

# Chapter 17

## Crowdsourcing and Living Labs in Support of Smart Cities' Development

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### ABSTRACT

*The concept of 'smart cities' has quite recently stimulated an alternative way of approaching urban sustainability through the extensive adoption of ICTs, harmoniously combined with human capital and city's potential in order new patterns of urban development to be generated. Crowdsourcing and living labs serve the goal of being 'smart' by promoting the establishment of broad cooperative schemes for prototypical ideas generation and innovation production. The present paper focuses on exploring the contribution of crowdsourcing and living labs to smart cities' development. In the first part, the backbone of a smart city is presented; in the second part, a methodological approach integrating smart cities' development with crowdsourcing and living labs is elaborated; in the third part, the role of crowdsourcing in generating prototypical ideas is described; in the fourth part, the potential evaluation and implementation of such ideas in a living lab environment is examined; and finally, some conclusions are drawn.*

### INTRODUCTION

During the last decades, new urban trends and lifestyles have been established in the context of the modern technology-driven globalized socio-economic reality. Urban environment, city functions and citizens are gradually adapted to alternative 'novel' patterns of urban development 'imposed' by the new digital era. The extensive adoption and exploitation of ICT-applications is strongly related to the intense urbanization and the increased needs arising due to the high concentrations of population in urban and metropolitan areas (Graham, 2002) while "...their (ICTs') production and use have important effects on the development of economic, social and environmental areas..." (Caperna, 2010, p. 340). Moreover, "the

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information technology revolution..." penetrates "...the whole realm of human activity" (Castells, 2010, p. 5) setting thus a new way of approaching issues concerning urban sustainability and city-functioning.

In this framework, the concept of smart city has emerged, reflecting on the one hand the integration of ICTs within city functions and infrastructures and on the other hand the expectation for the ubiquitous embodiment of intelligence 'everywhere' and into 'everything' in the city. Apart from technology, city innovation in a managerial and policy making level is also of utmost importance for a city aspiring to be 'smart' (Nam & Pardo, 2011). In parallel, the process of transforming an 'ordinary' city into a 'smart' city represents a kind of "strategy to mitigate the problems generated by the urban population growth and rapid urbanization" (Chourabi et al., 2012, p. 2289). As a result, smart solutions are sought for several sectors (transportation system, waste disposal, governance, economic efficiency, etc.) in order quality of life to be upgraded and new perspectives for the city's future development to be revealed. In this context, citizens are placed at the center of the aforementioned efforts, through extensive participation and creation of collaborative schemes, as smart cities generally, constitute urban environments where ICT-based technologies and infrastructures are intelligently combined with human capital, investments, natural and cultural resources, for the creation of new forms of urban development.

Crowdsourcing and living labs constitute two modern approaches, boosting the establishment of broad cooperative / co-creative forms in a city, which will contribute to the creation of innovative ideas / solutions and the achievement of a common end. Crowdsourcing focuses on the generation of innovative ideas / solutions / content / services while, living labs enable mass integration and inclusion of end-users during the research and innovation process. Both are promoting collaboration among stakeholders, public administration, private institutions, universities and end-users in the context of the '4Ps' model (Public-Private-People-Partnership).

The present paper focuses on the contribution of crowdsourcing and living labs to smart cities development. More specifically, it explores the possible combination and integration of such tools for smart ideas generation and innovation production by placing citizens 'in the first line'. For this purpose, a methodological approach is proposed, integrating urban sustainable development with stakeholders' and citizens' active participation. This is based on three main concepts: smart cities and their key fundamental axes, namely: smart people, smart governance, smart economy, smart mobility, smart environment and smart living (Giffinger et al., 2007); crowdsourcing and living labs as tools serving participation, collaboration and co-creation and; smart cities' sustainable development based on the three pillars of sustainability, namely: environmental protection, social cohesion and economic efficiency. The proposed methodological framework consists of five distinct steps: the problem detection phase, where knowledge is acquired and expressed needs and problems are identified; the goal and objectives definition stage, accomplished through the refinement of the information gathered; the crowdsourcing phase, where prototypical ideas / solutions are sought; the living lab first stage, where the evaluation of the previously collected crowdsourced 'product' is taking place and; the living lab second stage, concerning the implementation of the selected idea / solution and the innovation production process. Special attention is paid to the potential engagement of crowdsourcing and living labs by exploiting the advantages of crowdsourcing in a living lab environment in order public participation to be strengthened.

The proposed methodological approach represents an attempt to weave together concepts and tools, serving several purposes in the smart city context. The main goal is the development of an integrated framework through which scattered concepts and tools will be organized in a unified structure, promoting and boosting city governance, participatory planning, research and innovation processes, participatory

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