
MEMORANDUM

TO: Fiay Basak, Vice President, Architectural Division
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CC: John Coltrane, BIM Manager, Architectural Division

FROM: Sheila Ryan, Architectural Consultant

DATE: June 1, 2022

RE: BIM Qualification for New Hires, Proposal

Introduction

Building information modeling (BIM) has been an increasingly important part of our business since its development in the 1970s. The implementation of international BIM standards in January 2019 shifted this from a helpful tool to an essential tool for the services we provide and our ability to evaluate our productivity and effectiveness. For this reason, it is no longer sufficient to have only select staff members proficient in the integration and application of this tool. In this memorandum, we propose that all future new hires be proficient in the tools and technologies required to complete their work within our BIM system. We will demonstrate the essential nature of these skills to our ability to provide client services and optimize our division's financial performance.

Building Information Modeling Use in Architectural Division Services

BIM is an essential tool for the Architectural Division's ability to provide high-quality services to our clients. This tool enables more sophisticated evaluation and coordination of designs than possible through human coordination of projects alone. While we use this tool throughout the entire project lifecycle, below, I highlight the three applications that have contributed the most to improving the designs we provide to our clients. These three uses are performance analysis, conflict detection, and cost estimates.

- **Performance analysis.** We use BIM-generated digital models and project site-specific environmental data to simulate building heat gain, daylighting effectiveness, wind resistance, and heat loss. By completing this process, we optimize building systems during the design phase to create projects that are both cost-effective for owners and comfortable for occupants (Autodesk, 2016).
- **Conflict Detection.** As architects, we are responsible for detecting cross-disciplinary design conflicts while developing construction documents. BIM models allow the incorporation of all project disciplines into one 3-D model to identify and eliminate conflicts. Completing this review during the documentation process enables us to avoid construction phase changes and the associated costs (Young, Jones, Bernstein, and Gudge, 2009).

- **Project cost estimates.** During the creation of project documents, the BIM system generates a cost estimate using our material specifications and digital building model. By doing this, we can easily consider material alternatives' impacts on project costs (Young, Jones, Bernstein, and Gudgel, 2009). Thus, showing our clients that a contractor can build our design within the established construction budget.

As with many similarly sized architectural practices, our use of these systems falls short of the full implementation needed to maximize profitability. The division uses BIM well in design but uses it less effectively in other phases of the work (Baker et al., 2020) due mainly to a lack of expertise in the workforce. This gap is something a new hiring policy will help eliminate.

The Importance of BIM Proficiency for Our Division's Operational Success

To enable our division to fully understand the business value of hiring BIM proficient employees, our partner, McGraw Hill Construction, provided us with the research findings from a study that documents how BIM systems support other architectural practices' efficiency and productivity. They obtained the data with a survey of 2,228 construction industry firms in North America. The survey participants included 598 architectural firms, constituting 27% of the survey. The confidence interval for the architecture results is 95%, and the margin of error is 5% indicating a high level of reliability of the findings. While McGraw Hill did not identify the size of the firms represented in the study, our division's substantial workforce means we have the potential for significant benefit (Young et al., 2009) through operational improvements. A more recent McKinsey report suggests that the technology disruptions that have increased the profitability of other industries are finally reaching the construction industry, where it will increase productivity and profit (Bartlett et al., 2019).

McGraw Hill believes architecture is the construction industry discipline with the highest potential business benefit from BIM. Their study found that the primary business benefits emerge from reducing the need to redo work because of a better understanding of design intent by all project disciplines and the client, increased productivity in project documentation, and better coordination of project documentation with other disciplines. 80% of architects using BIM identified increased communication and understanding through 3-D modeling with the highest potential immediate return on investment. Almost as important, 74% of architects found improved personnel productivity a significant business benefit of BIM in architecture. However, most notably to our request, 73% of architects using BIM indicated that there would be increased value if more internal staff had BIM skills, with 59% of them responding that this was important for entry-level hires. Several additional findings suggest the importance of making this change now. First, when all staff members are proficient in BIM use, only five percent of firms had a negative cash flow on their BIM system compared with 33%, where staff proficiency is limited. More positively, when staff BIM proficiency is ubiquitous in the organization, 87% of architecture practices have a positive return on their BIM investment, with 20% having over 100% return. Only 38% of firms with low levels of employees' BIM proficiency had positive returns on their systems, with only 4% of firms at over 100% (Young et al., 2009). Finally, the *2020 AIA Firm Survey Report* documents limited BIM adoption outside of the design phase. This lack of adoption points to significant competitive opportunities to increase our efficiency and profit by implementing BIM on project tasks where other firms have not yet adopted it. These tasks include (Baker et al., 2020):

- Scheduling, where only 3% of firms are using BIM,

- Cost estimating, where only 25% of firms are using BIM, and
- Building performance analysis, where only 26% of firms use BIM.

The data presented suggest that having a workforce in our division proficient in BIM as soon as possible will increase our profit and give us a competitive advantage over other architectural groups that are not yet using BIM to its maximum business benefit.

Conclusion

This memorandum supports our request to change the division job descriptions and hiring processes. It describes the extensive use of BIM in documenting our decisions and designs through many phases of our work. Additionally, it shows the importance of this tool in increasing the business efficiency and productivity of the division, making us more profitable. This document provides you with evidence to support making therequested change to add BIM proficiency to the new hire requirements for the division.

References

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