Implementation Framework for BIM Methodology in the Bachelor Degree of Architecture: A Case Study in a Spanish University

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ABSTRACT

BIM concepts and workflows offer an unquestionable potential in the academic environment as contributory teaching methodology, so to improve the over-all teaching and learning process in the degree. Therefore, it must certainly develop an optimised implementation format to successfully undertake the challenge of proving capable to adapt to current academic formats and resources. In the Bachelor’s Degree of Architecture at UEM a framework of implementation of BIM methodology has been configured in a first experimental phase with valuable and transposable data. The implementation framework pivots on four main focuses: delimited teaching activities in conventional subjects, integrated project development in interdisciplinary workshops, extracurricular tools training and finally specific postgraduate programs and research projects. This exhaustive arrangement of academic formats outlines a global framework to achieve the highly diverse requirements of a gradual implementation, crystallizing in a coherent and synergic learn flow.

KEYWORDS

Architecture, Bachelor, BIM, Implementation Framework

INTRODUCTION

Given the urgency to train the future professionals in BIM flow skills and consequently take action on the Curricula, at the School of Architecture of the European University of Madrid (UEM) we have chosen to avoid the conception of BIM implementation as a catalogue of new additional contents and skills that might be considered in conflict or dispute with the Official Syllabi and opted instead to introduce BIM workflow as a teaching methodology, complementary and synergic with the existing ones.

This decision arises from our firm belief that BIM concepts and workflows do not constitute an independent knowledge in academia, but configure a learning environment that contributes to a better understanding of standard contents and skills. This way the main focus of BIM implementation is laid on improving the already existing excellence in education. Thus, subrogating BIM implementation to the global enhancement of the Curriculum, objections by the academic staff towards its adoption are avoided and consequently academic resources (especially human but also financial and technical) are optimized.

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This requires rethinking the eminently productive concepts of the professional BIM workflows (Figure 1) in order to reconfigure them into a learnflow that optimizes development phases and resources regarding the academic goals. This way, just as each professional stage of project development sets specific goals and proposes, with certain flexibility and adapted to project conditions and technological environment, the software resources that suit and interact best, the Academic Curriculum must configure an implementation framework in which each particular software may apply as teaching tool to specific academic goals.

This paper seeks to expose the overall academic benefits of BIM methodology and specify the academic formats and implementation design that might contribute to achieve them. The diverse formats actually implemented in the UEM configure our particular BIM methodology that aims to establish a harmonized Learnflow, easily comprehensible for both the internal and external academic community. In its various formats, it does not differ from the many usual examples of BIM implementation, but the goal now is to introduce those in a more holistic and thorough approach to achieve a solid and stable teaching environment. Therefore, an eminently graphical implementation framework is established to promote an agile and flexible application, providing a global overview to facilitate adoption and synergic development concerning all the architectural disciplines.

CONTEXT CONDITIONS

As specialized literature already emphasizes, the academic implementation of BIM flows must serve an enhanced development of both the specific degree profile and the future roles of professional practice (Ibrahim, 2014) avoiding at the same time that methodological innovation might question the official accreditation (Suwal et al., 2013). On the other hand, the implementation of BIM processes

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**Figure 1. Workflow. Project manager Hadid Architects (Farrell, 2013).**

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<thead>
<tr>
<th>AIA STAGE</th>
<th>SOFTWARE WORKFLOW</th>
<th>PURPOSES / COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concept Design</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schematic Design</td>
<td></td>
<td></td>
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<tr>
<td>Detail Design</td>
<td></td>
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<tr>
<td>Construction Documents</td>
<td></td>
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</tr>
<tr>
<td>Construction Administration</td>
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