Building Capacity for Smart Cities and Urban Resilience through Digital Transformation

Gabriela Viale Pereira [a], *Lucy* Temple [a], *Moritz* Wild [a], *Tomasz* Janowski [b], *Grazyna* Musiatowicz-Podbial [b], *Elsa* Estevez [c], *Edimara* Mezzomo Luciano [d], *Manuel Pedro* Rodríguez Bolivar [e]

[a] Department for E-Governance and Administration, University for Continuing Education Krems (Danube University Krems), Austria, gabriela.viale-pereira@donau-uni.ac.at, 0000-0002-7602-3052; lucy.temple@donau-uni.ac.at, 0000-0003-4131-7648; Moritz.wild@donau-uni.ac.at, 0009-0005-8251-8392.

[b] Department of Informatics in Management, Faculty of Management and Economics, Gdańsk University of Technology, Gdańsk, Poland, tomasz.janowski@pg.edu.pl, 0000-0001-8950-5782; grazyna.podbial@pg.edu.pl, 0000-0002-9343-1883

[c] Department of Computer Science and Engineering, Universidad Nacional del Sur, Bahía Blanca, Argentina, ece@cs.uns.edu.ar, 0000-0002-2596-4397

[d] Graduate Program in Management, Management School, Pontifical Catholic University of Rio Grande do Sul, Porto Alegre, Brazil, eluciano@pucrs.br, 0000-0002-2847-8845

[e] Department of Accounting and Finance, Faculty of Business Studies, University of Granada, Granada, Spain, manuelp@ugr.es, 0000-0001-8959-7664

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Abstract. This workshop explores capacity-building needs for public sector digital transformation in the context of smart cities and systemic resilience. Framed within the Erasmus+ CAP4CITY_DM project, it brings together academics, practitioners, and students to identify emerging skills and competencies across governance levels and sectors. The program includes a brief introduction to the REALITIES Joint Master's Curriculum, lightning talks from invited experts on digital governance, AI, smart communities, and innovation, followed by a collaborative session to map skill gaps in the field. Expected outcomes include shared insights on cross-sectoral capacity needs, contributions to curriculum development, and stronger connections between education, practice, and policy. The workshop supports a broader understanding of smart cities as part of interconnected systems to address complex societal challenges.

Keywords. Public sector transformation, smart city governance, resilient cities.
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1. Introduction

Smart sustainable cities represent a progression of how local governments – and increasingly, broader governance systems – apply digital technology to serve their populations, pursue sustainable development, and transform themselves to cope with societal challenges. With the goal of creating inclusive, safe, and climate-resilient urban development, collective efforts are needed including policymakers, academics, practitioners and citizens (Almulhim et al., 2024).

With the goal of tackling complex urban challenges, the success of smart cities requires more than just technology. A well-formulated data governance strategy, along with intelligent tools to use government data, is imperative for evidence-based policymaking. However, a governance strategy alone is not sufficient to ensure the improvement

of the overall well-being of inhabitants and, according to Mora et al. (2025), urgent reforms are needed to better incorporate scientific insights into smart city governance practices. Creating a citizen-centric approach is essential, ensuring participation and communication during the development, execution, and evaluation of policies to create equitable urban transformations.

The concept of Smart Sustainable Cities (SSC) has emerged from the increasing and urgent emphasis on providing social and environmental sustainability solutions for urban planning. It has become a significant term within policy and politics (Bibri and Krogstie, 2017), aligning with the Sustainable Development Goals (SDGs) (Beck et al., 2023). SSC is a field in continuous transformation, enabled by digital technologies and innovation, and empowered by stakeholder engagement and collaboration. An SSC constructs human, institutional and technical capacities to solve problems and create new development opportunities to raise and maintain the quality of life in communities and pursue sustainable development. As urban challenges become increasingly intersect with regional, national, and global dynamics, addressing sustainability and resilience requires a comprehensive, systemic perspective that extends beyond the local level (UN-Habitat, 2022).

Building on this conceptual foundation, research has demonstrated the relevance of digitalization in urban areas for a variety of purposes. Several studies have indicated that digitalization can enhance economic growth by attracting new business, driving higher innovation (Albino et al., 2015; Ismagilova et al., 2019; Hu & Zheng, 2021), and improving the efficiency of processes and resource utilization (Silva et al., 2018; Khan & Salah, 2018; Attaran et al., 2022). Other studies underscore the pivotal role of technologies in fostering interoperability among disparate systems, thereby creating a more cohesive and interconnected infrastructure to confront societal challenges (Gharaibeh et al., 2017; Bellini et al., 2022) and promote sustainability (Lim et al., 2018; Ismagilova et al., 2019; Xie et al., 2019). In summary, previous research underscores the pivotal role of digitalization in generating public value (Pereira et al., 2017) and its substantial impact on enhancing the quality of life of residents (Rodríguez Bolívar, 2019, 2021).

However, as highlighted before, the effectiveness of digital solutions increasingly depends on the collaborative ecosystems that support their implementation. There is an increasing understanding that collaboration among local governments might be as important for the success of smart cities as technology advances (UN-Habitat, 2022). The literature shows the importance of stakeholder collaboration as a vital element for effective development of smart cities (Komninos et. al., 2019), its performance (Appio, Lima and Paroutis, 2019; Komninos et al., 2019) and sustainability of its results (Correia et al., 2022). Additionally, a study shows that there are certain configurational approaches to increase collaboration in smart cities, which are context dependent, and that for large ecosystems there is a need for a smart city manager or a dedicated department (Clement, Manjon and Crutzen, 2022).

Given the complexity of smart city ecosystems, it is crucial to implement initiatives that not only provide technical training for current and future practitioners engaged in smart cities but also facilitate the exchange of experiences, perspectives, and expertise starting from a transdisciplinary approach. Academic programs should enable participants to develop a comprehensive understanding of the political, technical, and social landscape. This, in turn, will empower them to assess scenarios and cultivate successful collaborations for the effective development of smart cities that align with their objectives. This workshop is aimed at better understanding how academic programs – such as a master's in *Resilient Innovation Systems* – can help bridge the skills gap in public sector digital transformation. As the emerging concept of resilient smart cities evolves beyond a local governance tool, it is increasingly viewed as part of a wider network of interconnected systems –, including technical, institutional, and social – that span regions and sectors. Therefore, to effectively address today's most pressing societal challenges, future professionals must be prepared to think systemically, act collaboratively and innovate in multiple levels of governance.

2. Workshop Objectives and Program

This workshop welcomes academics, practitioners, and students interested in the topic of capacity building for smart cities and urban resilience through digital transformation. The objective is to advance understanding of the competencies and structures needed to support public sector innovation and to explore the growing demand for interdisciplinary capacity building in the context of digital governance, smart communities, and systemic resilience.

The workshop is organized into three main segments:

Welcome and Project Introduction: The session will begin with a brief round of introductions, followed by a short presentation of the Erasmus+ CAP4CITY_DM Project and the curriculum of the REALITIES Joint Master's Program, which focuses on resilient innovation systems and digital transformation in public governance.

Lightning Talks: A series of short expert talks will cover key themes related to smart governance, technological innovation, resilience, and stakeholder engagement. The talks will be followed by a moderated panel discussion

and an open Q&A session to foster dialogue and knowledge exchange.

The planned lightning talks include:

- Digital Governance for Societal Transformation *by Gabriela Viale Pereira*
- AI for Supporting Governance of Smart Sustainable Cities in Latin America *by Elsa Estevez*
- The role of Smart Communities in Emergency Situations *by Edimara Luciano*
- Smart City Governance and Multi-Level Collaboration *by Manuel Pedro Bolivar*
- Technology and Innovation for Digital Transformation and Resilience *by Tomasz Janowski*

These lightning talks illustrate the evolution of smart cities from local initiatives to complex, resilient systems that require coordinated governance, innovation, and stakeholder collaboration across scales.

Group Discussion and Collaborative Activity: Participants will take part in a structured collaborative session aimed at identifying current and emerging skills gaps in public sector digital transformation—particularly within the context of smart cities, urban innovation, and resilience. The session will explore what capacities are needed across governance levels and sectors to address complex societal challenges.

3. Expected Results and Conclusions

The workshop aims to generate insights into the key competencies and systemic capacities required for advancing public sector digital transformation and resilience. Through the collaborative group activity and expert talks, participants will contribute to a shared understanding of emerging skill gaps and cross-sectoral demands in the governance of resilient smart cities.

Key expected outcomes include:

- A preliminary map of relevant skills and knowledge areas to be addressed in transdisciplinary education for smart cities and digital governance
- Reflections on the challenges and opportunities of multi-level collaboration and stakeholder engagement
- Inputs that will inform the further development and refinement of the REALITIES Joint Master's Program curriculum
- Strengthened dialogue between academia, practitioners, and policy actors on advancing resilient digital innovation at scale

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