

## MICS - MADE IN ITALY CIRCOLARE E SOSTENIBILE

### Profile

#### About us

**MICS Made in Italy circolare e sostenibile** is an Extended Partnership between universities, research centers and companies funded by MUR – Ministero dell'Università e della Ricerca with funds made available by the European Union, as part of the NextGenerationEU (PNRR) program<sup>1</sup>.

#### Founding partners

**Industrial partners:** Aeffe, Brembo, Camozzi Group, Cavanna, Italtel, Itema, Leonardo, Natuzzi, Prima Additive, SACMI, SCM Group, Stazione Sperimentale dell'Industria delle Pelli e delle Materie Concianti (SSIP), Thales Alenia Space.

**Universities/research institutions:** National Research Council (CNR), Polytechnic University of Bari, Polytechnic University of Milan, Polytechnic University of Turin, University of Bergamo, University of Bologna, University of Brescia, University of Federico II of Naples, University of Florence, University of Padua, University of Palermo and University of Rome La Sapienza.

MICS involves over **100 companies and 42 research institutions** (if we count, in addition to the aforementioned subjects, the beneficiaries of cascade research calls), gathering skills and resources to promote innovation and sustainability in three **strategic sectors:** Fashion, Furniture and Automation. These areas of activity, that represent the excellence of Made in Italy, have a **significant impact on the national economy:**

- 48% of the added value of production
- 45% of total employment
- 44% of investments in terms of national capex

MICS promotes innovation based on **contamination between different disciplines**, in order to face the great challenges of digital and green transitions. Research activities are divided into **eight thematic areas (Spokes):** each of them represents a strategic focus on which universities and companies work together.

In detail:

- **SPOKE 1:** "Advanced digital design: technologies, processes and tools" led by **Flaviano Celaschi**, Alma Mater Studiorum - University of Bologna  
Mapping and developing digitally enhanced solutions for the optimization of design processes, decision making and circularity throughout the entire life cycle of products and machines.
- **SPOKE 2:** "Eco-design strategies: from materials to product-service systems (PSS)" led by **Giuseppe Lotti**, University of Florence

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<sup>1</sup> MICS received a total of €125 million (€114 million from PNRR funds and €11 million from private individuals, in the form of co-investment). This is the highest amount of funding ever disbursed for basic research projects in the field of circular and sustainable economy. Of this endowment, 40% of public funds are allocated to the South, an area subject to recent and important technological and industrial development.

Developing eco-design strategies for Product-Service Systems, considering their cradle-to-cradle lifecycle as well as impacts and communication for social innovation.

- **SPOKE 3:** "Green and sustainable products and materials from non-critical and secondary sources" led by **Pierluigi Barbaro**, National Research Council  
Creating sustainable products and materials using alternative raw sources: waste, industrial residues, and non-critical minerals.
- **SPOKE 4:** "Smart and sustainable materials for circular and augmented industrial products and processes" led by **Domenico Caputo**, University of Naples Federico II  
Developing climate friendly products and processes in order to support "dematerialization" and biological transformation of Italian craftsmanship.
- **SPOKE 5:** "Closed-loop, sustainable and inclusive factories and processes" led by **Sergio Terzi**, Politecnico di Milano  
Redefining the current concept of what a factory is and how it works, making it more sustainable: zero waste, pollution-free, safe, self-sufficient, inclusive.
- **SPOKE 6:** "Additive manufacturing as a disruptive factor of the Twin Transition" led by **Federica Bondioli**, Polytechnic University of Turin  
Researching processes that can revolutionize Additive Manufacturing as an enabling technology for the Twin Transitions.
- **SPOKE 7:** "Innovative and consumer-oriented business models for resilient and circular supply chains" led by **Ilaria Giannoccaro**, Polytechnic University of Bari  
Experimenting with new archetypes, methods and solutions of restorative and regenerative BMs in order to define a new competitive paradigm for Made in Italy.
- **SPOKE 8:** "Design and management of the digitally oriented factory through Artificial Intelligence and approaches based on data analysis" led by **Daria Battini**, University of Padua  
Designing a sustainable and resilient factory model with high-performance human-machine collaboration, inclusivity and sustainability based on AI, digital technologies and collaborative robotics.

Thanks to this structure, MICS fosters an cross-competence approach to academic research, so that it meets the industrial sector's needs and generates applicable and scalable solutions.

MICS focuses on three key sectors for the country's economic growth. **Fashion, Furniture and Automation** represent the core of Italian manufacturing and are at the center of the transition towards innovative and more sustainable business models. The integration among new technologies, advanced materials and circular economy strategies strengthens the competitiveness of Made in Italy as a brand on a global scale.

To date, the active projects involve **more than 900 researchers**: a concrete initiative to promote the enhancement of Italian scientific talents in research and industry.

Research is carried out either in collaboration with or internally to companies. Once the projects are completed, enterprises will have the opportunity to implement the results, receiving a significant boost to their technological and process development. The researchers, protagonists of the aforementioned technology transfer, will also have gained significant experience of working in contact with companies: two factors that promise to generate a decisive system upskilling.

The MICS Extended Partnership is part of the projects related to **Mission 4 "Education and Research" of the PNRR**. These are projects aimed at financing initiatives that **make Made in Italy circular, self-sufficient, self-regenerative, reliable, safe and sustainable**, from the design phase to the production phase.

### Approach and objectives






The objective of the Extended Partnership is to **accelerate innovation through synergy between the public and private sectors**.

The leadership of MICS believes that, with the contribution of university skills, it is possible **to acquire vertical skills, in line with the most up-to-date international standards**, and that, through contact with the business world, it is possible **to better interpret the market and consumer needs**.

### Activities implemented and main industrial challenges

The quality of the collaborations and the multidisciplinary approach allow MICS to work on ambitious scientific challenges, which leverage digitization and data analysis.

#### Among the main ones:

 <b>THE FACTORY IN SPACE</b>  A fully closed-loop factory in space, based on Additive Manufacturing practices and zero waste. It will be powered with renewable energy	 <b>BIO-PRINTED MATERIALS FOR FASHION</b>  Organic, but artificially regenerated materials 3D printed to be used in fashion. Metaverse-designed products will be assembled by augmented craftsmen with help from a collaborative robot.	 <b>ANTI-COUNTERFEITING FOR MADE IN ITALY</b>  Anti-counterfeiting measures based on tracking via specific materials, blockchain, Additive Manufacturing with RFID and tags to trace the origin of the item.	 <b>SUSTAINABLE JEWELS MANUFACTURING</b>  New solutions for urban mining combine with virtual design and the zero-waste Additive Manufacturing production techniques to produce sustainable jewellery.	 <b>CUSTOMIZED ZERO-IMPACT SMART PRODUCTS</b>  Products designed to have minimum footprint thanks to smart functions, morphing capabilities and zero-waste Additive Manufacturing practices.
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### MICS' cascade funding calls: 21.5 million awarded

In order to broaden the scope of its impact, MICS has awarded **21.5 million euros to 87 companies and 26 research organizations and universities**, beneficiaries of two cascade funding calls.

**The first cascade funding call**, with an initial value of 3 million, then increased to **5.5 million euros, was entirely dedicated to public and private universities, as well as research organizations**. It has rewarded the **involvement of women in research staff**, the **expected impact on social sustainability** and the



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implementation of projects in the **South and/or the Islands**. 14 research organisations and universities benefited from this call, joining the 12 founding public partners of the Partnership.

**The second cascade funding call, with a total value of 16 million euros, was intended for micro, small, medium and large enterprises**, which participated in the call individually or by creating a temporary association with research organizations.

It benefited 88 companies as well as 11 research organisations and universities, in addition to the 13 industrial partners and 12 founding public partners.

### **Let's design the future of Italy manufacturing**

MICS also inaugurated its **first Roadshow** with the aim of creating moments of discussion and sharing, to lay the foundations of a new Made in Italy model based on innovation, sustainability, advanced digital, analysis and processing of production data. The roadshow is called **"Innovation on the way. Let's build the manufacturing of the future, step by step"**: this is a **journey** that will touch the entire national territory, from September 2024 to June 2025. In addition to the founding Partners and new MICS Partners, the events will host other companies, research organizations and universities, as well as national and local institutions and trade associations.

**The first event took place on September 17, 2024, in Rome, at the Ara Pacis Museum.**

Each stop of the MICS Roadshow will guarantee spaces for in-depth analysis on crucial issues for Made in Italy, such as the implementation of sustainable technologies, the digitization of production processes and the integration of innovative practices into the Italian industrial fabric, with the aim of creating synergies that can guide Italian production towards more sustainable and competitive models. The research projects promoted by MICS will be compared with the best entrepreneurial experiences expressed by the host territories, creating a form of sharing of results that heralds further growth.

**An annual "main event", the [Made in Italy Innovation Forum](#)**, is also planned. It aims to highlight the strengths of Made in Italy, also in perspective, through a series of academic and industrial success stories, different from each other but united by the same characteristic: the propensity to build the future.

MICS has also organized, in February 2025, a major national competition, called **MICSathlon**, which has brought to the attention of **young researchers** involved in the Extended Partnership the challenges of innovation, circularity and sustainability launched by Made in Italy companies and artisans. The researchers gathered in teams and identified solutions to industrial problems submitted by companies, in a playful challenge between intelligences.

The aforementioned events are part of the so-called "dissemination activity" of the Partnership, i.e. an action to disseminate projects that starts from an assumption: skills must not only be developed but also shared.



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