

## Precast Concrete BIM Standard Documents

### IFC Binding Documents for Generic Concepts Volume III



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### Executive Overview

This is the near final release of the Model View Definitions for data exchanges of precast concrete information. It outlines the MVDs in four volumes:

- **Volume 1:** Overview, with specification of Exchange Models for use various use cases and the High Level Concepts making up the Exchange Models. These define what information is to be included in the exchanges and to what level of detail. They are presented in Model View Definition (MVD) diagrams.
- **Volume 2** contains the detailed binding definitions for all of the exchange concepts that are used in the diagrams of volume 1. These are IFC 2x3 bindings, and graphic depictions of the IFC entities and property sets used with their relationships, implementation rules, figures showing typical situations in precast buildings, and Part 21 file examples using EXPRESS. All of these are also available on the “IFC Solutions Factory” IAI MVD website, at <http://blis-project.org/IAI-MVD/>.
- **Volume 3 (this volume)** contains the detailed binding definitions for all of the exchange concepts that have been defined by other groups developing MVDs and that are re-used in the MVDs of volume 1. All of these are also available on the “IFC Solutions Factory” IAI MVD website, at <http://blis-project.org/IAI-MVD/>.
- **Volume 4** defines the specific model views that are developed for implementation, testing and certification. It also describes the test public demonstrations used for preliminary implementation.

The MVD presented here in four volumes are based on the functional specification called an Information Delivery Manual (IDM), completed in January, 2009. This set of documents, called Model View Definition (MVD), specifies at the implementation level the information needed to support the workflows defined in the IDM, covering all the major digital exchanges dealing with precast concrete. The exchanges are defined to be implemented using the Industry Foundation Classes (IFC) model schema. The IFC bindings will support a set of standard export and import exchange capabilities for commercial software products, enabling seamless exchange of digital information and enhanced work processes.

A particular exchange will depend on varied subsets of the overall model data. Thus these subsets or modules will be used selectively in multiple different contexts. We adopt the idea of information ‘Concepts’ to represent the information items in a way that allows them to be composed for re-use in different workflow cases. Implementers can re-use the software modules and testing and certification of modules is also anticipated. The notion of Concepts has grown from previous implementation activities, led by the BLIS effort in the early 2000s.

The Concepts are drawn directly from the Information Delivery Manual (IDM) that was prepared by the Precast Concrete BIM Project team, including the PCI Advisory Board and the Technical Support Team. They were voted on and approved by the PCI Advisory Board. The Concepts include such varied issues as the degree of detail needed, connectivity, aggregation and nesting relationships, type of geometry representation, and others used in different workflows. Our

## Model View Definitions for Precast Concrete

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Concepts were also drawn from a library of Concepts that have been proposed or defined by other BIM standard efforts in the IFC Solutions factory website: (<http://www.blis-project.org/IAI-MVD/>). These Concepts (those already posted and those developed for the Precast NBIM Standard) are available for possible re-use and some of them may have already been implemented by BIM software companies. The Concepts for any domain such as precast form a hierarchical lattice, from high-level aggregated Concepts to leaf ones, the leaves providing bindings to IFC (e.g., the associated IFC implementation code). All of the bindings are based on the 2v3, currently the production release, available on the buildingSMART website: <http://www.buildingsmart-tech.org/specifications/ifc-releases/ifc2x3-tc1-release/summary>.

The current diagrams start with the IDM requirements from which they were derived. These are followed by the Concept structures need to support those functions. These are then associated with the leaf bindings to IFC, using a diagramming method that is widely used within the IFC community. In many cases, certain information about a precast piece needs to have different representation and these alternatives are included in the Concept bindings.

This submission is for all aspects of the Precast National BIM Standard, specifically the eight amalgamated distilled from the IDM documentation. The current bindings reflect the technical team's judgment regarding best implementation of the IDM requirements. These will be reconciled, as needed, with software implementation capabilities and limitations.

## Table of Contents

<b>Concept Number</b>	<b>Concept Name</b>
MVC-581	Root Attributes
MVC-818	Face Based Surface Model
MVC-836	Generic Geometric Representation
MVC-848	GUID
MVC-852	Generic Material Association
MVC-866	Generic Assignments
MVC-876	Project Attributes
MVC-880	Site Attributes
MVC-888	Metric Project Units
MVC-889	Imperial Project Units
MVC-890	Project Name
MVC-891	Generic Aggregation
MVC-893	Building Attributes
MVC-895	Building Storey Attributes