Circular Manufacturing Mastery

Bridging the Skills Gap for a Sustainable Future

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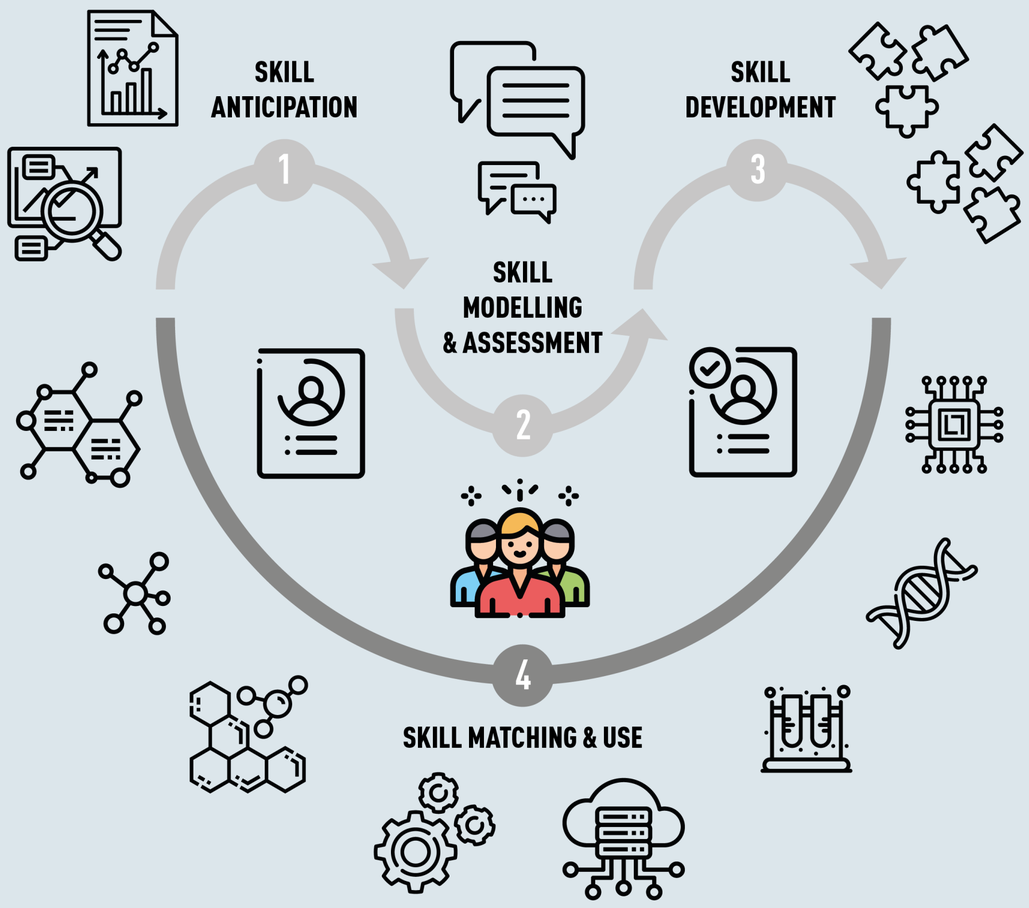


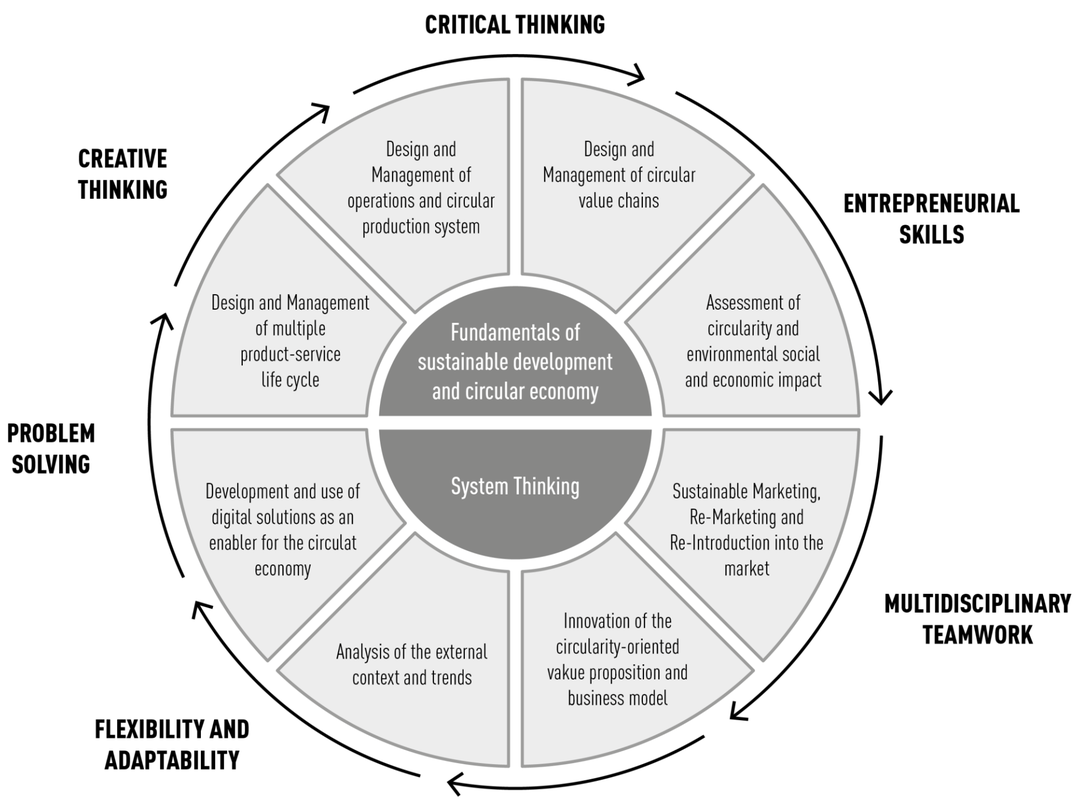
RESEARCH OBJECTIVES

The shift towards circular manufacturing necessitates a fundamental reconsideration of production and consumption, with significant implications for skills and jobs. This research project aims to produce cutting-edge scientific knowledge fundamental for manufacturing companies to be competitive on the market and to have the capability to manage the renewed circular processes. The generated scientific knowledge about new skills and job profiles has also practical relevance for education providers, policymakers, and other stakeholders interested in fostering circular manufacturing.

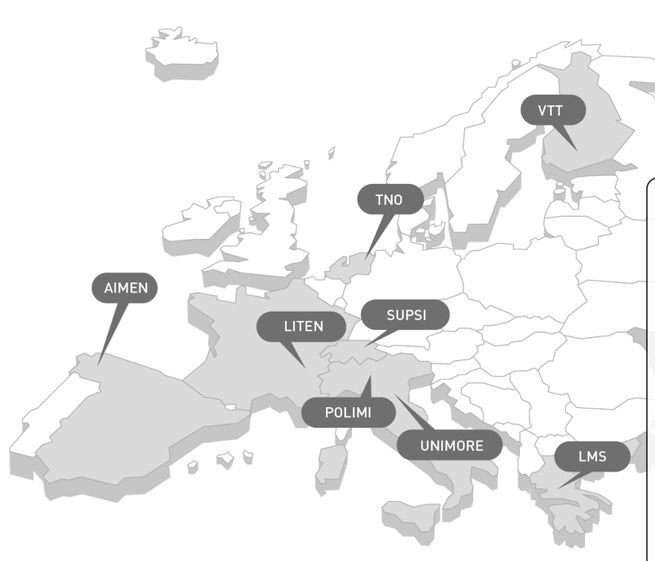
- **Anticipating skills**: This involves exploring (digitally enabled) methods for skill anticipation and conducting foresight activities to predict changes in skills driven by evolving technologies and sustainability requirements.
- **Modeling and assessing skills**: The goal is to create descriptors and frameworks specifying competencies, their components, and proficiency levels. Additionally, the project aims to design skill assessment solutions and investigate how digital and data-related technologies can enable them.
- **Developing skills**: The focus is on researching, developing, and applying innovative, digitally enhanced approaches and methods for personalized and adaptive skill development. The project also aims to establish collaborative networks of learning factories and digital innovation hubs for circular manufacturing, fostering skill development and the exchange of good practices on an international scale.
- **Making the best use of skills**: This involves investigating manufacturers' strategies for circular economy and skills, examining internal and external factors influencing skills management, and analyzing innovative practices and resulting sustainability outcomes. The project seeks to equip manufacturing stakeholders with methods and tools to optimize the utilization of skills from a triple bottom line perspective.

PRELIMINARY RESULTS

Circular Manufacturing Competency Model



Network of Learning Factories and Circular Digital Innovation Hubs



Learning Factories Network

Learning Factories for Circular Manufacturing are innovative, cyber-physical, testing and educational settings that replicate real-world applications, assets and industrial environments, offering hands-on training and skill development. Their dynamic innovation and learning approach bridges theoretical knowledge with practical application and allows companies and individuals to explore sustainable design and production methods, anticipate evolving skills, and collaborate in digitally enhanced circular processes.

Circular Digital Innovation Hub (DIH)

Circular DIHs aim at offering expertise, testing facilities, and knowledge exchange, to create digital and sustainable innovation ecosystems where the Circular Economy thrives.
By fostering collaboration between industry, academia, and policymakers, they want to accelerate the adoption of sustainable products, processes and business models.

INTERNATIONAL COLLABORATIONS

DaCapo · Industry 4.h TECHNOLOGY SERVING PEOPLE BY FONDATION GRENOBLE INP · CERES · MICS Made in Italy Circolare e Sostenibile

HumanTech DAY 1

26th January 2024, Politecnico di Milano – Campus Bovisa Durando

HumanTech – Humans and Technology is the project selected and financed by the Italian Ministry of University and Research (MUR) for the 2023-2027 period as part of the initiative “Departments of Excellence”. The initiative rewards departments that stand out for the quality of the research produced and funds specific development projects.

HumanTech Department of Excellence 2023-2027

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