

Architectural Precast

NBIMS Overview

The National Building Information Model Standard™ (NBIMS) is a set of interoperable standards for exchange of facility and infrastructure data through the life-cycle of a project. NBIMS is a joint project coordinated by the National Institute of Building Sciences (NIBS) in conjunction with many other facilities-related associations and software companies.

Business Case

The recent study of interoperability costs by NIST identifies one level of inefficiency within the construction industry. Other issues that are the result of using 2D drawings as communication include: incomplete communication; geometric layouts that are imprecise and impossible to verify for correctness; object definitions that require re-work (redrawing) as part of standard practice; inability of easily applying computers for such simple aspects as deriving area, volume, center of mass and other object component properties; inability to apply automation to the drawing data, for rebar bending, material procurement and other IT applications. The use of product models can resolve these and other inefficiencies, currently endemic to building design and construction.

Objectives

The objective of this work is to define the Information Delivery Manuals (IDM) and Model View Definitions (MVD) for precast concrete design, dealing with the use case exchanges between architectural design and precast fabricator. The initial step will be to define the IDM use specification. Later, the MVD will be specified and communicated with software implementers.

Implementation

The MVD has grown out of work coordinated through NIBS and FIATECH that tracked early work using BIM modeling in a sample project. Related work examined closely the exchange capabilities for precast concrete now available by all the major BIM design tools and the precast concrete fabrication tools.

Results to Date

- BIM modeling of a substantial precast concrete project has been undertaken, following current best practices, as defined by a precast concrete fabricator expert in BIM modeling.
- Exchanges and workflows for this project have been tracked and documented.
- Test case exchanges have been undertaken using all the major BIM design tools and the modeling methods used have been identified.
- Exchange capabilities have been tested between all of the major BIM design tools and all of the known precast concrete BIM tools, with an emphasis on IFC.

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