

Design Principle and Practices | Lisbon, 30.03.23

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# Fostering the Circular and Digital Synergy: The Role of Systemic Design in Open Innovation Processes

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# How can the ecological and digital transition be fostered in Europe?



# How are the european SMEs supported in this transition?



**Are they able to catch the business opportunities that these transformations entail?**



# Aim

To shed light on how a **systemic design** approach supports the **ecological and digital transition** and contributes to an **Open-Innovation** process with European SMEs, through the discussion of the results of **DigiCirc** project (call H2020-INNOSUP).



# Agenda

Introduction

Background research

DigiCirc

Final remarks & Systemic Design contribution



# Circular & digital transition

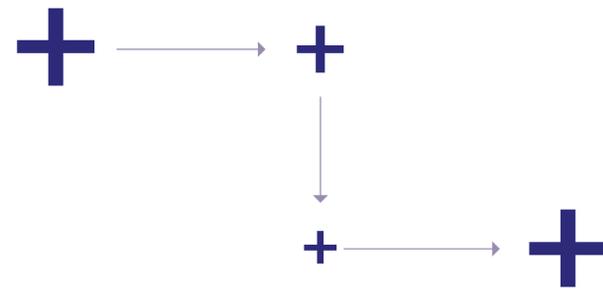
The green and digital transition are central and intertwined themes in our current era of transformations.

On the one side the **Circular Economy** strategies offer a paradigm of change to respond to the green transition.

On the other side, **digital tools** are meant to match people and resources, thus enabling circular processes that would otherwise be slower to activate.

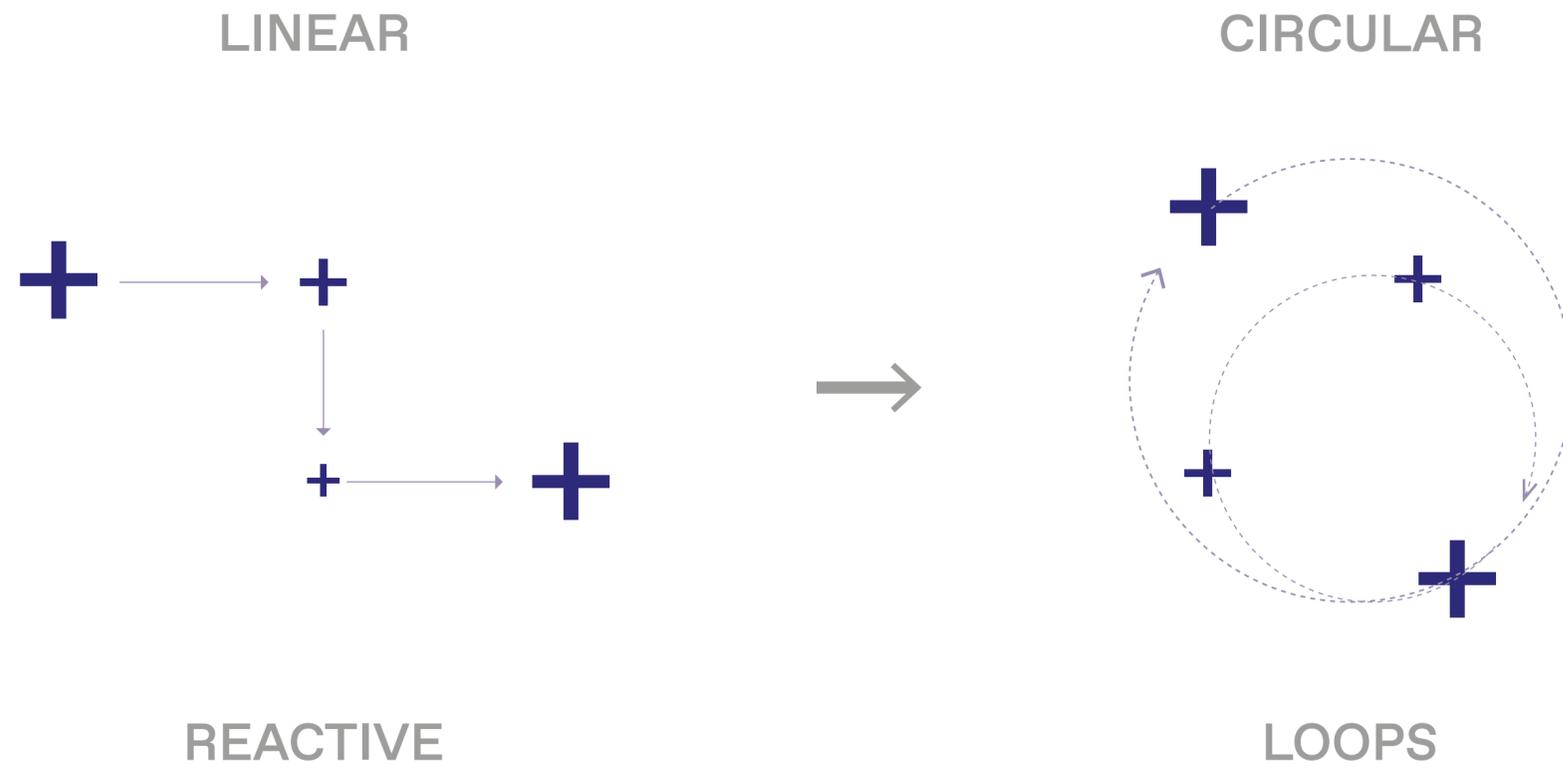


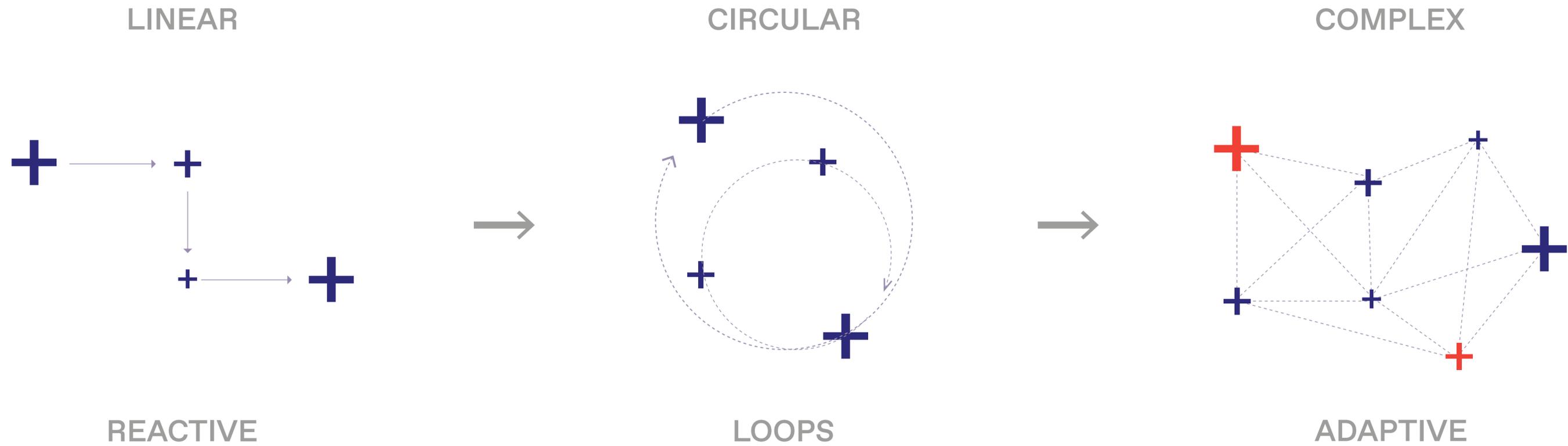
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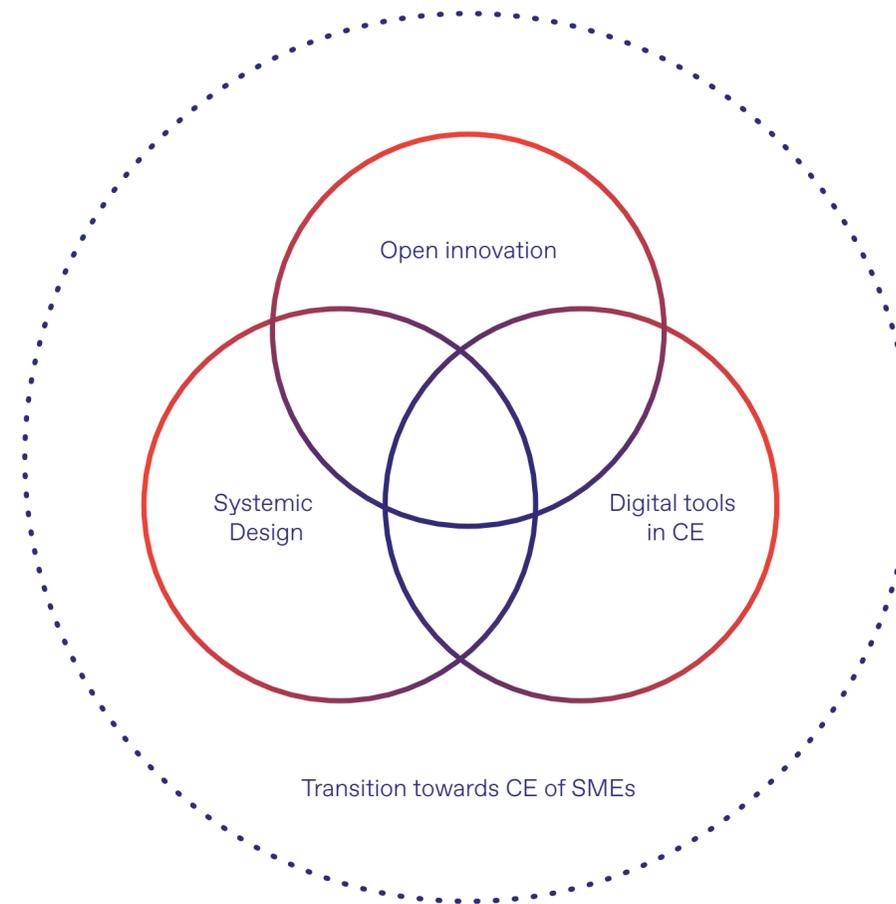




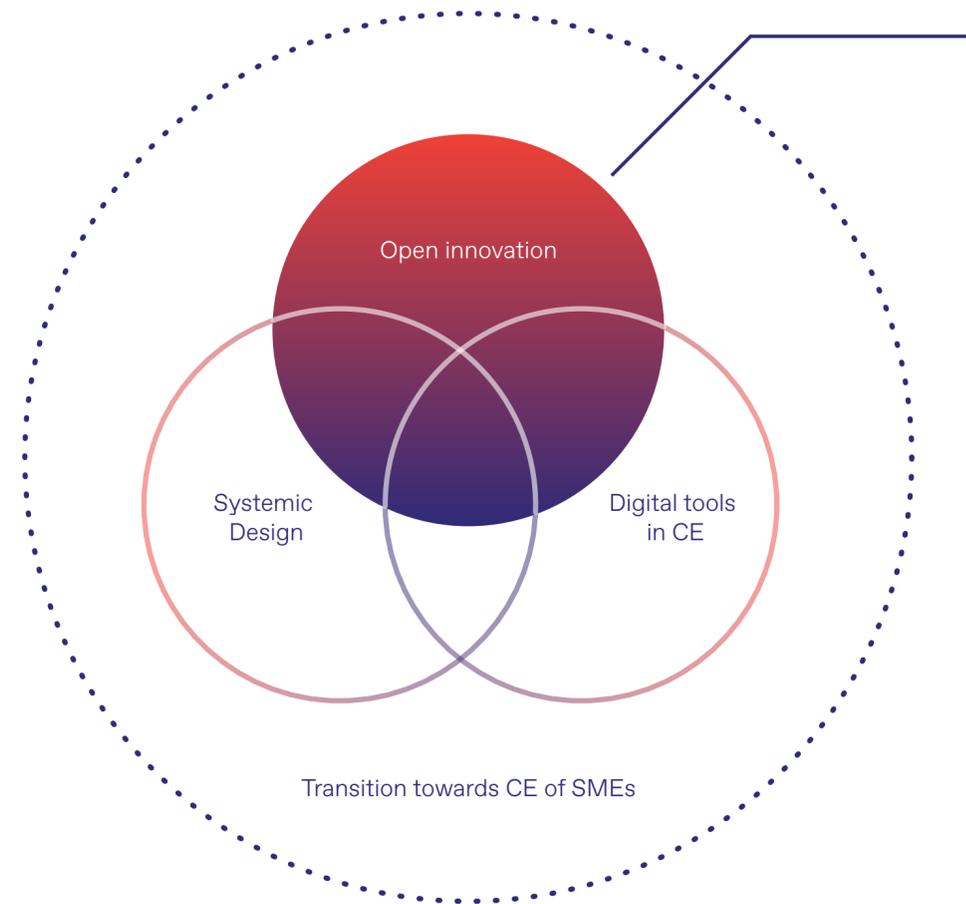


# Background research

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## Open Innovation

Defined as the flow of resources needed to activate an innovative process that goes beyond the industry's boundaries.

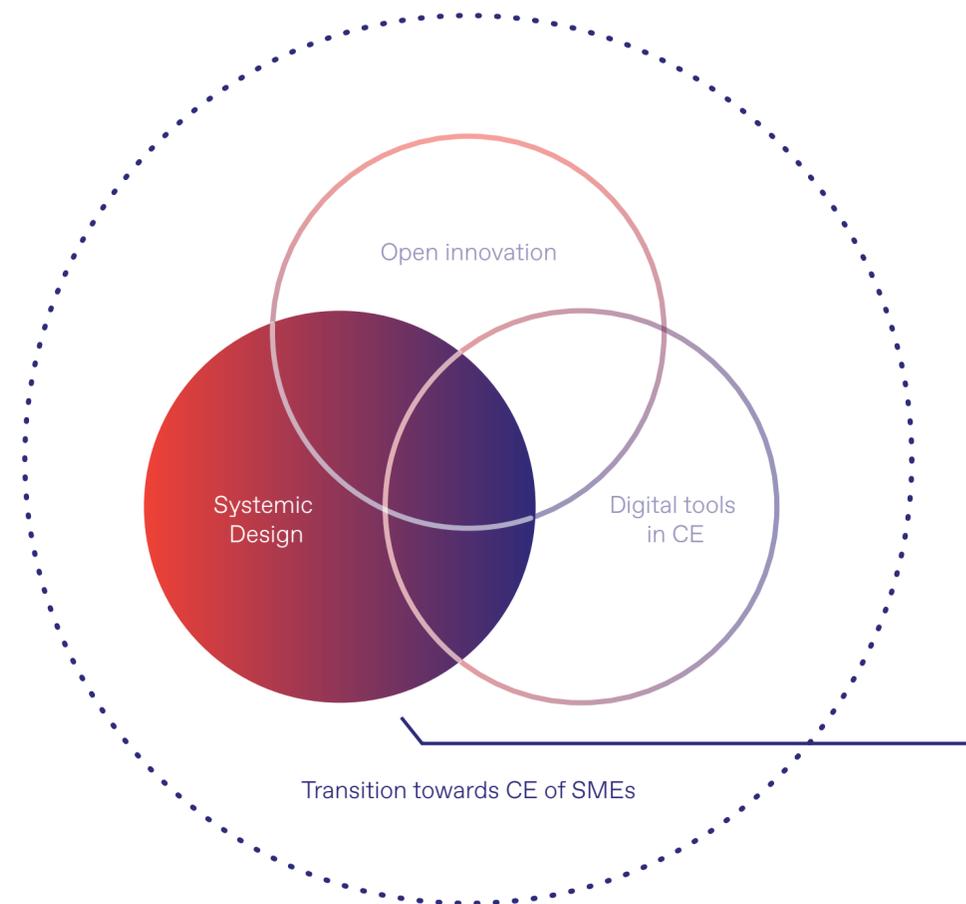
- inside, outside, both sides
- defined as the degree of permeability of firms to the external environment
- OI increasingly important in academic research and industrial applications (globalisation, complex challenges, ecological & digital transition)

(Gassmann and Enkel, 2004)

(Keupp & Gassmann, 2009)

(Obradovic' et al., 2021)

# Background research



## Systemic Design

Integrates systems thinking and design practices.

- It applies a holistic approach to the design of products, services and systems while supporting active collaboration among different stakeholders.
- In response to complex and interconnected problems, that requires the collaboration of different experts with diverse knowledge and skills.
- It focuses on production processes and is concerned with designing the flows of inputs and outputs.

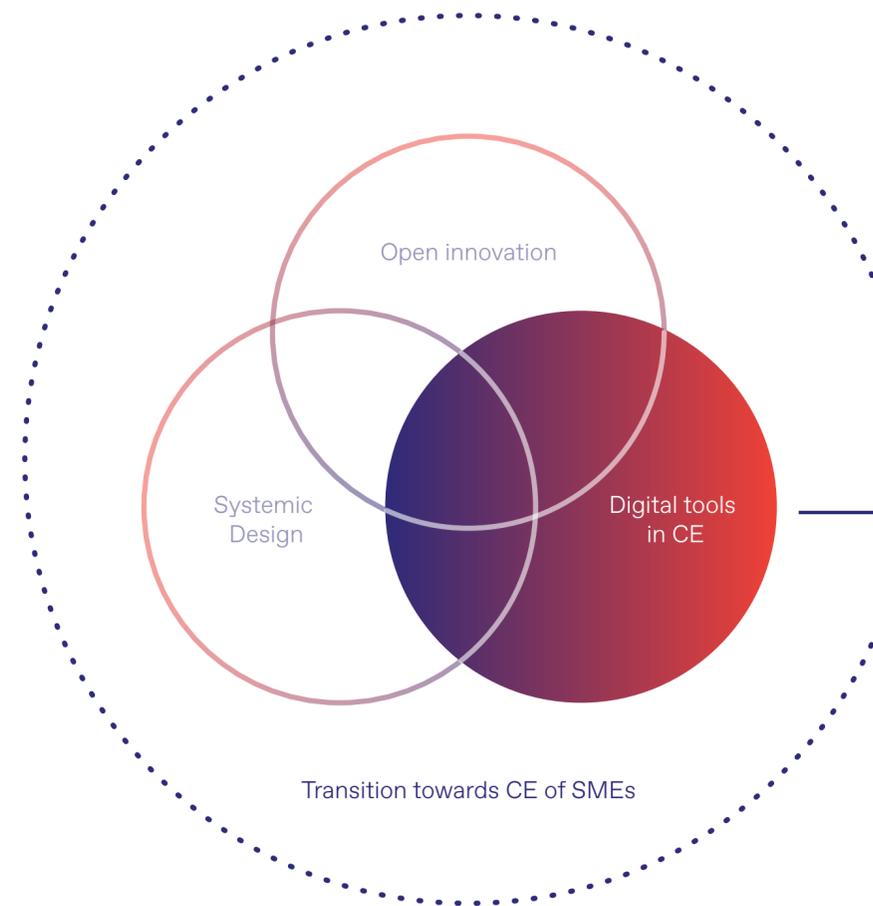
Since the 80% of impacts at the environmental level are generated at the design stage, it offers useful methods and tools for addressing complexity, so applied to business processes, it offers a broader lens for designing new innovative products, services and systems.

(Jones, 2014)

(Giraldo Nohra et al., 2020)

(Thackara, 2005),

# Background research



## Digital tools in Circular Economy

Make businesses more productive, integrated, intelligent and efficient, and enable them to make decisions based on traceable and transparent data, that can be shared with all stakeholders.

Digital technologies make it possible to collect, process and address large amounts of data, creating the conditions for the interconnected cycles for the CE.

This breaks down various barriers, making companies more permeable to the external environment and facilitating the implementation of OI processes.

Examples: RFID, IoT, e cyber-physical systems (CPS), Clouds, Blockchain; Big Data Analytics and AI

(Rachinger et al., 2018)

(Keupp & Gassmann, 2009)

# Challenges

A recent study by Trevisan et al. (2023) identified the main barriers (45) to firms' use of digital technologies for CE by conducting a systemic, multi-level analysis and classifying them into 8 categories.



# Synthesis

Open Innovation and digital tools have the potential to speed up Circular Economy in innovative SMEs.

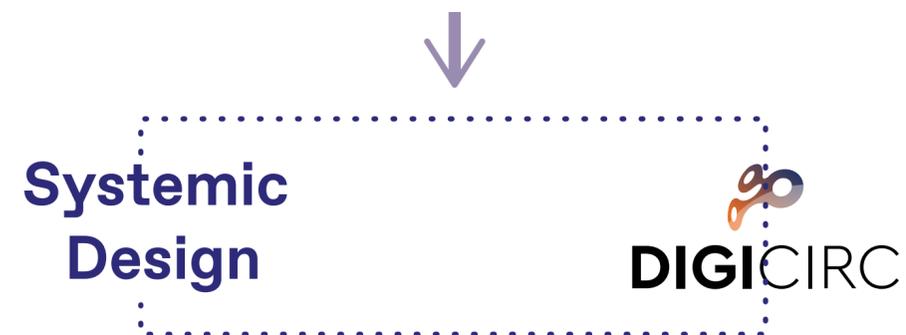
However, a systemic approach is needed to correctly interpret and address complexity and fully exploit both the Open Innovation and digitalization potential.



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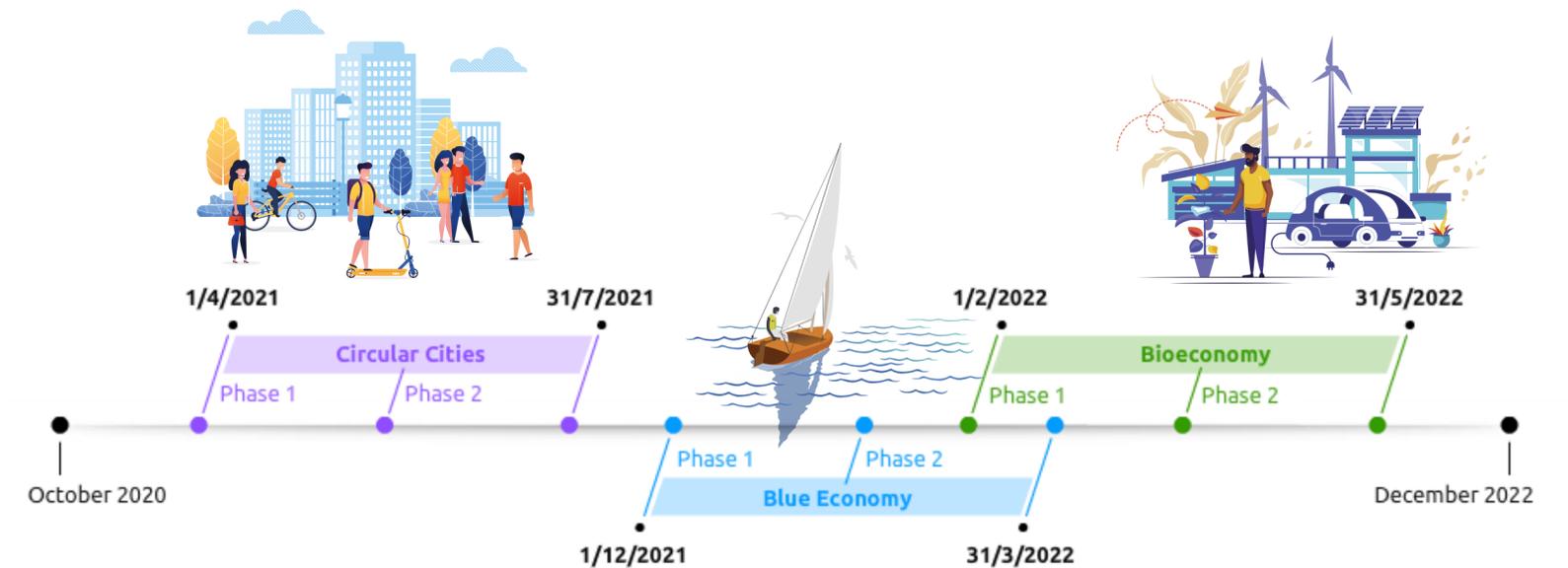


DigiCirc  
& Systemic Design

# DigiCirc

DigiCirc (HORIZON2020 - INNOSUP-01) addresses the ecological and digital transition of European SMEs, with Open Innovation processes and a quadruple helix perspective, in 3 strategic domains: “Circular Cities”, “Blue Economy” and “Bioeconomy”.

The main objective of DigiCirc is to support European SMEs in developing scalable digital solutions that contribute to the Circular Economy.



# DigiCirc

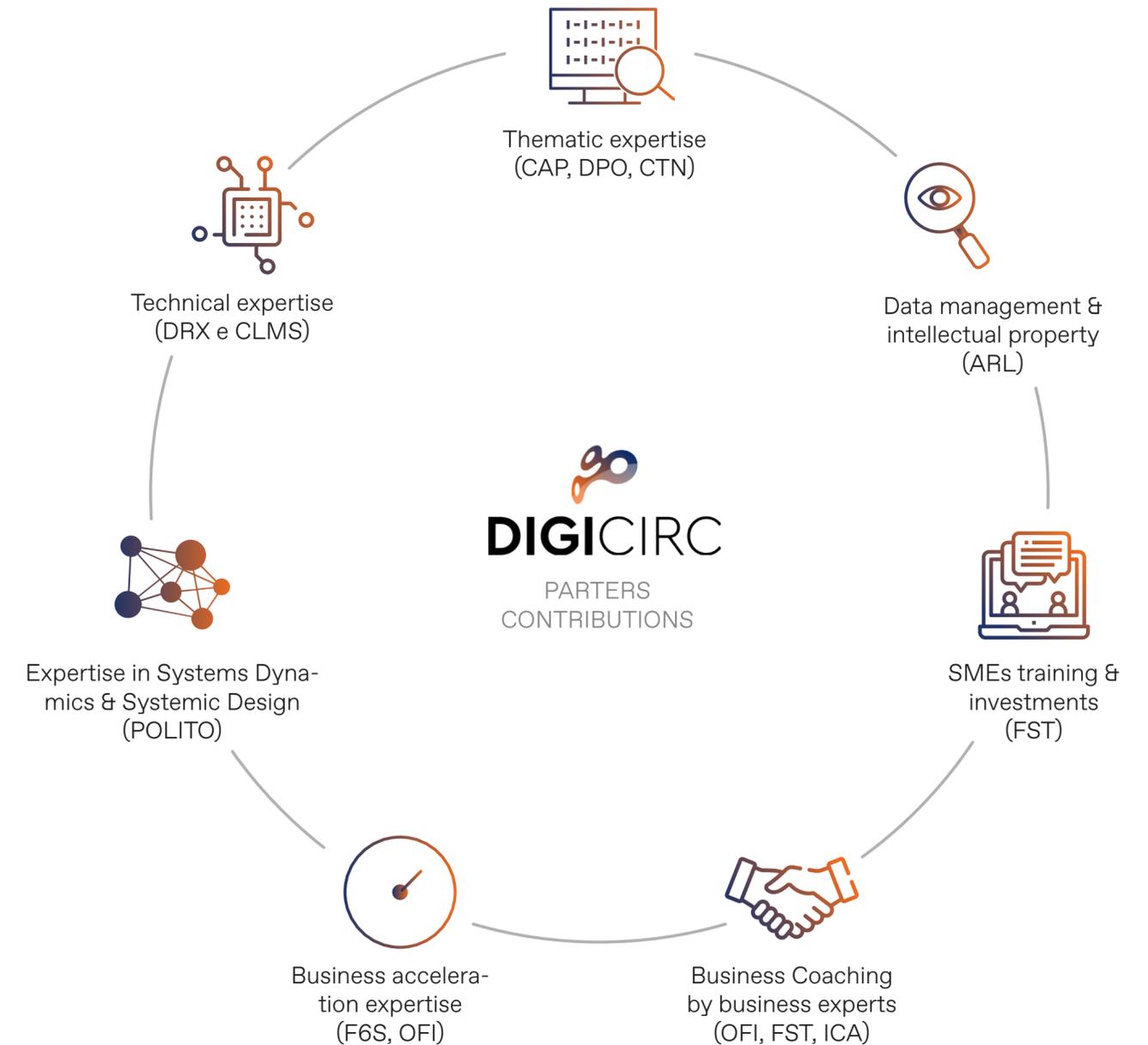
The project involved **11 partners** from 10 European countries, aiming to create a **trans-European Open Innovation ecosystem** by offering businesses a full range of services to support innovation



# DigiCirc

The project adopted a systemic approach to address the complexity, articulated in 4 macro-phases:

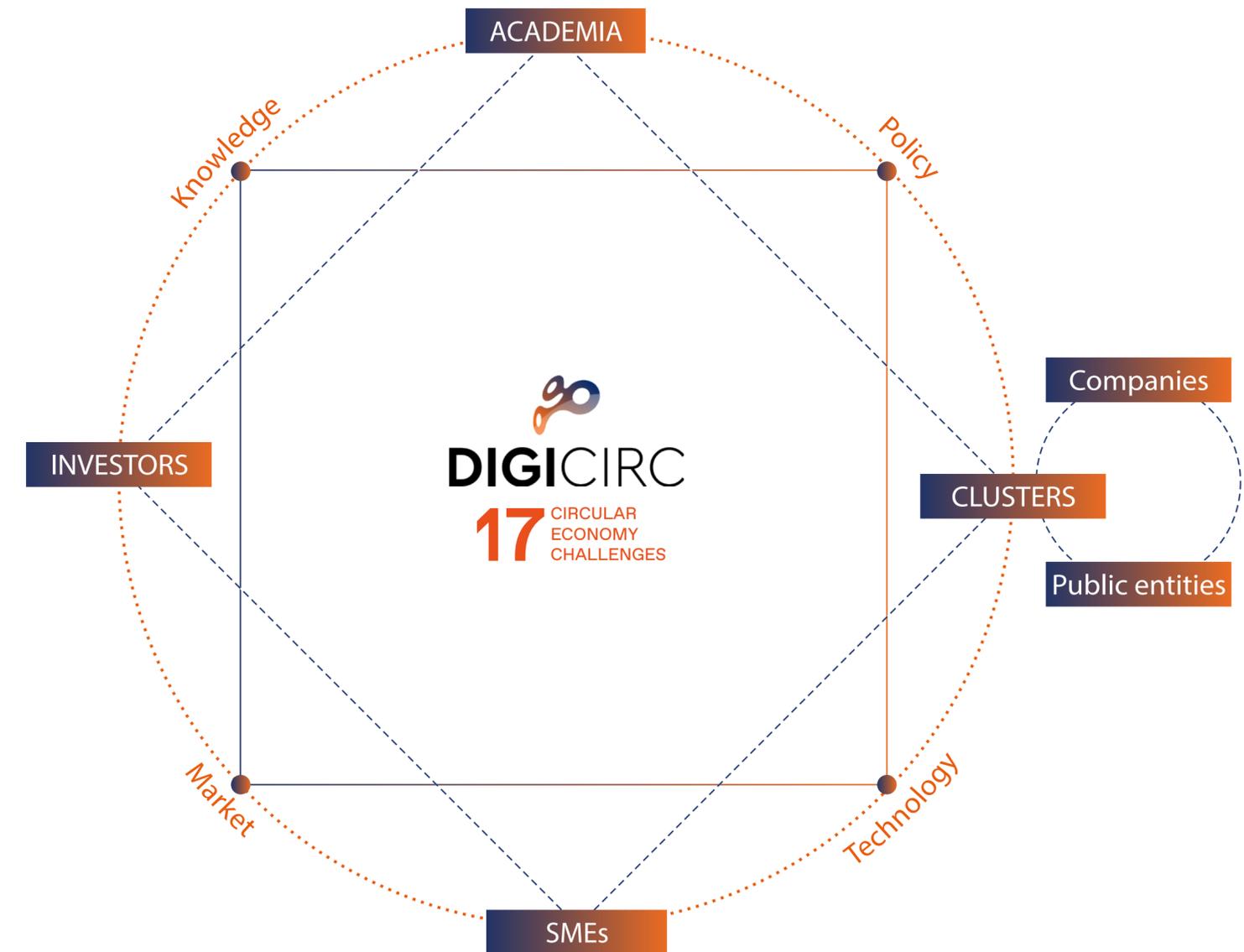
1) the creation of the trans-European **Open Innovation ecosystem**;



# DigiCirc

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- 1) the creation of the trans-European **Open Innovation ecosystem**;
- 2) 3 multidisciplinary **stakeholder engagement campaigns**, jointly defining the main **Circular Economy challenges** within the 3 strategic domains;



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- 3) the launch of 3 **acceleration programs**;



**Circular Cities**

**100** SMEs SUPPORTED



**Blue Economy**

**48** PROJECTS FINANCED



**Bioeconomy**

**26** COUNTRIES

# DigiCirc

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- 1) the creation of the trans-European **Open Innovation ecosystem**;
- 2) 3 multidisciplinary **stakeholder engagement campaigns**, jointly defining the main **Circular Economy challenges** within the 3 strategic domains;
- 3) the launch of 3 **acceleration programs**;
- 4) the creation of holistic **contents and tools** to support innovation.



Circular economy data hub



Matchmaking Tool



Industrial Symbiosis Platform



InfoPortal



MOOC platform

How did Systemic Design contribute  
to the project?

# DigiCirc & Systemic Design



# DigiCirc & Systemic Design



## Knowledge Management

- Provide the expertise on Systemic Design;
- Develop training for SMEs and coordinate partners in contents creation;
- Transfer knowledge within and outside the DigiCirc ecosystem and beyond the end of the project.

# DigiCirc & Systemic Design



## Process Management & governance

- Contribute in sharing the open call to clusters, SMEs, start-up within its network
- Contribute in selecting relevant clusters and academic skills for the definition of Circular Economy challenges

# DigiCirc & Systemic Design



## Technological

- MOOCs platform development

# DigiCirc & Systemic Design



## Products and materials

- Contents development of the Systemic Design course
- Assignments' evaluation of the Systemic Design course

# DigiCirc & Systemic Design



## Policy & regulation

- Meeting with the EU project officer
- Future contribution to develop the Policy Brief and the “Circular innovation priority report”

# DigiCirc & Systemic Design

Overall, Systemic Design contribute to:

- Trigger and sustain a **cross-sectoral dialogue** with diverse thematic, industrial, and academic stakeholders;
- **Transfer knowledge** both within and outside the DigiCirc ecosystem;
- Strengthen a **systemic understanding** in manufacturing and service SMEs.



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Thank you!

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