SYNERGY
CONSULTING ENGINEERS
"Your Success is Our Success"

Building Information Modeling
BIM

A Synergy Consulting Engineers White Paper

Understanding BIM

Overview

A Building Information Model (BIM) is "a digital representation of physical and functional characteristics of a facility." When properly implemented, BIM can provide many benefits to a project. The value of BIM has been illustrated through well planned projects which yield increased design quality through effective analysis. Engineers capture and analyze early concepts and then better maintain design coordination between disciplines through documentation and construction. At the end of the construction phase, data and information links of the major building systems can provide valuable information for asset management, space planning, and maintenance scheduling to improve the overall performance of the facility or a portfolio of facilities.

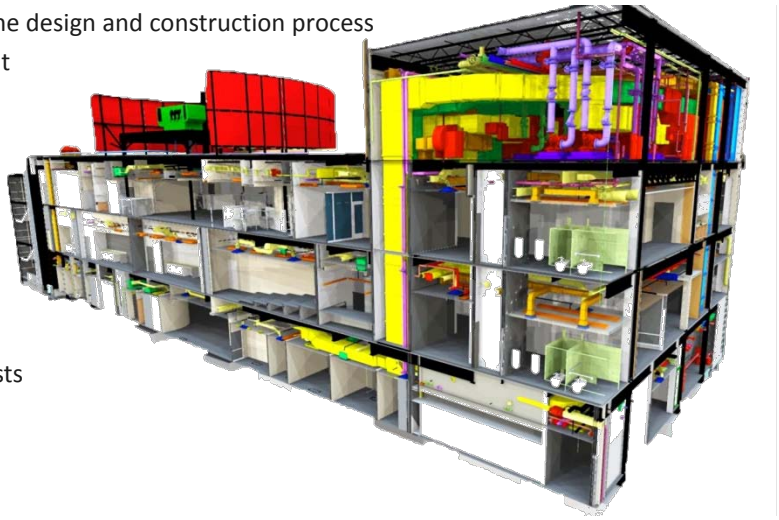
BIM drives more efficient sustainable design analysis, clash detection, construction planning, material and systems fabrication resulting in consistent positive ROI (return on investment). BIM has proven an effective tool with documented positive return on investment (ROI) from over 70% of users/building owners.The value of BIM does not end with the completion of construction, but it must begin in the schematic design phase of the project to achieve maximum results.

Viability

Building type, use, complexity, size, and owner's requirements are factors in determining the viability of BIM. Size is generally determined by systems complexity. A 3,500 sf research lab is as viable as a 300,000+ sf multi-story office building. All hospitals, research facilities, universities, K-12 education buildings, retail complexes, manufacturing with process equipment and multi tenant buildings are all viable. A cost benefit analysis will support the decision making process. Renovation, new construction, and planned phased construction projects are equally viable for BIM providing similar results.

Design professionals can deliver the following benefits as a result of BIM:

- Outstanding visual communication/Accurate Construction Documents
- Improved communication between all parties in the design and construction process
- Improved collective understanding of design intent
- Reduced number of field coordination problems
- Improved budgeting and cost estimating
- Reduced construction costs
- Avoid rework/changes - Clash Detection
- Reduced conflicts during construction
- Improved Fabrication
- Safer work sites
- Reduced number and need for information requests
- Improved scheduling capabilities
- Improved overall project quality



Service Deliverables

There are 7 levels of service deliverables related to BIM and each is based on the LOD "Level of Detail Matrix: Levels 100-700". The engineer will work with the owner to understand and choose a level of detail based on the owner's objectives/requirements. The owner retains all documentation including design and construction phase reports, printed and electronic copies of the completed model, complete as-built model and documentation based on desired LOD.

Requirements for use as a Building Systems Management Tool

Building owners will need applicable software, hardware, and training to interact with the completed Building Information Model and to effectively use it as a building/systems management tool.

6250 Jupiter Ave. NE •Suite B • Belmont, MI 49306
P 616.726.5025 F 626.726.5320 W synergy-engineers.com