

Structural Steel

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 National Institute of Building Sciences (NIBS) in conjunction with the International Alliance for Interoperability (IAI) and many other facilities-related associations and software companies.

Business Case

A recent NIST study concluded that there was at least \$15.8 billion lost in 2004 due to inadequate interoperability in the commercial, institutional, and industrial facilities industries. During the design life-cycle phase, architects and engineers incurred almost \$1 billion in interoperability costs. The use of product data models to promote interoperability between various structural steel project participants can help mitigate those costs. The use of product models can also be used to coordinate structural steel with other building trades such as HVAC, MEP, cladding, etc. to ensure higher quality, cost-effective, and timelier project delivery.

Objectives

The objective of this work is to develop Model View Definitions (MVD) and Information Delivery Manuals (IDM) for structural steel based on IFCs and compatible models, such as CIS/2. To accomplish this work process analysis will be done to define uses cases for interoperability between architects, designers, engineers, detailers, and fabricators. These use cases will be formulated into MVDs and IDMs that include the exchange requirements and functional parts to be implemented in IFCs. The IDMs will be validated and demonstrated with the use case information exchanges between different software packages.

Implementation

The MVDs and IDMs will be used by software implementers to make sure that different use cases of information exchange for structural steel via IFCs and CIS/2 are properly handled. End-users will be able to identify software packages that meet their exchange requirements.

Results to Date

- The CIMsteel Integration Standards (CIS/2) product model was originally adopted by the American Institute of Steel Construction (AISC) in 1998.
- CIS/2 has been implemented in at least 16 design, analysis, detailing, and fabrication software packages.
- The CIS/2-IFC Harmonization project identified areas of improvement in both product models.
- Georgia Tech has developed an IFC to CIS/2 Translator for two use cases and a CIS/2 to IFC Translator for one use case.
- NIST has developed a CIS/2 Viewer and a CIS/2 to IFC Translator for three use cases.
- Input is being provided to the IAI Implementers Support Group and Modeling Support Group for future enhancements to the IFC product model for structural steel.
- Preliminary work has been done to define the Use Cases, Model View Definitions, and Information Delivery Manuals for structural steel.

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