



# Synergies of Territorial Innovation and Digital Transformation

*How the combination of these two dimensions can provide multiple benefits for territories and European policies?*

**Editors:** P. Rodriguez Müller, R. Reimeris, S. Schade, J. Martín Bosch, M. Manzoni, C. Torrecilla Salinas, M. Bacigalupo.

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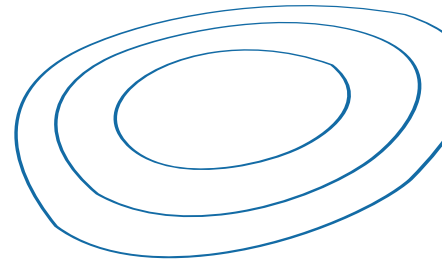
2024

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# ABSTRACT



On 6 March 2024, the Joint Research Centre hosted an exploratory workshop on the synergies of territorial innovation and digital transformation. This workshop aimed to identify research questions and knowledge gaps. This is crucial for supporting EU policies for regional and local transitions, particularly in the context of digital transformation and its contribution to territorial innovation. It brought together digital technology, governance and innovation experts to explore collaborative opportunities. The workshop's outcomes, including insights and discussions, can shape future work streams and research activities. The main obstacle to innovation and digital transformation is the differing mindsets of actors within complex ecosystems, leading to power struggles and resource prioritisation challenges. To address this challenge, a shift from 'needs to solutions' is required, implementing systemic change to prioritise common needs, shared goals and mutual understanding. Understanding the elements for the success of regions, supporting 'agents of change,' and building up capacity are crucial factors for driving innovation and sustainable development. Finally, embracing the triple (digital, social and green) transition and focusing on the developments within and connections between GovTech and CivicTech will drive innovation and change in the future.

# ACKNOWLEDGEMENTS

We are grateful to all participants, including the invited experts and our colleagues from B7 and T1 units, for their valuable contributions. Your support in preparation for the workshop and active participation has made this event truly productive and informative.

## Invited experts

The speakers brought their expertise, knowledge and experiences in digital transformation and territorial innovation. They came from different sectors, including academia and the private sector, including practitioners (see [Annex 2](#) for a detailed list of invited experts).

*Frank Bannister, Marta Martorell Camps, Toni Caro, Jarmo Eskelinen, Tomasz Janowski, Il-aria Mariani, Jonas Onland, Fermin Serrano Sanz, Christian Saublens, Dora Silva and Laura Varisco.*



# 1 | INTRODUCTION AND CONTEXT-SETTING

As the European Union (EU) navigates an evolving landscape of governance paradigms, it is crucial to understand the impact digital technology and data have in fostering well-being, innovation and competitiveness across its Member States, thereby making the EU more competitive worldwide. This requires revisiting the EU's multi-level governance approach to assess how EU initiatives can be interconnected to be more cohesive. With the EU's ongoing triple (digital, social and green) transitions, we need to check whether current governance structures are fit to meet these future challenges and consider the potential impacts of an enlargement to 39 Member States. We can pave the way towards a more inclusive, sustainable and effective governance structure within the EU by properly addressing these considerations.

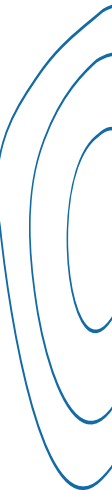
This report is a collaborative effort by two Joint Research Centre (JRC) units: Innovation Policies and Economic Impact (JRC.B.7) and the Digital Economy Unit (JRC.T.1). The JRC is the European Commission's scientific and knowledge service, providing independent scientific and technical advice to support EU policies. Together with research institutes across Europe, the JRC covers a wide range of fields, including innovation, digitalisation, energy, environment and agriculture. It consistently ranks among the top-cited European institutions in scientific research.

JRC unit T.1 within the Directorate for Digital Transformation and Data aims to study current and emerging digital transformation and its impacts on the European economy, society and environment, in order to support EU digital policies. In particular, T.1 provides techno-socio-economic research on the strategic role played by digital technologies, data and digital platforms and how this impacts the economy and society, as well as digital skills, digital education and the modernisation of the public sector.

JRC unit B.7 within the Directorate for Fair and Sustainable Economy aims to support the development and implementation of strategies for innovation-driven territorial transforma-

tion towards sustainability. It analyses the socio-economic effects of globalisation on the EU economy based on input-output data with high sectoral and geographical details. B.7 supports the European Semester with economic analysis and modelling tools to help achieve economic coordination and implement the Recovery and Resilience Facility.

Combining the expertise from these two units, this report explores how synergies between territorial innovation and digital transformation can be leveraged to create multiple benefits across EU territories and support broader European policies.





# 2 | EXPLORING SYNERGIES OF TERRITORIAL INNOVATION AND DIGITAL TRANSFORMATION

On 6 March 2024, the JRC units for Digital Economy (T.1) and Innovation Policies and Economic Impact (B.7) hosted an exploratory workshop on synergies of territorial innovation and digital transformation. The workshop's primary aim was to identify emerging research questions and gaps in the knowledge required to support EU policies for regional and local transitions – with a particular emphasis on digital transformation and how this can contribute to territorial innovation. The workshop used an exploratory and multidisciplinary approach, bringing together digital technology, governance, regional and local innovation experts. The discussions and insights generated during the workshop serve as a platform to collaboratively shape future work streams by integrating efforts across different initiatives and projects.

The following research questions guided the workshop as a starting point:

- How can new digitalisation processes transform regional administration to become more innovative, ecosystemic, efficient, sustainable and citizen-friendly?
- How can digital transformation improve experimentation in the regional ecosystems?
- How are digital regional agendas integrated with other regional strategies/agendas?
- How are digital, sustainable and social/inclusive aims combined in territorial (local, regional, national) policies?
- How can we improve place-based governance and how can it better contribute to sustainable, digital and inclusive objectives?

The workshop's core revolved around participant discussions to identify multi-level and cross-disciplinary gaps at the intersections of digital transformation and regional development, and generate research questions that will have synergetic effects for both JRC units involved and beyond. This report is based on the insights provided at the workshop. It proposes steps to roll out the required research activities and provides related recommendations to the relevant policy DGs and partners in Member States..

# 3 | EXPLORING FOUR RESEARCH AREAS ON DIGITAL TRANSFORMATION

Based on initial inputs from the experts, we identified four key research areas for further exploration. For each area, we detected key topics and research questions. Then, where possible, we generated additional insights into potential approaches and methodologies to enrich the identified research topics and questions, within the constraints of a single 1-day workshop and limited processing. Similarly, we noted the need for partnerships related to the various topics and research questions as well as a longer-term working scope.

Because we discussed the various areas in groups, the results vary in structure and focus. The research areas reflect the four main priorities set by the workshop organisers for the agenda, as well as the participants' priorities throughout the day.

At the beginning of the workshop, we debated the relevance and importance of addressing the complex challenges we face in Europe and as humans from a broader perspective. This approach considers not only the digital transition but a triple transition: social, green and digital. This approach, focuses on the type of society we want to build, on ways to reverse the damage we as humans have caused to the planet and on how to make technology an important ally and vehicle for these transitions (Caro-González 2023).

## Research area 1. Strategic frameworks for territorial innovation and digital transformation

### Brief description

This research area explores the development and implementation of strategic frameworks that enable regions to navigate the triple transition. It focuses on leveraging evidence-based and data-driven approaches to design regional policies, to ensure the integration of digital, social and green transitions. This area also examines how regional administrations can serve as dynamic platforms for stepping up innovation and addressing bottlenecks in policy reg-

ulation, strategy design and implementation plans. It seeks to outline coherent implementation plans for transformative agendas, fostering an environment conducive to sustainable development and resilience.

### Rationale & challenges

It is crucial that strategic frameworks are developed and implemented to help regional or local public administrations address the contemporary and future societal, environmental and technological challenges of different territories. Accordingly, many public administrations have acquired the know-how to develop solid strategies. However, further attention and advice are required concerning the adoption of an effective implementation process.

Data-driven policymaking tools can help map assets, assess past performance, identify future challenges, and determine the resources needed to begin a transformative process and create public policy through mission-oriented approaches. The use of facts and proof is essential to the shift in policy. Regional policy would greatly benefit from the use of the increasing volume of data becoming available and of advanced statistical modelling tools to forecast requirements and expected outcomes more accurately.

Integrating the triple transition encompassing the social, green and digital transitions requires strategic planning and coordination across multiple sectors and key actors. Understanding the interconnections between these transitions is a premise for developing broad and context-specific solutions capable of addressing the multifaceted needs and priorities of diverse regions (Caro-González 2023). Furthermore, adopting comprehensive and inclusive development strategies enables the interrelated challenges of economic prosperity, social equity and environmental sustainability to be addressed. Designing a new generation of innovation ecosystems is essential to address complex societal challenges and foster innovation in an inclusive, desirable and sustainable manner (Caro-González and Serra 2024).

Concerning regulations, a significant challenge arises in harmonising policies across various levels of governance, as interdependencies and potential inconsistencies may complicate the ability of local actors to navigate and implement coherent policies. Examining technical solutions, such as those based on big data and AI, alongside best practices for ensuring policy coherence, can help streamline implementation processes that are frequently misunderstood by the general public. This does not generally occur during the co-designing of solutions.

Furthermore, digital transformation enables local and regional governments to build, manage and sustain platforms that directly empower people and other social and economic actors to contribute to territorial innovation and development. However, achieving the platform paradigm requires implementing systems that engage people and integrate data, technologies and institutions in order to advance territorial innovation and development. In addition, digital transformation enables government processes to be automated, therefore improving operational efficiency, the delivery of public services, and the quality of government decisions, as well as making them more convenient for the public. The primary challenge lies in

automating local and regional administrations to yield anticipated benefits while mitigating associated risks such as misjudging decision contexts, introducing discrimination and bias and prioritising economic gains over social values.

## Initial research questions

### *Evidence-based and data-driven regional policy design and implementation*

- What are the main barriers to adopting an evidence-based and place-based data approach in policy regulation, strategy design and implementing plans for regional transitions?
- What strategies can strengthen policymakers' and stakeholders' abilities to utilise evidence-based data tools for effective strategy design and implementation planning?
- How can a coherent implementation plan be drafted during the strategy design phase for a transformative agenda?
- How can sustainability, competitiveness, relevance and inclusion, quality of life and wellbeing be balanced?
- What type of strategies integrate digital, social and green transitions within territorial innovation initiatives most effectively?
- How can a comprehensive approach to digital, social and green transitions contribute to sustainable development that is human-centred, environmentally friendly and equitable within innovation ecosystems and territories (both rural and urban)?
- What approaches can create innovation ecosystems that empower communities, stimulate economic growth and promote social and environmental welfare?
- How can policy coherence that ensures integrated and effective regional development across various scales and sustainability dimensions be achieved?

### *Regional administrations as platforms for innovation*

- How can digital transformation transform regional administrations into catalysts for territorial innovation and development?
- How can the automation of regional administration be scaled up for more effective territorial innovation and development?

## Prioritised and revised key research questions

- What mechanisms are effective in forming a triple transition team? How can public administration safeguard the mission to advance the public good?
- How can common goals for a triple transition be defined, and what motivates the selection of these goals in terms of values, principles, and rights? How can a reverse action plan be co-designed to achieve these goals?
- What strategies encourage administrations to move beyond a 'just in my administration' mindset?
- What key assets can drive the triple transition, and how can stakeholders identify and mobilise missing assets?
- How can the different templates used in tenders and calls for proposals be interconnected to effectively support the triple transition?



## How to?

The experts proposed a series of (methodological) approaches and strategies to address each of the research questions. Below are some of the research questions discussed with the relevant proposed approaches and strategies.

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*How can common goals for a triple transition be defined and what motivates the selection of these goals in terms of values, principles and rights? How can a reverse action plan be co-designed to achieve these goals?*

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- **Acknowledging uncertainty and sector-specific goals**

Recognising that a universal methodology is elusive (i.e. there is no 'one-size fits all'), the discussions highlighted the importance of examining specific sectors –such as health, energy, education and transport –to identify common objectives. These efforts include exploring whether cities or regions have shared goals and how collaborative action can address this variability, addressing the need for sector-specific research and stakeholder involvement in identifying key objectives.

- **Emphasis on sustainability goals and alliances**

There should be a focus on the centrality of sustainability goals, exploring how forging alliances and developing shared strategies can support the triple transition across different regions and sectors. By capitalising on diverse knowledge bases and leveraging expansive networks, these alliances can accelerate progress and step up the development of collective expertise and innovative solutions. This strategy aims to understand how cross-sector and cross-regional collaborations can enhance the sustainability aspects of the transition.

- **Employing design thinking for co-creation**

Assess the impact of employing design-thinking methodologies for co-creating solutions, should be assessed, in particular to boost collaboration across geographical and sectoral boundaries. This approach involves not just problem-solving but problem-setting, where stakeholders are actively engaged as experts on their own needs, empowered to provide diverse and often complementary insights that can steer the design of innovative solutions and create value.

- **Facilitating dialogue through citizens' assemblies**

The creation of spaces such as citizens' assemblies has been suggested as a way of facilitating discussion on prevalent issues, therefore improving the effectiveness of collaborative efforts and identifying whether problems are the result of single-issue lobbies.

- **Synergising digital innovations**

The importance of creating synergies between digital innovations across various themes and territories to drive the triple transition was emphasised. This strategy involves understanding how digital tools and platforms can enable the integration of transition goals and step up collaborative efforts.

- **Mission-driven approach**

Reverse action<sup>1</sup> planning could be employed to identify common needs, develop shared goals/interests/understanding, align objectives and involve stakeholders at early stages. This approach ensures that solutions are tailored to jointly identified problems, taking into account the scale of impact on the population, and can co-generate and co-identify joint missions.

- **Carry out a scoping exercise**

In parallel, we could carry out a landscaping exercise to identify common needs, actors, planned interventions and available resources (who does what, with whom and how) to develop complementarity of efforts and resources, achieve higher relevance of policies and impact of actions among EU/national/regional/local initiatives.

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*What strategies encourage administrations to move beyond a 'just in my administration' mindset?*

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- **Bringing to the forefront co-creation and public participation**

Examine into how co-creation and public engagement can break down the siloed mentality in administrations. Explore mechanisms for meaningful interaction, focusing on listening, community building and adopting co-design methodologies. The goal is to step up collaborative learning and engagement, ensuring that initiatives are community-driven and inclusive with an intersectional perspective and universal access.

- **Upholding public sector values**

While exploring new strategies, policymakers need to focus on the intrinsic value of the public sector, including key areas like health and education. This strategy aims to understand how administrations can integrate new approaches into their systems without compromising the fundamental services and values they aim to deliver, ensuring that innovation bolsters rather than undermines public value.

- **Rethinking optimisation**

Rethinking optimisation requires adopting a systemic perspective that is mindful and informed of the various areas and levels affected by optimisation. Although it is often seen as a desirable goal, more appropriate approaches may exist. The suggestion is to i) critically evaluate how optimisation strategies are applied, acknowledging that a broader, more inclusive approach might be needed to truly move beyond the 'just in my administration' mindset and ii) ensure best use of resources with better services guaranteeing inclusion and well-being, specifically of vulnerable people or those in need.

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1. A reverse action plan is a strategic planning method where you start with the end goal and work backwards to identify the necessary steps to achieve that goal.

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*How can the different templates used in tenders and calls for proposals be interconnected to support the triple transition?*

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- **Leveraging artificial intelligence (AI)**

AI is recognised as a pivotal tool in ‘revolutionising’ the way templates for tenders and calls for proposals can be interconnected. For instance, research could investigate AI’s ability to process and analyse large datasets to identify common elements and streamline integration processes, aiming to support the triple transition efficiently. Future research could also explore how to use generative AI for some repetitive and time-consuming tasks, while preserving novel ideas.

- **Simplification and elimination of redundancies**

Simplifying templates by removing unnecessary sections can make the process more efficient. This approach focuses on decluttering to ensure that essential aspects are highlighted, making it easier for respondents to understand and complete the templates.

- **Highlighting core project details**

Design strategies that emphasise the project’s core aspects within templates should be highlighted. Determine how such designs improve the relevance and quality of submissions by instructing applicants to highlight central objectives and methodologies.

- **Addressing technical complexity**

The technical and specific nature of templates, especially in the public sector, often makes them difficult to understand and respond to. There is a need to balance technical requirements with user requirements, while being mindful of accessibility, ensuring that templates are understandable and that proposers can focus their responses on what is truly important.

- **Allowing for creative freedom**

Despite the need for structure and specific requirements, templates should also offer enough flexibility to encourage people to explore of new research ideas and innovative solutions. Explore how this balance can encourage people to submit diverse and potentially pioneering proposals aligned with the triple transition’s innovative goals.

- **Closing the gap between stakeholders**

A balance must be found between the actors of the European multi-governance system to bridge the gap/distance between the policy makers who design the policies and the stakeholders who should implement them. This gap exists at every level of the multi-governance system.

## Research area 2. Boosting digital services and infrastructure for participatory value creation and systemic change

### Brief description

This research area explores how digital services and infrastructures can be designed to promote inclusive growth. It explores ways to adapt service design methodologies for digital transformation within public administrations to ensure accessibility, user-centricity and efficiency in delivering digital services while addressing the challenges of digital inclusion and connectivity. The goal is to bridge the digital divide, particularly in lagging regions and ensure that digitalisation efforts contribute positively to territorial innovation and socio-economic development.

### Rationale & challenges

In the evolving digital transformation landscape, well developed digital services and infrastructure for participatory value creation is a key asset. This research area, shaped by experts' insights and discussions, focuses on the need to tackle the complex challenges that stand in the way of creating significant, inclusive and desirable change.

A significant challenge is incorporating design-thinking principles and service design knowledge into organisations, requiring leadership thinking to shift away from traditional efficiency methods towards innovation, greater efficiency and the design (or better, the co-design) of services and products for multichannel delivery. Resistance to shifting from traditional to value-based business and financing models, the prevalent 'not invented here' mindset and a widespread deficiency in digital literacy within organisations block the path to these transformations. These barriers underscore the need for a shift in organisational culture, strengthening the notion that culture profoundly influences strategy. Digital initiatives must transcend traditional IT confines to be recognised as integral solutions to broader societal challenges, requiring a robust and reliable digital infrastructure.

However, creating digital infrastructure is a challenge as there is no solid evidence or negotiated consensus to support innovations, or a broad understanding of new value models that benefit everyone: communities, businesses and governments. It is essential to align funding strategies across public and private sectors to overcome these obstacles. Recognising the unique and often context-specific needs of diverse environments, from urban centres to rural areas, highlights the insufficiency of a one-size-fits-all approach and calls for customised strategies to address local demands.

Furthermore, existing compartmentalisation within European programmes and funding underscores the need for a more collaborative and integrated approach to digital transformation. Bridging these gaps is crucial for creating a digital world that genuinely involves all sectors of society and fosters systemic change, aligning policies across different levels of governance. Due to various factors, such as the different dimensions of coherence (horizontal – within one institution; vertical – from EU to local levels; global – beyond EU borders – and





temporal; for future generations) and sustainability (environmental, social and economic), it is a complex task.

### General challenges and barriers

- Rethinking the broad ecosystem/stakeholder's landscape.
- Relevance of intervention requiring synchronisation of efforts and resources.
- Trust among different actors and trust in technologies.
- Big tech companies influence vs local more agile and innovative actors.
- Complementarity of efforts, competencies and resources.

### Initial research questions

#### *Service design and digital transformation in public administration*

- How can public administrations operationalise and streamline service design methodologies for effective digital transformation?
- What strategies can boost the capacity of public administrations for service design as a part of digital transformation?
- What approaches promote digital literacy and inclusion within public administrations most effectively?
- How can public administration initiatives advance digitalisation efforts in remote areas?
- How can large-scale implementation of digital services be accomplished (potentially through standardisation) while taking into account to local autonomy and culture?

#### *Digital inclusion and connectivity for territorial innovation*

- How essential is universal digital connectivity for promoting digital inclusion and establishing open innovation ecosystems across different territories?
- What strategies for transitioning to a digital welfare state are needed to enable territorial innovation and adapt public services to local needs?
- How can policy labs be created and utilised to support digital innovation and inclusion?
- What role do European Partnerships play in the Horizon Europe strategic plan 2025-2027, particularly in improving digital services and infrastructure for territorial innovation?

### Prioritised and revised key research questions

- How can services be developed from conception to delivery to ensure a comprehensive cultural and systemic change using a continuous participatory approach? How can we ensure that this systemic change is aligned with the principles of the triple transition?
- What strategies effectively ensure all stakeholders' involvement, including policymakers, practitioners, intermediaries, and end-users, in the systemic change process?

- What approaches can boost digital capacities within public administrations to ensure value creation?
- What frameworks or methodologies prioritise user desirability over adaptability in the design process?
- What models enable value creation to be improved, mainly through synergies between private and public actors, and how can these models ensure that various funding schemes are interconnected?

## How to?

The experts proposed a series of (methodological) approaches and strategies to address each of the research questions. Below are some of the research questions discussed with the proposed approaches and strategies.

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*How can services be developed from conception to delivery to ensure a comprehensive cultural and systemic change using a continuous participatory approach? How can we ensure that this systemic change is aligned with the principles of the triple transition?*

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- **Early and continuous stakeholder participation**

Investigate strategies that ensure early and ongoing engagement with all relevant stakeholders in the service development process: stakeholders bring unique contributions to the table, providing specific knowledge and know-how that are often complementary and crucial when addressing complex challenges. Research could examine how sharing power, responsibilities and ownership can reflect diverse needs and encourage co-ownership and commitment, contributing to desired systemic change. In addition, continuous stakeholder participation does not mean always involving stakeholders, but when their knowledge and ability to contribute are most needed and relevant for creating value.

- **Design thinking and experimentation**

Combine design thinking with active experimentation in participatory design workshops, involving stakeholders in empathising, co-ideating, co-creating, co-prototyping and co-testing in real-world scenarios to gather insights: the relevance of real-world experimentation, even on a small scale, lies in gaining knowledge from first-hand experiences while gathering evidence-based knowledge that can then inform and steer further innovation. This iterative process transitions from co-creating to co-designing and co-producing, aligning the development of services with systemic change principles. The goal is to identify how these methodologies can best gather actionable insights and feedback, enabling services that align with systemic change principles to be developed.

- **Participatory design workshops**

Organise participatory design workshops involving stakeholders, such as policymak-

ers, practitioners, intermediaries and end users, to co-create services and policies: the significance of having multiple players interact in settings where hierarchies are temporarily flattened is instrumental in promoting innovation. This structure enables participatory design workshops to gather diverse insights and perspectives effectively in an environment designed to be open for discussion and contributions from various people, independent of power dynamics. Such an approach can promote discussion and mutual learning that is aligned with the triple transition principles.

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*How can the different templates used in tenders and calls for proposals be interconnected to support the triple transition?*

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- **Continuous engagement and mutual learning**  
Investigate and develop frameworks that promote continuous engagement and mutual learning among stakeholders involved in the triple transition: this approach could explore the mechanisms of regular communication, collaboration and knowledge sharing that can help stakeholders reach an agreement (and if possible, a consensus) on the need for systemic change and the nature of that change.
- **Deep involvement of academia, research organisations and intermediaries**  
Ensure that academia, research organisations and intermediaries are deeply involved in the systemic change process. Research should focus on how their expertise and insights can best inform strategies and implement solutions, including methodologies for deeper integration.
- **Adherence to multi-level governance principle**  
Examine the application of multi-level governance principles in systemic change strategies: this approach could identify best practices for operating across different governance levels to adopt a comprehensive and coherent approach to systemic change.
- **Innovative partnership agreements**  
Explore the development and implementation of innovative partnership agreements to enable cooperation among diverse stakeholders: these agreements should clearly outline roles, responsibilities and expectations, ensuring that all parties are aligned in their efforts to drive systemic change.

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*What approaches can boost digital capacities within public administrations to ensure value creation?*

*What models enable value creation to be improved, mainly through synergies between private and public actors and how can these models ensure the various funding schemes are interconnected?*

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- **Broadening the concept of value**  
Investigate how to expand and deepen the understanding of value in public agencies

beyond the purely financial: this approach aims to align the development of digital services with broader social objectives, ensuring that value creation encompasses improvements in quality of life and societal well-being.

- **Training and mutual learning**

Explore the development of appropriate training and mutual learning programmes for public servants and developers: there needs to be a focus on how such programmes can boost digital literacy, increase innovation and ensure that digital projects are designed and implemented with an understanding of public needs and trustworthiness.

- **Building trust in digital services**

Assess strategies to build and maintain trust in digital services among users, focusing on transparency, security and user privacy: we need to consider how trust influences the adoption of digital technologies and the role of public administrations in building a secure digital environment.

- **Mission-driven resource synchronisation**

Examine models for synchronising mission-driven funding and resources to align investments with strategic objectives of digital transformation and societal benefit: this includes creating mechanisms for public and private sectors to collaborate effectively and ensuring investments are targeted towards projects that maximise societal value.

- **Using precommercial and innovative procurement**

The public sector could take the lead in accelerating the uptake of innovations that have demonstrated their ability to provide a solution to an identified problem. It can do this by helping to get these innovations on the market by means of its procurement power.

### **Research area 3. Cultivating human and organisational capacities for innovation**

#### **Brief description**

This research area addresses the conditions for fostering a culture of innovation within digital transformation, focusing on developing human capital and organisational readiness. It involves exploring strategies for recruiting, retaining and further training skilled people in the public sector and overcoming practical challenges related to digitalisation. The area aims to identify effective practices for boosting digital literacy, promoting digital inclusion and advancing digitalisation, especially in remote and underserved areas.

#### **Rationale & challenges**

Digital transformation within public administration is expected to continue to revolutionise operational methodologies and service delivery mechanisms, therefore ensuring various benefits, including increased efficiency, cost reductions and increased public satisfaction. A key challenge inherent in this transformation is recruiting and retaining people with spe-

cialised skills. The development of innovative public services must meet the needs of both public servants and the general public. In this regard, if civil servants as well as members of the public adopt design-thinking methodologies, this would have the potential to deliver productive impacts through systematically collecting evidence and diagnosis to inform more effective leadership strategies as well as the collaborative brainstorming and co-creation of ideas to develop and experiment with new solutions with users in controlled environments. Market curation can also play a pivotal role in re-balancing the dynamics between government, business and civil society to create systemic change. Through its guidance and implementation power, market curation can support individuals, cities and communities in implementing new technologies.

Overall, public organisations face challenges with digital transformation, although the parameters and methodologies for addressing these challenges appear to be comprehensively understood. Nevertheless, there is only a limited amount of literature on instances of failure and on novel ideas to be considered. The emergence of AI as a transformative technology has the potential to reshape not only the public sector but also broader society and the landscape of research methodologies. While AI presents new opportunities, it also poses accompanying risks.

In the private sector, there is relentless emphasis on innovation, with corporations compelled to innovate to maintain competitiveness. The public sector too must adapt to remain relevant. There is concern that the state may become reduced to nothing more than a mere interface or application, echoing concerns over the detrimental effects observed on social media, which are increasingly recognised by social and political sciences. Furthermore, the knowledge surrounding digital transformation and emerging technologies within governmental organisations needs a broader paradigm shift, highlighted by an awareness that digital transformation constitutes a societal challenge. This transformation begins with a leadership that is aware of the complexities surrounding digital transformation.

## Initial research questions

### *Human capital and organisational readiness for digitalisation*

- How can the gap between the increasing needs for digitalisation and recruitment challenges be addressed to ensure a strong digital workforce?
- What strategies can be developed to create a highly motivated public service that meets the needs of both public servants and the general public?
- How can government capacity for long-term planning, foresight and handling complexity be developed and maintained?
- What measures can be implemented to retain and strengthen the capacity to innovate within public services?
- What role can market curation play in addressing knowledge gaps and balancing the interaction between government, business and civil society for systemic change?
- How can GovTech<sup>2</sup> – an innovation ecosystem where private sector start-ups and other

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2. For more details, refer to <https://publications.jrc.ec.europa.eu/repository/handle/JRC128093>.

small technology actors use emerging technologies to deliver products and services to public sector clients – boost government capacity to innovate?

- How can the challenge surrounding GovTech's innovation vs stability be addressed in a way that connects dynamic ecosystems of small technology agents with government agencies that prioritise predictability, stability and control?

#### *Overarching challenges and philosophical considerations of digital transformation*

- Despite the extensive knowledge about digital transformation, why do public organisations struggle in implementing it?
- Is AI merely another technological advance to be integrated, or does it represent a qualitatively different challenge for public organisations? If so, in what way?
- What are the potential societal implications/risks of over-digitalisation and over-automation in the public sector and how are they being addressed?
- How is the perception of digital transformation evolving within government bodies and what implications does this have for leadership awareness and strategy?

#### **Prioritised and revised key research questions**

- What roles, responsibilities, and empowering structures are needed within public administrations to facilitate social, green, and digital transitions effectively? How do these roles catalyse organisational changes that can potentially transform public administration?
- What specific individual competences (skills, knowledge, and attitudes) are required for these roles, and how can public administrations develop career paths for civil servants that prioritise these competences over traditional leadership progression?
- What collective competences are needed for the different roles to collaborate towards achieving the triple transition, and how can these competences be cultivated effectively?

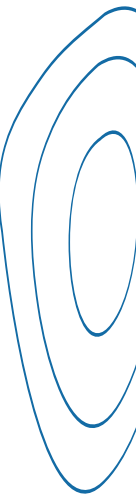
#### How to?

The experts proposed a series of (methodological) approaches and strategies to address each of the research questions. Below are some of the research questions discussed with the proposed approaches and strategies.

*What roles, responsibilities and empowering structures are needed within public administrations to enable social, green and digital transitions? How do these roles catalyse organisational changes that can potentially transform public administration?*

- **Promote capacity building, training and experimentation**

This should take place around key areas like strategic, operational and technical domains.



- **Joint understanding of triple transition**

Research could involve investigating methods for developing and communicating a clear, joint understanding of the triple transition, including its definition, necessity and expected impact. Developing this understanding involves exploring how such an understanding can be fostered across all levels of public administration to ensure a unified approach to the transition.

- **Organisational mandate and empowerment**

Study the balance between a top-down organisational mandate and bottom-up empowerment and capacity building to manage the triple transition: this examination includes looking at strategies for empowering individuals and teams within public administrations to implement and manage changes, ensuring that the transition is embraced throughout the organisation.

- **Developing a triple transition competence framework**

Explore the creation of a comprehensive Triple Transition Competence (TT-Comp) Framework: this research could address the current fragmentation among existing frameworks (like DigComp<sup>3</sup> for digital skills, EntreComp<sup>4</sup> for entrepreneurial competences, and GreenComp<sup>5</sup> for green competences) in order to integrate them into a unified framework that helps public servants acquire the skills and knowledge needed for the triple transition.

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*What specific individual competences (skills, knowledge and attitudes) are required for these roles and how can public administrations develop career paths for civil servants that prioritise these competences over traditional leadership progression?*

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- **Mapping competences and responsibilities**

Research could focus on identifying and mapping out the responsibilities of each role critical to the triple transition. This task would involve determining the specific competences (skills, knowledge and attitudes) required for each role, aligning them with the overarching goals of the transition and preparation of a current skills inventory. The aim is to develop a competency architecture or matrix that categorises different roles and the competences they require.

- **Innovative lifelong learning pathways**

The development of innovative lifelong learning pathways that support continuous development of competence for individuals in roles related to the triple transition should be explored. This exploration should include considering various learning models and career progression opportunities, such as:

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3. Digital Competence Framework for Citizens (DigComp): [https://joint-research-centre.ec.europa.eu/digcomp\\_en](https://joint-research-centre.ec.europa.eu/digcomp_en).

4. EntreComp: The entrepreneurship competence framework: [https://joint-research-centre.ec.europa.eu/entrecomp-entrepreneurship-competence-framework\\_en](https://joint-research-centre.ec.europa.eu/entrecomp-entrepreneurship-competence-framework_en).

5. GreenComp: the European sustainability competence framework: [https://joint-research-centre.ec.europa.eu/green-comp-european-sustainability-competence-framework\\_en](https://joint-research-centre.ec.europa.eu/green-comp-european-sustainability-competence-framework_en).

- vertical progression: from technical to managerial;
- horizontal progression: to broaden individuals' experiences and enrich their competences through horizontal career moves;
- integration of mixed roles that combine technical, managerial and innovative competence.

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*What are the collective competences needed for the different roles to collaborate towards achieving the triple transition and how can these competences be cultivated?*

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- **Identifying and supporting change makers**

Change makers within the organisation who can drive the triple transition forward should be identified. Research could explore how peer-to-peer structures and mechanisms can be established to support these individuals, enabling knowledge sharing, innovation and collective action at their level.

- **Outcome-based teams**

Ways to assemble interdisciplinary teams that span various sectors and generations using the 'multi-i methodology' should be explored. This study would include a focus on organising and managing teams in such a way that takes into account the wide range of perspectives and uses the skills these teams bring, aiming to boost the success of initiatives related to the triple transition.

- **Increasing inter-institutional collaboration**

The mechanisms for increasing collaboration among various organisations from the quadruple helix (government, industry, academia and civil society) should be examined to pool different expertise and innovative capacities. This research could focus on how such collaborative efforts can transform organisations and innovation ecosystems, identifying the collective competences that enable such organisations to contribute to the triple transition.

## **Research area 4. Engaging stakeholders in local ecosystems for distributed digital public governance**

### **Brief description**

This research area emphasises the relevance of involving individuals and communities in digital transformation through co-creation and participatory governance models. This area includes a focus on ensuring people's rights in the digital era, the impact of science on societal engagement and the development of governance models that are democratic and inclusive, and that resonate with community needs and aspirations.

### **Rationale and challenges**

The drive to engage actors in local ecosystems for distributed digital public governance stems from pressing challenges within the communities, contexts and existing governance



frameworks. Fundamental among these is the shift from focusing on problems to embracing a broader perspective that involves communities early on, aiming to transform engagement beyond the usual stakeholders. This shift requires reimagining the decision-making process and advocating for decentralised, agile methods that reflect the fluidity required in digital governance in a world that is changing increasingly rapidly.

Effective digital public governance depends on timely and substantive community involvement and a nuanced understanding of multi-level stakeholder interests. It requires shifting incentives from short-term political agendas to promoting long-term investments focused on genuine needs. Building trust and control among users through user-centric, reliable solutions is a key step towards reconciling bottom-up initiatives with top-down policies. The challenges of vendor lock-in (i.e., 'when someone is essentially forced to continue using a product or service regardless of quality, because switching away from that product or service is not practical) and the influence of adverse agents emphasise the importance of flexible, open governance frameworks that prioritise public interest.

Tackling these issues will lead to a more distributed governance model that champions inclusivity, adaptability and stakeholder collaboration. This endeavour aims to put in place governance ecosystems adept at leveraging the benefits of digital transformation, ensuring that public governance is not only technologically proficient, but also deeply committed to principles of inclusivity, transparency and sustainability.

## Initial research questions

### *The role of science in society and policymaking*

- What role can science, specifically citizen science<sup>6</sup>, play in narrowing the gap between policy making and societal needs?
- How can we maximise the role and the potential of citizen science?

### *Ensuring citizens' rights in digital transformation*

- How can the deployment of research and innovation infrastructures protect and strengthen citizens' rights during Europe's Digital Decade?

### *Public engagement and co-creation in public sector digital transformation*

- What factors contribute to low levels of public participation in governmental processes and what strategies are governments employing to address this issue? Could other strategies be envisaged?
- What methods can be adopted to involve the public and stakeholders in the digital transformation of the public sector, in order to achieve outcomes that better meet their needs and expectations?
- How can public organisations incorporate design thinking principles and public/stakeholder engagement practices to navigate and overcome obstacles in digital transformation?

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6. For more details, refer to <https://publications.jrc.ec.europa.eu/repository/handle/JRC123500>.

- How can CivicTech<sup>7</sup> help organise citizen volunteers, companies and government in community-led initiatives that increase public engagement, democratic participation and co-creation?
- Can GovTech and CivicTech use the same locally based technology actors, build ecosystems that involve them and pursue similar goals but from different angles?
- Can CivicTech complement GovTech to help scale-up digital solutions and innovations from regional administrations to the regions themselves?

### Prioritised and revised key research questions

- How can a community-driven, cross-sector/horizontal approach be supported to engage multiple stakeholders in making innovation responsible (human-centred), inclusive, and mission-oriented?
- How can distributed governance be organised to achieve the transition from centralised and top-down decision-making to validated decentralised and bottom-up decision-making, and how can its operationalisation into local ecosystems be supported?
- What foundational principles and methodologies can ensure digital solutions or innovations are desirable, trustworthy, tailored to contextual needs, and sustainable?
- How can multilevel actors from ecosystems be effectively engaged to carry out place-based innovation with real potential for scaling up in-depth, outwardly, and upwardly (deep, out, up)?

### How to?

The experts proposed a series of (methodological) approaches and strategies to address each of the research questions. Below are some of the research questions discussed with the proposed approaches and strategies.

*How can a community-driven, cross-sector/horizontal approach be supported to engage multiple stakeholders in making innovation responsible (human-centred), inclusive and mission-oriented?*

- **Case studies for real-world Insights**

Collect and analyse diverse case studies that showcase successful and failed attempts at stakeholder engagement across sectors: this analysis could highlight practical examples of how cross-sector collaboration can lead to more inclusive and mission-driven innovation, offering lessons on best practices and pitfalls to avoid.

7. For more details, refer to <https://collections.unu.edu/eserv/UNU:9010/civitech-report-backhouse-tavares-2022.pdf>.

- **Experimentation with stakeholder engagement**

Implement real-world experimentation that involves various of stakeholders in the innovation process, such as Living Labs. This hands-on approach allows direct feedback and insights into the dynamics of multi-stakeholder collaboration to be gathered, identifying strategies for encouraging inclusive innovation ecosystems.

- **Systematising knowledge for guideline development**

Synthesise knowledge from literature, case studies and experimentation to develop clear guidelines and frameworks: these guidelines should offer actionable steps for organisations aiming to adopt a community-driven, cross-sector approach.

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*How can distributed governance be organised to achieve the transition from centralised and top-down decision-making to validated decentralised and bottom-up decision-making and how can its operationalisation into local ecosystems be supported?*

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- **Case study analysis for practical insights**

Collect and analyse case studies that describe attempts to implement distributed governance within and across various contexts: there should be a focus on understanding the strategies employed, outcomes achieved, and lessons learned, providing a practical perspective on how different organisations have navigated the shift.

- **Experimentation across governance scales**

Implement experiments at different scales of distributed governance to explore the balance between top-down directives and bottom-up initiatives: this practical experimentation aims to assess the adaptability and efficiency of distributed governance models in real-world settings.

- **Developing an assessment framework**

Create a framework for assessing the impact and effectiveness of distributed governance models: this framework should include criteria for evaluating multi-level changes in the quality of decision-making, stakeholder satisfaction and the agility of the governance process.

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*What foundational principles and methodologies can ensure digital solutions or innovations are desirable, trustworthy, tailored to contextual needs and sustainable?*

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- **Establishing theoretical foundations**

Develop a comprehensive theoretical background that underpins the creation of digital solutions with the desired qualities: desirability, trustworthiness, contextual tailoring, sustainability and inclusiveness. This process includes reviewing and synthesising insights from a multidisciplinary body of literature to define a set of principles guiding digital innovation.

- **Developing and applying a monitoring and assessment framework**

A monitoring and assessment framework should be designed to evaluate to what extent the digital solutions are desirable, trustworthy, contextually tailored and sustainable. This framework could be applied in small-scale multi-stakeholder experiments to collect data and evaluate the solutions' adherence to these principles, refining them based on feedback and findings.

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*How can multi-level actors from ecosystems be engaged to foster place-based innovation with real potential for scaling in-depth, outwardly and upwardly (deep, out, up)?*

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- **Best practices through case studies**

Identify best practices for engaging multi-level actors in creating place-based innovation by collecting and analysing case studies: this approach could highlight successful strategies for collaboration and scaling innovations.

- **Developing a theoretical framework for scaling**

A theoretical framework that outlines the mechanisms and principles guiding the scaling of place-based innovations – in-depth, outwardly and upwardly – should be created. This framework should provide a structured approach to understanding scalability in diverse contexts.

- **Testing scenarios for practical insights**

Implement testing scenarios that apply the theoretical scaling framework to real-world situations: this step aims to gather empirical data on the scalability of innovations and understand the dynamics of engaging multi-level actors.

- **Translating outcomes for policy-making**

Outcomes from testing scenarios should be analysed to define conditions for successful innovation scaling. These insights should be used to inform and stimulate bottom-up policymaking, ensuring policies support the effective engagement of multi-level actors and scalable innovation practices.

- **A reverse action plan should be used to check the consistency of a strategy and its implementation**

A reverse action plan is useful for checking that all the critical ingredients of a strategy are in place to enable intelligent execution. The reverse action plan starts with the expected outcomes and looks at what is needed to achieve them, from infrastructure to human and financial resources. It also helps to check the interaction between the intermediary organisations that need to be involved to deliver public support.

# 4 | CONCLUDING REMARKS FROM THE PARTICIPANTS AND CO-ORGANISERS

The drive to engage actors in local ecosystems for distributed digital public The workshop tackled many questions concerning multiple perspectives and contexts in four initially pre-defined research areas, covering: i) strategic frameworks, ii) digital services and infrastructures, iii) human and organisational capacities and iv) stakeholder engagement.

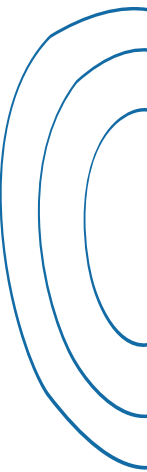
From the discussion, it emerged that the primary, common obstacle to both innovation and digital transformation is the specific mindset of the different actors within complex ecosystems, composed of international, national and local bodies and their specific situations. Actors within the ecosystem have different roles, objectives, structures, resources and partnership dynamics. This diverse set of characteristics drives power games, organisational challenges and resource prioritisation.

It is necessary to go from 'needs to solutions' (or from strategy design to implementation) by applying a systemic change to promote prioritisation around common needs, shared goals, mutual understanding and synchronisation of efforts. There is a need for more trust among all actors, as well as their further legitimisation and empowerment, especially the final beneficiaries of public sector services. Furthermore, there needs to be synchronisation of policies while preserving local relevance and governance legitimisation through comprehensive public consultation.

Following an extensive day of deliberations, the workshop attendees discerned the following primary takeaway messages:

- There is a need to embrace the concept of the triple transition in organisational, public-private collaboration and urban data strategies to drive innovation and change.
- Understanding why some regions succeed while others do not is as important as deploying innovation.
- Identifying and supporting 'agents of change' for co-designing developments and co-creating an implementation plan is essential to overcome barriers to innovation.

- People make a difference; capacity building and knowledge sharing are key factors in driving innovation and sustainable development.
- Applying step-by-step transformative policies and testing ideas before large-scale investment is important if changes are to be sustainable.
- Frequently, new agendas of change are dominated by the same persistent issues that have been identified for years. How can we overcome the fear to change and/or to fail? Transitioning from diagnosing problems to taking concrete actions for change is needed. Determining what is currently effective and where improvements are needed is also essential.
- Adding sustainability to digital transformation creates two distinct concepts. The first is sustainable digital transformation, which ensures no harm to public values. The second is digital transformation for sustainability, which aims to achieve higher public value goals aligned with the UN Sustainable Development Goals. Both concepts are interrelated but require different approaches.
- Digital transformation in smart cities and smart regions fail in different ways, particularly on sustainability. We should learn from such failures to make digital transformation of cities and regions sustainable.



# 5 | OUTLOOK TO NEXT STEPS

We are confident that this report, along with the expert workshop, will lay the groundwork for ongoing collaborations among the participants and suggest a unified research agenda within synergies of territorial innovation and digital transformation. Both JRC units will assess how to incorporate these findings, research questions, ideas and policy recommendations into future work plans, potentially leading to further exploration.

With the support of policy practitioners and researchers, additional workshops tailored to specific research questions or focused on implementing the findings could be organised.



# SUGGESTED READINGS

## Digital transformation

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## Innovation

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## Citizen engagement

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## Policymaking processes

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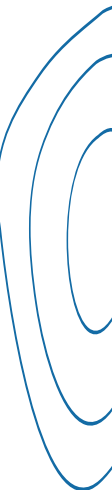
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# LIST OF ABBREVIATIONS AND DEFINITIONS

<b>AI</b>	Artificial Intelligence
<b>DigComp</b>	The European Digital Competence Framework for Citizens
<b>EC</b>	European Commission
<b>EntreComp</b>	The Entrepreneurship Competence Framework
<b>EU</b>	European Union
<b>EURADA</b>	The European Association of Development Agencies
<b>GreenComp</b>	The European Sustainability Competence Framework
<b>ICT</b>	Information and Communication Technology
<b>JRC</b>	Joint Research Centre
<b>RRF</b>	Recovery and Resilience Facility
<b>SDGs</b>	Sustainable Development Goals
<b>TT-Comp</b>	Technology Transfer Competence Framework



# ANNEX 1 - WORKSHOP AGENDA

<b>9.00 - 9.15</b>	<p><b>Welcome and setting the scene</b>  <b>Mikel Landabaso</b>, Joint Research Centre (JRC), European Commission, Director for Fair and Sustainable Economy  <b>Carlos Torrecilla Salinas</b>, Joint Research Centre (JRC), European Commission, Head of Unit for Innovation policies and economic impact  <b>Michele Vespe</b>, Joint Research Centre (JRC), European Commission, Acting Head of Unit for Digital Economy</p>
<b>9.15 - 9.30</b>	<p><b>Introduction to the workshop and expected outcomes</b>  <b>Sven Schade</b>, Joint Research Centre (JRC), European Commission</p>
<b>9.30 - 10.45</b>	<p><b>Getting to know the participants: main ideas for the workshop</b>  Moderated by <b>Sven SCHADE</b>, Joint Research Centre (JRC), European Commission</p>
<b>10.45 - 11.00</b>	<b>Coffee break</b>
<b>11.00 - 13.30</b>	<p><b>Identification of the most relevant/feasible topics</b>  Moderated by <b>Mariana Manzoni, Paula Rodriguez Müller, and Ramojus Reimeris</b>, Joint Research Centre (JRC), European Commission</p>
<b>13.30 - 14.30</b>	<b>Lunch break</b>
<b>14.30 - 16.00</b>	<p><b>Working in groups: scoping of approaches, methodologies, research questions and partners</b>  Moderated by <b>Mariana Manzoni, Paula Rodriguez Müller, and Ramojus Reimeris</b>, Joint Research Centre (JRC), European Commission</p>
<b>16.00 - 16.15</b>	<b>Coffee break</b>
<b>16.15 - 17.45</b>	<p><b>Consolidation of research topics and synergies, next steps</b>  Moderated by <b>Sven SCHADE</b>, Joint Research Centre (JRC), European Commission</p>
<b>17.45 - 18.00</b>	<p><b>Wrapping-up and closing</b>  <b>Carlos Torrecilla Salinas</b>, Joint Research Centre (JRC), European Commission, Head of Unit for Innovation Policies and Economic Impact</p>

# ANNEX 2 - PARTICIPANTS DETAILS (EXPERTS)

Name	Organisation	Sector	Role	Country
Frank Bannister	Trinity College Dublin	Computer Science	Fellow Emeritus of computer science	Ireland
Toñi Caro	Eoh-for-Good (Leading Systemic Transformations for the Common Good) Universidad Internacional de Valencia (VIU)	Social Innovation	Associate Professor and Director – International Research Project Office	Spain
Jarmo Eskelinen	University of Edinburgh	Innovation	Executive Director of Data-Driven Innovation	United Kingdom
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Ilaria Mariani	Politecnico di Milano	Social and technological innovation	Assistant Professor – Department of Design	Italy
Marta Martorell Camps	I2Cat	Social Innovation	Director Of Digital Social Innovation - Digital Society Technologies Area	Spain
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Fermin Serrano Sanz	Fundación Ibercivis	Citizen Science	Researcher and citizen science expert	Spain
Christian Saublens	EURADA	Economic Development	Former director	Belgium
Dora Silva	LabX, Administrative Modernization Agency (AMA)	Public sector	Analyst	Portugal
Laura Varisco	Smarter Europe, Interreg Europe Policy Learning Platform	Public Policy Innovation	Thematic Expert	France

# ANNEX 3 - METHODOLOGY

The workshop's main goal was to identify topics and shape further research questions that are required to support EU policies for regional and local transitions – with a particular emphasis on digital transformation and how it can contribute to territorial innovation.

The workshop utilised a collaborative approach, collecting initial input from participants and continuing with group discussions to improve the understanding of selected topics. Experts were asked to identify up to three core readings relevant to their research field and to specify up to three key research questions or gaps in the combined field of territorial innovation and digital transformation. These questions or gaps could encompass areas such as the use of experimentation spaces, the combination of digital, social and green transitions, service design and the evolving roles of public administrations. In addition, experts were asked to provide a brief rationale for each identified question or gap, explaining why it deserves further examination, including its potential impact, the challenges it poses to existing research, or emerging trends that require specific action.

All responses were carefully reviewed, organised into topics and categories. The workshop began with collaborative work in moderated groups, mapping the topics based on their impact and timeline. Following this, the most impactful topics were prioritised, with a focus on proposing strategies for addressing them, including the overall approach, methodology, potential research questions, partners and required resources. Finally, the experts worked on consolidating the discussed topics, seeking synergies among the topics and research questions to improve the overall understanding and identify potential for collaboration.

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