TOWARD THE SMART CITY AND BEYOND

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According to the advances emerged from at least two decades of intense debate within the EU and abroad, even the European Parliament recognized that the notion of "Smart City" concerns many different issues, pushed by both ICT and non-technical drivers, which overall aim is to «*seeking to address public issues via ICT-based solutions on the basis of a multi-stakeholder, municipally-based partnership*» (European Parliament, 2014). Appealing to the wide horizon of "public issues" and the multi-layered structure of the urban-related processes and actors, the definition acknowledges that is still no common understanding about the definition of Smart City, as frequently complained by many Authors, but it also suggests that this lack doesn't affect the core of the topic nor the approaches that we can adopt to cope with it. Due to the variety of urban situations and stakeholder needs that we are facing as well as the peculiar patterns characterizing each human settlement, there is no consolidate models to be applied to make a context "smart", but rather it will be only by design that the smart features can be effectively integrated within the urban dynamics. Since the crucial role of ICT is confirmed as the main enabling factor in the path toward Smart City, its effective exploitation asks for a more performance-based attitude in developing successful applications, instead of a technology-dependent one, as sometimes it happened instead. The huge extend of the available technical innovations and the fast improvement of their features need a better and clearer vision on the goals to reach and its socially shared relevance.

However, further research and testing needed to make the potential of ICT useful and effective, developing applications that both show the benefits of the city smartness and identify constraints and feasibility conditions.

Looking at the physical dimension of the built environment - that which architects and planners are properly called to deal with- this means that we must resume focus on the optimization of construction processes and building management schemes, trying to shape them to better fit the needs of quality of life and urban welfare and to comply with socio-economic and governance targets, such as environmental sustainability and social cohesion. The resources that ICT make more and more available provide both a large palette of tools suitable for this purpose, and many opportunities for the development of new applications.

This Special Issue of Techne deals with both these targets: several papers report applications on real contexts of smart devices and tools, especially focusing on the energy performances improving at urban, district and building scale; many others deepen the definition of models and methods of monitoring, assessing, modelling and planning of policies and actions; some ones point at the measures to support sustainable city development.

This means that effectively exploiting the new opportunities provided by ICT is one of the most challenging issues for architects,

urban planners and policy makers, who need to improve their skills in this field, working in closer cooperation together with both the holders of technological knowledge and the users.

Among others, two topics emerge as meaningful and promising targets for the next steps of the research in this field: the special needs of the historic heritage to consider in implementing the Smart City policies, and the applications that can be performed to deal with it; the exploration of the variety of structures and scales that the notion of "city" assumes today, including the large peri-urban and rur-urban areas with their dramatically ineffective features and critical environmental issues.

About 67% of the Italian territory is occupied by a dense network of small-scale settlements, while medium-size cities extend for 25% and largest metropolitan systems for 8% only (ISTAT, 2017). Additionally, Italy has more than 18,000 listed or protected historical centers, scattered all over the country (ANCSA 2017). This irreplaceable part of cultural heritage is as precious as it is fragile: ICT applications can provide unrivalled opportunities to better protect, manage and value it, but a special attention must be paid to integrate new features avoiding any alteration of the existing structures. Not all solutions and devices which have been developed for dense and large new cities can be merely transposed but adapted to fit the specific needs of these contexts. Furthermore, low-density sprawled settlements, high share of aged population, lack of familiarity with ICTs by companies and public administrations requires to adopt fine-tuned and tailored approaches allowing the successful exploitation of the Smart City features (Franco and Magrini 2017).

The rich panel of theoretical and methodological reviews collected in this special issue, as well as the experimental applications here documented, allows us to try to recap the operational effectiveness of the concept of "Smart City", in its various forms, as a tool distinctly characterised by a design oriented nature, aiming at the improvement of the quality of the territories through actions enhancing the "efficiency" in settlement and urban development.

The transfer of the term "smart" from the building to the urban and territorial scale represents in fact an implementation of the long process of adjective stratification that, in the last decades, has been going alongside the attribution of the word "city": strategic, sustainable, healthy and secure, green, ecological, low carbon, digital, media, smart and, today, resilient, are the attribute used to connote a new demand for quality emerging in response to the degradation of built environment.

No wonder all these forms have certain common denominators with regard to the main environmental challenges of urban development and land management. The areas of action taken into account are in fact mainly the same, referring to mobility and transport, energy and climate, waste and pollution, urban

renewal and building construction operations. And not just this: also the policies implemented to face these challenges undertake similar issues and strategies, focusing on: a knowledge based economy; enhancing the cultural assets and the social and territorial capital by means of the subsidiarity and the participation of an active citizenship; promoting the attractiveness of places and spaces, both for locals and tourists.

In this light, talk about smartness - whether referring to buildings, cities, territories or communities - goes well beyond the objective of promoting and implementing a systematic and extensive use of ICT in the various fields of action of the public policies, but it also requires the capacity to adopt a strategic intelligence, meaning a connected, intersectoral and multi-scalar intelligence.

Many experiments carried out and in progress at national and international level reveal the obvious limits of too sectorial interventions aiming at optimising a specific functionality, such as building's energy performance, resilience to the climate change, traffic emissions reduction, slow mobility, etc. These actions, whose value must be undoubtedly recognized for being pilot tests, often risk not only to produce partial results, in some cases completely inadequate to meet the required investments, but also to generate new imbalances and inefficiencies.

In this sense, the true intelligence of cities and territories lies in the ability to implement an integrated governance, focusing priorities and coordinating actions in a medium to long-term perspective. With a focus mainly aimed at reducing unnecessary waste and consumption, and enhancing possible synergies related to the proper use of resources, primarily by upgrading and enhancing existing assets, through systematic interventions for re-use and regeneration.

The rapid acceleration of technological innovation in areas such as big data, mobile devices, connectivity and wireless data exchange, internet of things, promises developments that are difficult to foresee today, with transfers extended to the most diverse application areas, both in terms of "soft" tools for monitoring, control and management, and in the "hard" dimension of infrastructures and services.

Beyond a purely techno-centric vision that reduces smartness to a driver for the economic development of those companies that in various ways operate in the ITC (Bolici and Mora, 2016), the outlook of a more significant and effective impact of this new form of intelligence is in a more balanced combination of socio-cultural, environmental, economic and technological factors. Able to harmonize the interventions in the various fields of strategic action - energy networks, water, atmosphere, waste, mobility and transport, health, social inclusion, education, culture and tourism, ecosystems and landscape.

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