

Scuola Superiore Sant'Anna di Studi Universitari e di Perfezionamento

Polo Sant'Anna Valdera



Committed to excellence.



Polo Sant'Anna Valdera.

Polo Sant'Anna Valdera (PSV) is the Sant'Anna School of Advanced Studies' research park, an advanced structure that provides an ideal environment where research and university level education in high-tech sectors are conducted. PSV was established within the framework of one of the School's ambitious growth projects, based on research and training activities projected beyond its walls. The area on which it stands was donated by Piaggio & C. S.p.A. in Pontedera and converted by the School with contributions from MIUR (Ministry of Education, University and Research law 488/92), the European Union, the Tuscany Regional Government and the Municipal Government of Pontedera. A plaque hangs in the building in memory of Giovanni Alberto Agnelli, who enthusiastically shared in the conceiving and realisation of PSV.

The birth of PSV is closely tied to a plan for strengthening the territory's research and development network, conceived by the Sant'Anna School in 1994 with the start of Project LINK. Today, as a leading-edge research centre, PSV houses many of the School's labs, and also sets itself as:

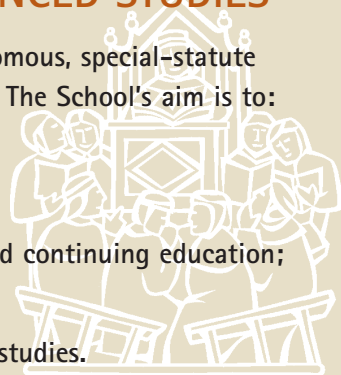
- > a representative of the local development and territorial innovation policy;
- > a meeting point for the exploitation and transfer of the wealth of experiences and know-how developed in international scientific circles.



THE SANT'ANNA SCHOOL OF ADVANCED STUDIES

The Sant'Anna School of Advanced Studies is an autonomous, special-statute university that operates in the field of applied sciences. The School's aim is to:

- > promote the development of culture, scientific and technological research, and innovation;
- > offer and oversee quality undergraduate, graduate and continuing education;
- > assure continuous interaction between research and educational activities for high quality university studies.



Our mission.

The aim of PSV is to exploit research results, setting itself as a support structure for the School's policy which is projected towards developing ties with the world of industry, finance and public administration.

The goals that the Sant'Anna School hopes to attain through PSV can be ascribed to three main intervention policies:

- > **to boost** research by creating an environment capable of stimulating cross-fertilisation between the various disciplines;
- > **to exploit** research results and build a bridge with international centres of learning;
- > **to support** local development policies through: collaboration with local and national partners, incentives for the birth of and start-up assistance for new high-tech companies and the offer of educational training and consulting.

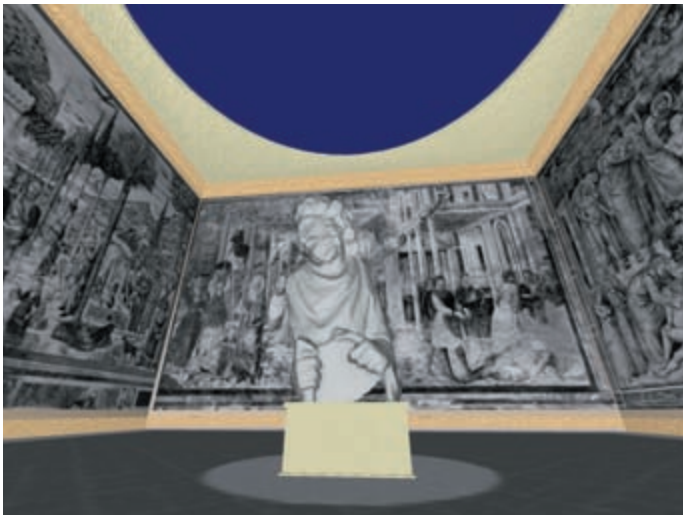




Facilities.

Covering 6,300 square metres, PSV houses:

- > 7 laboratories and research centres
- > 2 clean rooms, class 1,000-10,000
- > 2 CAD labs for electronic and mechanical design
- > 1 precision machine shop
- > 4 computer and teaching rooms with a total of 184 seats
- > 25 offices for professors and researchers
- > 250 square metres dedicated to meeting rooms and teaching labs
- > guestrooms and guest reception areas
- > general services and offices



PSV: Labs and Research Centres.

PSV is the seat of the Sant'Anna School's laboratories, where advanced research in territorial innovation and marketing, and in new technologies - robotics, bioengineering, biotechnologies, microengineering, virtual environments and computer science - is carried out. The School's labs have connections with international networks of excellence and boast consolidated collaborations with companies, local agencies and public administrations.

ARTS Lab (Advanced Robotics Technology and Systems Laboratory)

Established in 1989, the ARTS Lab was one of the first research laboratories activated at the Sant'Anna School of Advanced Studies. It focuses on basic research in the areas of bioengineering, robotics and mechatronics, with a pronounced multidisciplinary and interdisciplinary approach. One of its distinguishing characteristics is that it explores biomorphic and anthropomorphic technical solutions for application in the field of robotics and automation. Teaching and research activities are carried out in the ARTS Lab starting from solid basic skills in industrial bioengineering, electronics and computer science, and enriched by ties with other cultural areas such as neurosciences, artificial perception and social and human sciences. These activities are carried out chiefly in the biomedical robotics, electronic biomedical measurements, biomechatronics and rehabilitation bioengineering sectors.



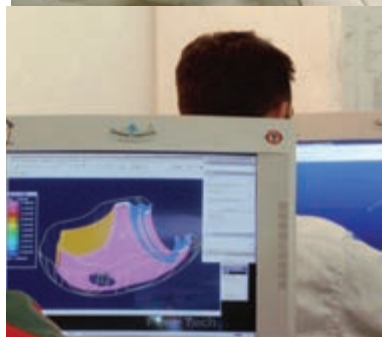
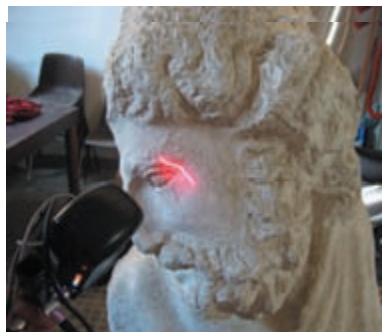
BIO Labs (Biological Laboratories)

The Sant'Anna School's Biological Laboratories consist of several interconnected, functional units: Biochemistry, Biotechnologies, in vitro Plant Tissue Cultures, Electronic Cryomicroscopy and X-Ray Microanalysis, Soil-Water Analysis Laboratory, Entomology Laboratory (LELab) and Optical Microscopy. The research activities carried out at BIO Labs are characterised by their multidisciplinary nature and high-tech level. A wide range of topics is explored, including environmental monitoring, ecosystem management, plant/environment interaction and biomaterials, and their common denominator is the environment understood more as a resource than as a binding development factor. Some examples of the research conducted here concern the reclamation of polluted lands using plants (phytoremediation), the development of biotechnologies for the realisation of advanced know-how products, the use of in vitro plant systems as biochemical-molecular investigation models, germ plasma conservation, the production of secondary metabolites of pharmaceutical interest, genetic improvement, organic farming strategies and the study of entomological bioindicators.

CRIM (Centre for Applied Research in Micro and Nano Engineering)

Design methodologies and production technologies for microcomponents, microsystems and micromachines, whose dimensions are between one centimetre and a few tens of microns, are studied at CRIM. Using a multidisciplinary, mechatronics approach, integrated and miniaturised devices and machines for a wide range of applications are built here, the majority of which in the biomedical field.

Some examples of these devices and machines are represented by autonomous microendoscopes that integrate microcameras, sensors for diagnostics and monitoring and intelligent actuators capable of moving in difficult to access environments. In particular, systems for surgery and minimally invasive therapy, intelligent endoscopy instruments, health monitoring sensors, microinstrumentation for the characterisation of biological tissues and microrobots for assembling micromachines are studied here. CRIM makes use of two clean rooms (class 1,000-10,000) of over 100 m² and of a series of specific equipment for microsystem testing and calibration to build its own micro-devices.



PERCRO (Perceptual Robotics Laboratory)

Research activities in the field of virtual environments and teleoperation are carried out at PERCRO, where considerable experience in the technical and experimental development of virtual environment systems has been gained. Virtual system components relative to graphic representation, behaviour modelling and interaction with simulated environments are studied in-depth, following an approach that is unique in the Italian research panorama.

The activities conducted at the PERCRO Laboratory, giving rise to the realisation of prototypes potentially leading to engineering implementation, characterise it as a qualified source of scientific know-how and of technological innovation in the virtual reality applications, haptic interfaces and robot mechanics fields. Graphics libraries have been developed at PERCRO for the visualisation of complex virtual environments and, in particular, of works of art and buildings of cultural-historical interest.

RETIS (Real-Time Systems Laboratory)

Research activities in the real-time systems sector are carried out at the RETIS Laboratory. This sector is expanding rapidly because it is closely tied to the new multimedia applications and virtual reality areas, including videoconferencing, video-on-demand, advanced system simulators and automotive motor control systems. In this context, the RETIS Laboratory deals with software tools for developing these systems, on-line communication protocols and kernels for real-time embedded systems.

EZ-Lab Research Centre

EZ-Lab is a research centre focusing on technologies and support services related to longevity. It integrates expertise in bioengineering, socioeconomic analysis, human factors, marketing, medicine and law, and promotes projects and cultural initiatives aimed at combining the needs of senior citizens with the industrial innovation opportunities in the longevity sector.

The centre operates according to the concept of collaborative research, giving rise to a wide range of applications and technology transfer through the sponsorship of research activities.

IN.SAT (Business and Territorial Systems Innovation Laboratory)

Activated through the efforts of the engineering and economics sectors, IN.SAT's objectives are to study, develop and experiment innovative methodologies for exploiting the results of scientific and technological research and for territorial analysis, marketing and policies based on technological, organisational, managerial and normative innovation.

Humanoid Robotics Research Centre

(in collaboration with Waseda University - Tokyo)

This research centre was established within the context of the scientific-cultural agreement between Italy and Japan.



Educational Training and Consulting Services



Finance and Projects Area. PSAV sees itself as a partner and ideal point of reference for Italian and foreign public and private enterprises interested in developing projects that promote social, economic and productive research spin-offs.

Innovation and Technological Transfer Area. By supplying feasibility studies, consulting, market analyses, training and product engineering, PSV facilitates access to the new technologies developed in the Sant'Anna School's labs and directs the industrial market towards a problem-solving type of approach.

Spin-Off Centre and Spin-Off Community Area. PSV welcomes spin-off companies and supplies specialised skills to support their start up. Twelve spin-off companies have been generated up to 2002.

MEDEA srl
Biomedical Engineering
Computer Aided Medicine

I³ - ICUBE srl
Internet Services
Real-Time Systems
Computer Networking

Humanware srl
Computer Graphics
Virtual Reality

MicroTech srl
Biomedical Devices
Micro-electronics
Environmental Monitoring

TechnoDeal srl
Technology
Due Diligence

Synapsis srl
Biomedical and Healthcare
Telematic Services

Domotica 2000
Home Automation
Call-Center Services

S.M. srl
Mechatronics
Advanced Robotics

Pragma srl
Electronic
& Radio-communication
system

I.D.E.A. Srl
Service Robotics
Hw/Sw Codesign

Items srl
Electronics
Sensors

Aedit srl
Services
for Environmental
Monitoring

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Educational Training - Industrial Research Projects - Partners

Intellectual Property Area. PSV offers assistance in patenting and product certification procedures.

Advanced Educational Training Area. PSV is also a "training yard" that exploits post-graduate curricula as on-the-job training opportunities.

The residential area at PSV makes it possible to host researchers and professors from Italy and abroad and to offer advanced educational training services to non-residents.



HOW TO REACH PSV:



Polo Sant'Anna Valdera is located in Pontedera, 15 minutes from Pisa and Livorno and 35 minutes from Florence. It can be reached by the S.G.C. highway (FI-PI-LI). Those coming from the Autosole should take the Firenze-Signa exit. From the S.G.C., take the Pontedera-Ponsacco exit, go towards Pontedera and then follow the signs for the Piaggio factory. Polo Sant'Anna is located at Viale Rinaldo Piaggio, no. 34.



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