

Saperi&Co

Sapienza Enhances Research Innovation and Coworking



SAPIENZA
UNIVERSITÀ DI ROMA

Abstract

SAPeri&Co. is a research and service infrastructure of the Sapienza University of Rome, whose aim is to promote outstanding applied research and to support innovation by offering a variety of services to companies and industries. SAPeri&Co. is organized as a hub model that connects different laboratories and expertise. The headquarter is located inside the main University Campus, inside the building Palazzina Tumminelli.

SAPeri&Co promotes and encourage synergies:

Inside the University:

- by supporting the most notable researchers giving them access to interdisciplinary activities and advanced tools;
- by training the most outstanding students for their future jobs applying networking strategies that connect the students with companies and industries.

Outside the University:

- by creating a space for encounter and exchange in between Public Research and Private Companies;
- by giving access to advanced know-how and a variety of research fields to public and private companies and institutions.

SAPeri&Co.'s activities focus on high qualification strictly bonded to our local tradition and the Made in Italy, heading towards strategic local outstanding sectors: Cultural Heritage, Bioscience, Aerospace, Renewable Energies together with Sapienza's distinguished research fields such as Design, User Experience, Archeology, Engineering, Medicine among many others.

SAPeri&Co is a project promoted by Sapienza University of Rome, whose aim is to constitute a comprehensive infrastructure of Research, Innovation and Education, following the European model of Research Infrastructures, to support:

- multidisciplinary knowledge and expertise;
- innovation and technological transfer;
- the collaboration between the Academia and the productive fabric;
- the creation of new entrepreneurship;
- the enhancement of Sapienza's excellence and values, both nationally and internationally;
- a collaborative network of laboratories from different University Departments.

Pursuing the goal of contributing to a competitive development of Sapienza University, SAPeri&Co's main activities focuses mainly on the Lazio Region and Made in Italy's highly relevant specialized fields of production and research, preeminently working towards the sectors that show a major response to new digital manufacturing technologies. SAPeri&Co's specialized fields reflect the Lazio Region and Southern Italy main vocation, that defines the following strategic sectors:

- Cultural Heritage
- Bioscience
- Aerospace
- Renewable Energies.

SAPeri&Co's mission also focuses on enhancing Sapienza's excellence working with particular attention in the area of Design, Cultural Heritage, Economic and User Experience.

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ORGANIZATION

SAPeri&Co's mission enhances Sapienza University of Rome's excellence and innovation of research and education. It offers and promotes a variety of multidisciplinary activities, according to the knowledge triangle scheme:

- **Education:** advanced training on topics related to SAPeri&Co's mission, with the aim of fostering the development of innovative expertise and of the technological transfer;
- **Research:** tools and laboratories that allow students and researchers to maximise, track and test their projects;
- **Innovation:** services and resources that foster the inflow of research's outputs in the market as well as in the society, so that to generate a series of relationships and exchange opportunities between the public and private sector.

The dissemination and spread of excellence and innovation of Sapienza's activities are also part of the mission.

SAPeri&Co. headquarter hosts the following facilities:

- *Fablab;*
- *Coworking;*
- *Lab on demand;*
- *Training;*
- *Materialdesignpoint;*
- *Video lab and research documentation.*



ORGANIZATION

FABLAB

The Fab Lab Saperi&Co is a workshop and an applied research centre focused on advanced digital manufacturing technologies and innovative production process. The centre is equipped with advanced fabrication machines and hosts multidisciplinary expertise. The Fab Lab Saperi&Co enhances research activities and development, training and technological transfer. Its philosophy roots in the open philosophy, it promotes the use of open source tools and furthers sharing as a fundamental means for social and cultural sustainable development. In the Fab Lab Saperi&Co, someone can find both analogical and digital tools, according to the Fab Foundation's definition:

- *digital tools*, tools for digital fabrication like 3d printers, laser cutters and engravers, CNC milling among many other tools for rapid prototyping, like thermoforming machines, heat press, laminator, calender, rotary cutters, equipped workstations for electronics (4 channel oscilloscope; digital multimeter, soldering station, and more). The Fab Lab Saperi&Co includes a specific workshop room with various tools and machines for finishing, assembling and dismantling objects;
- *interactive tools*, CAD stations for 2d/3d modelling, 3d scanners, augmented and virtual reality systems.

The available tools include additive technologies, subtractive technologies, 3D Scan and modeling.



ORGANIZATION

FABLAB - Additive Technologies

DELTA WASP 4070

It is a large scale 3D printer that guarantees rapidity and accuracy on a microscopic and macroscopic scale.



Technology

FDM (Fused Deposition Modeling)

Working Area

40x40x70 cm

Materials

ABS, PLA, Nylon, Soluble, Medical, IRA-Bronze, IRA-Wood, IRA-Carbon, IRA-Copper, ABS-Super

Resolution X/Y

12 micron

Resolution Z

5 micron

Applications

Houses, ceramics, service, medicine, hubs

ORGANIZATION

FABLAB - Additive Technologies

DELTA WASP 2040 TURBO

Unique in size and printing precision, it is the fastest of its kind, especially thanks to its polar mechanics system.



Technology

FDM (Fused Deposition Modeling)

Working Area

20x20x40 cm

Materials

PLA, ABS, Nylon, Flexible Polymers, Polystyrene, Laywood

Resolution X/Y

12 micron

Resolution Z

5 micron

Applications

Houses, ceramics, service, medicine, hubs

ORGANIZATION

FABLAB - Additive Technologies

IRA3D POETRY 360

It is a large scale 3D printer that guarantees rapidity and accuracy on a microscopic and macroscopic scale.



Technology

FLD (Fast Layer Deposition)

Working Area

25x25x30 cm

Materials

ABS, PLA, Nylon, Soluble, Medical, IRA-Bronze, IRA-Wood, IRA-Carbon, IRA-Copper, ABS-Super

Resolution X/Y

12 micron

Resolution Z

5 micron

Applications

Houses, ceramics, service, medicine, hubs

ORGANIZATION

FABLAB - Additive Technologies

ZORTRAX M200

is an advanced 3D printer that easily manage multiple devices over Wi-Fi using Z-SUITE slicing software. It also monitor the progress with the built-in camera.



Technology

LPD (Layer Plastic Deposition)

Working Area

20x20x18 cm

Materials

Z-ABS, Z-ULTRAT, Z-HIPS, Z-GLASS, Z-PCABS, Z-PETG

Resolution X/Y

1,5 micron

Resolution Z

1,25 micron

Applications

industrial manufacturing or prototyping

ORGANIZATION

FABLAB - Additive Technologies

FORMLABS FORM 2

It creates high-resolution objects at a fraction of the cost and size compared to industrial 3D printers.



Technology

SLA (Stereolithography Apparatus)

Working Area

14,5x14,5x17,5 cm

Materials

Acrylic Resins

Resolution

25; 50; 100 micron

Applications

Engineering, production, odontology, education, medicine, entertainment, jewelry, audiology

ORGANIZATION

FABLAB - Additive Technologies

DIGITALWAX XFAB

It is an innovative desktop 3D printer with a compact design and high resolution.



Technology

SLA (Stereolithography Apparatus)

Working Area

25x25x30 cm

Materials

Gamma Invicta 3 (gray and white ABS-like material, polypropylene-like material), Flexa 2 (black and transparent rubber-like material), Vitra 2 (amber and transparent acrylic material), Precisa 779 (rigid opaque gray material), Therma 289 verde (Vulcanized rubber moulds for jewellery artworks and general applications), Vesta 443 (wax-like material)

Resolution X/Y

10 to 100 micron

Applications

industrial design prototyping, digital dental modelling, artisanal jewellery making, educational settings and makerspaces

ORGANIZATION

FABLAB - *Subtractive Technologies*

VALMEC FALCON 1500

Unlike other types of machines built with aluminum profiles, molded etc .. that, due to vibrations and stresses for the processing, lose the precision declared by the manufacturer, the Falcon 1500 as its entire range maintains these characteristics even under stress and in continuous way.



Technology

CNC milling

Process

cutting, profiling, engraving 2d and 3d

Working area

150x120 cm

Materials

wood, plastic, expanded polyurethanes, soft metals

Applications

mechanical parts, advertising, mortuary

ORGANIZATION

FABLAB - *Subtractive Technologies*

BIRIO 1000

Birio laser machines offer maximum productivity with very low costs. Variety of work surfaces sizes and with different power classes.



Technology

Laser cut and engrave CO₂

Process

cutting, engraving 2d and 3d

Working area

100x60 cm

Materials

wood (not resinous or oily), plywood, cork, acrylic, polycarbonate (thin), natural fabrics (cotton, hemp, felt, cloth), paper and cardboard, leather, hide, MDF, PETG, Delrin® (Polyoxymethylene), Kapton ribbon (Polyimide), Mylar (BoPET) (not golden), depron, gator, magnetic sheets, rubber (without chlorine), PTFE (teflon), uncoated carbon fiber, polionda (difficult), glass sheet, ceramic tiles, anodized aluminum, marble and hard stones

Applications

ORGANIZATION

FABLAB - *Subtractive Technologies*

ROLAND VERSACAMM SP540I

Thanks to their ease to use, low cost and extreme versatility, they allow you to reproduce the most diverse graphic products.



Technology

printing and cutting plotter

Process

2d printing, engraving, cutting

Working area

width 13.71 cm

Materials

thermofoils, cartocino, sandblast, paper, micro-perforated, PVC banner, canvas, adhesive PVC

Applications

posters, stickers, banners, fine art, graphics on vehicles, stores personalization

ORGANIZATION

FABLAB - 3D Scan & Modeling

SHINING 3D EINSCAN-PRO

User-friendly multi-functional 3D scanner with modular design.



Technology
structured light

Process
3D scan

ORGANIZATION

FABLAB - 3D Scan & Modeling

TOUCH 3D STYLUS

Using haptic technology, Touch turns digital experiences into tactile sensations. Pressure, balance, textures and gravity can actually be felt, designed and coded.



Technology

haptic device

Process

3D modelling

ORGANIZATION

FABLAB - 3D Scan & Modeling

SONY ALPHA 7R II

It guides the revolution in the field of resolution thanks to sensitivity, response and shooting perfection in all light conditions.



Technology

mirrorless camera with interchangeable lenses

Process

photography

ORGANIZATION

FABLAB - 3D Scan & Modeling

GODOX SL60

It offers high light brightness and color rendering index with powerful LED beads. It creates stable light resource and even illumination for video recording, photojournalistic and wedding shooting.



Technology

LED light illuminator

Process

photo and video lighting

ORGANIZATION

FABLAB - *Metal additive manufacturing*

EOS M 290

It allows a fast, flexible and cost-effective production of metal parts directly from CAD data. An intuitive user interface, the intelligent software concept with a combination of open and standardized parameter sets and the improved filter system are specially designed for the industrial production.



Technology

Direct Metal Laser Sintering

Working Area

250x250x325 mm

Materials

aluminium Alloy AlSi12, Stainless Steel 316L, Titanium Ti64

Applications

EOS ParameterSets manufacture parts with standardized Part Property Profiles (PPPs)

ORGANIZATION **COWORKING**

The Coworking Saperi&Co. is a place for different knowledge fields to meet, where students, researchers, professors and entrepreneurs can work and discuss. The area of about 100 sqm is organized as an open multifunctional space with 20 workstations, 16 pcs, Wi-Fi, projector and an IWB. Every workstation can be reserved by time, although the entire room can be fully booked for hosting activities of dissemination and communication of research, in line with Saperi&Co's mission. The Coworking Saperi&Co. is a "facilitator" place because of the creation of communities, interaction, co-participation and inclusion among expertise, fosters multidisciplinary approaches and aims to become an incubator of research and innovation.



ORGANIZATION

LAB ON DEMAND

SAPeri&Co consists also of highly specialized 4 Lab on Demand focused on the 4 regional strategic sectors:

Aerospace Lab

The laboratory carries on research and development activities in the sectors of aerospace, aviation, satellite monitoring in line with the Galileo program and the programs of the European Space Agency (ESA) .

Scientific supervisor: prof. Paolo Gaudenzi

Cultural Heritage Lab

The laboratory carries on research activities about the enhancement, monitoring and protection of cultural heritage artifacts, as well as the development of cultural and touristic services. The lab is a collaboration between Humanities (Archeology, History of Art, Linguistic and Esthetic) and Science (Informatics, Chemistry and Physics).

Scientific supervisors: prof. Giorgio Piras and Chiara Petrioli

Life Science Lab

The laboratory carries on research activities focused on medicine, e-health, domotics, biotechnologies, nutrition and biomaterials.

Scientific supervisor: prof. Angela Santoni

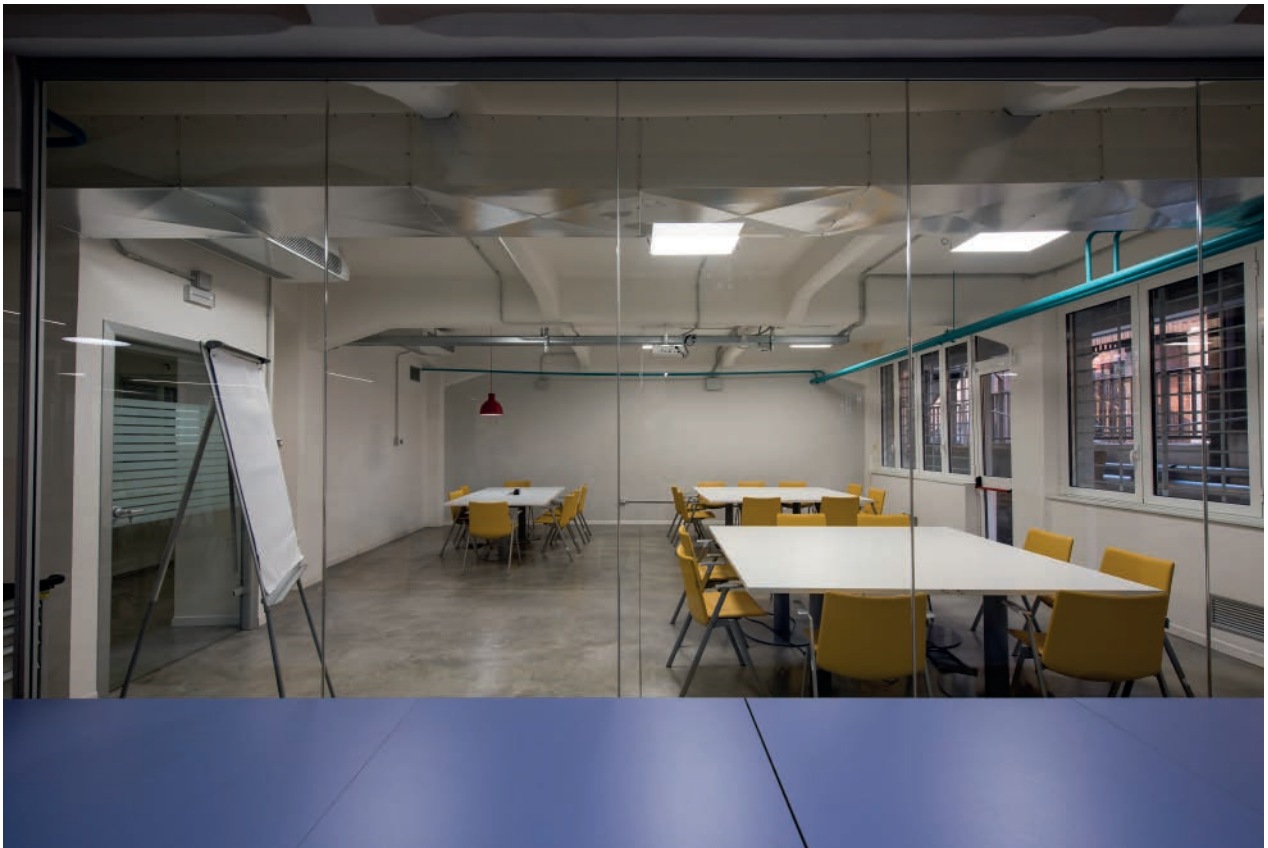
Renewable Energy Lab

The laboratory carries on research and development activities in the fields of energy efficiency, alternative and renewable energies, and green development.

Scientific supervisor: prof. Livio De Santoli

ORGANIZATION
MATERIALDESIGNPOINT

Inside the Coworking room there is also a Material Point, a material library by MaterialdesignLab (a design laboratory focused on innovation products through new materials), a dedicated book selection and innovative materials' samples (patented or in progress to be patented/industrialized) that can be useful to open new path on these topics.



ORGANIZATION

VIDEO LAB AND RESEARCH DOCUMENTATION

Within Saperi & Co there is a production video lab and a Research documentation, born from the Project of Excellence of the Dip. P.P.S.S. to make video lessons (deliverable distance learning), documenting research-interventions and good practices and creating social communication campaigns aimed at policy makers and citizenship.

ORGANIZATION

TRAINING

The SPeri&Co Training area offers advance education on the topics related to the center's mission. With the aim of improving the development of innovative skills and fostering technological transfer, SPeri&Co offers:

Advanced Training

High educational programs about emerging topics connected to technological transfer in the variety of sectors where SPeri&Co operates;

Learning by Doing

Active learning sessions focused on experimentation and innovative design development, to connect young researchers with industry, high crafts and research, as well as to develop entrepreneurship by experimenting innovative methodologies and techniques through the use of the advanced tools available in the Fab Lab SPeri&Co.;

Tailored Training

High specialized training co-designed with companies and private and public institutions



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SAPERi&Co.

Sapienza Enhances Research
Innovation and Coworking

