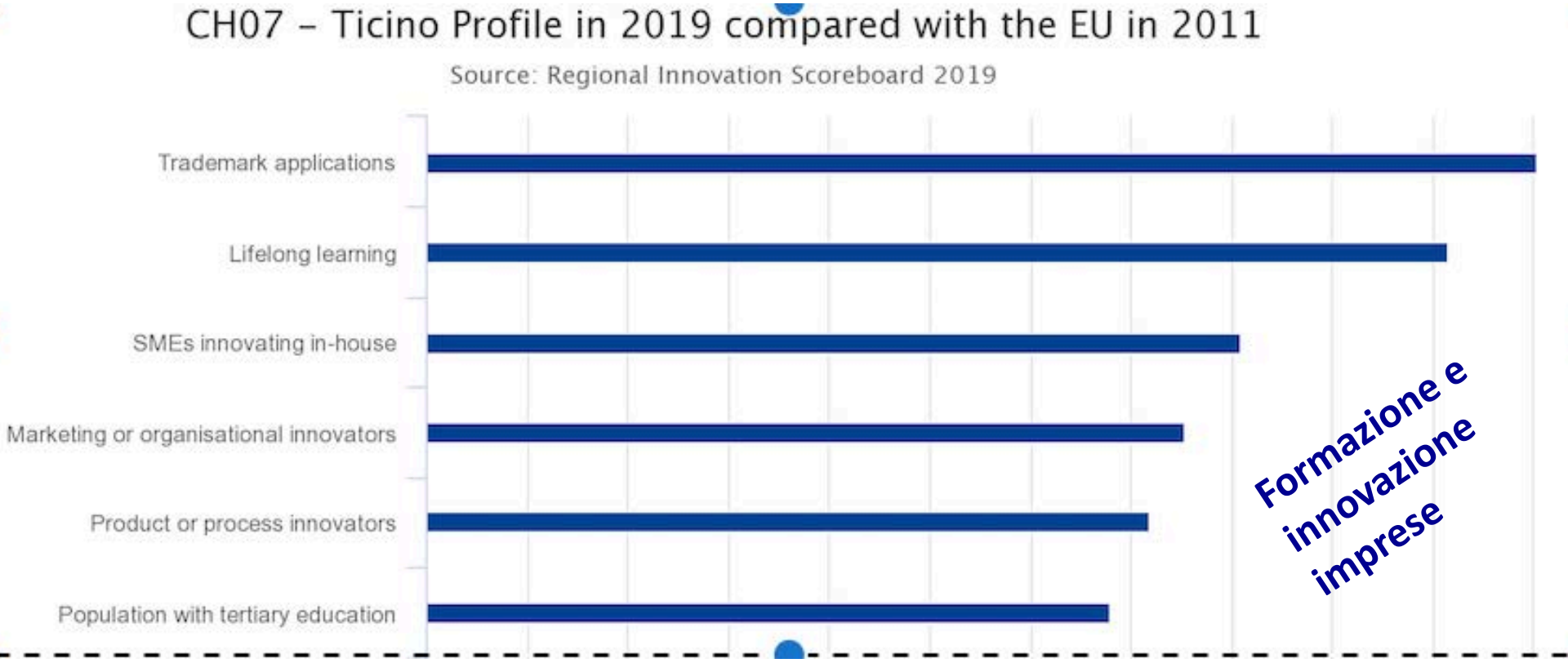






Il Dipartimento Tecnologie Innovative della SUPSI

La nostra ***strategia per il territorio***: contribuire alla crescita del personale tecnico e della innovazione delle imprese









Il Dipartimento Tecnologie Innovative della SUPSI

La nostra ***azione per il territorio***:

- Formare giovani ingegneri altamente qualificati per le aziende ed istituzioni del territorio tramite la *formazione base*
- Garantire l'aggiornamento professionale del personale tecnico delle imprese e degli enti tramite la *formazione continua*
- Supportare la capacità di innovazione e crescita del sistema regionale, e delle imprese in particolare, tramite la *ricerca applicata* ed il *trasferimento tecnologico*







Il Dipartimento Tecnologie Innovative della SUPSI

+ 320 collaboratori (230 UTP)
+ 100 docenti esterni (in FB ed FC)
+ 5 istituti con > 20 laboratori
+ 5 corsi di laurea con > 15 opzioni
+ circa 650 studenti in FB (bachelor e master)
+ oltre 1.000 partecipanti a corsi/iniziative FC
+ circa 150 progetti ricerca attivi
+ forte legame con aziende ed istituzioni del territorio
+ forte rete federale ed internazionale



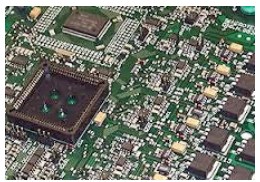




Dipartimento Tecnologie Innovative: competenze scientifche e tecnologiche

Istituti	Competenze		
MEMTI	Meccanica	Materiali	Termofludiodinamica
IDSIA	Ottimizzazione	Reti Neurali	Scienze computazionali
ISEA	Microelettronica	Regolazione	Telecom
ISIN	Big Data	Cybersicurezza	Internet of Things
ISTEPS	Automazione	Robotica	Logistica



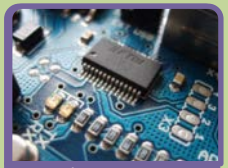




Più di 20 laboratori di ricerca e formazione


Cognitive and mobile robotics


Computational Materials Science


Microelectronic, bioelectronics and sensors

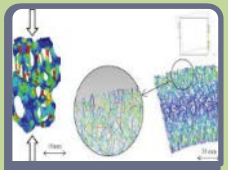

IoT - Internet of Things

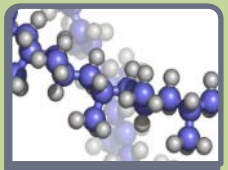

Mini-factory


Bio-Environmental technologies


Pneumatics


AR/VR Multimedia and Educational Technologies


Hybrid Materials


Polymer Engineering

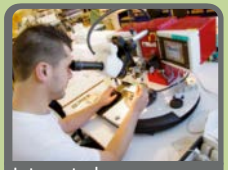

Drones


Materials characterization


Mechanical Engineering

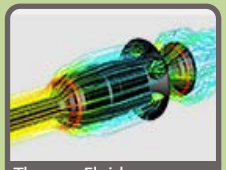

Chemistry


Telecom Telemetry and High Frequency


Integrated biomedical systems


Electrical Discharge Machining


Automation Robotics and Machines


Thermo-Fluid Dynamics and Energy


Telematics

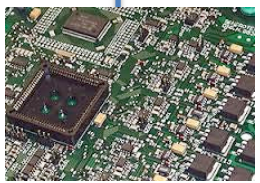

Mechatronic Systems

> 3’500 metri quadrati di superficie dei laboratori

Dipartimento Tecnologie Innovative: mandati istituzionali

Istituti	Formazione Base	Formazione Continua	Ricerca Applicata	Trasferimento tecnologico
MEMTI	■	■	■	■
IDSIA	■	■	■	■
ISEA	■	■	■	■
ISIN	■	■	■	■
ISTEPS	■	■	■	■







La offerta formativa del DTI

Bachelors of Science in Ingegneria — 485 Studenti

Master of Science in Engineering — 159 Studenti

Master in Matematica con DFA — 7 Studenti

Programmi PhD — 22 Studenti

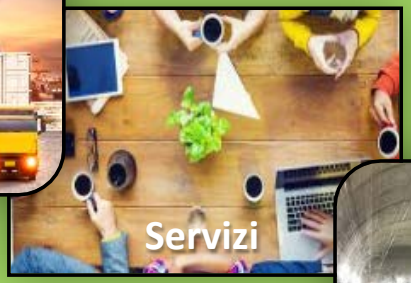
Formazione continua — 800 Studenti

Bachelor of Science

Pratica in azienda

Bachelor of Science in Ingegneria

Ingegneria gestionale



Ingegneria informatica

Ingegneria elettronica

Ingegneria meccanica

Bachelor in Data Science and Artificial Intelligence

Master of Science in Engineering (MSE)

- 90 ECTS (3 semestri TP / fino a 6 semestri PAP)
- 2/3 del percorso: attività di ricerca applicata
- Sedi dei corsi: Lugano, Zurigo, Losanna
- Forte connessione con il mondo industriale
- 2/3 di studenti: lavoro part-time

Haute école spécialisée bernoise

Fachhochschule Nordwestschweiz

Hes·so Haute Ecole Spécialisée de Suisse occidentale

zhaw

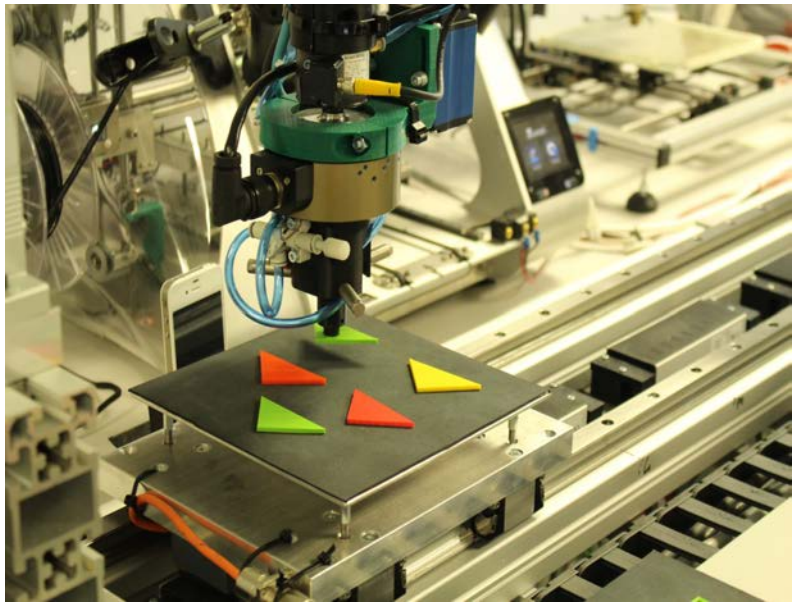
Lucerne University of Applied Sciences and Arts
HOCHSCHULE LUZERN

Scuola universitaria professionale della Svizzera italiana
SUPSI

FHO Fachhochschule Ostschweiz

MSE | MASTER OF SCIENCE IN ENGINEERING

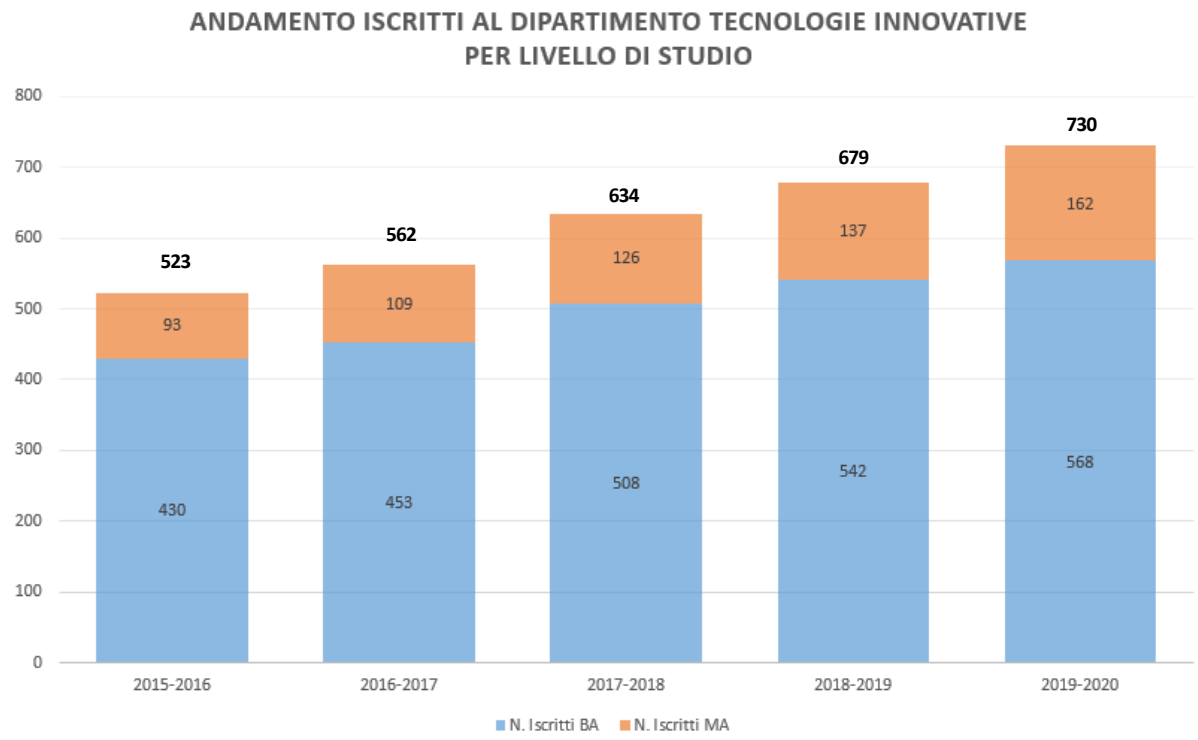
Mini Fabbrica DTI



Startup Garage DTI

Dove dare vita ai tuoi sogni e concretizzare le idee

Formazione base: evoluzione del numero di studenti 2015-2019



DOMANDE DI ISCRIZIONE

a.a. 2019/20 vs. a.a. 2018/19

BSc: +7%

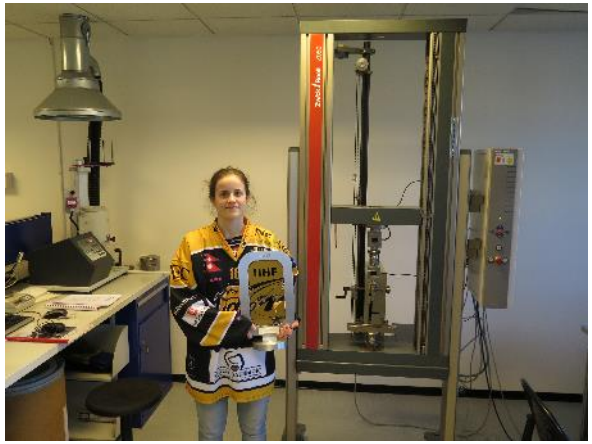
MSE: +52%

Formazione base
Premi e riconoscimenti

Una vita tra sport e studio: quattro chiacchiere con Anneke Orlandini

28 gennaio 2019

Anneke Orlandini, studentessa di ingegneria meccanica al terzo anno, ci ha raccontato la sua storia personale fatta di tante esperienze vissute sul ghiaccio e sui banchi della SUPSI. La passione per lo sport e la voglia di emergere nel mondo del lavoro le danno la carica necessaria per affrontare al meglio le sfide quotidiane. Nel 2018 ha conquistato un mondiale di categoria con la nazionale italiana. L'abbiamo incontrata per una chiacchierata presso i laborari di meccanica del Dipartimento tecnologie innovative della SUPSI.



TICINO

La bella storia di Zaccheo Dotti della SUPSI

Studiare dischi e mazze da hockey

Una bella storia quella di Zaccheo Dotti, studente al terzo anno in ingegneria meccanica alla SUPSI, che grazie alla modalità formativa "flex" può seguire entrambe le sue passioni: studiare ingegneria e giocare a hockey . Il binomio vincente è stato possibile grazie ai Ticino Rockets di Biasca e alla SUPSI, che ha introdotto una griglia oraria flessibile. Così Zaccheo ha trasformato le sue passioni in un progetto di ingegneria volto ad approfondire l'impatto del bastone da hockey col disco al momento del tiro. Il progetto ha lo scopo di studiare la dinamica per sfruttare al massimo l'energia fornita dall'elasticità di manico e paletta.

Collaborazione con aziende ticinesi: oltre 80 tesi all'anno con aziende o enti ticinesi

ABB · mergee · GRÜNENFELDER · MECARTEX · EXTEN films and laminates · Aurum Gavia · aet Azienda Elettrica Ticinese · eoc

BÜHLER · Schindler · PRECICAST SA · micromacinazione · EASY ENERGY CONSULTING & TECHNOLOGY · cerbios · DSP data and system planning · elmec

JENNY SCIENCE · riri · DSP data and system planning · Aptar pharma · Zambon · DEVICE IT ENGINEERING · Dimas SOLAR THERMAL SYSTEMS · DSwiss

micro-sphere sa · LEVEL U · SINCE 1941 · TE connectivity · +GF+ · ideal-tek · PLASTEX · ail

ibi · swisscom · SBB CFF FFS · AgieCharmille · MORE ENGINEERING · PARADOX ENGINEERING

SOFINOL · GF GENERAL FORNI · Bognuda Carrozzeria · MIKRON · veragouth · SwissLimbs Mobility now. · Together ahead. RUAG · prewel

avaloq · Sandro VANINI Delizie da vivere · CCS Group · Medacta International · Kerr SYBRON DENTAL SPECIALTIES · Rapelli · hoxell excellence in hospitality · DAC SYSTEM · DAC SYSTEM SA

REX.CH RUBBER AND THERMOPLASTICS

PORETTI GAGGINI · CIMOTEC · FAULHABER · LABTITUDE · MECARTEX · MIKRON

TICINO CYCLING

Formazione continua

Formazione continua breve: < 10 ECTS

Formazione continua lunga: CAS, DAS, MAS

- Project Management
- Ingegneria industriale
- Ingegneria informatica
- Ingegneria elettronica
- Corsi con associazioni industriali

+800 Studenti Corsi

+1.000 Partecipanti Webinar

La Formazione continua: alcuni esempi

Scuola universitaria professionale della Svizzera italiana
Dipartimento tecnologie innovative

SUPSI

Project Management Forum

Lo sviluppo delle competenze

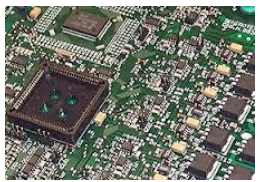
Palazzo dei Congressi, Lugano

23–24 maggio 2019

Dipartimento Tecnologie Innovative: competenze scientifiche e tecnologiche

Istituti	Competenze		
MEMTI	Meccanica	Materiali	Termofludiodinamica
IDSIA	Ottimizzazione	Reti Neurali	Scienze computazionali
ISEA	Microelettronica	Regolazione	Telecom
ISIN	Big Data	Cybersicurezza	Internet of Things
ISTEPS	Automazione	Robotica	Logistica



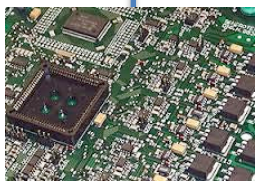




Dipartimento Tecnologie Innovative: progetti di ricerca

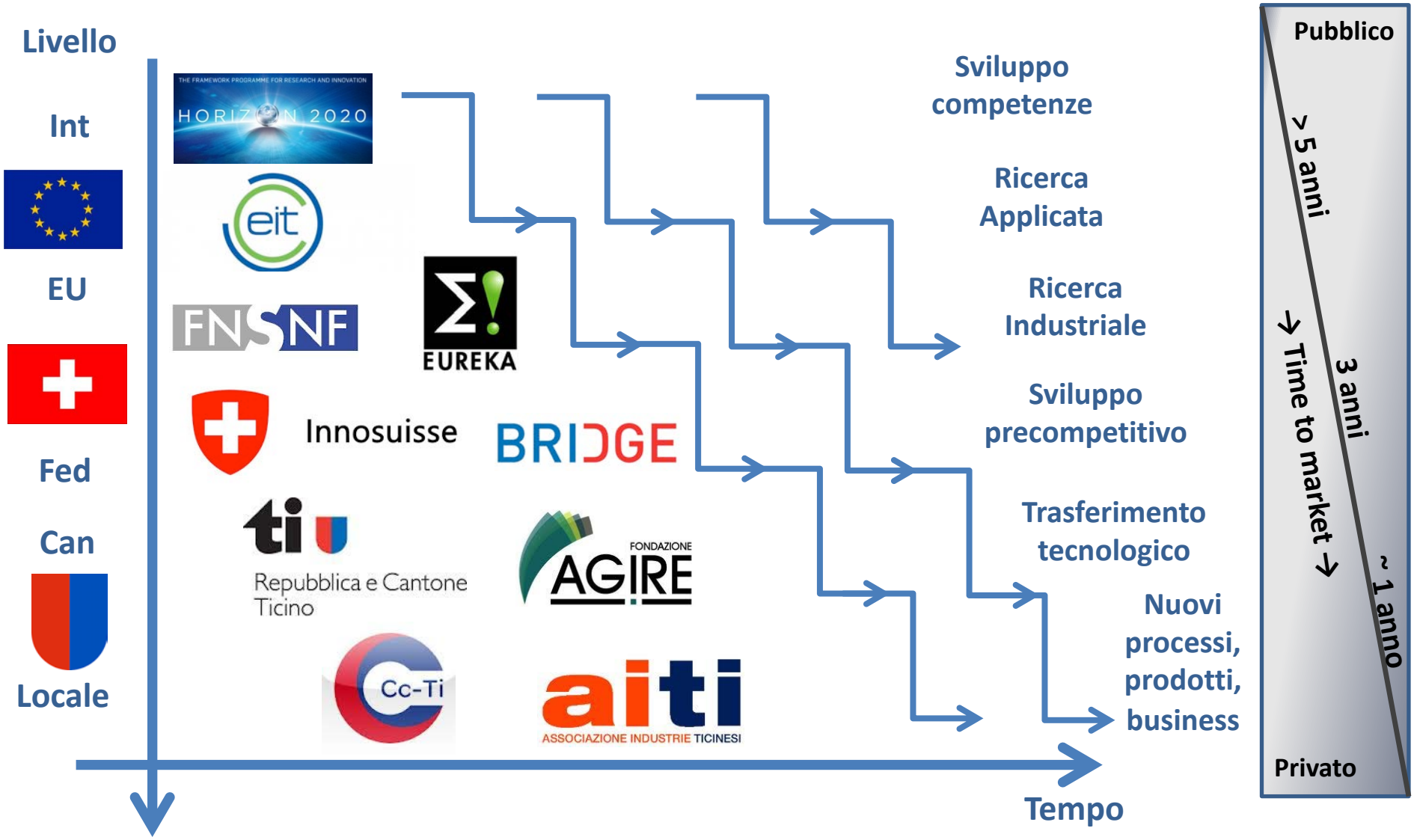
Istituti	Meccatronica	Smart City	ICT	MedTech
MEMTI				
IDSIA				
ISEA				
ISIN				
ISTEPS				



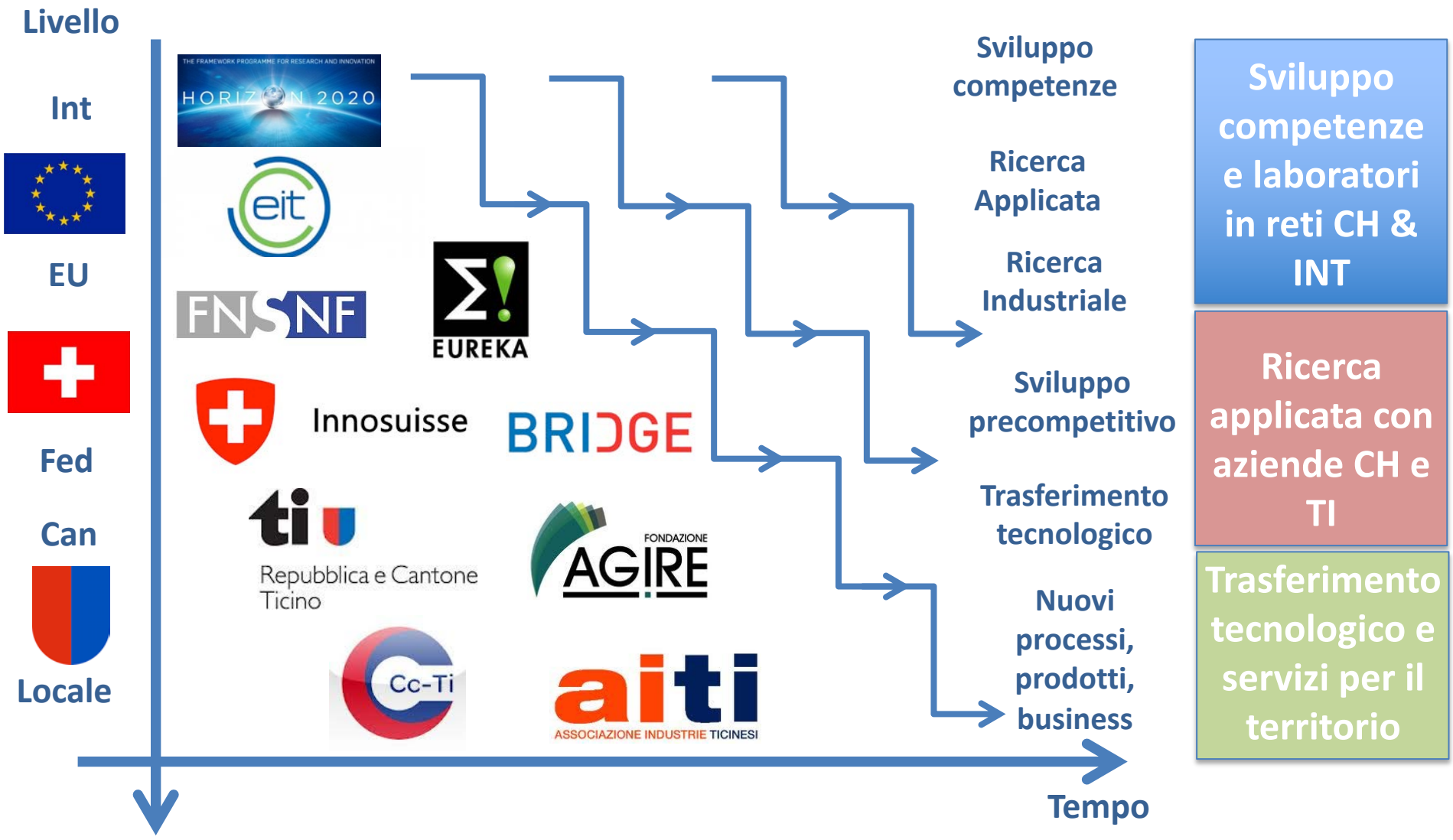




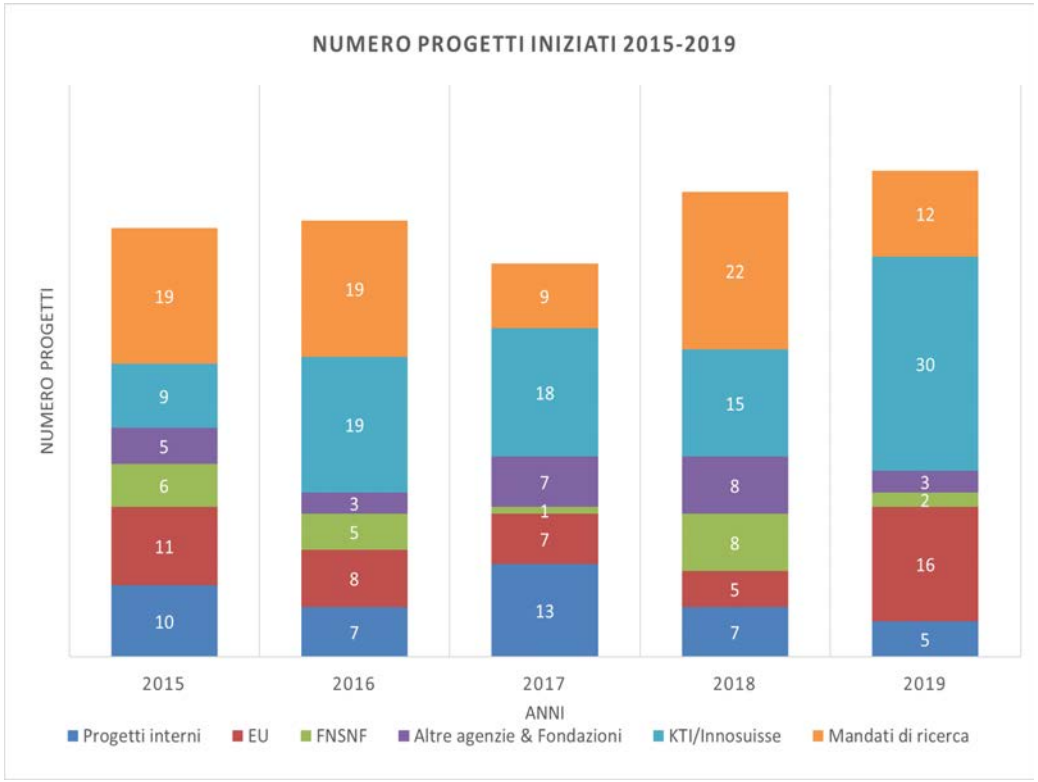
La ricerca applicata al DTI: la filiera dell'innovazione



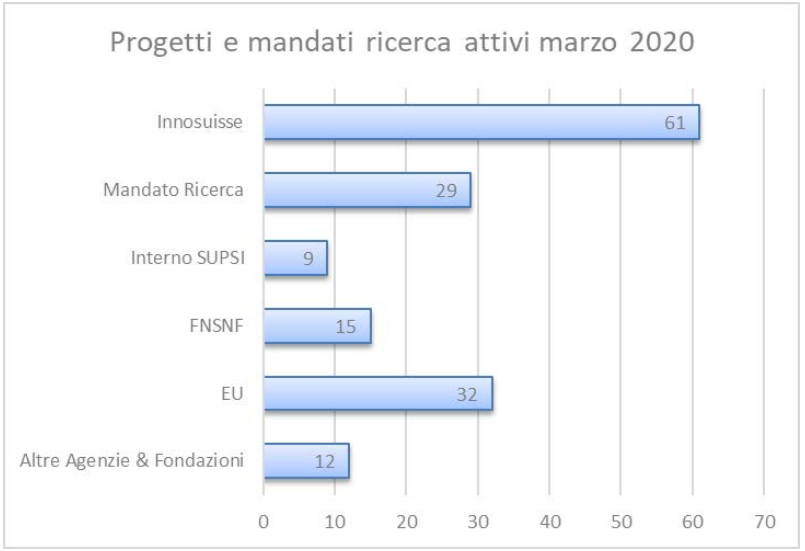
La ricerca applicata al DTI: la filiera dell'innovazione



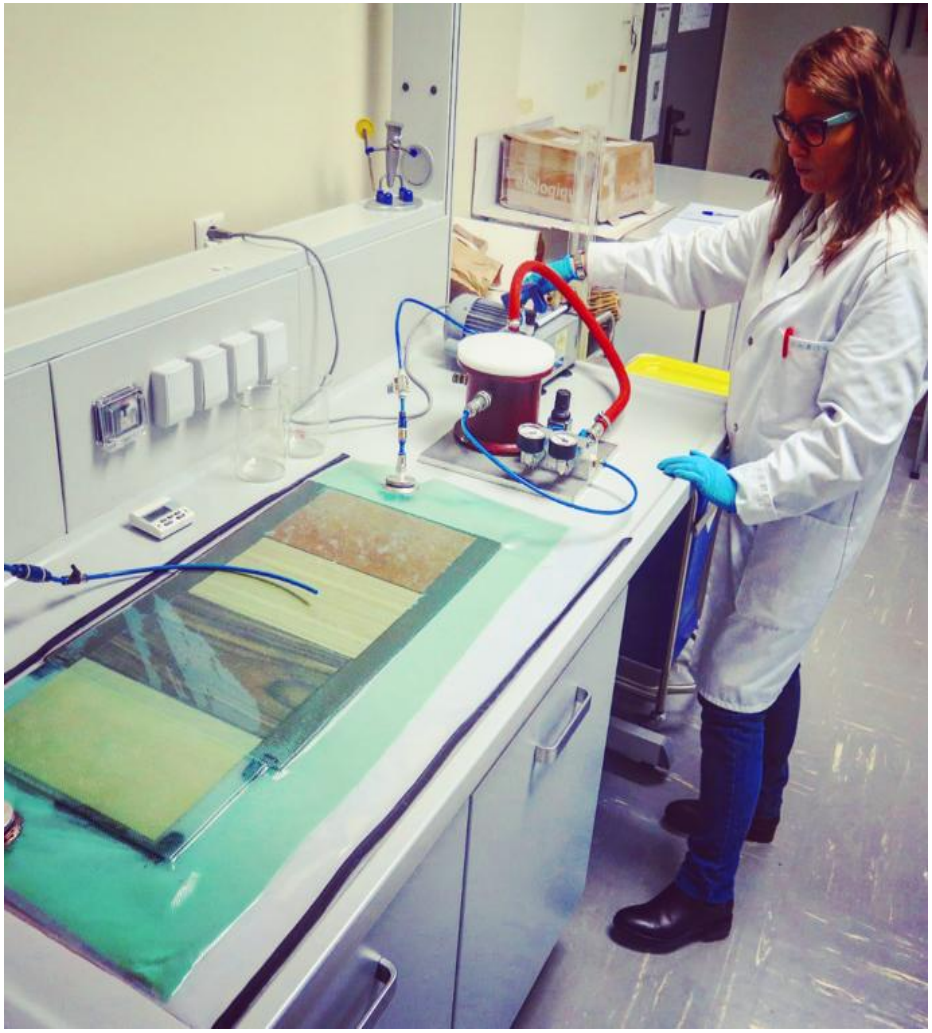
Progetti di ricerca 2020

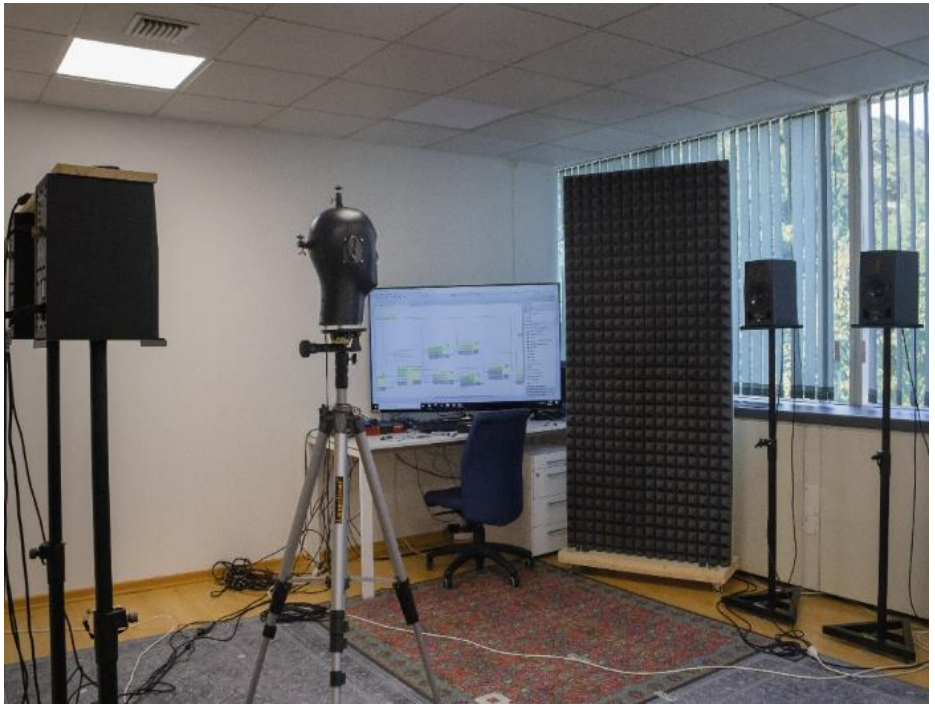


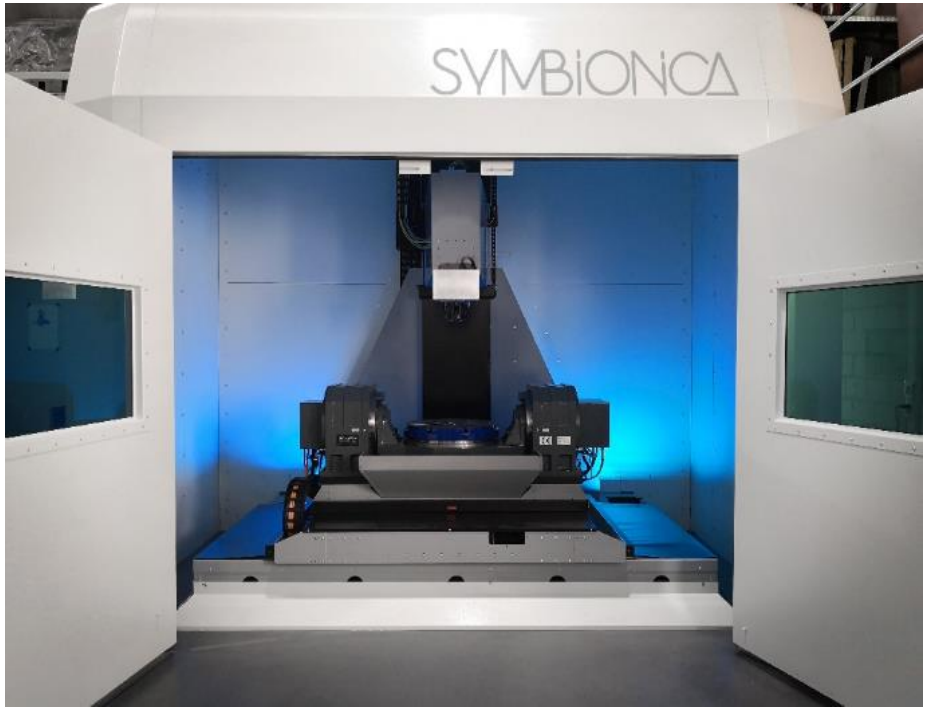
158 progetti e mandati di ricerca attivi 2020



Almeno un nuovo progetto con un'azienda ogni settimana!






SYMBIONICA


Leistritz

UBS' Artificial Intelligence Grab

Project Partner: UBS
Contact Person:
andrea.rizzoli@supsi.ch

UBS' Artificial Intelligence Grab

Wednesday, 17 January 2018 08:56

UBS site in Manno, Ticino/Switzerland

Switzerland's largest bank is expanding a site in Ticino to specialize in artificial intelligence. The move will create 80 new jobs in southern Switzerland.

The University of Lugano IDSIA institute has advanced to a recognized research center for machine learning and artificial intelligence. Now, Zurich-based UBS is linking up with the institute, news agency «AWP» *(behind paywall, in German)* reported on Wednesday.

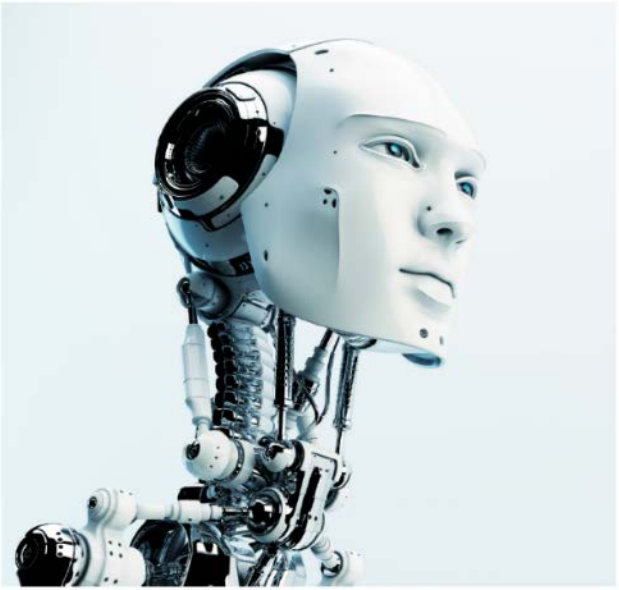
The bank plans to expand a site in Manno, southern Switzerland, into a center for artificial intelligence, analytics and innovation. The site is to find specific applications for UBS' information technology platform to use big data and artificial intelligence.

UBS

IDSIA

Intelligent Automation

A UBS Group Innovation White Paper



ASAR (Revolutionary Array Synthetic Aperture Radar)

Funding Agency: Innosuisse
Project Partner: Muttoni e Beffa SA, New Celio Electronics Sagl, MEET Ltd., Huggenberger AG
Contact Person: andrea.salvade@supsi.ch

Problem

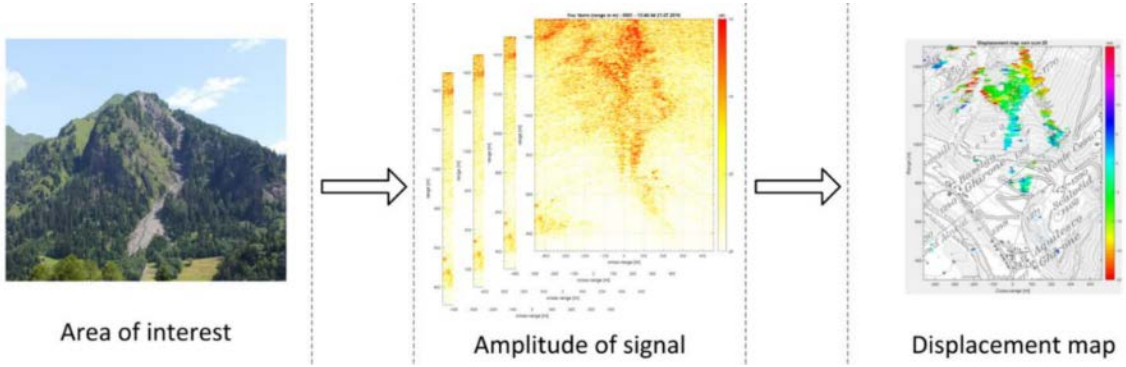
Synthetic aperture radars (SARs) are electronic systems that allow the graphical display of areas and objects in a scenario: cameras do optically, SARs do through electromagnetic waves. Ground Based SARs (GB-SARs) are employed to monitor a scenario and to highlight small movements (order of [mm]): continuous monitoring of natural phenomena and urban structures are so granted. Traditionally GB-SARs relies onto a mechanical movement of transceiver antennas, to obtain high angular-resolution images.

Objectives

The project aims to develop a revolutionary radar electronic platform, compact, portable and reliable. Main core of the product is an electronically driven array of transceiver antennas, instead of a mechanic displacement of antennas, in order to speed-up data acquisition and to obtain an high reliability.

Results

The final prototype is a portable solid but lightweight SAR, able to detect small movements ([mm]) at long distance (up to 3 km). The system has been successfully tested in controlled environment and un-der real conditions.



World digital twin segmentation and visualization

Funding Agency: Innosuisse
Project Partner: Nomoko (AG)
Contact Person: giacomo.poretti@supsi.ch

Problem and objectives

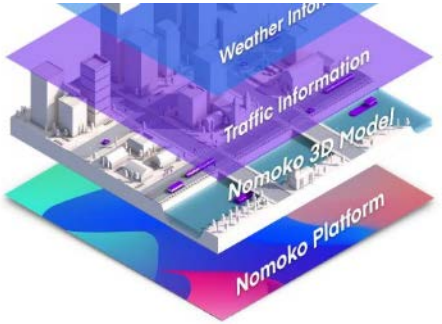
Nomoko AG is a company that acquires dense 3D point clouds of urban environments, using unique giga-pixel cameras developed in-house; this generates photorealistic 3D models named “world digital twin”.

Nomoko has recently won the Prix Strategis 2019.

Within the Innosuisse project “World digital twin segmentation and visualization”, SUPSI and Nomoko address research topics of functionalities that Nomoko requires in order to increase the value of the existing solution for their customers: the development of efficient and scalable solutions for data storage, queries and rendering of dynamic point clouds and 3D meshes; the development and validation of automated semantic segmentation (SS) algorithms for large 3D point clouds; the design of efficient, ad-hoc user interfaces for manual generation of ground truth data and for human verification of segmentation results.

Results

By achieving these objectives, Nomoko and SUPSI will enable the delivery of unique spatial applications (volumetric city-based and semantically segmented 3D data analysis) and new digital real world-based products focused on autonomous vehicle, gaming, augmented and virtual reality applications, smart city planning industries.



SYMBIONICA
Next Generation Bionics and Smart Prosthetics

Funding Agency: European Commission
Contact Person: anna.valente@supsi.ch

Problem and objectives

The Orthopaedic Prosthetics value chain is very complex and multidisciplinary. The requirement for immediate delivery has brought to the development of a high number of very fragmented catalogues as a compromise between the need for customization and the need of a very short “from order to delivery” time.

Symbionica objective is to make technically feasible and economically sustainable the production of orthopaedic smart implants and prosthesis with a high level of geometrical and morphological customization, to tailor the implant to patient interfaces for endo-, exo- and hybrid implants made in multiple materials, as also functional customization to adapt prosthesis dynamic and static behaviour to patient needs (responsiveness to loads, condition based drug delivery, etc.) across the patient life.

Results

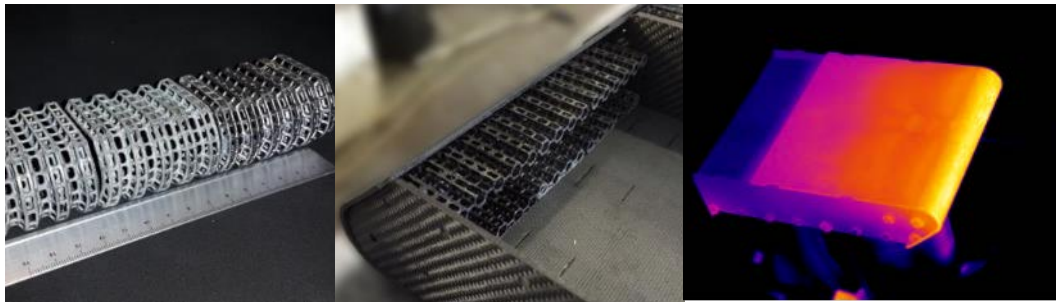
SUPSI has designed and developed a novel machine for Multi Material Additive Manufacturing with the following key points :

- Combining different laser beam based technologies, namely Direct Energy Deposition (DED) and laser ablation in a single machine, enabling the operator to switch from a massive deposition to a fine material removal in just a few seconds.
- Blending multiple powders and extruding different materials.
- 5 axes architecture enabling the manufacturing of parts up to 800 mm diameter and one full meter of height.
- Closed-loop monitoring of the process that leads to parts that are always right the first time.
- World class efficiency.
- Minimization of powder loss.

Sandwich structured ceramic matrix composite

Funding Agency: European Commission
Contact Person: alberto.ortona@supsi.ch

A prototypic sandwich structured ceramic matrix composite leading edge for Thermal Protection Systems (TPS) of future space vehicles has been designed, produced and tested in plasma wind tunnel in a standard re-entry condition. Cooling was performed flowing gasses in the inner TPS sandwich structure with different gases and mass flows.



Recenti premi e riconoscimenti

SUPSI-ISTePS

ARM Lab

«Innovation Radar Prize»

SUPSI-DTI/DFA

«Optimus Agora Award»

Anna Valente

«Women-led innovations»

Giovanni Pavan

«ERC Consolidator Grant»

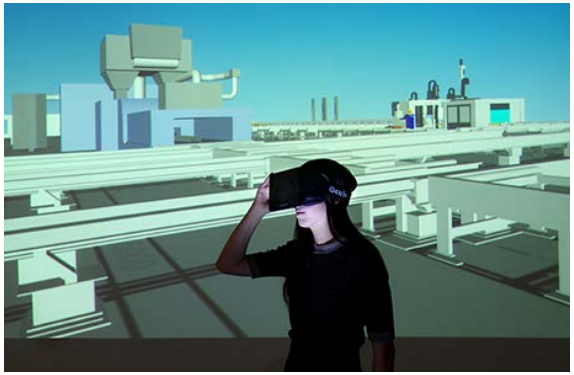
Silvia Giordano

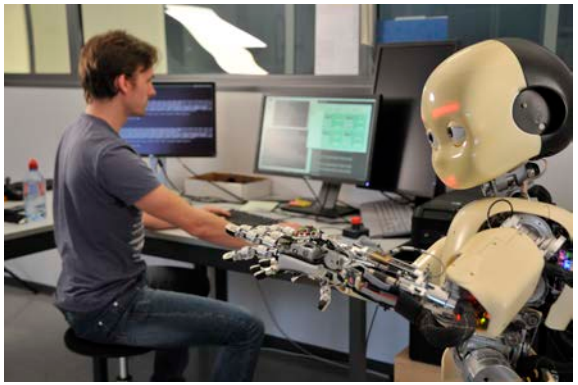
«N2Women: Stars in Computer Networking and Communications»

Il motore del Dipartimento Tecnologie Innovative!

Progetti strategici in corso: valorizzare la opportunità del nuovo campus

Progetti strategici in corso: sviluppare competenze ed infrastrutture



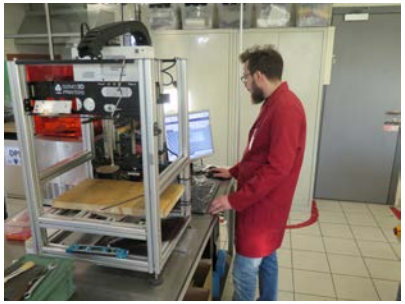


Elettronica

Informatica

Intelligenza Artificiale

Progetti strategici in corso: : sviluppare competenze ed infrastrutture



Meccanica e Materiali

Automazione e Produzione

BioMedTech (nell'ambito della strategia Life Science)

Progetti strategici in corso: : accrescere presenza, immagine, autorevolezza

Eventi e iniziative 2019

Oltre 30 eventi organizzati

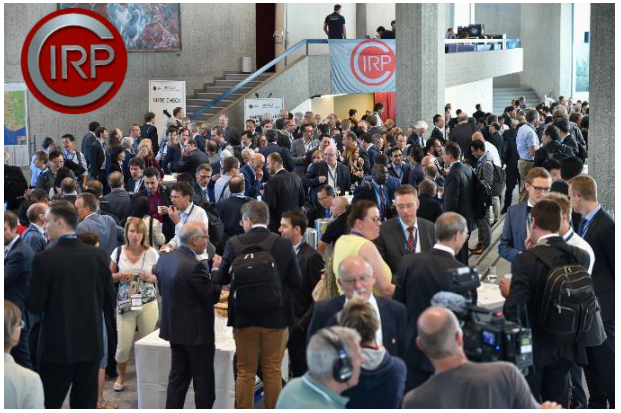
Più di 1’200 partecipanti

OpenDay: giornate di porte aperte al DTI

Project Management Forum – «Lo sviluppo delle competenze»

Reti e conferenze

FTAL CONFERENCE 2018



CIRP GENERAL ASSEMBLY 2017

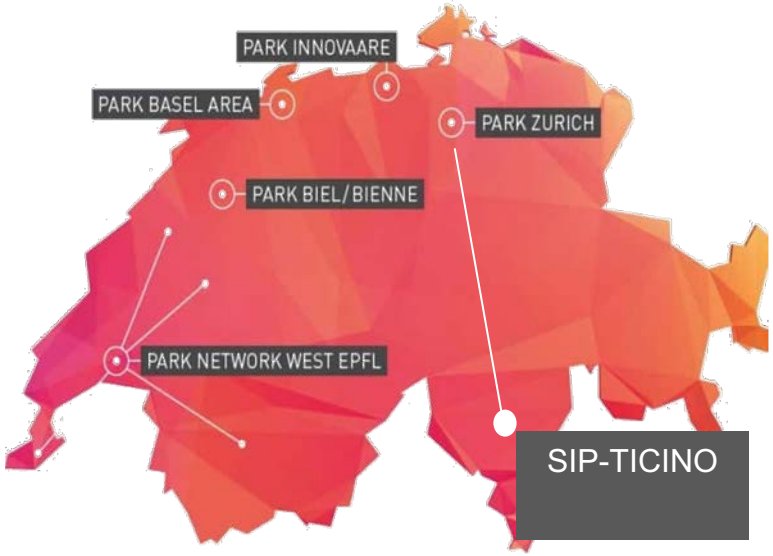
Progetti strategici in corso: cogliere opportunità iniziative SIP e GZA

SWITZERLAND INNOVATION

GREATER ZURICH AREA

ETH zürich

Empa
Materials Science and Technology



inspire

Advanced Manufacturing
Technology Transfer Centers

zh aw School of Engineering

robotics
Swiss National Centre of Competence in Research

Scuola universitaria professionale della Svizzera italiana
Dipartimento tecnologie innovative

SUPSI

“L’importante non è prevedere il futuro ma renderlo possibile”

Antoine de Saint-Exupéry (1900-1944)

Grazie per l’attenzione!

Prof. Dr. **Emanuele Carpanzano**

Direttore Dipartimento Tecnologie Innovative SUPSI