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## **Introduction**

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Cities are changing. You can see it in their form; feel it in the cultures of a multi-ethnic workforce; detect it in the data of their new knowledge-based economies, in the rising creative industry clusters. Many of these changes have arisen from the new wave of globalisation, emerging technologies, virtuality and the collective intelligence of the web, but also from the energy and environmental crises as well. A new paradigm of city development and planning is emerging, which connects the previously unrelated dimensions of sustainability, green development, digital and smart spaces, innovation and creativity.

Intelligent cities highlight a key aspect of this new paradigm relating to the creation of environments that improve the cognitive and learning skills of the population and the knowledge and innovation capabilities of organisations located within them. Intelligent cities are territories in which the local system of innovation is enhanced by digital collaboration spaces, interactive tools and embedded systems. Digital spaces, electronic devices, information systems and online services sustain a series of new urban functions related to knowledge creation, technology transfer, innovation application, and global marketing and delivery. The city gains innovation capability, which is then translated into increased competitiveness, a better environment, more jobs and wealth. Intelligent cities are the golden key for unlocking multiple gates within the actual development model.

As an emerging field of research, intelligent cities are characterised by a high level of diversity. This is only to be expected because of the many different disciplines that converge in this field (city and regional planning, human geography, innovation management, telecoms, information technology, social media) and because research is at an initial stage with many concepts and research topics still in formation and undergoing continuous modification.

Diversity is also the main characteristic of this special issue. It contains papers that outline parallel aspects and phenomena which are simultaneously shaping intelligent cities. Among the topics discussed are:

- the globalisation of innovation ecosystems and new relationships between innovation and its environment, as knowledge resources from around the globe combine together and new innovation environments and institutions take shape
- living labs and innovation hubs that continue and progress the theory of innovative milieu and innovation clustering in the era of global digital interaction and involvement of end customers in new product design, development and testing

- the rise of collaborative knowledge networks and virtual communities sustaining innovation capabilities and the innovation performance of organisations
- e-governance and changing city management towards more democratic and participative forms enabled by online communication and interactive community services
- the digital city and digital citizenship, myths and ideas accompanying these concepts and challenges of institutionalised digital cities
- ubiquitous communities; pervasive and intelligent environments enabling new forms of interactions and transactions that become available anywhere at anytime.

Diversity is the strength of this research field, indicative of many different ways in which innovation systems, broadband communication and digital cooperation combine to create new environments. In this special issue, emerging concepts, case studies from around the world and a global landscape of practices illustrate the breadth of this ongoing research. Intelligent cities take multiple shapes reflecting the trends characterising innovation and digital cooperation. For instance, global innovation networks and open procedures actually predominate within systems of innovation, while the Web 2.0 predominates within digital spaces. No doubt, different trends will appear in the near future, influencing the content of intelligent cities accordingly.

Besides diversity, common ground in all these alternative and complementary aspects of intelligent cities lies in the assumption that innovation is an environmental condition. Converting scientific knowledge into new products and services, which is the core process of innovation is only feasible within an environment rich in networks and resources for experimentation and entrepreneurialism. Research is a crucial component of innovation; but it becomes fertile by mobilising various capabilities within a wider system of knowledge, creativity, risk-taking, tolerance and cooperation. As systemic theories of innovation came to show, the emphasis has shifted from the innovation process to innovation networks and the environment, which have now taken on global dimensions. Virtual spaces and embedded systems are generating a wave of new hybrid environments (global digital ecosystems, living labs, i-hubs, COINs, smart cities, e-gov, digital cities, u-communities, intelligent environments, etc.) which in turn amplify networking, experimentation and innovation.