Facts and Figures 2024
Department of Innovative Technologies

SUPSI

Overview

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At SUPSI’s Department of Innovative Technologies, innovation and dynamism are core components of daily activities. The institutional mission guides various areas, including academic programs, applied research, and development. Lecturers are committed to developing up-to-date curricula, while research teams collaborate on projects with both local and global partners, striving to train the leading engineers of the future.

Prof. Milena Properzi, Ph.D.
Director of the
Department of Innovative Technologies

Key numbers

1004

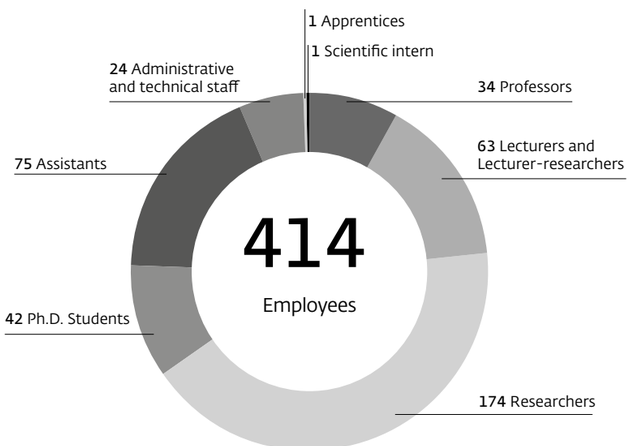
Bachelor and Master students

806

Continuing Education participants

238

Ongoing research projects



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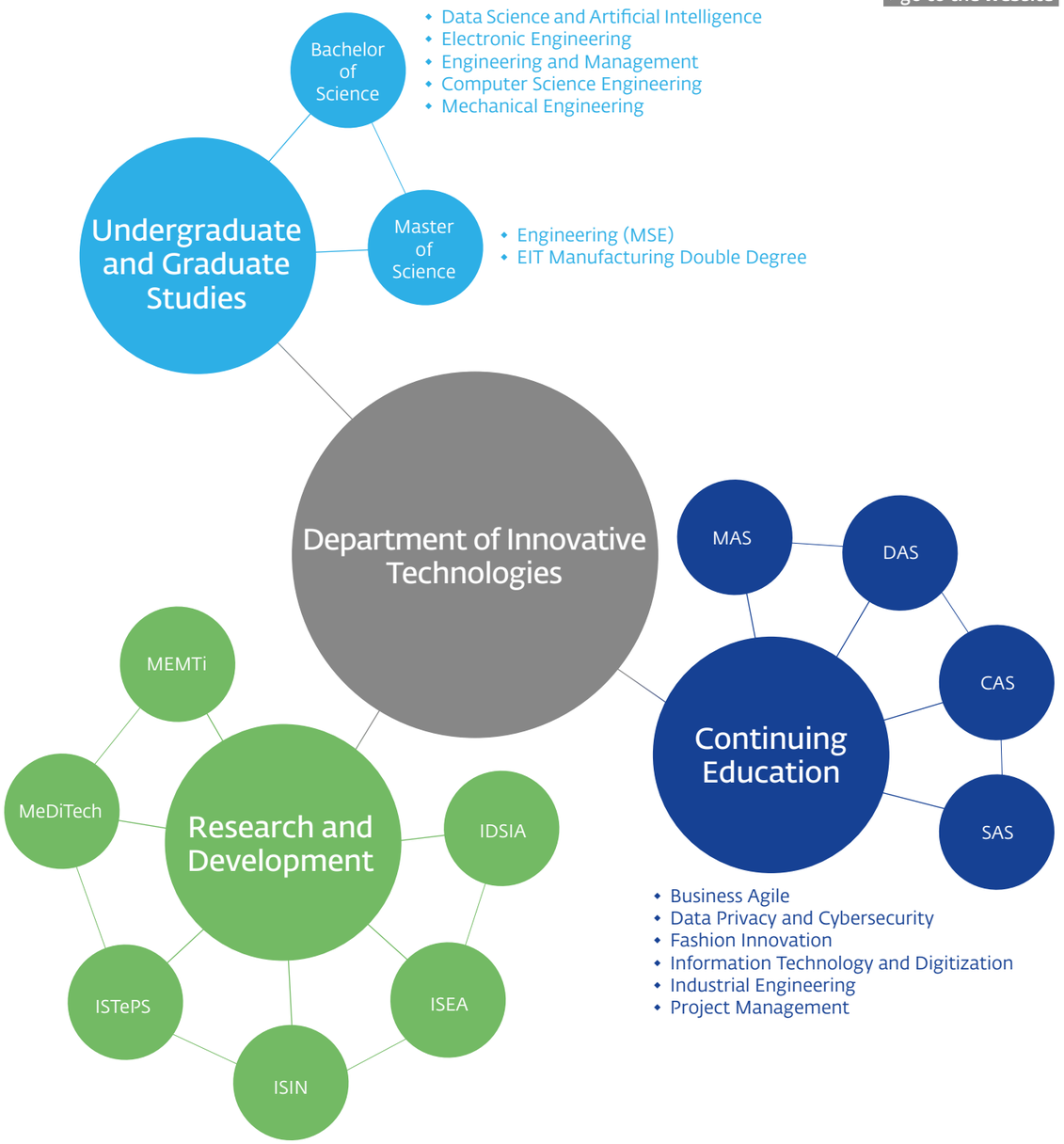


IDSIA USI-SUPSI	Dalle Molle Institute for Artificial Intelligence
ISEA	Institute of Systems and Applied Electronics
ISIN	Institute of Information Systems and Networking
ISTePS	Institute of Systems and Technologies for Sustainable Production
MeDiTech	Institute of Digital Technologies for Personalized Healthcare
MEMTi	Institute of Mechanical Engineering and Materials Technology
MAS	Master of Advanced Studies
DAS	Diploma of Advanced Studies
CAS	Certificate of Advanced Studies
SAS	Short Advanced Studies

Undergraduate and Graduate Studies

Head: Prof. Andrea Graf

→ go to the website

The Department of Innovative Technologies offers Bachelor's and Master's degree programs in Engineering recognized at both the federal and European levels.

The educational offering has a strong professional focus. The curriculum of all programs includes a significant amount of hands-on laboratory activities, along with opportunities to undertake internships, semester projects, and thesis projects in collaboration with local companies and institutions.

Our courses

Bachelor of Science

5

Data Science and Artificial Intelligence
Co-heads: Prof. Alessandro Facchini, Ph.D., and Matteo Casserini, Ph.D.*

Electronic Engineering
Head: Eng. Gianluca Montù

Engineering and Management
Head: Prof. Paolo Pedrazzoli, Ph.D.

Computer Science Engineering
Head: Prof. Sandro Pedrazzini, Ph.D.

Mechanical Engineering
Head: Eng. Luca Diviani**

Master of Science

2

Master of Science in Engineering (MSE)
In collaboration with the other Swiss Universities of Applied Sciences
Head: Prof. Donatella Corti, Ph.D.

EIT Manufacturing Double Degree Master
In collaboration with international universities
Head: Prof. Donatella Corti, Ph.D.

Students

784
Bachelor of Science

220
Master of Science

Professors and Lecturers

97
Professors, Lecturer-researchers and Lecturers

1:10
Academic staff to students ratio

*In charge from January and from February 2025, respectively, succeeding Prof. Andrea Graf (ad interim).
**In charge from September 2024, before Prof. Walter Amaro.

From Degree to Professional Career

The Department of Innovative Technologies contributes to the growth and development of the economy at both the cantonal and national levels. Most of our graduates find employment within a year of graduation or successfully continue their educational path.

Graduates

127

Bachelor

58

Master of Science
in Engineering

Post-Graduation Outcomes

86.1%

is employed

11.6%

is studying

2.3%

is looking for a job

Theses with Industry Partners

More than 80 Bachelor's and Master's theses per year are conducted in collaboration with local companies and institutions. Some of our partners:

and many more.

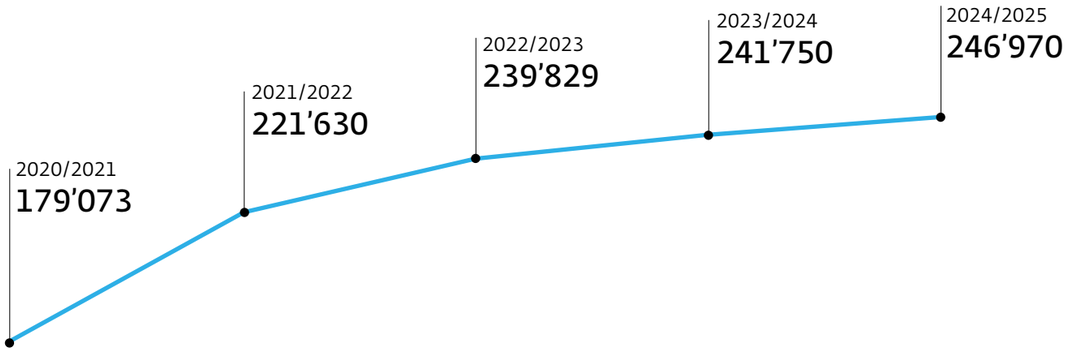
Awards and Scholarships

Each year, the most deserving students are recognized for the best Bachelor's and Master's thesis projects and may be awarded scholarships and financial incentives to support their academic journey.
These awards celebrate academic excellence while providing valuable encouragement, encouraging talented and motivated students to pursue their studies.

→ go to the website

Sponsors and Funding Volume (in CHF)

- Argor-Heraeus
- BPO Foundation
- Corrado Valeri Foundation
- Leonardo Foundation
- Nizzola Foundation
- PREMIOSWISSENGINEERINGTICINO Foundation
- Reteca Foundation
- RUAG Foundation
- Rudolf Chaudoire Foundation
- TalenThesis Award



Continuing Education

Head: Silvia Mari*, Ph.D.

→ go to the website

Continuing Education at the Department of Innovative Technologies offers a wide range of courses in the fields of: Business Agility, Data Privacy and Cybersecurity, Fashion Innovation, Computer Science and Digitalization, Management Engineering, Industrial Engineering, and Project Management.

Tailored for professionals in engineering and emerging technologies, these programs empower participants to stay at the forefront of innovation and effectively meet the evolving demands of industry and society.

Certification courses (SAS, CAS, DAS, MAS)
46

Advanced short courses
183

Tailor-made courses for companies
37

Participants
806

Competence Center
1

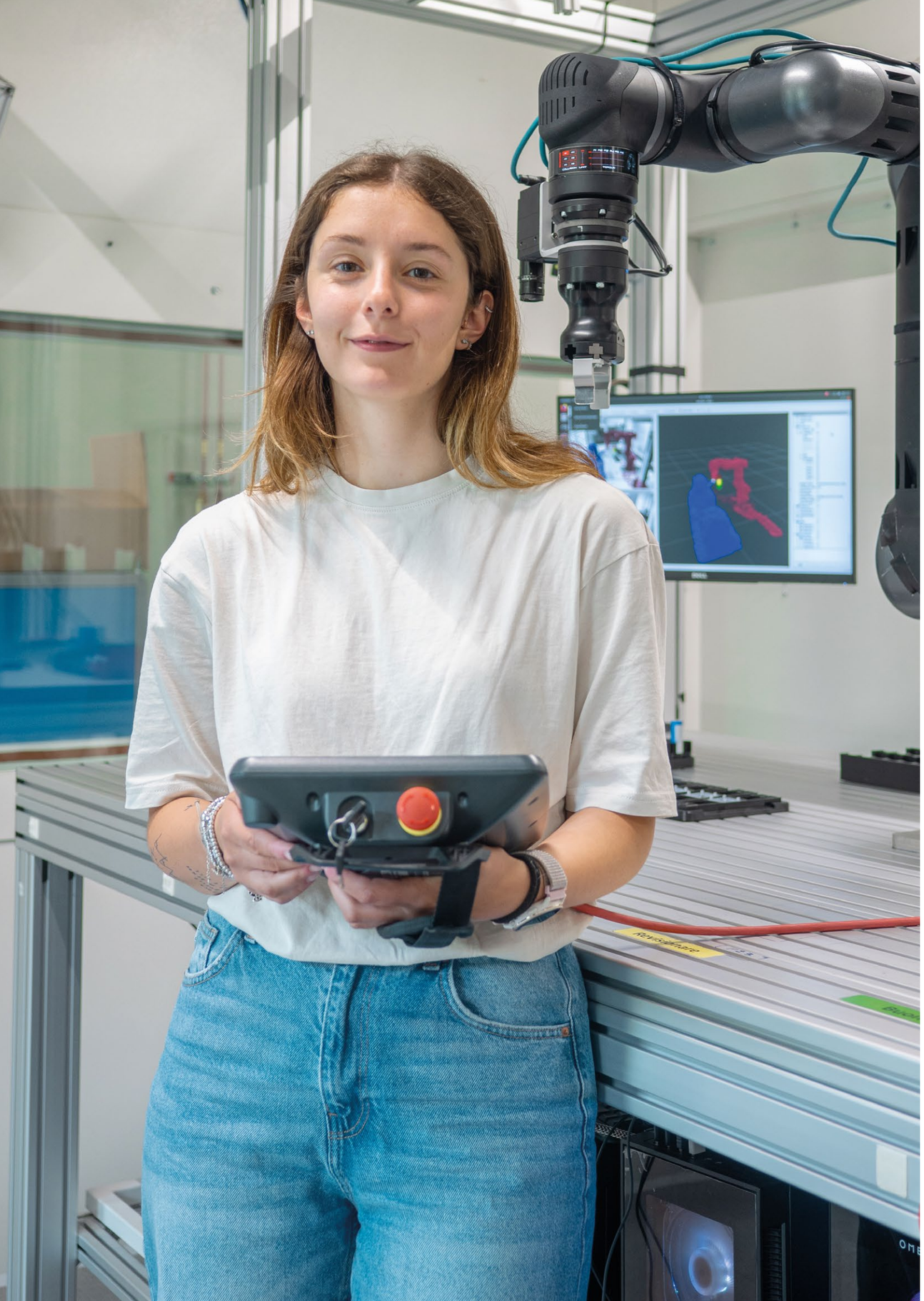
Budget (Mio CHF/year)
1.3

Competence Center for Project Management

Founded in November 2024, the Center supports professionals and organizations through applied research, training—both standard and tailored—and collaborative initiatives. It promotes the sharing of project management practices and tools, fostering skills development and the adoption of innovative approaches to project management.

Areas of expertise:
- Agile Project Management
- Distributed Project Management
- AI-Supported Project Management
- Sustainable Project Management
- Value-Based Project Management

*In charge from August 2025, following a period of collaboration with Eng. Antonio Bassi — former Head of Continuing Education — since April 2025.



Research and Development

Head: Prof. Federico Bosi, Ph.D.

→ go to the website

The Department of Innovative Technologies carries out applied research projects in collaboration with academic, institutional, and industrial partners at the local, national, and international levels.

By fostering these strategic partnerships, the Department promotes technological innovation and facilitates knowledge transfer, contributing to the development of practical solutions to address emerging challenges across the most advanced sectors of the economy and society.

Research institutes*
6

On-going projects
238

Budget (Mio CHF/year)
27

Third-party funding
78.9%

Publications
150+

Patents*
40

On-going projects by funding agency

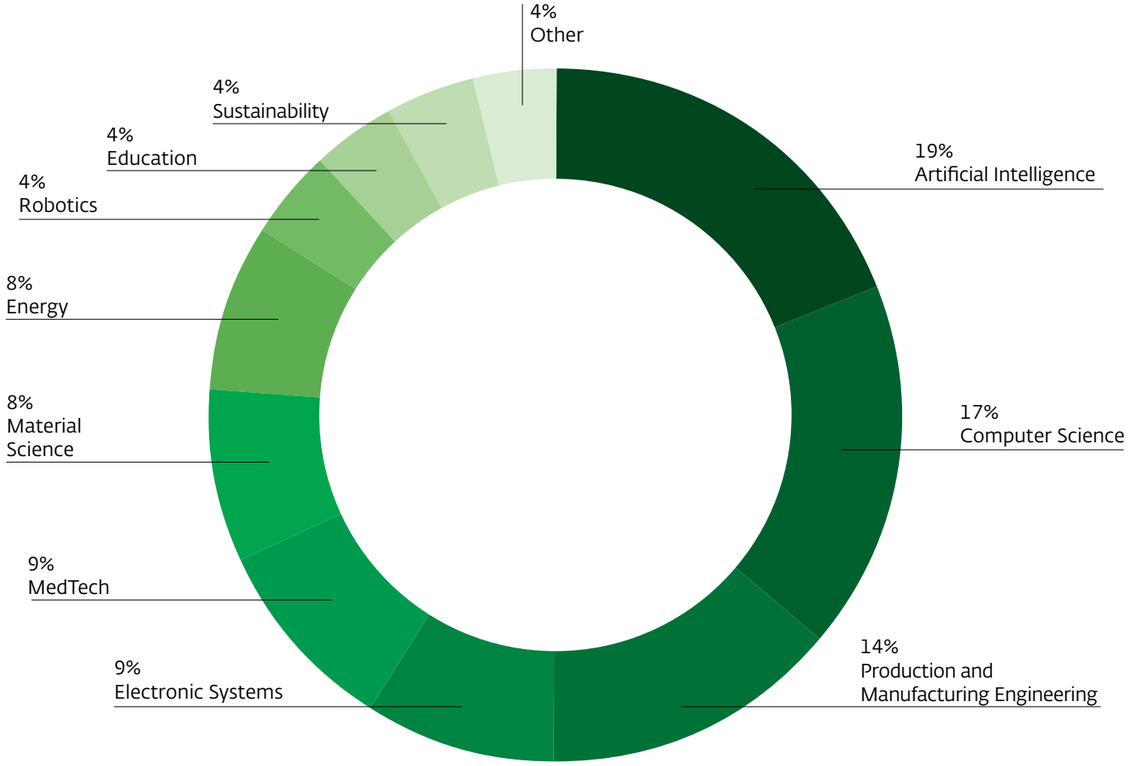
86 Swiss Innovation Agency (Innosuisse)	41 European Union (EU) State Secretariat for Education, Research and Innovation (SERI)	19 Swiss National Science Foundation (SNSF)	30 Research Mandate	39 Other Agencies and Foundations	23 Internal SUPSI

*Total number, not referred to 2024.

Research Collaborations

Projects	Ticino	Switzerland	Europe	Extra Europe		
Percentage distribution	50.4%	23.1%	25.2%	1.3%		
Partner Institutions						
Universities and research centres	2	45	221	5	273	806
Public and private companies	82	79	366	6	533	

Main Research Areas



Research Institutes and Areas

→ go to the website

Dalle Molle Institute for Artificial Intelligence (IDSIA USI-SUPSI)

Director:
Prof. Andrea Emilio Rizzoli, Ph.D.

- Machine learning
- Intelligent control for systems and networks
- Natural language processing and information retrieval
- Computational geometry and computer vision
- Autonomous robotics
- Theory and algorithms

Institute of Systems and Applied Electronics (ISEA)

Director:
Prof. Daniele Allegri, Ph.D.

- Digital electronics, microelectronics and bioelectronics
- Analogue and radio frequency electronics, telecoms and imaging systems
- Power and applied energy electronics
- Mechatronic systems
- Applied photonics and optoelectronics

Institute of Information Systems and Networking (ISIN)

Director:
Prof. Tiziano Leidi, Ph.D.

- Advanced human-machine interaction
- Audiovisual processing and immersive multimedia
- Cloud and distributed systems
- Data engineering, analysis and processing
- Educational technology and open data
- Reliable and secure computer networks

Institute of Systems and Technologies for Sustainable Production (ISTePS)

Director:
Prof. Marco Colla

- Automation, Robotics and Machines
- Sustainable Production Systems

Institute of Digital Technologies for Personalized Healthcare (MeDiTech)

Director:
Prof. Stéphane Meystre, Ph.D.

- Medical Devices
- Biomedical Signal Processing
- Biomedical Informatics and Data Science
- Ubiquitous Health

Institute of Mechanical Engineering and Materials Technology(MEMTi)

Director:
Prof. Maurizio Barbato, Ph.D.

- Polymer Engineering
- Mechanical Engineering
- Hybrid Materials
- Computational Materials Science
- Thermo-fluid Dynamics

Our Flagship Projects

The following pages feature a curated selection of applied research projects developed by the units of the Department of Innovative Technologies, in close collaboration with national and international companies and institutions.

These projects span a wide range of strategic areas, including Artificial Intelligence, MedTech, sustainability, advanced manufacturing, materials science, and robotics.

This selection highlights the Department's strong expertise and multidisciplinary competencies, and the scientific and technological progress achieved through its research activities. Particular emphasis is placed on the practical applications of these projects and their tangible impact across industrial, healthcare, and social domains—driving innovation, advancing sustainability, and strengthening the competitiveness of businesses.

→ go to the website

Dalle Molle Institute for Artificial Intelligence (IDSIA USI-SUPSI)
- AI for Supporting People with Disabilities
- AI in Intensive Care Units

Institute of Systems and Applied Electronics (ISEA)
- Innovative System to Monitor Bottom and Suspended Solid Transport in Rivers
- New Device for Post-Stroke Rehabilitation

Institute of Information Systems and Networking (ISIN)
- Virtual Reality and Design of Automotive Infotainment Systems
- AI and Agriculture, Allies for Potato Preservation

Institute of Systems and Technologies for Sustainable Production (ISTePS)
- Human-Centric Digital Twins for Production Systems
- Human Expertise and Robotic Precision: Towards a Safer and More Efficient Industry

Institute of Digital Technologies for Personalized Healthcare (MeDiTech)
- CUOREMA: an app for personalized cardiovascular rehabilitation
- VisioBone: New Wearable Device for the Autonomy of Visually Impaired Individuals

Institute of Mechanical Engineering and Materials Technology (MEMTi)
- Molecular Models to Extend Battery Life
- GreenHub, a Project for Seasonal Energy Storage

Dalle Molle Institute for Artificial Intelligence (IDSIA USI-SUPSI)

AI for Supporting People with Disabilities

The REXASI-PRO project (REliable & eXplAinable Swarm Intelligence for People with Reduced mObility) uses safe and reliable AI to develop self-driving wheelchairs, assisted by drones, to support people with motor and sensory disabilities.

Thanks to progress in artificial intelligence and robotics, innovative solutions are emerging to support individuals with reduced mobility. However, a key challenge remains: developing products and devices that are increasingly technological, safe, and reliable, while also adhering to manufacturing models that prioritize environmental sustainability and ensure the safety of both workers and end users.

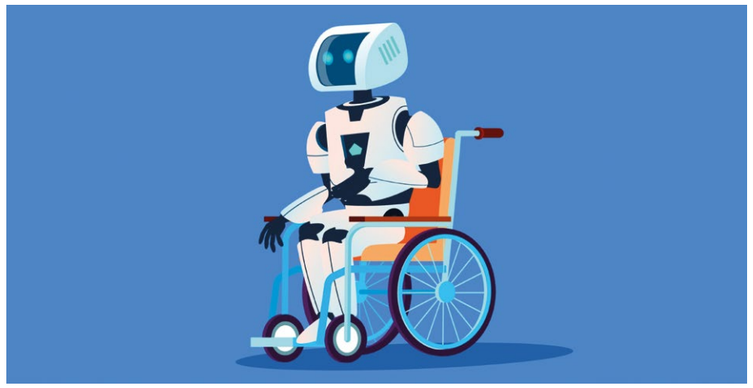
The REXASI-PRO project, in which the Trustworthy Autonomous Systems (TAS) research group of the Institute IDSIA USI-SUPSI is participating, aims to develop a new framework based on the paradigms of Trustworthy Artificial Intelligence and Swarm Intelligence. This system will facilitate collaboration between heterogeneous robots—such as autonomous wheelchairs and drones—allowing them to coordinate their actions and navigate more effectively. By working together, they will be able to avoid collisions, obstacles, and other hazards far more efficiently than they could individually.

The research team simulated some decision support scenarios for safe crossing of roads in the presence of other vehicles. The experiment enabled the evaluation of safety benefits arising from the multi-agent integration of redundant and heterogeneous sensors—including computer vision-based systems—through information fusion techniques. Data from the various detectors were combined using dedicated algorithms, resulting in significantly greater accuracy and decision-making reliability compared to the use of individual sensors alone.

«The trial described is part of the broader research project, whose results will enable greater autonomy and safety for people with motor and sensory disabilities, constituting an important element of social inclusion and sustainability in future smart-cities», comments Prof. **Francesco Flammini**, Head of the research group.

The project, coordinated by Spindox Labs with the participation of the National Research Council (NRC), the German Artificial Intelligence Research Center (DFKI), King's College London and the University of Seville, was selected by the European community under the Horizon Europe program and is nationally funded by the State Secretariat for Education, Research and Innovation (SERI)*.

*SUPSI's activities within the project are funded by the State Secretariat for Education, Research and Innovation (SERI).



AI in Intensive Care Units

The SUPSI research group in Knowledge-based AI, in collaboration with the Ente Ospedaliero Cantonale (EOC), is studying how to use artificial intelligence to detect Ventilator-Associated Pneumonia (VAP) at an early stage.

Ventilator-associated pneumonia (VAP) is the most common nosocomial infection in intensive care units (ICUs), primarily affecting patients requiring invasive mechanical ventilation. This condition not only increases potential complications but also extends hospital stays and significantly raises healthcare costs. Early detection is crucial for initiating timely treatment, reducing complications, and promoting faster recovery. However, despite its significant clinical impact, accurately and promptly identifying VAP remains an unsolved challenge.

To tackle this complex issue, the project *Early Identification of Ventilator-Associated Pneumonia Using Machine Learning Techniques*, funded by the Swiss Innovation Agency (Innosuisse), leverages Artificial Intelligence (AI) to support clinicians in the early detection of VAP.

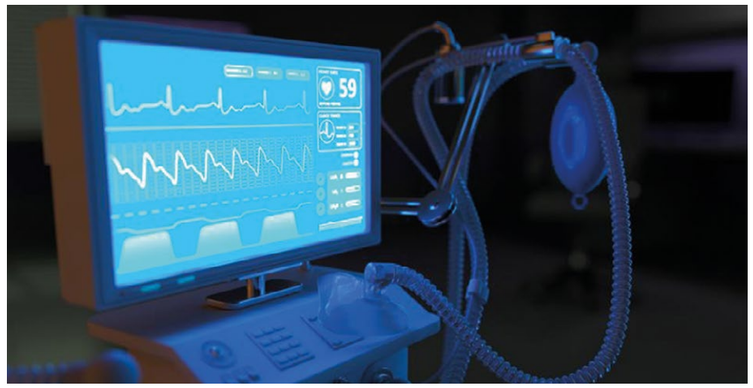
«By analyzing data collected from ventilators, we have been able to identify very small changes in respiratory pattern that are predictive of the onset of VAP», explains **Laura Azzimonti**, SUPSI Senior-Researcher and Lecturer. «These early changes are typically too subtle to be perceived by humans and often become evident only when the condition has already progressed».

The novelty of the project lies in using data directly extracted from mechanical ventilators, recorded continuously and automatically without human intervention. These data, combined with the clinical characteristics of patients, enable the AI system to provide a reliable diagnostic tool. The system integrates seamlessly with bedside ventilators, making it practical and suitable for everyday clinical use.

The potential of the AI system goes beyond clinical practice. By facilitating the early and accurate detection of VAP, it ensures timely and effective treatments, improving patient outcomes and generating significant savings in healthcare costs. It also serves as a valuable tool in addressing the global challenge of antibiotic resistance, limiting excessive use and promoting a more sustainable therapeutic approach.

The project, led by the SUPSI research group in Knowledge-based AI at the Institute IDSIA USI-SUPSI, spearheaded by Laura Azzimonti, is conducted in collaboration with the Intensive Care Unit, the Medical education and Research Area (AFRi), and the Information and Communication Technology Area (ICT) of the Ente Ospedaliero Cantonale (EOC).

This collaborative effort between clinicians and data scientists sets a new standard in tackling a complex and pervasive ICU challenge, demonstrating the transformative potential of AI in healthcare.



Institute of Systems and Applied Electronics (ISEA)

Innovative System to Monitor Bottom and Suspended Solid Transport in Rivers

→ watch the video

The RiBeMos project, funded by Innosuisse, aimed to develop a multi-sensor system capable of quantifying both suspended solids and bedload transport in rivers. This is a fundamental operation to enable preventive maintenance interventions, avoiding the development of landslides and the resulting damage to structures and infrastructure.

RiBeMos (Revolutionary RIver BEd-load MOnitoring System) focused on two main objectives: first, to automate the measurement of suspended solids—an activity that previously demanded substantial time and resources; second, to enable the measurement of river bedload transport, which had previously been unachievable.

The project was carried out by the ISEA Institute in collaboration with the companies Laboratorium 3D, Kern Elektronik AG, the Azienda Elettrica Ticinese, and the Watercourses Office of the Department of Territory of the Canton of Ticino.

Specifically, ISEA researchers were responsible for developing the sensors, electronics, algorithms, and data transmission system, as well as conducting tests on scale models in the laboratory and real-world tests on rivers.

«It was a very interesting and interdisciplinary project: the fruitful collaboration between electronic, computer, rural, civil, and environmental engineers allowed us to combine different topics and working methods towards a common goal», said **Samuel Poretti**, Project Leader and Head of the RF Electronics, Telecommunications, High-Frequency and Imaging Systems Area.

«Particular efforts were dedicated to the experimental phase and practical validation. The use of real-scale models was crucial for developing the entire monitoring system, as it allowed us to replicate events that, in nature, occur unpredictably», he added.

The innovative system developed through the project has yielded important results on multiple fronts, paving the way for new projects and collaborations in the region.

Following the development and testing of the models in Valle Bedretto and at the Laboratorium 3D company in Biasca, the next phase—supported by the Watercourses Office of the Canton of Ticino—will involve installing the prototype at a measurement station in Val Canaria, above Airolo.

This stage will enable the implementation of a continuous monitoring system for further testing and optimization. Looking ahead, the multi-sensor system holds significant potential for identifying suitable locations for protective infrastructure and for informing river restoration strategies.

The project was also featured in an article by Ticino Scienza (in Italian only): *Misure super-precise dell'attività dei muscoli per aiutare i pazienti colpiti da un ictus cerebrale*

New Device for Post-Stroke Rehabilitation

Through the WP-SEMG project (Wireless Portable and Multichannel Surface EMG), the ISEA Institute is developing a new device for the rehabilitation of stroke patients. The goal is to create a functional prototype of an electromyograph as a non-invasive alternative to needle electromyography, in order to improve the diagnosis of myopathies and support clinical recovery.

Post-stroke rehabilitation is a critical challenge in the recovery process for individuals affected by stroke, aiming to restore motor functions and enhance overall quality of life. Advances in medicine and technology have led to the development of new therapeutic approaches that integrate physical and cognitive treatments with innovative assistive devices.

In this context, the WP-SEMG project—launched in 2015—also plays a significant role. Following an initial phase of technical and clinical validation on healthy volunteers, the project progressed to data acquisition and analysis involving individuals undergoing post-stroke rehabilitation. The prototype, which has been continuously enhanced over the years, now enables the simultaneous acquisition of signals from 256 electrodes, a substantial improvement over the previous model, which supported only 64.

Vanessa Arteaga, a Ph.D. Student at the Institute ISEA, is working on data acquisition and implementing advanced electromyographic signal processing techniques under the supervision of Prof. **Daniele Allegri**, ISEA Director, and Prof. MD. **Alain Kälin**, Director of the Neurocentro della Svizzera Italiana, in collaboration with physicians from the Ente Ospedaliero Cantonale and the Hildebrand Clinic.

«With our device and algorithms, we plan to conduct regular tests on patients to monitor changes in motor unit parameters. This will help us better understand how the neuromuscular system adapts during the different phases of rehabilitation», explains Vanessa Arteaga. «The interdisciplinary nature of this project is guaranteed by the fruitful collaboration between engineers and physicians. Indeed, the common goal is to support and facilitate the recovery of patients' motor skills through the optimization of rehabilitation therapies».

Institute of Information Systems and Networking (ISIN)

Virtual Reality and Design of Automotive Infotainment Systems

The V-Cockpit project, funded by Innosuisse, led to the development of a platform for the prototyping, management, and testing of automotive infotainment systems through virtual reality.

The digitalization of the automotive sector is increasing the complexity of vehicle infotainment systems. From selecting music playback to making Bluetooth calls, adjusting comfort settings, and configuring navigation systems, the number of operations drivers can perform while driving is growing.

V-Cockpit, developed by the ISIN and ISEA Institutes in collaboration with Connecta Automotive Solutions, aims to transfer most of the design and validation phases of automotive infotainment systems into the virtual world before the vehicle is marketed.

«We are trying to recreate a 3D virtual environment that allows users to experience various forms of interaction with the infotainment system, from a parked vehicle to driving under different environmental and traffic conditions», explains **Achille Peternier**, Associate Professor at ISIN. «In this way, it becomes possible to identify potential problems or discrepancies compared to expectations early in the design phase, reducing time and costs for testing and final product development».

The developed platform supports the design of new infotainment systems and provides tools for ergonomics analysis, optimal screen and buttons placement, and identification and reduction of distractions through constant monitoring of the user's emotional state. «Specific sensors measure physiological data from the driver, such as heart rate variability, eye movements, breathing, and muscle tension, to detect levels of attention or stress while driving», continues **Michela Papandrea**, Senior Researcher and Lecturer at ISIN. «Once collected, this data is analyzed by machine-learning models and displayed on a dashboard, facilitating design corrections based on user experience».

The ISEA Institute also contributed by interfacing the virtual environment with the real hardware where the infotainment software is installed and executed. The Director, Prof. **Daniele Allegri**, emphasizes that emulating complex electronic systems in virtual environments is very challenging, as the responsiveness of the electronic components must align with the performance expectations of the software. The integration between real hardware and the virtual environment allows users to evaluate system performance and optimize solutions from the early stages of development.

Eng. **Roberta Martusciello**, General Director of Connecta Automotive, celebrates the success of the initiative: «Thanks to collaborations with major car manufacturers and Tier 1 suppliers, the project enabled the development of Car-Infotainment solutions in a virtual environment, meeting both aesthetic expectations and safety regulations, while reducing design costs and timelines».

The V-Cockpit tool among the highlights of the 2025 Consumer Electronics Show in Las Vegas

→ watch the video

AI and Agriculture, Allies for Potato Preservation

The potato is the fourth most important food crop in the world, with cultivation spanning 16.5 million hectares (about four times the size of Switzerland). The PRONTO project (Predicting Potato Sprouting to Optimise Tuber Storage) is developing predictive model-based solutions capable of detecting the onset of sprouting early and prolonging tuber storage life.

Since 2020, part of the food industry has been searching for new solutions to extend potato storage time. The reason? That year, first in Europe and later in Switzerland, Chlorpropham—a pesticide formerly used to prevent early sprouting—was banned due to its toxicity to human health. Until then, it had been widely employed to maintain potato quality, weight, and therefore economic value.

In response to this challenge, as an alternative to traditional storage methods (cool, dark, and ventilated environments between 6°C and 8°C), another substance was adopted: Orange Oil, a natural extract from orange peel that is safe for consumers but significantly more expensive. Industries now spray stored potatoes with Orange Oil to prevent sprouting. However, given the high cost, it is essential to optimize its use by applying it only at the right time—ideally at least two weeks before root emergence. This is where Artificial Intelligence comes into play.

The PRONTO project, involving the ISIN Institute, aims to develop predictive model-based solutions capable of detecting the sprouting time early. Researchers **Omran Ayoub** and **Davide Andreoletti** state: «The results are encouraging. In the past, predicting potato sprouting had a margin of error of 30–40 days. Today, thanks to the new algorithms, this interval has been reduced to just 7 days. This significant progress allows for halving Orange Oil applications, resulting in clear economic savings and better waste management».

Achieving this goal requires the application of sensors and in-depth analysis of the plant's internal processes, focusing on electrophysiological signals and other behavioral indicators that AI algorithms can use to predict sprouting. «Hundreds of potatoes are equipped with sensors that monitor electrophysiological signals, while the exact sprouting date is recorded. The collected data is then processed by the algorithm, which also receives information about the sprouting day. By combining these datasets, the predictive models can estimate sprouting with high precision, allowing for the identification of the optimal time to apply Orange Oil treatment».

The PRONTO project, set to conclude in autumn 2025, is funded by Innosuisse and carried out in collaboration with various agricultural and food companies, including Vivent Biosignals, UPL, Fenaco, and Zweifel. It also involves the Swiss Confederation's competence center Agroscope and the Web Science Lab of the Fernfachhochschule Schweiz (FFHS).

Institute of Systems and Technologies for Sustainable Production (ISTePS)

Human-Centric Digital Twins for Production Systems

Within the STAR project, the Sustainable Production Systems Laboratory developed a software infrastructure and related models to digitize production systems, including workers, and support the quality control and navigation activities of autonomous mobile robots.

STAR is a research project funded by the Horizon 2020 program* that involved 15 European partners in designing new technologies for the digitization of human-centered manufacturing systems. The intent is to facilitate the integration of artificial intelligence systems and incentivize the adoption of safe and reliable standards.

The project has been researching, developing, validating and making new technologies available to the community. These include cutting-edge artificial intelligence models designed to be easily interpretable for humans through Explainable AI technologies. Others include active learning systems, simulated reality systems and digital twins for digital representation of all actors in the production system, including workers.

A major contribution to the latter technology was made by the Sustainable Production Systems (SPS) laboratory of the Institute ISTePS. Specifically, an extensible and flexible IIoT platform was built to create customized representations of production systems and their entities, including humans. The dimension of worker characterization was also integrated by leveraging the Asset Administration Shell (AAS) standard. The versatility of the platform, based on a modular infrastructure with interchangeable components, was demonstrated through application in two different use scenarios envisaged by the project: quality control (in collaboration with Philips, JSI, Qlector and the University of Groningen) and intelligent navigation for autonomous mobile robots (in collaboration with DFKI and Thales).

The representation of the human component within digital twins, especially the use of artificial intelligence techniques to automatically analyze this information for decision support, has raised several ethical issues that are still being debated at the legislative level.

Vincenzo Cutrona, Researcher in the SPS lab, remarks, «Technology is advancing at a rapid pace that regulations often struggle to keep up with. Over the course of the project, we have been constantly engaging with experts in ethics and regulations to ensure ethical, transparent and responsible use of our technology and avoid negative impacts on the role of workers in production processes. Crucial was the support of partner Arthur's Legal, which is always attentive on issues of artificial intelligence and ethics». Besides SPS Lab researchers, a few Master of Science in Engineering (MSE) students also collaborated on the project through the research assistance track or for their thesis projects.

The platform developed has been an important resource for the research group, facilitating the development of other applications for the use of collaborative robots and paving the way for further projects on human-centric human-robot interaction.

*SUPSI's activities within the project are funded by the State Secretariat for Education, Research and Innovation (SERI).

The project was also featured in a report by Il telegiornale RSI (more information on page 36).

Human Expertise and Robotic Precision: Towards a Safer and More Efficient Industry

The Fluently Project, led by the Automation, Robotics, and Machines (ARM) Laboratory in collaboration with an international consortium of 22 academic and industrial partners, aims to enhance human-robot interaction in industrial sectors, such as manufacturing, by leveraging the most advanced artificial intelligence techniques.

The ARM research team leverages artificial intelligence to make industrial robots accessible to all levels of human expertise, combining the precision, strength, and endurance of machines with human judgment, skills, and predictive capabilities.

In the context of industrial and manufacturing applications, the team is developing a human-machine interface that enables robots to understand and interpret gestures, language, and human behavior, fostering effective collaboration. This allows robots not only to execute commands but also to adapt to the psycho-physical conditions of the operator.

Currently, the project focuses on solving automation challenges across various sectors:

- **Recycling** – targets hazardous or repetitive tasks in the disassembly and recycling of lithium batteries, reducing risks for human operators.
- **Aerospace** – supports the assembly of engine nacelles, facilitating complex activities such as positioning, fastening, and inserting components.
- **Repair and Remanufacturing** – enhances processes for inspection, reverse engineering, and defect analysis in the repair of high-value metal components.

In these and other areas, Fluently aims to improve efficiency, safety, and worker well-being while reducing the complexity of industrial processes. This innovative approach demonstrates how artificial intelligence can revolutionize the workplace, making technology a valuable ally in supporting human capabilities.

To develop a communication interface that feels as natural as possible, the Fluently project also prioritizes the protection of sensitive data—such as voice and biophysical signals—processed by the system. This goal requires the use of AI models that can operate efficiently on devices with limited computational capacity, without compromising performance. To achieve this, the ARM team leverages the support and cutting-edge edge computing technologies provided by Qualcomm, a leading innovator in the field.

Institute of Digital Technologies for Personalized Healthcare (MeDiTech)

CUOREMA: an app for personalized cardiovascular rehabilitation

The MeDiTech Institute, within the framework of the project "Mobile App for Cardiovascular prevention and cardiopatic patients monitoring (CUOREMA)", has developed an application to support patients during cardiovascular rehabilitation.

Cardiovascular diseases are the leading cause of death worldwide, accounting for about 17 million deaths per year. Cardiovascular rehabilitation (CVR) is therefore crucial for prevention, with data showing a 20% decrease in mortality.

However, after completing hospital care, patients often lose enthusiasm and interest in improving their lifestyles. For this reason, the CUOREMA project aims to develop an innovative and personalized mobile health system, to increase adherence to post-hospital cardiovascular rehabilitation.

The CUOREMA application, currently under observational study at Malcantonese Hospital (OSCAM) and Centre Hospitalier de Corbie (France), integrates data from wearable devices —allowing patients to autonomously and automatically record their physiological parameters, activities, and training sessions—and provides bio-behavioral, motivational, and personalized feedback based on the user's profile and the data collected.
This supports continuous progress and the achievement of CVR goals, also through interaction with virtual coaches who offer suggestions and advice based on Swiss and European rehabilitation guidelines. In addition, the app provides cardiologists with a more efficient and structured tool to monitor patients' health and progress, aiming to improve both quality of life and health outcomes.
«The solution we developed required strong multidisciplinarity and personalization», explains **Francesca Faraci**, head of the Biomedical Signal Processing (BSP) group, «with the development of a personalized and adaptable behavioral model based on AI algorithms».

Various data types are used as information sources: those collected via sensorized shirts, as well as questionnaires and contextual information obtained through a chatbot. This way, statistical and causal modeling algorithms are able to create highly personalized behavioral profiles.

Radoslava Švihrová, Ph.D. student, points out: «Over time, user needs may change, requiring continuous updates and adaptations of the initially created model. Significant changes and results are communicated to the user (biofeedback), explaining the (causal) relationships and their impact on lifestyle».

The project, funded by the Eurostars program and the State Secretariat for Education, Research, and Innovation (SERI), involves partners from academia, clinic, and industry: the Malcantonese Hospital, the companies My MHealth (UK), Game Solution Lab (NL), ALFAGAMMA (CH), and L.I.F.E. (IT).

VisioBone: New Wearable Device for the Autonomy of Visually Impaired Individuals

The Ubiquitous Health research team at the MeDiTech Institute is developing a wearable device that enables visually impaired individuals to move independently within their surroundings, without the need for additional aids.

The central idea of the VisioBone project, funded by the Leonardo Foundation, is to leverage the brain's neuroplasticity to reproduce vision through tactile stimuli.

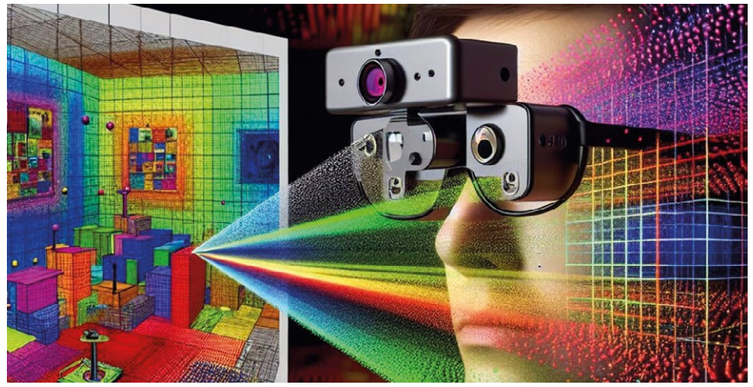
To achieve this, a device has been developed with three main components: a camera for visual capture of the surrounding environment, an image interpretation software, and a series of tactile stimulators that transmit processed visual information to the body.

Using a depth camera embedded in a frame similar to a pair of glasses, the device gathers information about the distance of nearby objects and converts this data into tactile stimuli. These haptic feedbacks are transmitted to the user through stimulators positioned on specially designed garments, providing the wearer with a sensory map of the environment.

The first prototype of the system, already successfully tested, divides the camera-captured images into four main areas, each representing an average object distance. Four actuators with vibrating motors for tactile stimulation translate these different distances into vibration frequency and intensity, enabling perception not only of the physical environment but also of additional information, such as object color.

The next phase will focus on developing a market-ready product with an increased number of stimulation points and an optimized design, integrated into a practical and lightweight garment that complies with medical device standards. It will also be built with biocompatible, hypoallergenic, and breathable materials, essential for applications requiring short- to medium-term skin contact.

With this innovative device, the MeDiTech team is making a significant advance in assisting visually impaired individuals, providing them with a new form of spatial perception that fosters autonomy and inclusion.



Institute of Mechanical Engineering and Materials Technology (MEMTi)

Molecular Models to Extend Battery Life

With the LIBDEMO (Lithium Ion-Battery degradation): towards a synergistic, multi-scale modelling strategy project, the Computational Materials Science Laboratory (SUPSI) and the Energy Storage Research Centre (BFH) study and simulate the degradation factors of lithium-ion batteries to optimize cell management, aiming to improve their performance and lifespan.

Lithium-ion batteries, whose invention and subsequent refinement earned the 2019 Nobel Prize in Chemistry for John B. Goodenough, M. Stanley Whittingham, and Akira Yoshino, represent a cornerstone in the transition to a «rechargeable» and increasingly sustainable world.

Essential for the widespread adoption of portable electronic devices, they also play a key role in the electric vehicle sector. However, despite their high potential, lithium-ion batteries are affected by various degradation processes that negatively impact their performance and lifespan, especially when subjected to demanding operating conditions, such as those required in the transport sector (e.g., extreme temperatures, rapid charge cycles, etc.).

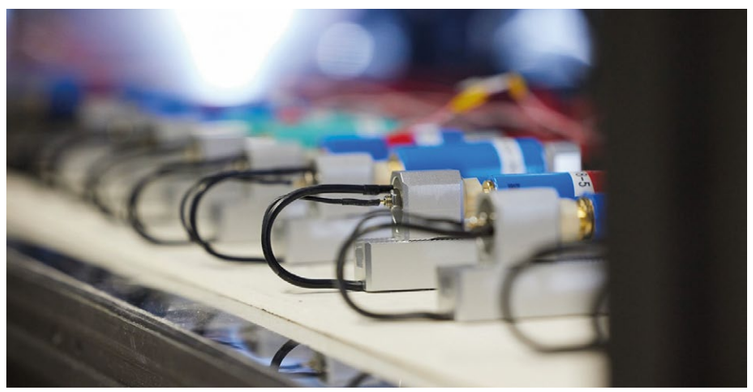
The goal is to develop advanced algorithms for optimal management and usage, extending their lifespan and improving their efficiency.

The project adopts an innovative approach by combining two modeling levels at different scales to deepen the understanding and prediction of degradation phenomena. Molecular models developed at the CMS Lab provide precise microscopic descriptions (approximately 10^{-10} m) of the molecular dynamics of key battery components, such as the electrolyte and the electrode-electrolyte interface. Senior Researcher **Claudio Perego**, project leader, explains, «Molecular models are crucial for understanding and predicting complex phenomena such as lithium-ion battery degradation».

In addition to enabling detailed characterization of battery degradation processes, the simulation results have been integrated into a physical model developed by BFH, operating at a higher scale and representing the entire electrochemical cell. This model enables the prediction of battery performance under real operating conditions, analyzing its evolution under the effects of degradation.

«The combined approach used in LIBDEMO enhances the prediction of degradation effects in physical battery models», comments Priscilla Caliandro, head of the Energy Storage Research Centre at BFH.

Looking ahead, the LIBDEMO project aims to leverage the results to develop operational management strategies for commercially available batteries, optimizing their performance and extending their average lifespan.



GreenHub, a Project for Seasonal Energy Storage

MEMTi Institute is participating in the GreenHub project, led by the Ostschweizer Fachhochschule (OST), to develop advanced solutions in renewable energy. The goal is to develop innovative systems to produce, convert and store green energy into liquid fuels, using raw materials from sustainable processes such as waste recycling.

In the future, waste recycling facilities in Switzerland could play an increasingly crucial role in the supply of energy and raw materials. «According to the principle of circular economy, we want to get as much benefit as possible from the different infrastructure and waste and energy flows in the KVA», explains project leader **Dariusz Nowak**, Researcher at the OST Institute of Energy Technology.

The GreenHub project, one of eight Flagship projects funded by Innosuisse, brings together 15 research partners and aims to demonstrate that an energy self-sufficient Switzerland, able to promote economic growth, can be achieved through the intelligent use of synergies between different technologies. This will be achieved through the conversion of locally generated heat, CO_2, and electricity into chemical energy carriers.

Specifically, the project aims to meet the seasonal energy deficit by adopting different energy storage strategies; these will result in a region-wide field demonstration in the form of a «Green Energy Hub». In this regard, the Hybrid Materials (HM) and Thermo-Fluid Dynamics (TFD) laboratories of the Institute of Mechanical Engineering and Materials Technology (MEMTi) will collaborate in the design, modeling, and construction of a reactor-heat exchanger, to enhance the outflows from the incinerator.

The Horgen Waste Incineration Plant (KVA) will act as a «real-world laboratory» and will be significantly involved in the project as an implementation partner. During the four-year development of the project, a significant portion of the research results will be tested in real operation at the Horgen plant, using prototypes and verifying their scalability for other KVA and industrial plants.

Guided site tours will also be organized to provide the public with an insight into the research results and the potential represented by waste incineration plants for sustainable energy and feedstock supply.


SUPSI
SUPSI

Best Theses

Bachelor of Science

TalenThesis Award

Manuel Acquistapace
Data Science and Artificial Intelligence

Enhancing Agricultural Sustainability: Machine Learning-based Early Drought Stress Detection in Plants using Electrophysiological Signals

Federico Erillo
Mechanical Engineering

*Ottimizzazione di un codice Python per la descrizione del processo di micronizzazione di polveri farmaceutiche**

Luca Nicolas Bezzola
Electronic Engineering

*Telecamera termica per la detezione precoce di incendi nelle gallerie**

Christian Cippà
Engineering and Management

*Modello per l'ottimizzazione del processo manutentivo della sala montata Re di FFS e di CARGO**

Filippo Finke
Computer Science Engineering

Blockchain wallet con account abstraction

RUAG Innovation Award

Alan Tallarini
Engineering and Management

*Ridefinizione della politica dei componenti**

Master of Science

Fondazione Nizzola Award

From the left: Joseph Cassarà, Samuele Chiesa, Tatiana Adele D'Onofrio

1° prize
Samuele Chiesa
MSE Energy and Environment

Dark I-V Measurement System

2° prize
Tatiana Adele D'Onofrio
MSE Data Science

Predicting the Fabric Consumption of Fashion Items

3° prize
Joseph Cassarà
MSE Energy and Environment

Six months piloting in 500 L digesters with pre-treatments to produce biogas from manure

Argor-Heraeus Award

Nicolò Turchiano
MSE Business Engineering

Strategic Development of Sustainability: Comprehensive Analysis of Environmental Impact and Business Strategy for an Innovative Industrial Packaging Solution

*Official thesis title in Italian.

Awards and Honors

Prof. Anna Valente appointed to the Innosuisse Board of Directors and among the individual members nominated by SATW

January 24 - Prof. **Anna Valente** joins the Board of Directors of the Swiss Innovation Agency (Innosuisse), bringing her many years of experience in research and innovation. Her appointment helps maintain a direct connection between the scientific and economic spheres within the Board.

March 5 - The Swiss Academy of Engineering Sciences (SATW) has appointed 14 new individual members. Professor Valente was selected in recognition of her contributions to the Swiss scientific and economic ecosystem, particularly for her leadership in innovative projects in the fields of industrial and manufacturing technologies.

TRA Visions Senior Researcher Award - Railway Sector

April 26 - Prof. **Francesco Flammini** was awarded the prize during the closing ceremony of the Transport Research Arena conference in Dublin.

The award celebrates excellence in transport research and recognizes researchers involved in European projects that have demonstrated proven impact in their field.

Best Paper Award at the 20th Embedded Vision Workshop in Seattle

July 23 - The paper *Multi-resolution Rescored ByteTrack for Video Object Detection on Ultra-low-power Embedded Systems* received the Best Paper Award at the 20th Embedded Vision Workshop, held during the Conference on Computer Vision and Pattern Recognition (CVPR). The work also included contributions from **Daniele Palossi**, Senior Researcher at SUPSI and IDSIA USI-SUPSI.

ESKAS Excellence Scholarship and XAI2024 Award

August 19 - **Fatima Ezzeddine** is a Ph.D. student at the Institute of Information Systems and Networking (ISIN) of the Department of Innovative Technologies (SUPSI) and the Faculty of Informatics (USI), under the supervision of Prof. Silvia Giordano and Researcher Omran Ayoub (SUPSI), and Prof. Marc Langheinrich (USI).

Her research, *Privacy Implications of Explainable AI in Data-Driven Systems*, explores the privacy implications of machine learning explainability on data and models.
For the second time, she has been awarded the ESKAS Excellence Scholarship, granted annually by the Swiss Confederation to promote international exchange and research cooperation between Switzerland and over 180 countries.
She was also recognized for the Best Ph.D. Proposal at the World Conference on Explainable AI, the leading global event in the field.

Laura Azzimonti appointed Group Leader at the Swiss Institute of Bioinformatics

September 2 - **Laura Azzimonti**, Senior Lecturer-Researcher SUPSI at IDSIA USI-SUPSI, has been appointed Group Leader of the Machine Learning for Bioinformatics and Personalized Medicine research team at the Swiss Institute of Bioinformatics (SIB).

SIB is an organization dedicated to biological and biomedical data science, supporting the advancement of research in the health sector.
The Machine Learning for Bioinformatics and Personalized Medicine group develops advanced machine learning methodologies for translational research and clinical decision support.

Age Innovation Prize 2024

November 11 - The award, presented during the Research & Innovation for Age(ing) Congress at the Innovation Park of the University of Applied Sciences of Eastern Switzerland (OST), was granted to the project *Serious Games for Cognitive Training and Monitoring of Older Adults at Home (SIGMA)*.

The project involved **Alessandro Puiatti**, Head of the Ubiquitous Health research area at the MeDiTech Institute.

Dalle Molle Award for the Quality of Life label

November 18 - The award was granted to the project *Trustworthy Artificial Intelligence for Autonomous Wheelchairs*, led by a SUPSI team composed of Prof. **Francesco Flammini, Alessandro Antonucci** (Lecturer-Researcher), **Jerome Guzzi** (Senior Researcher), **Franca Corradini** (Ph.D. Student), and **Carlo Grigioni** (Assistant with Bachelor).

The project develops drone-assisted wheelchairs to ensure safe navigation in complex environments, aiming to improve the quality of life for people with disabilities. This recognition, which follows the 2023 award for the REMIT project on tele-rehabilitation, confirms the Institute's commitment to developing cutting-edge solutions to break down barriers and promote social inclusion.

10 DTI Researchers Among the Top 2% in Stanford's World Ranking

November 19 - Once again this year, 10 researchers from the Department of Innovative Technologies have been included in the prestigious World Ranking of Top 2% Scientists published by Stanford University. Among them, nine SUPSI's researchers at IDSIA USI-SUPSI and one at MeDiTech Institute.

IDSIA USI-SUPSI: Prof. **Giorgio Corani**, Prof. **Francesco Flammini**, Prof. **Alessandro Giusti**, Prof. **Fabrizio Grandoni**, Prof. **Monaldo Mastrolilli**, **Dario Piga** (Senior Researcher), **Loris Roveda** (Senior Researcher), **Marco Scutari** (Senior Researcher), Prof. **Marco Zaffalon** (Scientific Director)

MeDiTech: Prof. **Stéphane Meystre** (Director)

SAMCE Connect Talk Award for Advanced Manufacturing

December 5 - The Swiss Advanced Manufacturing Community (SAMCE) is dedicated to promoting innovation and collaboration among young professionals in the field of advanced manufacturing in Switzerland.

Samuele Dell'Oca, Scientific Collaborator at the Institute of Systems and Technologies for Sustainable Production (ISTePS), was awarded for his work titled *Harmonizing Human-Robot Collaboration*, which focuses on an innovative approach to enhancing collaboration between humans and robots in manufacturing.
The main goal is to equip robots with advanced capabilities to understand and anticipate human intentions, using technologies such as Computer Vision and Deep Learning. This enables robots to adapt their actions to optimize shared tasks and improve operator satisfaction.

Best Paper Award at the NATO Symposium on Digital Transformation

December 9 - The award was given to the paper *Explainability in Multi-Agent Reinforcement Learning for Air Combat Tactics*, authored by **Ardian Selmonaj** and **Alessandro Antonucci**, Ph.D. Candidate and Lecturer-Researcher SUPSI at IDSIA USI-SUPSI, along with a team from the Science and Technology (S+T) Competence Center of the Swiss Federal Department of Defence, Civil Protection and Sport (DDPS).

The research focuses on Reinforcement Learning, a branch of artificial intelligence that develops systems capable of making sequential decisions. The Best Paper Award was presented during the Annual Symposium «Modelling and Simulation as Enabler for Digital Transformation in NATO and Nations», organized by the NATO Science and Technology Organization (STO). This recognition highlights the growing importance of explainability in artificial intelligence as a key factor in the future of defence and security technologies.

FTAL Best Scientific Paper Award

December 11 - At the FTAL Conference 2024, the annual event promoted by the Swiss Association of Universities of Applied Sciences in Engineering, Architecture, and Life Sciences (FTAL), the Sustainable Production Systems (SPS) Laboratory received the Best Scientific Paper Award for the study *Advancing Circular Economy in Fashion: Feasibility and Impact of Enhanced Recycling Technologies for Post-Industrial Textile Waste.*

The awarded paper presents the results of a study conducted in collaboration with the company Blumine, including a Life Cycle Assessment (LCA) of a chemical recycling technology for cotton containing elastane (a synthetic fiber). The research is part of a broader project evaluating the impact and benefits of recycling industrial (pre-consumer) textile waste in North Africa, where many suppliers of European fashion brands are based.

Swiss Additive Manufacturing Group Award (SAMG)

December 19 - **Lorenzo Pollicini**, Master of Science in Engineering Student and Assistant at the Laboratory of Robotics, Automation, and Machines, was awarded by Swissmem, the industry association representing the mechanical, electrical, and electronics sectors in Switzerland, for his research in the field of Additive Manufacturing.

Press Review

The activities of the Department of Innovative Technologies draw significant media interest. In 2024 alone, they were featured in over 140 media appearances, including articles, interviews, and in-depth reports.

Below are some examples (available in Italian only):

January 24
RSI Edu
Intelligenza artificiale, ma quanto ne sai?

→ read the article

February 4
RSI Il giardino di Albert
Sostenibilità e innovazione nella lotta contro i PFAS

→ watch the video

February 12
RSI Il Quotidiano
L'intelligenza artificiale in diretta dall'IDSIA USI-SUPSI

→ watch the video

April 2
Ticino Welcome
Chi ha paura dell'intelligenza artificiale?

→ read the article

June 26
Ticino Welcome
Intelligenza artificiale e una lunga vita in salute

→ read the article

September 29
RSI Il quotidiano
Test con droni per cercare i dispersi

→ watch the video

October 3
RSI Il Telegiornale
Un braccio meccanico che interpreta i nostri bisogni

→ watch the video

October 31
Ticino Welcome
Dentro la rivoluzione digitale

→ read the article

Major Events and Conferences

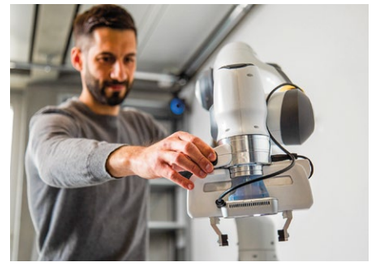
8° Voxxed Days Ticino
January 18-19

Open Day
February 3

CSR & ESG Meets Blockchain Summit
July 10-12

Welcome Day
September 12

International Conference on Artificial Neural Networks
September 17-20



17th International Workshop on Human-friendly Interaction
September 30 - October 1

DACH+ Conference on Energy Informatics
October 9-11

Circular Economy in Organizations
October 15

Planning the Future - Project Management in the Era of Digitalization
October 21

Bachelor and Master Graduation Ceremony
November 23

Safety, Artificial Intelligence, and First Responder Agencies
November 28

Continuing Education Graduation Ceremony
December 2

Mobility and Internationality

The Department of Innovative Technologies actively promotes internationalization through a global network of collaborations, offering faculty members and students unique opportunities for exchange and international cooperation.

→ go to the website

Outgoing and Incoming Mobility

Students and researchers in mobility

+18

Destination countries:
Australia, Chile, Denmark, Germany, Ireland, Italy, Czech Republic, Spain, United States

Hosted students and researchers

+70

Countries of origin:
Australia, Belgium, Brazil, France, India, Italy, Mexico, Poland, Spain, Switzerland, United States

Partner institutions

42

Geographical Distribution of Partner Institutions

Switzerland

3

Europe

23

Extra Europe

16

Italian Courses for Non-Italian Speakers

To promote integration into the local community, the Department of Innovative Technologies renews its annual commitment to offering free Italian language courses to staff, visiting scholars, and non-Italian-speaking students. In 2024, the initiative attracted over 20 participants, confirming the strong interest and value of this opportunity.

New Academic Appointments

Matteo Casserini[1]
Co-head of the Bachelor
in Data Science
and Artificial Intelligence

Giorgio Corani
Professor in Applied Statistics
and Data Science

Luca Diviani[2]
Head of the Bachelor
in Mechanical Engineering

Alessandro Facchini[3]
Associate Professor in Epistemology,
Logic, and Ethics of Artificial Intelligence
and co-head of the Bachelor
in Data Science and Artificial Intelligence

Silvia Mari[4]
Head of Continuing Education

Marzio Sorlini
Associate Professor
in Sustainability
of Industrial processes

Davide Valtorta
Adjunt Professor in Design and
Modeling of Mechanical Systems

[1]In charge from February 2025, succeeding Prof. Andrea Graf (ad interim).
[2]In charge from September 2024, succeeding Prof. Walter Amaro.
[3]In charge from January 2025, succeeding Prof. Andrea Graf (ad interim).
[4]In charge from August 2025, following a period of collaboration with
Eng. Antonio Bassi — former Head of Continuing Education — since April 2025.

Organization Chart

Advisory Commission
Chairman: Stefano Modenini

DTI Director: Milena Properzi

College of Professors
Co-chairs: Milena Properzi
e Andrea Castrovinci

Departmental College
President: Luca Canetta

Assistant Director
Nora Pedrazzini

Department Services

DTI Direction

Research Institutes:

		IDSIA	ISEA	ISIN	ISTePS	MeDiTech	MEMTi
Head: Andrea Graf	**Undergraduate and Graduate Studies**	Dalle Molle Institute for Artificial Intelligence USI–SUPSI	Institute of Systems and Applied Electronics	Institute of Information Systems and Networking	Institute of Systems and Technologies for Sustainable Production	Institute of Digital Technologies for Personalized Healthcare	Institute of Mechanical Engineering and Materials Technology
Head: Silvia Mari*	**Continuing Education**	Director: Andrea Emilio Rizzoli	Director: Daniele Allegri	Director: Tiziano Leidi	Director: Marco Colla	Director: Stéphane Meystre	Director: Maurizio Barbato
Head: Federico Bosi	**Research, Development and Knowledge Transfer**						

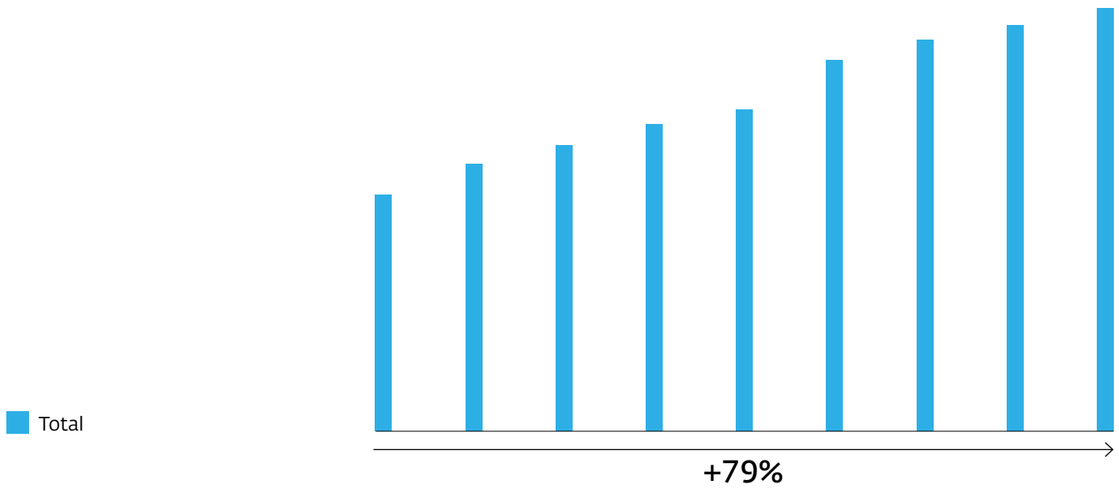
Organization Chart DTI, May 1, 2025

[4]In charge from August 2025, following a period of collaboration with
Eng. Antonio Bassi — former Head of Continuing Education — since April 2025.

At a glance

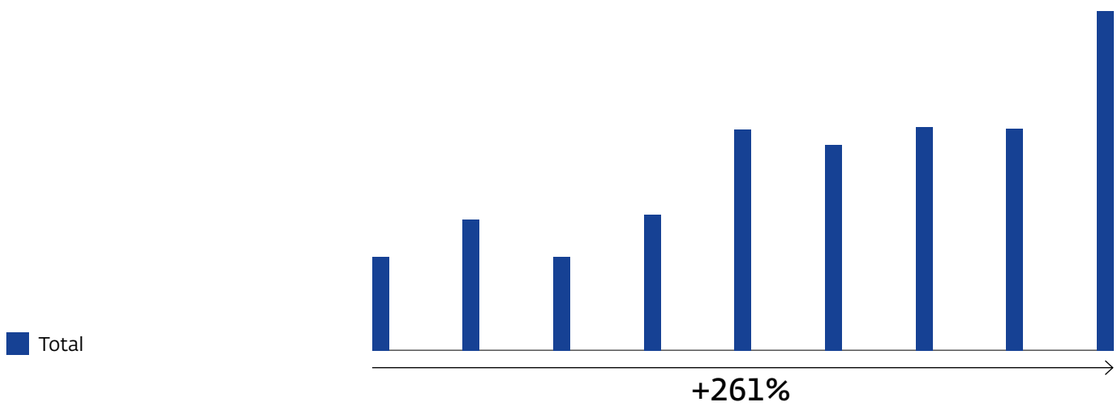
Undergraduate and Graduate Studies

Enrolled	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25
Bachelor of Science	453	508	542	563	583	666	705	761	784
Full time	*388*	*445*	*468*	*484*	*507*	*574*	*603*	*668*	*687*
Parallel to professional activity	*65*	*63*	*74*	*79*	*76*	*92*	*102*	*93*	*97*
Master of Science	109	126	137	166	180	215	223	202	220
Total	562	634	679	729	763	881	928	963	1004



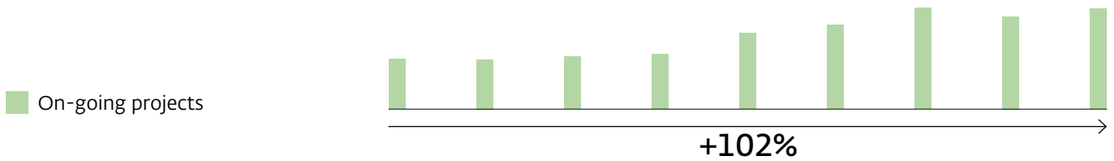
Continuing Education

Participants	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25
CAS, DAS, MAS (10 to 60 ECTS)	167	159	173	265	224	238	287	183	211
Short courses (1 to 9 ECTS)	39	127	17	13	178	166	105	170	199
Tailor-made courses for companies	17	24	33	44	123	84	139	174	396
Total	**223**	**310**	**223**	**322**	**525**	**488**	**531**	**527**	**806**

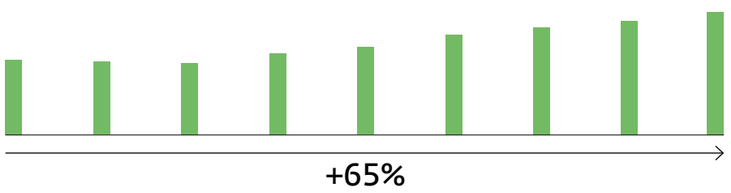


Research and Development

Projects	2016	2017	2018	2019	2020	2021	2022	2023	2024
On-going	118	111	124	130	180	200	240	220	238
Newly launched	61	55	65	68	82	88	110	122	100

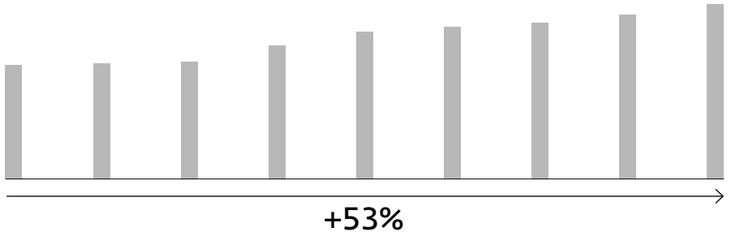


Budget*	2016	2017	2018	2019	2020	2021	2022	2023	2024
Mio CHF	16.4	16	15.7	17.9	19.2	22	23.5	25	27



Employees

	2016	2017	2018	2019	2020	2021	2022	2023	2024
Total	270	275	279	317	350	361	371	389	414



*To improve visual clarity, this chart uses a different scale from the others.

Balestra Building

Lugano city centre

Department of Innovative Technologies

East Campus USI-SUPSI

Boscioro Building (150 m)