

KNOWLEDGE FOR INTELLIGENCE: DISCUSSING THE STATE AND THE ROLE OF BUILDING DATA IN ITALY

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KEY WORDS: Smart Asset Management, Building Data, Data Integration

ABSTRACT:

The availability of integrated information on buildings is the premise for an effective assets management and the provision of innovative services to buildings users: such form of knowledge relies on the efficient exploitation of existing data, providing a complete overview on the state of buildings, and on the acquisition of real-time data flows, coming from sensor and mobile devices, reporting users behaviours. If, on the one hand, technology is progressively enabling the management of new huge streams of data, on the other hand the interconnection among traditional and well rooted datasets, the majority of which in charge of public administrations, is not always guaranteed. While, at European level, interoperability issues among public archives concerning buildings were properly addressed, and the relevance of geo-information is widely recognized, in Italy this process is still taking time to be undertaken. This paper discuss the current state of Building Information in Italy, outlining a possible path for the creation of a georeferenced Building Information System at municipal level, starting from the informative heritage available in existing databases, generated with different purposes and maintained by independent authorities: the idea is to solicit that digitalization process, started a decade ago with the “Digital Administration Code”, through the proposition of real use cases that might be implemented once that public data on buildings are profitably combined together.

1. INTRODUCTION

New challenges related to population growth and human concentration in urbanized areas are currently soliciting governments and policy makers in the development of smart management models able to deal with increasingly complex cities. As stated in a recent United Nation report (UN-GGIM, 2015) “the integration of smart technologies and efficient governance models will increase and the mantra of ‘doing more for less’ will be more relevant than ever before”. From this point of view, the availability of data on urban features and environments is a basic premise for the definition of policies and management models that will ensure the provision of more efficient services and the reduction of human impacts on natural environment and resources.

The management of the built environment, and buildings in particular, is a strategic issue: buildings are places dedicated to the hosting of a growing urban population and are the key for the provision of efficient services to new citizens (AGI, 2015). Moreover the definition of strategies aimed to improve the quality of buildings and their energy efficiency play a critical role in the reduction of GHG emissions: the Energy Performance of Building Directive 2010/31/EU recast states that buildings account for 40% of total energy consumption in the European Union and a shift toward a reduction in energy needs and new renewable sources would reduce the carbon footprint caused by the building sector. Efficient building management and renovation strategies requires data on the existing building stock able to orient available resources in a systemic way: as claimed by the report of the International Energy Agency on Energy Efficient Communities, in place of developing measures on single cases, boosting the renovation at district level could be more effective and viable (IEA-EBC,

2013). Thus, the availability of data on buildings at city or district scale is crucial for the effective management of the city of tomorrow.

At European level, a general framework on building geo-information is provided by the INSPIRE directive (Directive 2007/2/EC): the scope of this initiative is to provide common rules for the realization of geographic datasets on natural and built environment, in order to realize a European database supporting the implementation and the monitoring of the effects of environmental policies, especially in cross-border areas. The use of spatial information for the modelling of building information is addressed by the INSPIRE Data Specification on Building, that recognizes and adopts the international standard for City Modelling *CityGML* (INSPIRE, 2013) (OGC, 2012). But in order to realize a complete city model (or for the modelling of a specific theme) both geometric and semantic data coming from different data sources have to be combined together: thus the creation of city models relies on the availability and interoperability of data.

Many data on buildings exists nowadays, generally produced and maintained by public authorities in order to accomplish their ordinary duties (e.g. cadastral data, created for fiscal purposes): nevertheless, problems are associated with poor data quality, lack of updates and lack of interoperability between different data sources (UN-GGIM, 2015). Some European countries, as reported in section 2, started to work on data interoperability and integration issues several years ago, assuming them as a main concern at national level: in these contexts the gathering of existing data ensure an efficient management of available information, avoiding redundancies and improving data quality and the connection with geo-referenced bases enabled the creation of City Models with

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