Chapter 13
Major Events, Big Facilities: From FM for a Football Stadium – Tools for Augmented Experiences and Fan Engagement

Maurizio Marco Bocconcino
Politecnico di Torino, Italy

Fabio Manzone
Politecnico di Torino, Italy

ABSTRACT

Let us imagine a large sports facility and an integrated system to control its maintenance (structures, facilities, furnishings, communication systems), pre-configure temporary set-ups, procurement of goods and materials, check compliance with technical regulations concerning the safety and regularity of sports and recreational events, contracts with sponsors and suppliers, and the work of technical staff. Then, let's imagine that this mass of data is supplemented by tracking the flows of people attending events, recording their behaviour through the looks they make, the stops they make, the actions they take. This is the theme of the contribution proposed, an experimental application involving a sports facility of international importance and integrating BIM processes for design and maintenance, social and commercial information systems open to the public, marketing and usage analyses based on sensors and big data, and artificial intelligence capable of prefiguring the safest and most comfortable solutions.

INTRODUCTION

The subject of knowledge through automatic data collection requires reflection on the synthesis models that such actions produce and the construction of an analytical method for validating the qualities of metadata and its synthesis actions. In particular, a study of data concerning the interaction between humans and the environment and data more specifically involving technological infrastructures. The themes of Big Data, the Internet of things (IoT) and the smart city converge in a project that aims to bring these

DOI: 10.4018/978-1-6684-4854-0.ch013

aspects together through the innovative point of view of representation. Through models, it is possible to orient and promote the understanding of complex structures by making explicit apparently concealed relationships and mechanisms (Bocconcino, 2018). With regard to the possibility of expressing the city of tomorrow, models simulate and design the project in a dimension of physicality. In recent years, a number of instrumental and technological supports appear to have matured; they can make the design process more efficient, in particular for one relevant aspect: the integration in the cognitive framework of a series of attitudinal and behavioural data, both those concerning the individual and those relating to groups of people who move, live and use urban space.

Over time, the methods of investigation of the physical and social context in which the urban regeneration and redevelopment project is born and developed, for different reasons, have seen a progressive difficulty in the field of data collection and its processing to produce information (Lo Turco et al., 2021). The different disciplines involved in the study and the design need to search for fields of confrontation where they can express, in a language common to all, their instances, their methods, the articulation of their outcomes. This field of recomposition can be facilitated by two relevant guidelines: the integration of knowledge in the professionals in training with components that are exogenous with respect to their own field of application; the possibility of access to resources and tools for analysis and representation that are interactive, dynamic and customisable according to the user's interest (Bocconcino&Manzone, 2019).

Digital technologies have radically transformed our interaction with the built environment. Mobile devices provide tools to quickly access and share information. In the context of large event facilities, these technologies impact both capital projects and day-to-day operations. Computer-aided facilities management (CAFM) systems that support the full range of facilities management (FM) activities, both physical and IT, have become ubiquitous: information technologies that are easy to access and use open up integrated knowledge containers to professionals and workers and allow structured, organised and interrogable controls with the appropriate levels of adaptation, both in the construction and management phases. (D'Urso, 2011).

Thanks to sensor networks and IoT devices, FM teams have access to a wide range of real-time building information (Valinejadshoubi, 2022). Mobile apps and cloud-hosted file systems further enhance this functionality, providing service engineers with field access to building and equipment information and building occupants with a limited range of self-service activities, such as real-time room scheduling and problem reporting (Villa et al., 2021).

The digital information model set up in the feasibility and design phases of complex artefacts increasingly supports site monitoring and ongoing maintenance activities (Lo Turco, 2015, Lo Turco et al., 2015). From design to construction site to management, this chapter aims to define an operative frontier by illustrating a method of automatic processing and graphic representation of data that multiplies the possibilities of the construction and management model set up within information and computer systems dedicated to the maintenance process (Bocconcino, 2021).

One particular common ground is neuroarchitecture/neurourbanism; although it appears to be a new discipline, for decades its function has been to create spaces capable of arousing and ensuring well-being and improving the quality of life. A meeting point between neuroscience, architecture and urban planning, architects, engineers and neuroscientists work hand in hand within this discipline. This interdisciplinary synergy aims to design spaces and buildings focused on the functioning of the brain of those who will then live or work in them.