Editorial: Smart cities in the making

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Over the past decade, smart urban technologies have begun to blanket our cities, forming the backbone of a large intelligent infrastructure (Lara et al., 2016). Along with this development, dissemination of the sustainability ideology has had a significant imprint on the planning and development of our cities (Yigitcanlar, 2016). Consequently, the concept of smart cities has become a popular topic particularly for scholars, urban planners, urban administrations, urban development and real-estate companies, and corporate technology firms (Lara et al., 2016). The concept of smart city is relatively new and can be seen as a successor of information city, digital city, intelligent city, sustainable city, and knowledge city (Yigitcanlar, 2006, 2009; Sarimin and Yigitcanlar, 2012; Carrillo et al., 2014; Yigitcanlar and Bulu, 2015; Yigitcanlar and Teriman, 2015). Despite the overwhelming popularity of this notion, there is still a lack of consensus on what a smart city is (Yigitcanlar and Lee, 2014; Yigitcanlar, 2016). In general, this new city brand is understood as an urban locality that makes use of information and communication technology (ICT) extensively to provide a high quality of living to its citizens. The term smart city is also used as an umbrella concept that contains a number of sub-themes such as smart urbanism, smart economy, sustainable and smart environment, smart technology, smart energy, smart mobility, smart living, and so on (Lara et al., 2016).

At present, there exists a plethora of smart cities definitions. The fast growing literature on smart cities comes from the streams of academic, commercial and international/national organisations researching and practicing smart cities. These parties have a different take on the concept as they see it from different lenses such as disciplinary, practice/conceptualisation orientation, and domain-oriented – e.g., economy, society/community, technology, management, environment and so on. Among those the most popular definitions of smart cities are listed below, in chronological order, to provide some clarity on what a smart city is.

Smart city is:

- A city that monitors and integrates conditions of all of its critical infrastructures including roads, bridges, tunnels, rails, subways, airports, sea-ports, communications, water, power, even major buildings, can better optimise its resources, plan its preventive maintenance activities, and monitor security aspects while maximising services to its citizens (Bowerman et al., 2000).
- A city well performing in a forward-looking way in economy, people, governance, mobility, environment, and living built on the smart combination of endowments and activities of self-decisive, independent and aware citizens (Giffinger et al., 2007).

- A city that gives inspiration, shares culture, knowledge, and life, a city that motivates its inhabitants to create and flourish in their own lives. An admired city, a vessel to intelligence, but ultimately an incubator of empowered spaces (Rios, 2008).
- A city to be smart when investments in human and social capital and traditional transport and modern ICT infrastructure fuel sustainable economic growth and a high quality of life, with a wise management of natural resources, through participatory governance (Caragliu et al., 2009).
- A particular idea of local community, one where city governments, enterprises and residents use ICTs to reinvent and reinforce the community's role in the new service economy, create jobs locally and improve the quality of community life (Eger, 2009).
- A public administration or authorities that delivers or aims to a set of new generation services and infrastructure, based on ICTs (González and Rossi, 2011).
- A humane city that has multiple opportunities to exploit its human potential and lead a creative life (Nam and Pardo, 2011).
- A city improves the quality of life, including ecological, cultural, political, institutional, social, and economic components without leaving a burden on future generations (Zhao, 2011).
- A city that represents the future challenge, a city model where the technology is in service to the person and to his economic and social life quality improvement (Lazaroiu, 2012).
- A safe, secure environmentally green, and efficient urban centre of the future with advanced infrastructures such as sensors, electronics, and networks to stimulate sustainable economic growth and a high quality of life (Schaffers et al., 2012).
- A city that intends as an urban environment which, supported by pervasive ICT systems, is able to offer advanced and innovative services to citizens in order to improve the overall quality of their life (Piro et al., 2014).
- A community that systematically promotes the overall wellbeing for all of its members, and flexible enough to proactively and sustainably become an increasingly better place to live, work and play (Lara et al., 2016).
- An ideal form to build the sustainable cities of the 21st century, in the case that a balanced and sustainable view on economic, societal, environmental and institutional development is realised (Yigitcanlar, 2016).

This issue of the *International Journal of Knowledge-Based Development* contains five papers that are looking at the smart city development issue from various angles in order to provide a further understanding of the complex nature of smart cities concept in the age of global knowledge economy and cities.

Following this editorial introduction, the issue commences with a paper (paper 1: 'Strategy ontology construction and learning: insights from smart city strategies') by Aroua Taamallah, Maha Khemaja and Sami Faiz that focuses on the smart city strategies. This paper attempts to acquire expertise from existing strategies and projects about smart cities. The research develops a strategy ontology that aims not only to formalise and

conceptualise the strategy related concepts but also to analyse existing projects and strategies. The study employs automatic annotation of smart cities related documents. In addition to automatic annotation, it uses ontology-based information extraction for ontology population, and enrichment with new concepts and instances. The resulting ontology allows sharing the gathered knowledge between people participating in the activities of smart cities design, and thus learning from smart cities previous projects and strategies in order to create new ones.

Paper 2 of the issue by Katharina Fellnhofer ('Evidence revisited: literature on smart specialisation calls for more mixed research designs') focuses on the smart specialisation issue. This paper aims to present an overview of the applied research methods that have been used to examine smart specialisation. The findings of the review show that only a few studies applied mixed research methods. Primarily, there are more qualitative than quantitative methods used among papers concerning smart specialisation. More efforts to use mixed methods in smart specialisation could yield findings that are applicable to knowledge-based policymaking. To further illuminate the research discipline of smart specialisation, applying advanced, quantitative research techniques would enrich future efforts of all quadruple helix stakeholders engaged in smart specialisation.

Next, in paper 3, Sayyed Mohsen Allameh, Seyed Hasan Hosseini, Ardalan Samadi and Ali Darikandeh ('The relationship between intangible organisational capitals, knowledge management, and organisational learning') focus on the intangible organisational capitals issues. This paper aims to explore the interrelationships between intangible organisational capitals, knowledge management processes, and organisational learning. In order to do so, the authors undertake an empirical study including surveying 132 employees, and undertaking multivariate regression and structural equation modelling analyses. The findings reveal that intangible organisational capitals have a positive effect on knowledge management and organisational learning; knowledge management is associated with organisational learning; and knowledge management significantly mediates in the relationship between the organisational intangible capitals and organisational learning in the investigated case study.

Paper 4 ('Place management of a creative city: the case of Izmir'), by Onur Mengi, S. Bahar Durmaz Drinkwater, Aslı Ceylan Öner and Koray Velibeyoğlu, focuses on the issues of creativity and place making in cities. This paper investigates how place management is used to render a creative city through the combination of soft factors as intangible characteristics, and hard factors as tangible characteristics of the built environment. The study focuses on Izmir, Turkey; exploring its potential as an emerging creative city through the recent art and design-based developments. Findings provide a framework for place management tools and their strategic use for closer integration of art, design, creativity, and knowledge in creative cities. Place management can be used as a tool for image building and identity enhancement, as well as for quality of place to attract creative and knowledge workers. Soft and hard factors in place management appear as an integrated process, including tangible and intangible characteristics encompassing major aspects of creative city formation. In the case of Izmir, hard factors triggered the formation process whereas soft factors have taken strengthen the initiative.

The last contribution of the issue, paper 5 by Ming Cheng, Fumi Kitagawa and Michael Osborne ('The evolution of internationalisation strategy: a case study of the University of Nottingham') focuses on the internationalisation strategy issue in the context of universities. This paper places internationalisation at the centre of debate on

the future of higher education as an area of important strategic and organisational activity in the rapidly changing global and local landscapes within the knowledge economy. Drawing on a case study of the University of Nottingham with its campuses in the UK, Malaysia and China, this paper examines the changing scope of its internationalisation strategies and how these strategies have affected four key institutional activities: student learning, staff mobility, quality assurance, and community engagement. The study unpacks the concept of internationalisation through the lenses of stakeholder relationships and leadership theory and illustrates challenges of internationalisation as perceived by the university leaders and key stakeholders.

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