

Smart and Connected Cities and Communities Minitrack (Introduction)

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Cities around the world are entering a new era of transformation in which residents and their surrounding environments are increasingly connected through rapidly-changing intelligent technologies, sometimes called, smart technologies. This transformation, which has become a top priority for many city governments, offers great promise for improved wellbeing and prosperity, but it also poses significant challenges at the complex intersection of technology and society.

Although “smartness” has traditionally been associated with urban environments, lately, there is a stronger emphasis on the concept of smart communities. On the one hand, this is the result of recognizing the existence of contexts that can benefit from the use of smart technologies; from localities or villages to communities, communes, towns, cantons, cities, and megacities. On the other hand, it is the consequence of conceptualizing smartness beyond technology and in relation to the people living in those communities, who are connected by common goals, interests, and challenges. A smart and connected community can therefore be conceptualized as a community that synergistically integrates intelligent technologies with the natural and built environments, including infrastructure, to improve the social, economic, and environmental well-being of those who live, work, or travel. Building on the notion of community informatics, smart communities can be seen as enabling and empowering citizens and supporting the individual and communal quests for wellbeing.

Although the literature is rich in references to smart cities and communities, this is still a developing and fuzzy concept that is not used consistently. Despite the different definitions and studies, there seems to be a common understanding of a smart community as a multidimensional and multifaceted concept that goes beyond the mere use of technology and infrastructure.

Although technology is a necessary condition to become smart, it is not the only one. City administration and community management, information integration, data quality, privacy and security, institutional arrangements, and citizen participation are just some of the issues that need greater attention to make a community smarter today and in the near future. The literature on smart cities and communities is fragmented, particularly in terms of the strategies that different cities and communities should follow in order to become smarter. What most of the literature does agree on is that there is no one route to becoming smart and different communities have adopted different approaches that reflect their particular circumstances.

The four papers included in this minitrack represent different methodologies, theories, conceptualizations, and assessments of smart and connected cities and communities. Together, they offer a platform for discussion of emerging and innovative research in this area as well as on emerging academic programs for future leaders of smart sustainable cities.

In the first paper for this mini-track, “Value Creation through Urban Data Platforms: A Conceptual Framework”, authors Samaneh Bagheri, Tobias Brandt, Haydee Sheombar and Marcel van Oosterhout, seek to help city policymakers and business developers realize value from Urban Data Platforms (UDPs) in city ecosystems. To do so, they present a literature review to identify key UDP dimensions and through discussion with an expert panel they develop a framework for understanding value creation through UDPs. By identifying key dimensions of UDP and their effects on value creation through UDP, the authors proposed framework provides a systematic and comprehensive approach for understanding UDP adoption, use, and value creation.

In the second paper for this mini-track, authors Matthias Buchinger, Peter Kuhn, Anastasios Kalogeropoulos and Dian Balta present a comprehensive analysis of the literature on interoperability of smart city data platforms in an attempt to conceptualize interoperability approaches. In their paper, “Towards Interoperability of Smart City Data Platforms”, they propose a taxonomy of selected approaches based on four dimensions with three characteristics each. The authors present the taxonomy with a discussion of the implications for theory and practice and conclude with a first assessment of individual approaches.

In their paper entitled “Smart Community and Social Resilience: Reflection on the COVID-19 Pandemic”, Calvin Chan, Dong Qui and Felix Tan, demonstrate how smart community began to fill the void that was left behind after the conventional community could no longer function due to restrictions and lockdowns. Smart community in Singapore generated each of the six attributes of social resilience, which has great relevance given the disruption and distress brought about by the pandemic. The authors note that their analysis revealed how smart community can function to enhance social resilience and they call for further research into how smart community may contribute to the social resilience of the community in time of crisis, such as the COVID-19 pandemic.

In their paper, “Interdisciplinarity in Smart Sustainable City education: exploring educational offerings and

competencies worldwide” authors Magdalena Ciesielska Gdańsk, Nina Rizun Gdańsk and Tomasz Janowski note the lack of guidance on how to introduce interdisciplinarity into the increasing number of specialized student programs for current and future managers of Smart Sustainable Cities (SSCs). In order to address this gap, the authors identify 87 SSC-related study programs from around the world and analyze their disciplinary and interdisciplinary coverage. The analysis presented classifies programs and competencies, using a variety of text mining and clustering algorithms and Bloom’s taxonomy and correlation analysis.ac

These four selected papers advance the goal of this minitrack by helping to build on our understanding of the foundations of smart cities and smart communities as a study area and as a practice priority. Through these efforts to better understand the challenges of becoming smarter the papers contribute to analytical and practical developments and trends. More specifically, they deepen our understanding of urban data platforms and value creation in the context of data-centric smart cities, including the critical issues of interoperability. They call attention to the need to reflect on the development opportunities for future leaders of smart sustainable cities and in particular, call for a reflection on the critical role of smart communities in building resilient communities in both normal times and during crises, such as the COVID-19 pandemic.