

The Future of BIM- the Merge of BIM & Project Management

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1. INTRODUCTION

As the etymology of the word suggests (from Greek chief builder), the architect is a person who plans, designs and oversees the construction of buildings, i.e. the leader that manages the whole process of creating facilities of human occupancy or use.

Yet, somehow along the process of industrialization and advancing the technology the architect has slowly been giving up its leading role in the construction process. We were made to believe that being technical and being creative cannot be integrated. The result we face is arguable execution; poor cost control and design intentions not being followed.

Somewhere along the line BIM has been introduced to solve the issues we face on a daily basis. BIM is about going back to our core identity: managing the process of creation and delivering high quality buildings with the tools at hand (be it a pencil or a computer).

However, one of the main challenges that need to be overcome, according to my professional experience, is the misconception of looking at BIM and project management as two separate activities. BIM is just a more technologically advanced way of doing project management. By job description, the project manager is the person responsible for the programme, budget, resources, choice of procurement process, deliverables. The BIM manager has the same responsibilities as the project manager but in a more integrated way – they cover the entire facility life cycle, from planning through execution to facility management. A change in looking at the design process and higher level of skills is required.

2. MATERIALS AND METHOD

I would like to present the everyday challenges we encounter in order to deliver a BIM project with real life examples. However, I will keep the information as generic as possible for confidentiality reasons.

2.1. Case study 1: Mixed use development (residential + retail)

Approach: The project started as a client driven first test for BIM implementation. The project managers did not have the relevant BIM expertise, so they relied on external BIM consultants with whom they communicated all way through the process.

Strengths: (i) flat structure and shared responsibilities throughout the team; (ii) the BIM experts were qualified and experienced architects and the communication with the project managers was productive; (iii) a database was created according to company's standards; and (iv) internal training was provided and knowledge shared

Weaknesses: (i) the project managers were not able to supervise the intelligence built into the model for the lack of hands-on experience on the software used; (ii) the traditional method was enforced back in terms of resources /staffing/ half-way through the project, and such unnecessary expansion of the team resulted in the coordination issues, so more time was spent to correct errors than for the actual design process; and (iii) the time for creation of the data base was not provided for in the initial project programme.

Results: The initial setting up (based on BIM management) went smoothly, on time and within the budget. The communication with the client was improved and their trust in the information being reliable was gained. So the client gave us an extra time to set up a well organized and user-friendly database which could be used on future projects. Also, the client's trust lead to a new project being assigned. Nevertheless, the use of the traditional methods half-way through the project had its adverse consequences for the due and timely completion of the entire project.

2.2. Case study 2: Mixed use development (residential + retail)

Approach: A similar project as in the first case study with the same client and the same requirements. The traditional hierarchical management structure was used. The newly appointed external BIM leaders were not with the relevant architectural experience.

Strengths: (i) created and approved by the client database; (ii) main part of the team already trained and experienced with the project typology and the client; (iii) client's trust gained (iv) lessons learnt from the first project; and (v) project challenges and deliverables were predictable.

Weaknesses: (i) inability of managers to supervise and check the quality of models; (ii) lack of communication within the team and with the consultants; (iii) lack of training; (iv) no clear rules and the Executive plan was not followed; (v) every task was done for meeting the deadline without considering the impact on future deliverables; (vi) the BIM leaders were not architects and lacking the ability to be part of the decision-making process in the critical early stages of the project; (vii) unwillingness to use the database already created; (viii) team increased out of proportion.

Results: Although with a very good foundation for being a successful project, the prevail of weaknesses over strengths and the lack on management side to acknowledge them in the critical early stages, lead to a lot of abortive work, deadlines hardly met and the budget was overrun. The information provided to the client was not reliable enough. The client's trust was lost.

2.3. Case study 3: Commercial development (office building)

Approach: A client driven BIM project with all the consultants involved experienced in BIM projects. Training and workshops were considered as a part of the programme. The latest version of the relevant BIM software was provided. BIM leaders with high level of expertise both in software and architecture were appointed as team members.

Strengths: (i) BIM leaders were a dream team of experts; (ii) latest software was used to support the process; (iii) small qualified team within a newly launched company with presumably flexible structure; and (iv) internal training was provided, at least in the first phase of the project

Weaknesses: (i) too many managers who refused to understand the process and get involved; (ii) a traditional hierarchical structure; (iii) a complete lack of communication; (iv) an assumption that the software can resolve design issues; (v) none of the experts were involved in the design and decision-making process; (v) inexperienced people neither in software or architecture were taken on board with no training and /or supervision; (vi) no clear instructions were given; (vii) the BIM manager was perceived as a person who should fix software problems.

Results: Perfectly planned but badly implemented. Simple tasks were repeatedly done due to the lack of communication. The main advantage of the BIM creating intelligent models was not introduced because it was deemed superfluous. The models were used as basic CGIs only, hence the need for Value Engineering. The project ran over budget, the programme was not coordinated with deliverables. The quality of deliverables was arguable if not poor.

3. RESULTS AND DISCUSSION

The managers' inability to keep up with software requirements was an issue in the first scenario but the project was started on a really good platform. The expertise-lead process and flat structure helped to well programme the deliverables. Use of a few but skilful people resulted in gaining the client's trust.

However, going back to the traditional management lead to loss of client's confidence and slowed down the process. Similar was the result from the managers' underestimation of necessary training and their failure to understand how BIM works (as in the second scenario). The lack of hands-on experience and supervision by the managers over the actual intelligence in the model and participation in the production line resulted in important early decisions being taken by inexperienced and unqualified staff.

Also critical was the lack of continuity and inability or unwillingness to use the database already created as it lead to a waste of precious time for design and coordination and doing things all over again.

4. CONCLUSIONS

As Einstein puts it, "Insanity is doing the same thing over and over again and expecting different results." The moment we realize and accept the fact that we should manage our projects with all the new technologies if needed, focus on creating the perfect team and challenge them to perform to the best of their professional skills, the trust in our role in the building industry will return.

BIM is not only about managing data and delivering building facilities to higher standard, BIM is also about managing people. Architects, by default and by professional expertise, are or should be the right people to lead the process and they have to keep up with the pace introduced by technology if not advancing it. The merge of BIM and project management might be a smart way forward.

5. REFERENCES

[1] F.Jernigan, E. BIG BIM, little bim. Salisbury, 4SitePress, 2007.