UNITED BIM

BIM Dimensions

3D | 4D | 5D | 6D | 7D

Definition & Benefits

DIFFERENT DIMENSIONS, DIFFERENT USES

Building Information Modeling (BIM) is a dynamic process of creating information-rich models for the entire lifecycle of a project. As a project passes through different phases, the BIM process also matures to different levels namely LOD 100, 200, 300 and beyond.

A BIM model can be utilized for pre-defined specific purposes, commonly known as use-cases. According to project stage requirement and project complexity, specific parameters are added to the existing information contained in BIM. These additions of pre-defined used cases can be described as BIM dimensions.

These dimensions enhance the data associated with a model to share a greater level of understanding of a construction project.

BIM dimensions – 3D, 4D, 5D, 6D & 7D, each has its own purpose and is useful in finding out how much a project would cost, its timeline, when it would be completed and how sustainable it would be in the future.

3D

BIM 3rd Dimension

All About Geometry

3D as we are all commonly aware, represents the three geographical dimensions (x, y, z) of a building structure. The geographical capabilities help stakeholders to visualize a building's structure in 3 dimensions even before the project is started. When it comes to 3D BIM, it involves the creation of a 3D model and sharing the same information using a common data environment (CDE).

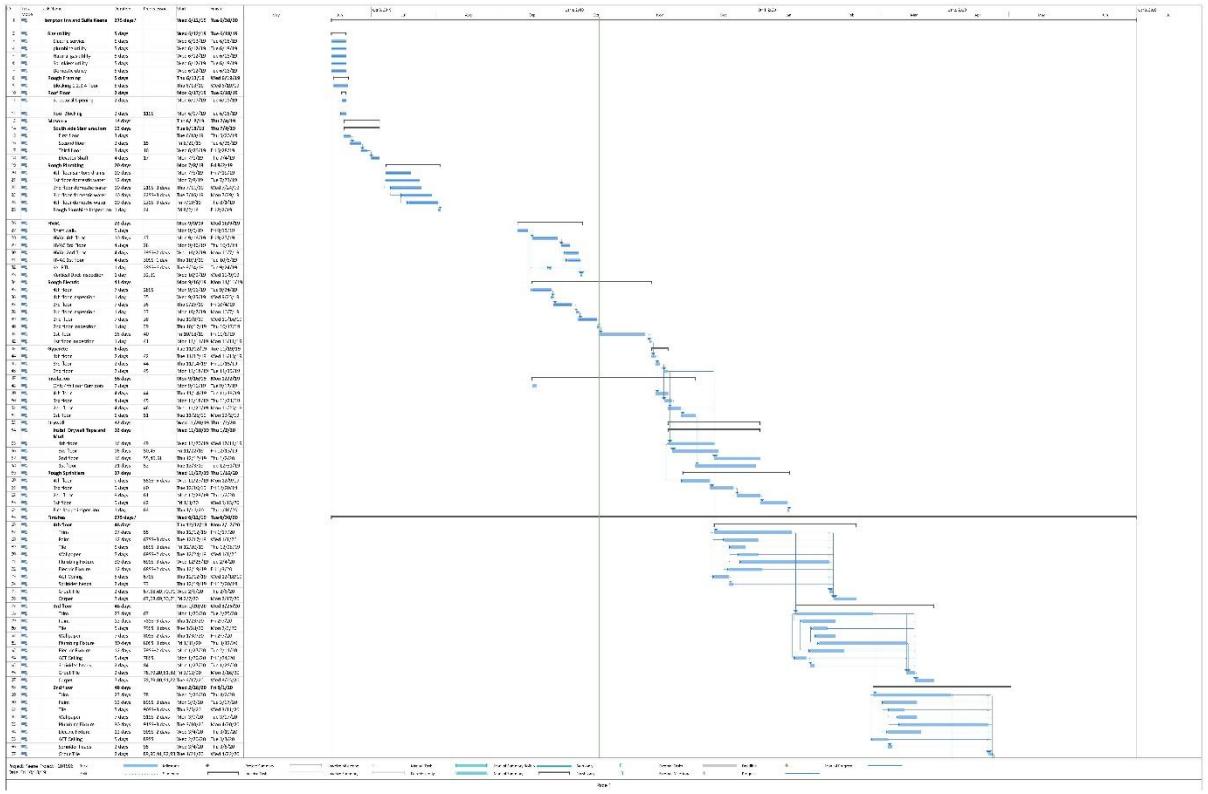
3D BIM enables all the stakeholders to collaborate effectively for modeling and solving typical structural problems. Also, as everything is stored at a central location i.e. the BIM model, it becomes easier to resolve issues at a future stage.

Benefits of 3D BIM

- Enhanced 3D visualization of the entire project
- Streamlined communication and sharing of design expectations
- Easy collaboration between multiple teams irrespective of their area of expertise
- Reduced instances of rework and revisions due to complete transparency from the beginning

4D is related to planning the construction site by adding a new element i.e. time. Scheduling data helps in outlining how much time will be involved in completion of the project and how will the project evolve over time. The information can provide elaboration about the time taken for installation or construction, time needed to make the project operational, the sequence of installation of various components, along with other scheduling information.

4D BIM is a tool for planning of activities on site. It can help in early conflict detection by seamlessly managing information related to site status and visualizing the impact of changes undertaken during the entire lifecycle.



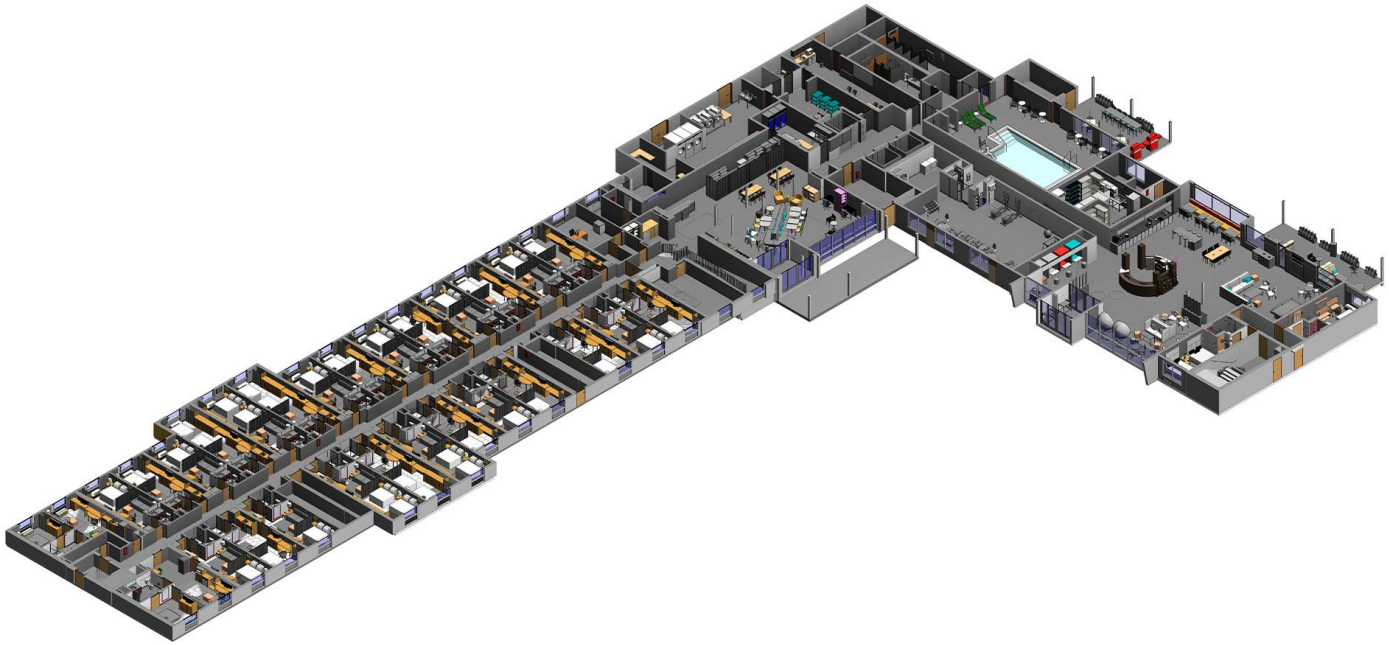
4D

BIM 4th Dimension

Duration, Timeline & Scheduling

Benefits of 4D BIM

- Improved site planning and scheduling optimization
- Seamless coordination among architects, contractors and on-site teams
- Better preparedness in terms of next steps during every construction stage
- Enhanced information sharing related to timeline expectations helping to avoid costly delays
- Enhanced safety and efficiency due to documentation of entire plan with specific timelines



5D

BIM 5th Dimension

Cost Estimation, Analysis And Budgetary Tracking

5D BIM is useful in cases where budget analysis and cost estimation are required from the beginning of any project. It goes without saying that cost is one of the most important elements associated with a project. 5D BIM enables project promoters and owners to analyze the costs that will be incurred over time in relation to the project activities.
5D BIM can help in accurately predicting the budgetary requirements along with the changes in scope, material, manpower or equipment requirements. With 5D BIM, one can easily extract the costs associated with a scenario and can also factor in for changes along the way.
Have a look at our hospitality project with 5D BIM Modeling during a hotel construction project.

Benefits of 5D BIM

- Real-time cost visualization in 3D with notification on changes in costs
- Automatic count for components/system/equipment associated with a project
- Simplified cost analysis and budgetary analysis with predicted and actual spends over the course of time
- Minimization of budgetary offshoot due to regular cost reporting and budgeting

6D

BIM 6th Dimension

Making A Structure Self-Sustainable & Energy Efficient

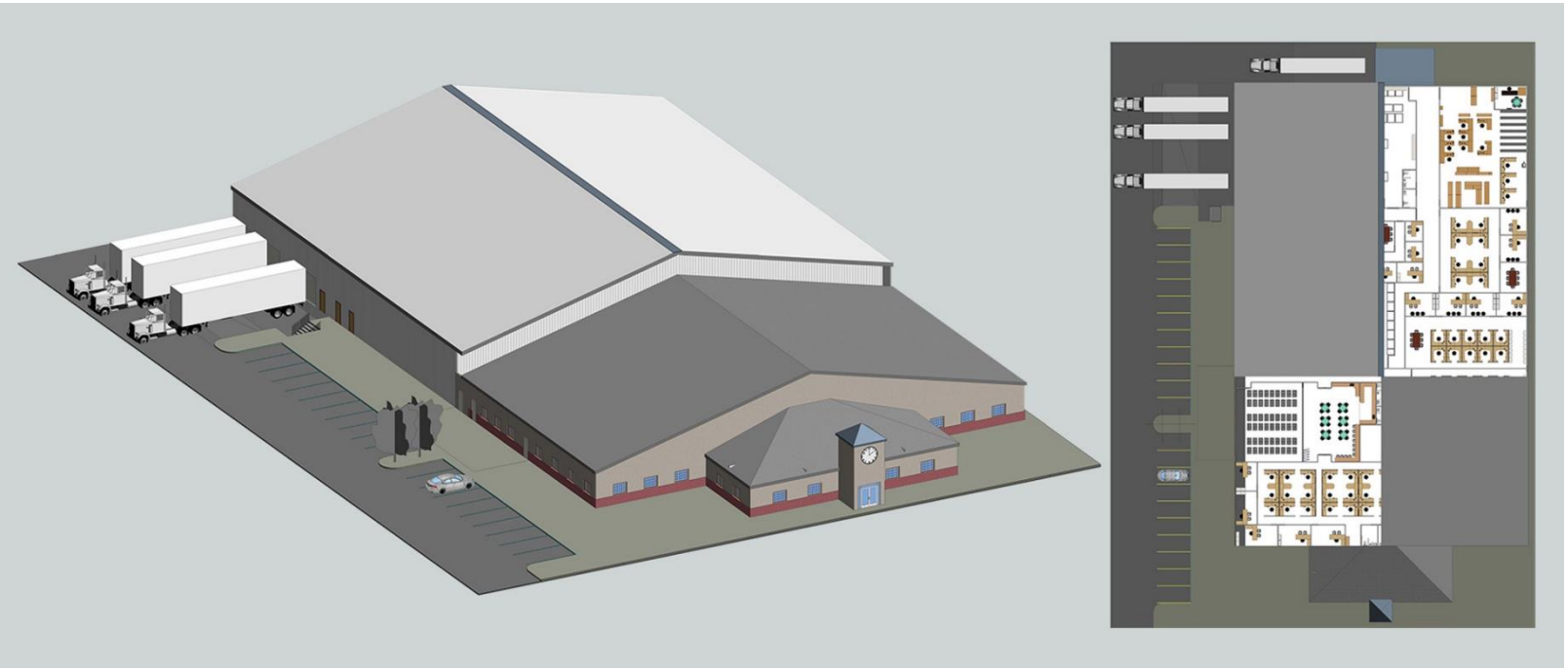
6D building information modeling helps to analyze the energy consumption of a building and come out with energy estimates at initial designs stages. Accounting for various life stages of a structure, 6D BIM ensures accurate prediction of energy consumption requirements.

6D BIM technology takes the industry a step beyond the conventional approach that just focuses on the upfront costs associated with a project. This approach helps in getting an idea of the entire cost of an asset and how the money should be spent on achieving sustainability and cost efficiency.

6D BIM is also known as integrated BIM as it involves detailed information that can help in supporting facility management and operations at a future date. This essentially involves information about a component's manufacturer, installation date, maintenance schedule, configuration details for best performance, energy requirement and decommissioning information.

Benefits of 6D BIM

- Reduced energy consumption in the long run
- Faster and more accurate decision making related to component installation during the design process
- Detailed analysis and impact of a decision on economic and operational aspects over the entire lifecycle
- Better operational management of the building or structure after handover



7D

BIM 7th Dimension

Holistic Facility Management Information for Entire Lifecycle

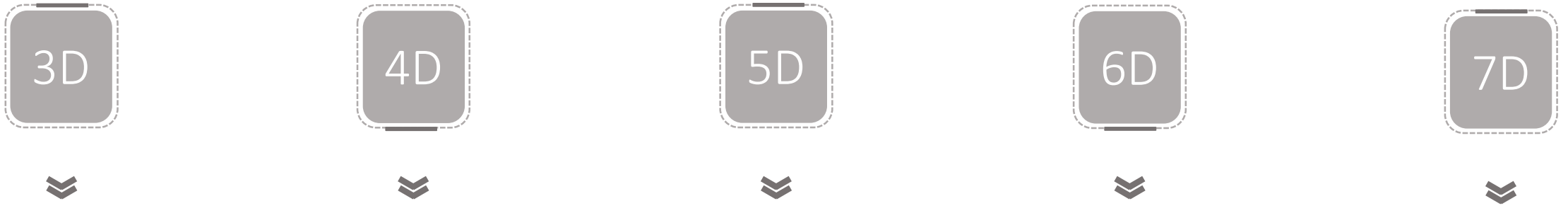
7D BIM is all about operations and facility management by building managers and owners. The dimension is used to track important asset data such as its status, maintenance/operation manuals, warranty information, technical specifications, etc. to be used at a future stage.

7D BIM is a unique approach where everything related to facility management process is collated at a single place within the building information model. Such a tactic helps in improving the quality of service delivery during the entire lifecycle of a project. Using 7D BIM ensures that everything in a project stays in its best shape from day 1 to the day of demolition of a structure.

Benefits of 7D BIM

- Optimized asset and facility management from design stage to demolition
- Simplified and easy replacement of parts and repairs anytime during the entire life of a building
- Streamlined maintenance process for contractors and subcontractors

BIM Dimensions



Geometry

3- dimensional (x, y, z) geographical structure.

Time

3D + Timeline, scheduling and duration

Money

4D + Cost estimation, budget analysis

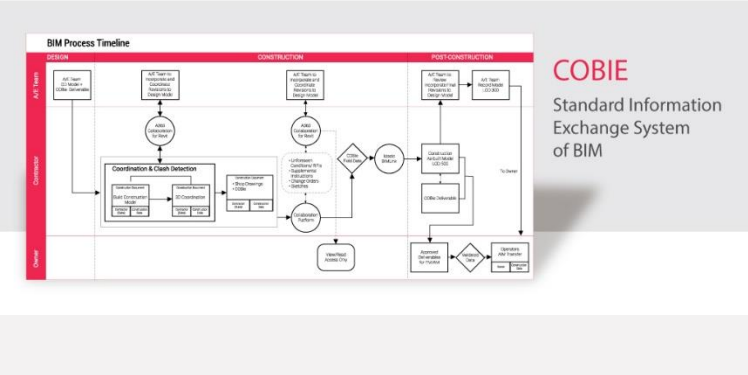
Sustainability

5D + Self-Sustainable & Energy Efficient

Facility

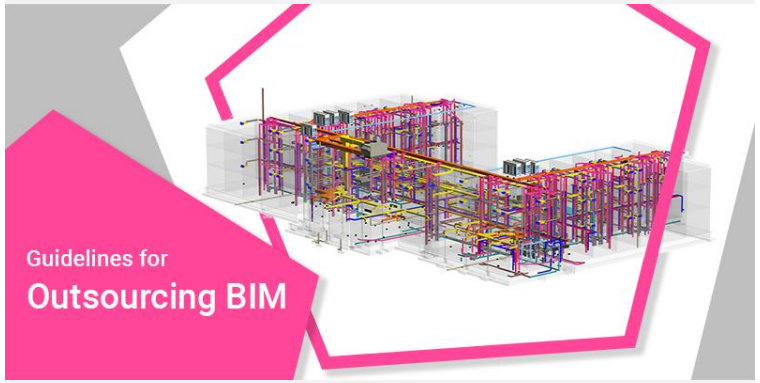
Management 6D + Facility Management Information

FEATURED BLOGS



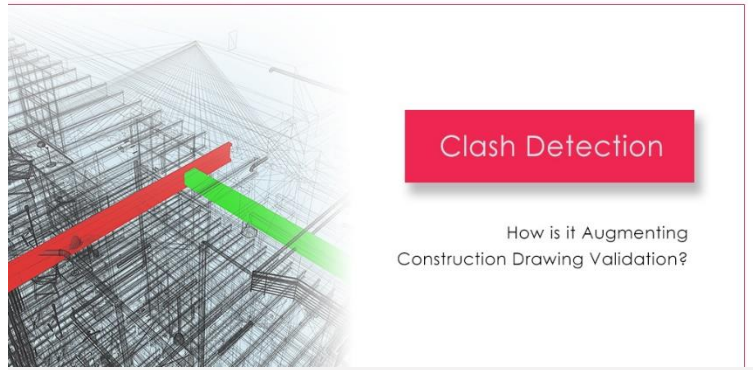
What is COBie?

How it is streamlining data collaboration between AEC professionals



Guidelines for Outsourcing BIM

Key Takeaways for AEC Professionals



What is Clash Detection in BIM?

Process, Benefits and Future Scope in Modern Day AEC industry

REVIEW CHECKLIST
FOR PERFECT DESIGN DRAWINGS

Review your design drawings to perfection with this easy to use drawing checklist, made for Architects and Engineers.

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