Web-based Design Coordination - Building Information Modeling (BIM)

Shifting from the two-dimensional design process, the industry has recently embraced Building Information Models (BIM) that allow an information-rich visualization of the facility from the feasibility stage of the project enabling efficient information transfer among the stakeholders. The technical core of BIM is made up of three components: 3D computer-aided design (CAD), Intelligent Models, and Information Management. Deploying the BIM on the 'cloud' platform or cloud computing (CC) enhances design coordination especially clash detection. BIM can be expanded to a 4D/5D model with project schedule/cost data.

BIM is "a shared knowledge resource for information about a facility forming a reliable basis for decisions during its lifecycle" (Davis 2007). BIM is a digital conduit of information between the design, construction, and operations of an infrastructure asset. BIM supports process optimization and data interoperability throughout the life cycle of an infrastructure asset. BIM provides the ability for integrated project delivery teams to build the project "twice"—once virtually and again in real life. Building virtually first allows the traditional errors that plague construction productivity to be mitigated before a single dollar is spent in construction.

A BIM framework that allows version and audit history to be retrieved at any instance of time via a cloud-based BIM model server to capture the design evolution that emerges because of change propagation while resolving any coordination issues requiring a record of the history of design changes.

> **When to Use:** Design development CR through Construction
> **Whom:** Core Constructability Team, Designers, Construction Team
> **References:**
> FHWA Tech Brief, ADVANCING THE DEVELOPMENT AND DEPLOYMENT OF BIM BACKGROUND FOR INFRASTRUCTURE
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> Davis, D. 2007. National Building Information Model Standard NBIMS. National Institute of Building Sciences, Washington, DC, and AEC Infosystems, Inc. Baltimore, MD. p. 9.
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> Bersin, J., B. Pelster, J. Schwartz, and B. van der Vyver. 2017. Introduction in Rewriting the Rules for the Digital Age: 2017 Deloitte Global Human Capital Trends. Deloitte University Press.
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