

Implementation of Building Information Modeling in Light Steel Framed Buildings

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- **Portions of this presentation have been produced using material from:**
 - National BIM Standard – United States (NBIMS)
 - British Standards Institution (BSI)
 - BuildingSMART Alliance
 - BIM Forum

1. What is BIM?

2. BIM Maturity Levels

3. Benefits of BIM

4. VDC Processes & Requirements

5. BIM Levels of Development

6. BIM in Light Steel Framing

7. Software Solutions

8. SteelSmart® Framing (Hands-on)

- **Definition**

- The National Building Information Model Standard Project Committee defines BIM as:
- Building Information Modeling (BIM) is a digital representation of physical and functional characteristics of a facility. A BIM is a shared knowledge resource for information about a facility forming a reliable basis for decisions during its life-cycle; defined as existing from earliest conception to demolition.

- **Practically**

- BIM is an essential value creating collaboration through the entire life-cycle of a construction in a collaborative 3D environment built on models and intelligent parametric structured data.

Just 3D CAD...

BIM

- All project data is stored in the single environment
- When dimension values change, the objects associated to dimensions are changed

CAD

- Stores and retrieves project data from multiple files
- Dimensions only display the distance between two entities

Just a new technology application...

BIM

- Uses system of categories and subcategories to organize information
- Creates own intelligent parametric objects & quickly customize the existing ones

CAD

- Uses traditional 2D/3D drafting capabilities
- Can't create own intelligent parametric objects or layers

The future...
...it's here &
essential!

BIM

- Provides access to single file and multiple users with the possibility of defining ownership for some elements or areas.
- Multiple design view with a flexible interface
- Detail library & material Takeoff functionalities

CAD

- One person at a time can access and work on a file
- Single design view

- **Why Essential?**

- Buildings cost more than they should to design, build and sustain and they take too long to deliver. In a recent study by the National Institute of Standards and technology (NIST) inadequate interoperability in the U.S. Capital Facilities industry was identified as an additional cost of \$15.8B annually

- **BIM...**

- Improves Collaboration between stakeholders/Participants
- Provides more accurate fundamental information to support decision making
- Provide a standard way of storing information so that it survives the test of time

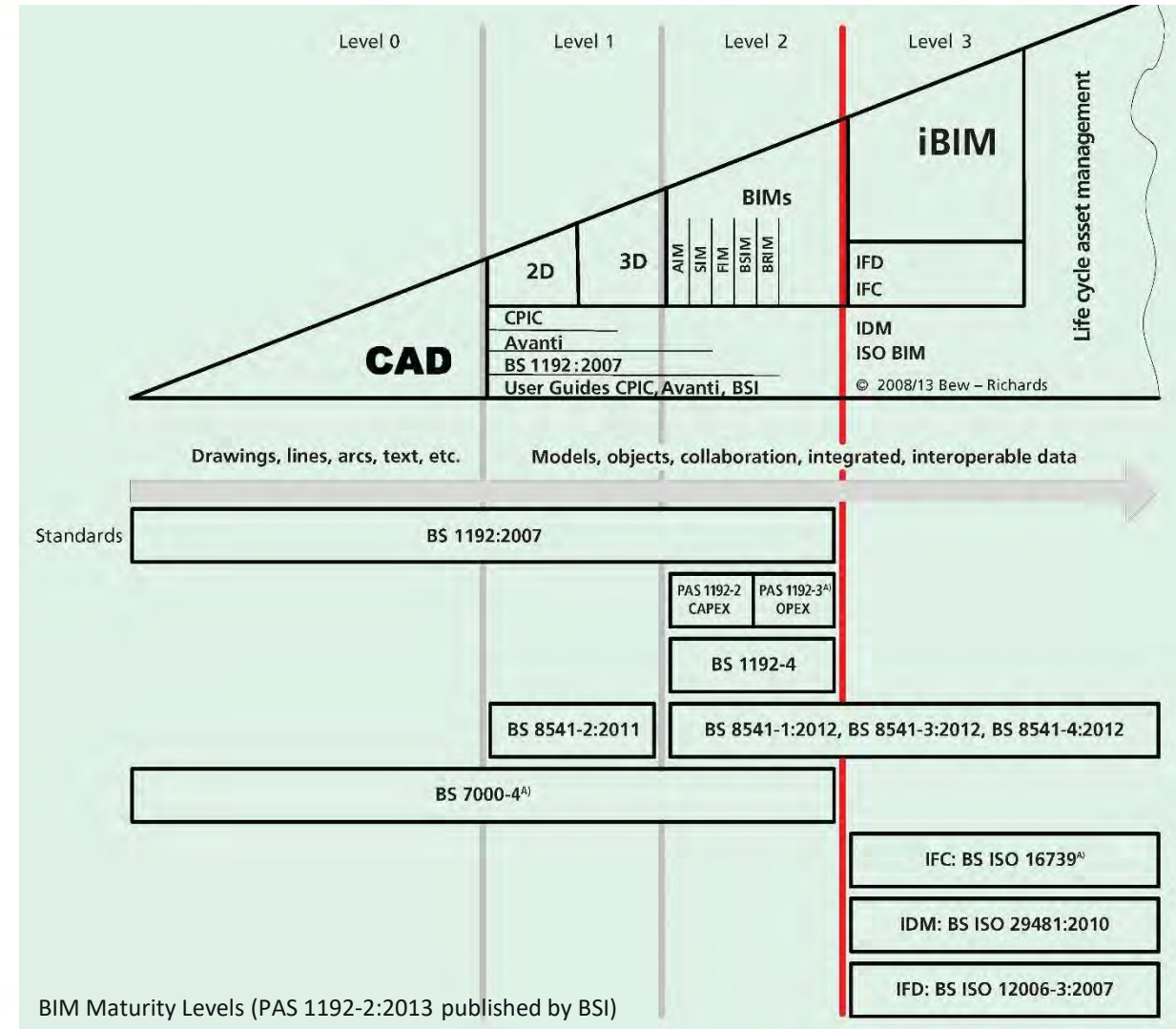
- **Result.... Savings in COST & TIME**

• BIM Level 0

- No Collaboration
- 2D CAD drafting
- Output distributed via paper or electronic prints

• BIM Level 1

- 3D CAD for Concept
- 2D CAD drafting for documentation & production
- Sharing via Common Data Environment



- **BIM Level 2**

- All Parties use their own 3d Models
- Design information shared through a common file format. Each party can combine that data with their own model to make a federated BIM model, and carry out checks on it
- Any CAD software used must be capable of exporting common file formats such as IFC (Industry Foundation Class) or COBie (Construction Operations Building Information Exchange)
- This is the current standard

- **BIM Level 3**

- This is the Future. Full collaboration between all disciplines using a Single Shared Project Model
- Model Held in a centralized Virtual Space. All parties can access and modify the same model
- Removes final layer of conflicting information
- Known as “Open BIM”

- Better collaboration
- Reduced rework
- Reduced safety risks
- Reduced waste

- **Definition**

- VDC is the management of integrated multi-disciplinary performance models of design-construction projects, including the product (i.e., facilities), work processes and organization of the design - construction - operation team in order to support explicit and public business objectives.

- **VDC Execution Plans**

- Stakeholders/Contacts/Responsibilities
- Model Management – Origin and Grid system, Tolerances, Units, Floor Elevations, Quality Control
- Modeling Procedures/Guidelines, LOD, File naming, File formats
- Coordination guidelines – Kick-off, Coordination meetings, Clash detection Reports, Model Sign-off

- Project Deliverables

LOD Definition

It's the agreed upon level of development of information and detailing inside a BIM model which enhances the accuracy & facilitates the building operation Dimensions (4D,5D,6D) BIM.

LOD 100

- Description: Office chair
- Width:700
- Depth: 450
- Height: 1100
- Manufacturer: XX
- Model: XZ



LOD 200

- Description: Office chair
- Width:700
- Depth: 450
- Height: 1100
- Manufacturer: XX
- Model: XZ



LOD 300

- Description: Office chair, wheels & Arms
- Width:700
- Depth: 450
- Height: 1100
- Manufacturer: XX
- Model: XZ



LOD 350

- Description: Office chair , wheels & Arms
- Width:700
- Depth: 450
- Height: 1100
- Manufacturer: XX
- Model: XZ



Concept (Presentation)

LOD 400

- Description: Office chair , wheels & Arms
- Width:700
- Depth: 450
- Height: 1100
- Manufacturer: XX
- Model: XZ
- Purchase Date: 05/02/2018



Courtesy BIM forum Levels of Development Specification

LOD 100

Solid mass model representing overall building volume; or, schematic wall elements that are not distinguishable by type or material.

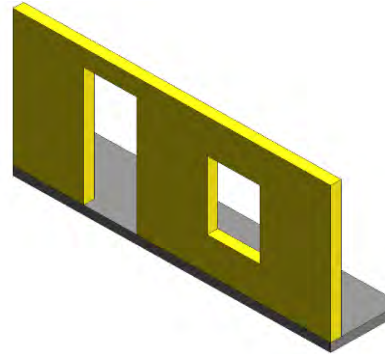
Assembly depth/thickness and locations still flexible.

LOD 200

Generic wall objects separated by type of material (e.g. brick wall vs. terracotta).

Approximate overall wall thickness represented by a single assembly.

Layouts and locations still flexible.

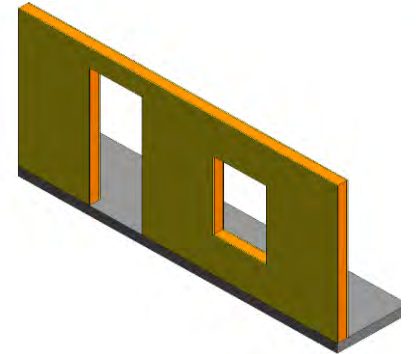


LOD 300

Generic wall objects separated by type of material (e.g. brick wall vs. terracotta).

Approximate overall wall thickness represented by a single assembly.

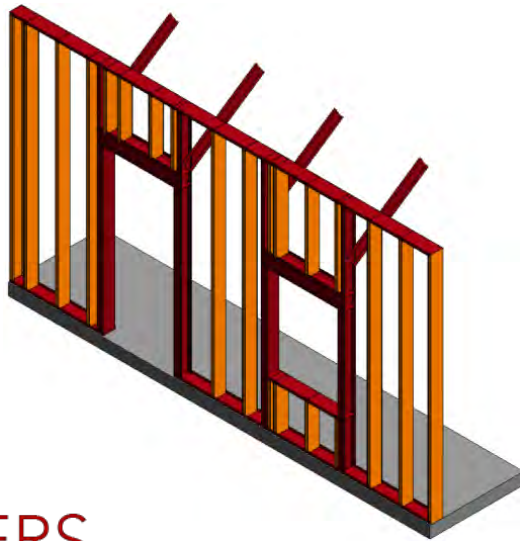
Layouts and locations still flexible.



LOD 350

Cold formed metal framing is developed with sufficient elements to support detailed interface coordination with other systems such as MEP.

Openings modeled with support framing around openings

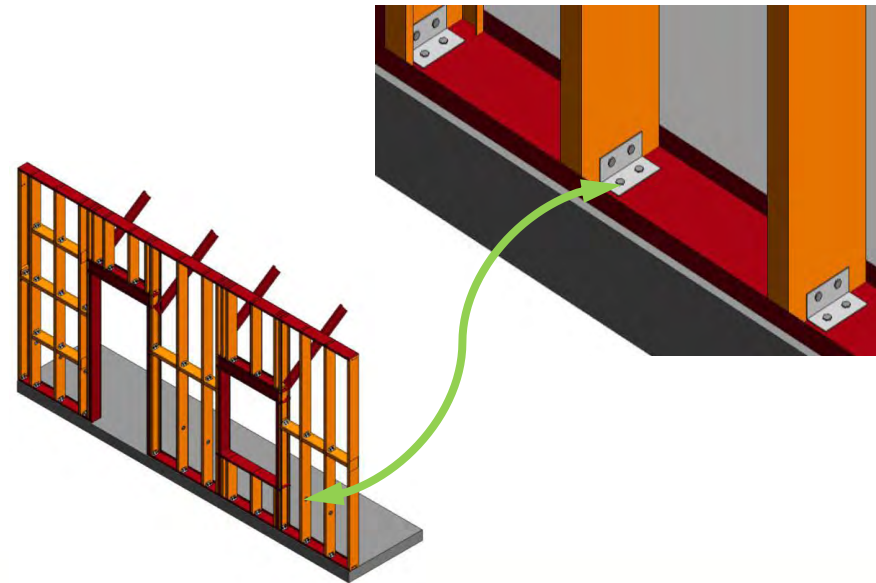


LOD 400

Cold formed metal framing is developed with sufficient

elements that support the fabrication of the CFMF system.

Connection content is development in the wall elements. This includes but is not limited to fasteners, clips, and other related hardware.



- **Why BIM in Light steel Framing?**

- Accurate Design/Modeling. Building on outputs of Design Process
- Clash detection
- Material Take-Offs. Minimizing waste
- Fabrication Drawings for Panelized Construction
- Cloud Sharing/Collaboration/Communication

- **Stand-Alone Applications**
 - Vertex BD
- **Revit-Based Add-ins**
 - Structsoft MWF Pro
 - AGA-CAD Metal framing tools
 - ASI's SteelSmart® Frammer
- **Collaboration/Sharing Software**
 - Autodesk A360
 - Navisworks
 - BIM 360 Glue

THANK YOU!

Start your Free Trial of the SteelSmart® Framing Plugin for Revit® Structure®!

- Have an ASI Portal Account?

Login Here:

<https://portal.appliedscienceint.com/Account/Login>

- Don't have an ASI Portal Account?

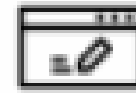
Register Here:

<https://portal.appliedscienceint.com/Account/Register>



Already using the SteelSmart Frammer (SSF)?

- Once your model is complete and you're ready to look at project cost, the **Request a Material Quote** is a feature that makes it especially easy to buy the material you have designed with. Simply click the button and you're done! A TSN Salesperson will return back a quotation to you shortly.
- Have a technical question about the SteelSmart Frammer or a TSN Product? Click **Request Technical Support**, attach a screen shot, write your question and It's that easy!



Request
Material Quote



Request
Technical Support