

Introduction to the Special Theme

Future Cities and Smart Technologies: A Landscape of Ambition and Caution

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The old Chinese curse of “may you live in interesting times” has never been more relevant than in the field of urban development. For some time now, the global urban population has exceeded the global rural population. Cities and city regions have therefore emerged as the only growth models capable of meeting the increased demands and strains facing global supply systems, which are seriously affected by population growth, climate change, globalization and international security issues. Given these constraints, urban development is becoming a tough challenge.

Smart technologies may play a role in addressing these issues. From sensor networks to wireless connectivity and big data analytics to the Internet of Things, our planners, architects, infrastructure engineers and facilities managers have the ability to harness the power of information generated within the boundaries of cities and the built environment. Transport planners can better understand the demand for services and passenger behaviour; similarly, energy providers can tailor their supply to the real needs of their customers. End users can benefit from personalized and timely service provision that takes into account the individual’s location and situation - from way finding to micropayments to finding a good place to dine. There is enormous potential to use these technologies to establish more sustainable behaviour: for example, with energy use monitoring informed by smart meters, personalized transport assisted by e-ticketing and mobile technology, wireless infrastructure, to name just a few possibilities.

This capability, however, comes at a significant cost. Real time monitoring and bulk data collection call for high performance computational infrastructure, huge storage capacity, wide reaching connectivity, digital skills and a positive governance attitude. Furthermore, this technology creates the potential for mass surveillance operations by the state as well as global corporations, triggering grave concerns for individuals’ privacy. This is a promising yet challenging field that has a significant role to play in creating a more sustainable urban future. Technologies deployed and tested across multiple cities provide insights into a future that we

may wish to see, but also give us forewarnings about the challenges that lie ahead.

This special issue of ERCIM News captures the state of art of European research and provides an insight into smart systems and technologies that are already, or may become in the future, part of our daily urban lives. Although it is difficult to provide an exact definition for it so early in its development, these technological advances contribute fundamentally to a forward-thinking concept that has been termed ‘Smart City’, i.e., an urban environment that capitalizes on contemporary information management capabilities, including ICT infrastructure and applications, to improve on the delivery of public services, transport, health, sustainability, the economy and the overall wellbeing of its residents. A recent report from the Department of Business, Innovation and Skills (BIS) in the UK estimated the emerging global market of Smart Cities to worth a minimum of \$400 billion. As an emerging domain, however, there are still a number of uncertainties to be addressed.

With a wide selection of articles from novel networking technologies to digital entrepreneurial processes, it is clear from this special issue that no single technology or vendor can deliver the promises of the Smart City. No amount of sensors or data will offer a solution without purposeful assembly of the right components, including technology, skills and governance. This is an important perspective which highlights the need for European policy, system architecture and systems integration to be informed by the challenges of understanding human behaviour, fostering creativity by developing the human capital and ensuring compliance with the data protection framework through balancing the need for security with respect for individual rights. What interesting times, indeed!

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