

YEAR 2021

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Research, Innovation and New Entrepreneurship for a Sustainable Future

www.fondofsi.it

Research, innovation and supporting young entrepreneurship. These are the pillars underpinning the partnership between **Fondazione Politecnico di Milano** and **FSI**. FSI is also sustaining **PoliHub** through this agreement, backing the new Smart City Innovation Hub "Parco dei Gasometri".

"FSI invests in partnerships with organisations of excellence in Italy. Our national economic fabric has a wealth of skills in research and innovation, with global leaders that can respond effectively to worldwide challenges in life sciences, smart mobility, energy and the evolution of consumer goods and telecommunications. I believe that supporting our companies in developing their distinctive brand of Made in Italy, by digitalising services, expanding the teaching of technological subjects and encouraging younger entrepreneurs, must become a priority for Italy".

Maurizio Tamagnini Managing Director of FSI.

FSI will not only be the partner of the PoliHub community, it will also sponsor at least five call4ideas, which are events for selecting innovative entrepreneurial projects specialising in sectors chosen by FSI.

"Our partnership with FSI confirms that forward-looking companies and institutions have set their hearts on running innovation and research within Italy. As set out in the EU's Country Report for Italy 2020, the level of investment in R&D in Italy is still below other EU countries. For this reason, our partnership with FSI is strategic. Our focus on alliances means that we can stimulate processes of cross-fertilisation of knowledge and develop hi-tec entrepreneurship, involving universities, businesses, institutions, limited companies and all other players in the innovation field".

Andrea Sianesi, President of Fondazione and of PoliHub.

"Investment and sustainable development form a critical pairing for growth in Italy. Our agreement with FSI is part of this approach. FSI intends to focus on new potentially high value technological companies and on tomorrow's great challenges, and has chosen PoliHub and Politecnico di Milano as its partners. We are convinced that this will be the lever for growth in Italian regions and for new generations of entrepreneurs. This agreement will be inserted within an ambitious project to regenerate the area of the "Gasometri" in the district of Bovisà, to create a scientific and technological park that can match international standards, in an ecosystem of collaboration centred on our startups".

Ferruccio Resta Rector of Politecnico di Milano.



BLS, our face masks to protect your health

www.blsgroup.it

We welcome BLS, a historical Italian company and producer of devices to protect patients' airways from damage, now an Institutional Member of Fondazione Politecnico di Milano.

BLS is behind Narvalo, a startup that makes high-tech face masks to protect wearers from viruses and pollution. With Covid-19, this project has become even more important and seals the synergy between university, startup and companies.

Can you tell us your story?

The coronavirus pandemic has projected us from being a "niche" company into the centre of a system making items that are now indispensable for people's health. We have remained competitive in our production, designing and engineering our equipment totally in-house and thriving on the synergy between us, Politecnico di Milano and our market partners. For us, it was important to invest in innovation and draw on our common capacity for joint-up thinking between university and industry. This prompted us to work with Narvalo, a Politecnico di Milano spin-off incubated at PoliHub and now an institutional member of Fondazione Politecnico di Milano. Narvalo had the expertise to create a high-tech face mask, conceived for urban commuters in particular, with a smart respirator exhaling valve (active shield) that makes the mask more comfortable to wear but, more importantly, monitors what the wearer breathes in. With its active carbon filter and our BLS Zero technology, Narvalo Urban filters out more than 99% of harmful airborne elements, protecting the wearer from pollution, smells and pollen, as well as viruses and bacteria. This project dovetails well with our philosophy, and explains how important face masks are in protecting ourselves from invisible enemies in the air and in improving our quality of life.

What are you expecting from this alliance with the university world?

BLS has been working with Politecnico di Milano for many years. In 2021, we decided to increase our R&D investments, and joined Fondazione Politecnico di Milano. We are immensely proud to be part of one of the leading associations in its sector. We are certain that we will be able to join forces and together create a path for a stronger presence and deeper roots in our local area. We want to build a safe future, and this alliance will allow us to pursue our research objectives and work in partnership with local businesses to the best of our ability.



TechCamp@POLIMI, a summer under the banner of technology

<https://techcamp.polimi.it/>

Spend a week building a robot, programming or designing a smart car. With **TechCamp@POLIMI** you can do just this. In the week of 14-25 June 2021, secondary school girls and boys will learn about innovative topics such as **coding, cybersecurity, self-drive vehicles and robotics**.

In response to the growing demand for people with skills in STEM subjects (Science, Technology, Engineering and Mathematics), TechCamp@POLIMI will introduce secondary school students to the foremost technical university in Italy. Politecnico di Milano is tangibly committed to parity between sexes, and some of its scholarships and grants are for girls only. This year, the university is offering 100 scholarships for the 300 places available.

Politecnico has awarded 15 scholarships to talented children of its permanent technical-administrative and teaching staff, and together with D Repubblica, has selected 20 students on the basis of their school reports and motivational letters. Many businesses are also working on the STEM front. For the third year, BNP Paribas is offering 20 scholarships for young people, awarding one to an exceptional girl under the wing of NGO Fondazione Rava. Associazione Parizzi is awarding 10 scholarships to students in any subject, and Boston Consulting Group is allocating 10 scholarships to young people selected from schools in Milan. Tritecnica Spa is funding 5 scholarships based on merit or for students in need. Insurtech Association is offering 6 scholarships for the course on Cybersecurity and Mobility, Lumison is allocating 5 scholarships to the sons or daughters of its staff, Flamme is giving 3 scholarships to students at Liceo Classico, Fluid-o-Tech and Rold is funding 2 scholarships for the offspring of its staff, and Fondazione Alberto and Franca Riva Onlus are also funding 2 scholarships for girls and boys from the Rione Sanità district of Naples.



ARTERY, robots and artificial intelligence in surgery

www.artery-project.eu

Cardiovascular disease is the main cause of death and disability in Europe. Can technology improve the way we do surgery and can this type of surgery be offered to everyone needing it?

January 1 2021 was the official launch date for **H2020 ARTERY - Autonomous Robotics for Transcatheter dEliveRy**, a project coordinated by Politecnico di Milano and supported by Fondazione Politecnico di Milano. The research project is financed by the **European Commission** under Horizon 2020. With ARTERY, the objective is to create a revolutionary hybrid system that exploits robotics, artificial intelligence and augmented reality to treat structural heart disease, which if left untreated can often be fatal. Patients generally need open heart surgery or percutaneous coronary intervention (PCI). In PCI, the diseased parts are repaired or replaced by implanting one or more small devices called stents in the heart, using a catheter that is threaded through the blood vessels until it reaches the heart. PCIs are however technically complex procedures, and the catheter is positioned using X-rays, which are damaging to the patients and especially to the operators in the theatre.



A robotic platform will be created as part of the ARTERY project, which will simplify PCI procedures and the use of X-rays will become redundant. The surgeon will interact with the robotic system through augmented reality. The system is semi-autonomous and decisions guided by AI will always be shared and agreed with the human operator. In practice, there will be an immersive and intuitive system where surgeons will operate under conditions of greater safety for themselves and their patients.

To achieve this ambitious objective, Politecnico di Milano is combining its expertise with that of the Hospital San Raffaele of Milan, which provides the clinical guidance for the project, the Sant'Anna School of Advanced Studies of Pisa, the Catholic University of Leuven, and three companies that will work on the transfer of research, FBGS, specialised in optical fibre sensors, Artiness, specialised in medical augmented reality, and SwissVortex, transcatheter technology specialists.

“Research for Development” an expanding series

www.fondazionepolitecnico.it/media/pubblicazioni

“Research for Development” is a editorial collaboration between Fondazione Politecnico di Milano and the publisher Springer; the series promotes complex texts arising from a broad spectrum of multi-faceted research projects, featuring multi-disciplinary content focused on future development. After the success of last year with eight books published, 2021 seems ready to build and improve on this achievement. The encouraging results for this year are 4 books published so far, 7 books in draft form, and 11 new proposals in the assessment phase. The series was launched in 2014 with the intention to promote development as the outcome of research in terms of sustainable growth, environmental benefits, long-term economic development, social responsibility and efficient use of resources, as well as for innovation applied to all scientific and technical sectors. Fondazione Politecnico di Milano has the role of “programme planner”, gathering and selecting material and then transmitting the selected proposals to Springer. The Foundation will oversee the progress of accepted manuscripts until publication and, afterwards, promote them through targeted cultural dissemination initiatives. Springer, in turn, will accept or reject the submitted manuscripts, and will handle all aspects relating to the editing, production, publication and commercial distribution of the books. “Research for Development” was included in the Scopus listing in September 2018, one of the world’s largest databases of scientific literature. To date, 80 proposals have been received, and 33% passed the selection phase for publication.

Recent books published include “**Digital Health Technology for Better Aging - A multidisciplinary approach**”, edited by Giuseppe Andreoni and Cinzia Mambretti, which outlines knowledge and technologies developed, including through processes of co-design, to improve the quality of life and health of the elderly; “**Cycling & Walking for Regional Development - How Slowness Regenerates Marginal Areas**”, edited by Paolo Pileri and Rossella Moscarelli, which scrutinises how to cater for and include the concept of slowness when planning our cities and our territory.

Giuseppe Andreoni
Cinzia Mambretti *Editors*

Digital Health Technology for Better Aging

A multidisciplinary approach Springer

AI-SPRINT optimised artificial intelligence

www.ai-sprint-project.eu

Artificial intelligence has entered our daily lives and is used in many large Italian companies. The increasing output of AI applications, with smart personal assistants, audio/video surveillance systems, smart city applications, self-drive vehicles and Industry 4.0, has introduced the need to optimise computer resources to gather and elaborate the data and analyse them online.

AI-SPRINT “Artificial intelligence in Secure Privacy-preserving computing continuum” is ready to develop a new framework to design and run artificial intelligence applications, together with their data, exploiting computing continuum environments. The main results include new tools to develop AI applications for managing and optimising runtime, to help tackle the current technological challenges of utilising resources in the edge-to-cloud continuum, in terms of flexibility, scalability, interoperability, energy efficiency, safety and privacy.

This will enable **AI-SPRINT** to satisfy the need for companies and the public sector to become digitalised, demonstrating its competitive advantage and replicability in three real life situations, in line with the EU’s priority areas for AI investment, namely Farming 4.0, Maintenance & Inspection and Personalised Healthcare.

The project will also set up AI-Sprint Alliance, open to small software houses and EU cloud suppliers, to support the AI ecosystem and edge computing in Europe. AI-SPRINT is a project of research and innovation co-funded by the European Commission under Horizon 2020. The consortium brings together 9 partners with expertise in this area from 6 European countries; the Italian partners are Politecnico di Milano, supported by Fondazione Politecnico di Milano, Trust-IT Services Srl and IDC Italy.



Membership and workshops, new milestones for PoliHub www.polihub.it



In spite of the pandemic, the number of startups climbed in 2020 across Italy as a whole, with Milan heading the list. PoliHub, the incubator managed by Fondazione Politecnico di Milano, recorded, for its flagship competition, S2P, a record increase in ideas presented, up by 30% compared to previous years. This year, **Switch2Product**, the programme that gives market exposure to innovative solutions, new technology and business ideas, will be split into four categories: Life Science & Med Tech, Green Energy & Circular Economy, Industry Transformation and New Ways of Working & Living.

PoliHub’s development plan includes creating spaces for laboratories where startups can test out their prototypes and implement their technological innovations.

The greatest novelty is the **Membership** programme, designed to spur the growth and development of a community of people interested in the value generated by startups, researchers and companies located in the incubator’s ever-increasing ecosystem. Membership consists of an annual subscription giving subscribers access to all basic common services plus a few extra ones, Additional Services, designed to satisfy the subscribers’ specific interests and help them to achieve their objectives in developing business and skills.

The community is open to real people and companies, both large and small. There are two membership classes: People Membership, for students and professionals, and Business Membership for startups, professional investors and companies. The community and events platforms are for networking, creating synergy, learning more about deep tech and entrepreneurship matters, and for basic services. The Additional Services include meetings between investor firms and startups, and access to PoliHub startups to establish commercial relationships or propose collaborations.

What will be the “Parco dei Gasometri” is an asset that looks to the future, and is the future in a few years from now. This scientific and technological park is being created along the lines of hubs in other great European cities. It will be a laboratory open to the city and to companies, an ecosystem of collaboration inserted in a large green area. The two gasometers will house some of the driving functions in the worlds of innovation, entrepreneurship, well-being and culture, and the idea is to promote growth in the sphere of knowledge and innovation that starts from the university and expands to the community. It will be a tangible answer to sustainable and inclusive development.



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