



Evidencing changes in design practice

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GUEST EDITORIAL

Evidencing changes in design practice

We started this special issue with a call for an open debate as to whether or not improving the design process is concerned with reducing the time it takes to design. Contrary to that idea, we argued that the efficiency of a process cannot be at the cost of effective design solutions. Thus, to improve the design process could mean that, sometimes, processes are lengthened to accommodate improved practices. As architectural, engineering and construction companies change their design practices by adopting Building Information Modelling (BIM) enabled tools, methods and standards of work, comes the opportunity to reflect on reconfigured design processes (be they shorter or longer).

This special issue is focused on research related changes in design practice showing evidence of impact in both processes and products: particularly how they support improved communication and collaboration across the multidisciplinary project team. In this respect, three articles presented in this issue are focused on changes in the process to improve the levels of design integration that leads to enhanced products (buildings and infrastructure). In the context of continuously increasing complexity, the exploration and solution of design trade-offs seems to be the bottleneck of design, irrespective of the design phase. BIM appears as a common cross-cutting theme (but not restricted to it) that supports design trade-offs and in our final article emphasis is placed on metrics of an efficient design process through BIM implementation.

The first article presents a longitudinal investigation concerned with future proofing design solutions in the context of environmental changes. Goldsmith and Flanagan promote adaption of the Value Methodology in the United States, which combined with the multi-criteria analysis supports resilient design solutions. The approach was developed through action research within seven cases where the method was applied to leverage the challenges related to stakeholder concerns, practitioner preferences and uncertainty around future conditions. The authors suggest that the combined approach offers an effective platform for collaboratively developing innovative design solutions.

Our second article follows the idea of support to decision-making and discusses the need for better tools within the early stages of design, when the brief is still developing and decisions are made in an environment of uncertainty. Donato addresses this problem by linking parametrical design with graph theory through BIM-enabled software. His approach was developed through a series of case studies which were focused on exploring building layout and circulation patterns through graph theory. This way, spatial relationships are converted in numerical reference values which assist the assessment of design options and help minimise the risk of project failure. The method seems to be particularly advantageous in large complex projects that contain a multitude of criteria and parameters.

While our first and second articles are focused on the early stages of design, the third article concentrates on the flows of information within the detail design phase. In this article, Mejl ander-Larsen discuss change management and how a change control system linked to design information within a building model can be used to manage design change requests and assess the impact and consequences of changes. The findings are based on experiences from project execution in major infrastructure oil and gas projects through case study research. The change management approach is characterised by four aspects concerned with: the coordination and categorisation of changes, the approval of changes and the identification of downstream consequences of changes.

Finally in our fourth article the attention shifts from product to process as it discusses the efficiency of design in the context of Building Information Modelling. BIM is increasingly becoming common practice over the entire world, permeating small, medium and large companies and changing the ways designers design things. In this article Abdirad builds upon the existing literature and extensively reports on a wide range of measures and criteria for evaluating BIM implementation in practice. He investigates how researchers and practitioners are evidencing changes in design practice that are triggered by the use of BIM and identifies the measures, key performance indicators and benchmarks utilised. He also highlights the gaps in defining metrics for assessing BIM implementation. The metrics identified are an indication of areas that are becoming more integrated in design practice.

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