How BIM-lean integration enhances the information management process in the construction design


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HOW BIM-LEAN INTEGRATION ENHANCES THE INFORMATION MANAGEMENT PROCESS IN THE CONSTRUCTION DESIGN

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Some of the key challenges within the construction design have been highlighted in this paper such as lack of communication and coordination, poor or missing input information, design changes.

This paper identified some of the key IM challenges within the design process which have been summarised into four main categories of systems or tools, information, people, and policy and strategy.

These challenges have been linked to the construction design problems and it is believed by the authors that by improving those, the IM will be accordingly improved.

BIM and Lean would enhance IM. It is believed that the integration of BIM functionalities (i.e. visualisation) with Lean principles (i.e. reduce variability) enable better IM improvement during the design process.

BIM and Lean interaction would benefit IM in terms of reducing construction design problems, and associated with the IM problems.

Conclusion

- Time and cost saving, and thus design could be identified in an earlier stage and would help to overcome the identified construction design problems such as missing information.
- Information within the 4D scheduling provides an overall image of projects’ current situation. Project participants using 4D scheduling would be vital in recognising current conditions of the projects and the need to outline with necessary regulations that could be required.
- 4D scheduling supports the participants in identifying the necessary schedules required and the relevant data that will be needed in relation to material and cost information.
- It helps to avoid inconsistencies related to the provided documentation, unnecessary design changes, and avoid poor input information.
- It would improve the schedule planning reliability which will increase the current deficiencies of communication and coordination within the projects.

Clash detection enables identifying clashes between systems and objects. These improved systems and strategies allow people to take more reliable decision making. Clash detection improves the richness of the information exchange. It avoids future design changes and unreliable decision making. Human errors could also be identified through clash detection.

- All the shared information can be accessed and used by project participants in a collaborative environment.
- Design problems can be directly improved through identified design errors or issues in the design stage. Visual management is linked closely to standardisation.
- Design problems due to lack of standardised systems would be improved directly and indirectly.
- As BIM and Lean provide effective work strategies the construction design problems will be resolved by improving information management.

Clash detection
- Lack of content and coordination
- Insufficient documentation
- Unbalanced sharing of resources
- Unreliable decision making

Reducible Variability
Reduce cycle time
Increase flexibility
Use visual Management
Simplify and visualise

• Effective collaboration and communication among project participants enables creating accurate information.
• Integrated tools and systems improves the reliable decision making process.
• Collaboration enables project participants to share information at the same time and adjust any changes.
• Clear understanding of the project strategy and requirements through better communication and improve coordination.
• Effective information exchange among all the project team collaboratively enhances preparing sufficient documentation in the design process.