




ALEXANDRU IOAN CUZA
UNIVERSITY of IAȘI



CENTRE FOR EUROPEAN STUDIES
FACULTY OF LAW



INDI-DeR POLICY BRIEF 2.

INDI ▶ DeR

INSTITUTIONS, DIGITIZATION AND REGIONAL DEVELOPMENT
IN THE EUROPEAN UNION
PN-III-P4-PCE-2021-1878

cse.uaic.ro/indider

A Quadruple Helix smart governance framework through Living Labs

Major issues related to digitalization identified

Metropolitan areas in Central and Eastern European countries face specific challenges in implementing digitalization measures that are deeply intertwined with institutional strength and local contexts. These challenges often include *insufficient technological infrastructure, limited digital literacy, fragmented policy frameworks, low trust from the citizens regarding digital tools, and low levels of public-private collaboration.*

For metropolitan areas aiming to implement advanced digital tools, such as artificial intelligence in public services or blockchain for transparent governance, the limited digital literacy and skill gaps among public administration employees and citizens is a significant barrier that can reduce or even cancel digital progress.

Metropolitan areas also face challenges in implementing EU-wide regulations, such as the GDPR. One of the primary difficulties lies in striking a balance between ensuring transparency and maintaining security. These regulations often require significant infrastructural adjustments and expertise, which can be unevenly distributed across regions, particularly in areas with diverse socio-economic dynamics.

An equally pressing issue is the need for inclusive digitalization that addresses the urban-rural disparities within metropolitan regions. While central urban areas often benefit from advanced digital infrastructure and innovative services, peripheral or rural areas within the same regions are frequently left behind. This exclusion from digital transformation not only deepens inequalities but also undermines the cohesive development of metropolitan regions as a whole.

Additionally, many CEE territories struggle with a lack of unified platforms for public services, leading to inefficiencies in critical areas such as urban mobility, e-governance, and smart city initiatives. For example, urban mobility systems often operate independently rather than as integrated networks, resulting in poor connectivity and reduced accessibility for users.

Similarly, e-governance efforts are hampered by the absence of standardized digital tools, making it difficult for citizens to interact seamlessly with public administrations. The inefficiencies are compounded by limited collaboration among stakeholders within the metropolitan framework.

In order to address these ongoing shortcomings several urban areas from all over European Union are turning their attention to an innovative approach regarding digitalization acceleration, a *Quadruple Helix (QH) smart governance framework through Living Labs (LL) structures*. A LL can test innovative solutions for data management, while the QH ensures a balanced perspective by involving legal experts, tech developers, policymakers, and citizen advocacy groups in designing data governance models that are locally applicable yet aligned with broader regulatory standards. Through a LL, workshops, training sessions, and hackathons can be organized to enhance digital competencies, while the QH model ensures that universities, tech companies, and local authorities co-create curricula and programs tailored to local needs. Additionally, stakeholders can co-design inclusive policies with real-time experimentation and feedback loops to ensure these policies are effectively addressing local disparities.

Introduction to smart governance and the Living Lab model

Governance in smart cities can be understood as a framework of principles designed to guide actions related to the challenges that arise from interactions among public administrations and stakeholders. Good governance, supported by information technology is at the basis for a smart city. The democratic system supports the legal framework that shapes principles of good governance. This framework facilitates citizen collaboration through active participation and engagement (Bifulco et al., 2017).

LLs create a user-centred innovation environment, designed to foster innovation in real-life settings. This approach starts by focusing on people's ideas, experiences and knowledge, as well as their everyday needs for support from products, services or applications. LLs shape and challenge the development process. This framework also introduces bottom-up, socially-driven policies to complement traditional top-down economic drivers.

In the centre of a LL there are the processes of collaborative search and shared learning and the collective contribution to societal challenges. In living labs, stakeholders collaboratively learn by exploring the obstacles and opportunities and work together to co-create feasible and effective solutions. Participants in a living labs aim are continuously involved to assess the living lab performance as it evolves, in order to meet the needs and expectations at community level.

Smart governance relies heavily on digital platforms and tools to enhance citizen engagement, improve service delivery and foster transparency and accountability. These technologies bridge the gap between government agencies, businesses and citizens, making governance more efficient and responsive (Gil et al., 2019; Kankanhalli et al., 2019; López-Quiles & Rodríguez Bolívar, 2018).

In the context of smart cities, public engagement platforms constitute essential tools for fostering citizen participation, enhancing transparency and enabling collaborative governance. These platforms harness digital technologies to create interactive environments where citizens, public authorities and other stakeholders can collectively address urban challenges.

The rise of collaborative public engagement platforms has shifted urban governance towards a more inclusive and open approach. Grounded in open innovation, these platforms empower citizens to actively contribute to the innovation process, from the conception of ideas or solutions to their practical implementation.

Good practices of LLs across Europe

Normandy Living Lab is the network of living labs in Normandy, supported and run by the Secure Electronic Transactions competitiveness cluster (TES cluster).



Normandy, supported and

Normandy Living Lab's focus is on the efficient

development of innovative products and services in the fields of digital agriculture, industry, health, smart territories, and creative digital content, by systematically placing the product or service user at the heart of the innovation process. Thanks to its wide variety of members and its continuous work with local authorities and communities, NLL is building a life-size testing environment covering all of Normandy



AMS Institute is a public-private institute founded in 2014 by Wageningen University & Research and Delft University of Technology, together with Massachusetts Institute of Technology. The mission of AMS Institute is to develop a deep understanding of the city – sense the city – to design solutions for its challenges, and integrate these into the city of Amsterdam. AMS Institute ambition is to create sustainable

metropolitan solutions by realizing a cross-fertilization of ideas. AMS Institute research portfolio revolves around six urban challenges that cover the most important urban transitions.

UVT Digital & Green Living Lab makes use of digital and green tools for transformation projects, benefitting from the education and research human capital & infrastructure. Contributing to community wellbeing is



the ultimate goal of the UVT Digital & Green Living Lab. Along with the dedicated digital (AI, ML, IoT, HPC, Cloud Computing) and green (circular economy, renewable energies, urban gardens and green buildings, biodiversity and sustainable development) tools wellbeing is being addressed by the UVT LL with capabilities related to green jobs & ergonomics.



Limerick's Citizen Innovation Lab is a place for observation, co-creation and experimentation in the city. It is a collaboration between the University of Limerick, Limerick City and County Council, and the citizens of

Limerick, supporting them to work together on a sustainable future for the city.

It is a place where people can help shape a path to a climate neutral Limerick by 2050, guided by the Limerick Climate Action Plan. As a living lab, it leads and supports collaborative research projects, citizen-led initiatives, digital and citizen science tools, and public engagement activities. The shared approach is aligned with the UN Sustainable Development Goals and focuses on areas including decarbonisation, the clean energy transition, climate innovation, digitisation and technology, active travel, and urban development. The Citizen Innovation Lab puts people at the heart of Limerick's climate transition.

DigitalIS Living Lab – a successful QH smart governance framework

The integration of LL model into innovation and urban development strategies is still emerging in Romania, although a comprehensive legislative or policy framework is not yet established. The adoption of LL framework is progressing through various initiatives, primarily within academic institutions or collaborative projects. Many Romanian universities have initiated Living Labs that leverage their institutional frameworks for research, student involvement, and community engagement. These labs often integrate user-centered research and aim to foster interdisciplinary collaboration.

The Romanian innovation ecosystem is characterised by a dynamic interplay among various actors, including academic institutions, government bodies, private businesses and non-governmental organisations. This collaborative environment fosters synergies that drive research, development and technological advancement.

One of the most successful initiatives that have been implemented in Romania following a LL structure is DIGITALIS LL through the project *Institutions, digitization and regional development in the European Union | INDI-DeR* (PN-III-P4-PCE-2021-1878). The aim of DLL is to deliver a novel, experimental and operational citizen-based LL as an open cooperation platform bringing together the different QH stakeholders. DLL acts as an innovative and replicable co-creation framework at the level of Iasi county for finding solutions through citizen involvement, experimental researches and good practices exchanges focused on digital transformation and institutional work.

During the first two years of activity, DLL distinguished itself through a series of experimental approaches and consultations that provided insights previously unknown.

1. Focus group on digitalization

The focus group conducted involved 40 participants, evenly divided into four key categories: 10 representatives from academia, 10 from public institutions, 10 from the business sector, and 10 from NGOs. This balance was maintained to ensure a diversity of perspectives on digitalization across various fields of activity. The tool used was a structured question guide, which enabled the collection of detailed and relevant information about the challenges, benefits, and practices associated with the digitalization process.

The main objective was to explore participants' perceptions and experiences with digitalization, identify under-digitalized areas, and gather examples of best practices and suggestions for institutional support.

The tool consisted of a set of structured, thematically grouped questions designed to stimulate in-depth discussions and obtain diverse perspectives. The questions covered the following aspects:

- Definition of digitalization in the field of activity: To understand how each participant perceives and applies digitalization within the specific context of their organization.

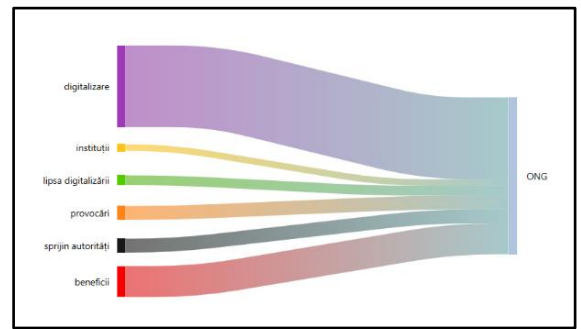
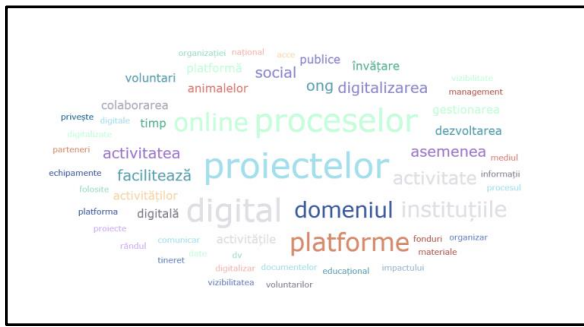


Figure 2 Focus group results by QH category - NGOs

This method was essential for capturing the diversity of experiences and opinions, helping shape more tailored and inclusive digitalization strategies.

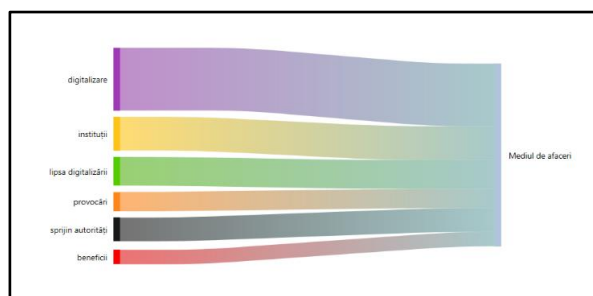
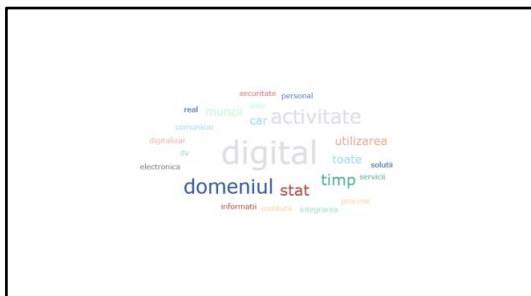


Figure 3 Focus group results by QH category – Business environment

While some differences can be observed between groups, certain common elements suggest that the QG groups have some major similarities in terms of needs, but also challenges, bottlenecks and solutions.

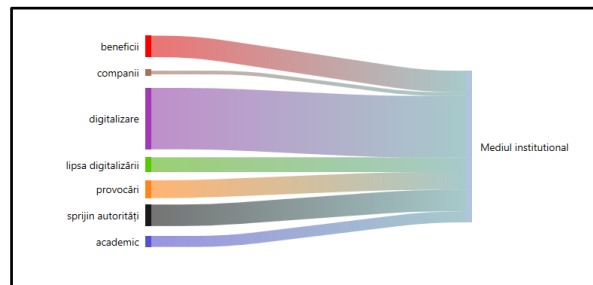


Figure 4 Focus group results by QH category – public institutions

2. *Experimental nudge interventions for influencing intentions to use digital services provided by Romanian institutions*

Since their emergence in the late 2000s, nudges have gained significant popularity. Defined by Thaler and Sunstein (2009) as “any aspect of choice architecture that alters people’s behaviour predictably without forbidding any options or significantly changing their economic incentives”, nudges are rooted in behavioural science. Their theoretical foundation stems from the work of Tversky and Kahneman (1974, 1992), which distinguishes between two cognitive systems: the automatic system, which is fast but highly susceptible to environmental influences, and the reflective system, which is slower, goal-oriented, and less influenced by external factors. While traditional economic theories assume rational decision-making driven by the reflective system, evidence suggests that under cognitive overload or time constraints, the automatic system dominates decision-making, relying on heuristics (cognitive shortcuts). Nudges preserve individual freedom of choice, involve minimal economic incentives, and rely on small contextual adjustments informed by behavioural economics and cognitive psychology.

Our nudge experiment explored three experimental nudge manipulations aimed at influencing the intention to use online public services, particularly the payment of travel document fees. The interventions focused on three main themes:

- a. *Social proof and peer comparison nudges*; Leveraging social norms, participants were exposed to messages emphasizing peer behaviour.
Control group received a standard message encouraging online fee payment.
Experimental group 1 received an additional message: “Most people like you already pay their fees online”.
Experimental group 2 received a quantified message: “65% of people like you already pay their fees online”.
- b. *Social proof with motivational drivers*; Building on the first manipulation, motivational prompts were added.
Control group: Same as above.
Experimental group 1: Additional message: “Make the smart choice and join them”.
Experimental group 2: Additional message: “Join them and save time”.
- c. *Data security and protection nudges*; Addressing concerns over data privacy, messages varied in technical and legal assurances.

Control group: Standard message.

Experimental groups: Messages varied from simple assurances (“Your data is secure”) to detailed explanations of encryption measures and GDPR compliance.

Participants across all groups answered questions about trust in the message and their intention to pay fees online.

The findings highlighted the effectiveness of social proof nudges, particularly those with specific statistics, in increasing online payment intentions among moderate and consistent users. Security-focused nudges that combined IT and legal assurances were particularly impactful for experienced users, though their combined framing yielded mixed results. Motivational prompts like “make the smart choice” resonated with rational decision-makers, while “save time” appeals worked well for convenience-oriented users.

However, resistant or inexperienced users showed limited responsiveness to nudges, requiring additional interventions. This group, which is often forgotten by the designers of smart initiatives may represent a very important share of the population, depending on the type and implications of the initiative.

Implications and recommendations

Initiatives across several European countries revealed the important role that LLs can have in the design, implementation, testing and follow-up of citizen-centred initiatives. Their novel user-centred, participatory model for driving innovation and addressing urban challenges with ease makes them perfect for the support of the framework of smart governance. Furthermore, their capacity of easily integrating the QH stakeholders helps creating a dynamic environment for collaborative problem-solving and co-creation of solutions. The integration of these labs into urban governance processes fosters citizen engagement, strengthens transparency, and supports the development of socially-driven, innovative policies.

In Romania, the adoption of the LL model is still in its nascent stages, with initiatives primarily emerging from academic institutions and project-based collaborations. The lack of a comprehensive legislative or policy framework dedicated to LLs poses a challenge to their systematic implementation. Networks such as the European Network of Living Labs and the alignment with EU strategies are helping scaling these initiatives.

The example set by DigitalIS LL can be expanded to other metropolitan areas. Furthermore, the experimental approach of DLL provided several solutions for policy-makers in their search for effective digital solutions, giving that digital tools play a transformative role in enhancing smart governance.

The technologies enable real-time data collection, resource optimization, and increased transparency, **empowering citizens to actively contribute** to urban development processes. This particularity of digital tools should be used by local and metropolitan policy-makers to shift from the implementation of digital tools as a help the citizens to digital tools as an involvement of the citizens. The various digital solutions deployed across the city should not limit solely to offering information and reducing the answering time, but also to collect the citizens' input, to make the citizens part of the decisional process. The feedback function could be highly important.

Furthermore, giving the novelty, as well as the challenging nature of digital solutions, the decision-makers should intensely **use nudge-based solutions**, especially for domains where the implementation of the digital solutions is critical, such as tax payment, official acts, administrative shortcuts. DLL provides evidence that nudges can be used as enhancers for digital solutions. Nudges are a cost-effective, scalable tool for influencing behavior. With strategic design and implementation, they can drive widespread adoption of online behaviors and boost engagement with public digital services. Thoughtful integration of nudge types can enhance effectiveness but requires careful framing to avoid diminishing individual impacts.

Finally, while digitalisation aims to create equal opportunities and equal access, it is extremely important to take into consideration the **personalization of the digital solutions**. Taking example from the popular applications and platforms that evolve towards a personalized experience, the digital tools implemented by the urban areas should also provide a tailoring experience to user concerns (e.g., IT security assurances for tech-savvy users and legal compliance for regulation-focused individuals). Furthermore, as the skills vary across the age and social groups, the smart initiatives are due to offer functionalities tailored for each group in order to ensure wider usage.

References

- Bifulco, F., Tregua, M., & Amitrano, C. C. (2017). Co-governing smart cities through living labs. Top evidences from EU. *Transylvanian Review of Administrative Sciences*, 13(50), 21-37.
- Gil, O., Cortés-Cediel, M. E., & Cantador, I. (2019). Citizen participation and the rise of digital media platforms in smart governance and smart cities. *International Journal of E-Planning Research (IJEPR)*, 8(1), 19-34.

Kankanhalli, A., Charalabidis, Y., & Mellouli, S. (2019). IoT and AI for Smart Government: A Research Agenda. *Government Information Quarterly*, 36(2), 304-309. <https://doi.org/10.1016/j.giq.2019.02.003>

López-Quiles, J.M., Rodríguez Bolívar, M.P. (2018). Smart Technologies for Smart Governments: A Review of Technological Tools in Smart Cities. In M.P. Rodríguez Bolívar (Ed.) *Smart Technologies for Smart Governments. Public Administration and Information Technology* (pp. 1-18). Springer, Cham. https://doi.org/10.1007/978-3-319-58577-2_1

Authors:

Gabriela Carmen, PASCARIU

Ramona TIGANASU

Bogdan-Constantin IBANESCU

Mihaela CLINCU

Ioana Maria URSACHE

„This work was supported by a grant of the Ministry of Research, Innovation and Digitization, CNCS - UEFISCDI, project number PN-III-P4-PCE-2021-1878, within PNCDI III”