BIM Support for Construction Projects from a Supplier’s POV

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Already today BIM has an impact on suppliers of construction products. Suppliers are required to provide digital content and information for a BIM model. In addition, suppliers can influence the evolution by developing tools which simplifies the workflow like automatic analysis or object placement. And they can also contribute to enhancing the productivity on the jobsite by having the construction information ready.
Key learning objectives

At the end of this class, you will know about:

- The possibilities of project detailing in an early stage
- The use of tools for detailing
- The workflow to automatically integrate product solutions into the design
- The best practice to link the design with the construction site
Attendees

Who is the audience?

- Owners/Operators/Developers
- Architects/Engineers
- Specialty Consultants (e.g. BIM Consulting)
- General Contractors
- Trade Contractors
- Suppliers/Manufacturers
- Software Developers
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- Introduction

- BIM Support for Design
  - Content Library
  - Integration of Calculation
  - Next Evolution

- BIM Support for Execution
  - Jobsite Support
  - BIM-to-field

- Conclusion
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Why do Suppliers need BIM?

- Design
- Specifications
- Consulting
- Software
- Distance measuring
- Leveling and aligning
- Detection
- Drilling and chiseling
- Diamond systems
- Cutting and grinding
- Diamond systems
- Direct fastening
- Screw fastening technology
- Anchor technology
- Installation
- Construction chemicals
- Firestop
- Fleet management
- Repair service
- Lifetime service
- Delivery service
- Training and consulting
Hilti will **not** be the **driver** of BIM. But the **supporter** for the driver.
BIM for Suppliers

BIM requires new approaches from suppliers because

- It will be a requirement from customers along the whole project life cycle
- Detailing can and will be done in an earlier phase than before
- Product Information have to be available digital
- Collaboration will change the existing workflows

To make BIM successful, all stakeholder have to participate.
BIM Workflow and Suppliers Support

**Design**
- Architectural Design
- Engineering Design
- Tendering
- Detailing
- Purchasing

**Execution**
- Construction
- Validation
- Facility Management
- Demolition

**Operation**
- Planning and Design
- Jobsite Preparation
- Jobsite Support
- Documentation

**Tools**
- Digital Content, Calculation Tools
- Total Station
- Documentation Manager

**Services**
- Engineering & Modelling Support
- Model-based Quantity, Preassembly, JIT-Logistic
- Maintenance Support
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Need for Content Libraries
BIM content is needed by the designers/engineers during the design process in order to create optimized models.

The requirements for digital products are in general:

- Should represent the real product
- Should contain necessary information
- Should utilize the functionality of the authoring software
- Should be easy to integrate into the authoring software / workflow

A lot of different content already exist.
Content Libraries – Examples

General Platforms:

Supplier specific platforms:

VELUX®  ASSA ABLOY  HAWORTH®
HILTI  BRIZO  Schneider Electric  ....
General Platforms

Advantages:
- Large Market Reach
- Users don’t have to change platforms (One-stop-solution)
- Server Maintenance by platform
- Plugins to Software Systems available

Disadvantages:
- Directly next to your competitor
- Limited contact to user

Supplier Platform

Advantages:
- Direct User access
- Only supplier products are available (no competitor)
- Easier to customize for company needs (e.g. branding)
- Direct integration into internal workflows

Disadvantages:
- User has to change platforms
- Own Server Maintenance
Hilti’s Approach for content distribution

Hilti has chosen a multi-dimensional approach to combine the different advantages:

- Hilti BIM/CAD-Library
- Autodesk Seek
- BIMobject
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Need for Calculation Tools
BIM/CAD content is not always sufficient to provide the full support for the customer because

- Customer thinks in systems not in parts
- Assembly of parts is time consuming
- Risk of false assembly
- Detailed knowledge for correct use is needed

Tools which simplify the correct calculation/assembly will provide good workflow integration.
Calculation Tools – Example

Plugins:

Standalone:
Plugins

Advantages:
- Direct integration into authoring software to ease user workflow
- Same look and feel for user

Disadvantages:
- Needs all logic built in
- Users can experience many tabs for different suppliers
- Program specific development

Standalone

Advantages:
- Development / maintenance independent from design software
- Can be linked to different authoring software

Disadvantages:
- User has use different programs
- User has to learn product software
Hilti’s Approach for Calculation Tools

Hilti has developed standalone programs which can have a direct link to different authoring software:
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Next evolution
Beside content libraries and calculation tools, what are the requirements to further enhance the ease of work for a designer/customer?

- Direct integration into existing environment
- Simple to use and Easy to understand
- Safes time
- Create optimized solution
- Fulfill all safety regulations

Hilti’s approach:

Automated Design
Hilti Firestop Button
Hilti Firestop button workflow: 3 steps

1. **Firestop clash detection**
   - Within a digital 3D building, find all the clashes with pipes and walls

2. **Assign firestop products**
   - The system automatically assigns products for each clash based on defined standards and regulation
   - Review of the proposal, manual change

3. **Auto populate firestop products**
   - Populate selected firestop products to the authoring CAD systems

**Task**

- **System**
  - Autodesk NAVISWORKS
  - Hilti Firestop Manager
Hilti Firestop button workflow: Clash Detection

Identifies all firestop relevant clashes.

List of all firestop relevant clashes. Utilising Navisworks “Result list” functionality.

visual feedback Here is firestop needed.

List of all firestop relevant clashes.

Utilising Navisworks “Result list” functionality
Hilti Firestop button workflow: Product selection

Main functionalities:
Automatically assign firestop products to all penetration based on regulations

Detailed view on all penetration

List of all clashes in building hierarchy

Specific view on one penetration for edit: Change products
Hilti Firestop button workflow: Automated Population

Auto populates Hilti firestop products to the Revit model
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Suppliers can also give a good support of the BIM workflow on the jobsite:

- Model-based Quantity Take-Off
- Just-In-Time Logistic
- Kitting/Cutting/Pre-assembly
Jobsite Documentation

1. Prepare the project
   - The project is planned using the user-friendly application. All information to be documented is specified individually according to the project or building. Users are defined, plans of the building integrated as necessary and all necessary data set out.

2. Record the fire seal
   - All information and photos relevant to each firestop seal are recorded on the spot using a smartphone or tablet computer. The data is transferred straight to the database and the installation is clearly marked with an identification label carrying the corresponding QR code.

3. Create a report
   - After completion of the project, or in an intermediate step, all data from the project is retrieved and a report is produced automatically. Information about the project can be supplemented at any time. The report can also be printoutable. Details of the firestop seal can be printed out in a list and subsequently processed. All reports created are saved automatically.
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Site preparation for BIM-to-field

Information from a BIM-Model can be used to prepare the layout on the field.

POINT LAYOUT

Also product information can be transferred on the jobsite.
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For the BIM workflow, it is essential that suppliers will also take a vital part in it. First steps are already there:

- Product information can be integrated already in early stages
- Solutions (Libraries, Calculation Tools) exist to simplify the design
- Design tasks can be automated which will reduce the workload and minimize errors
- Product information can be easily transferred to the jobsite
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