BIM for Precast

Peter Karlsson
Business Unit Director IMPACT
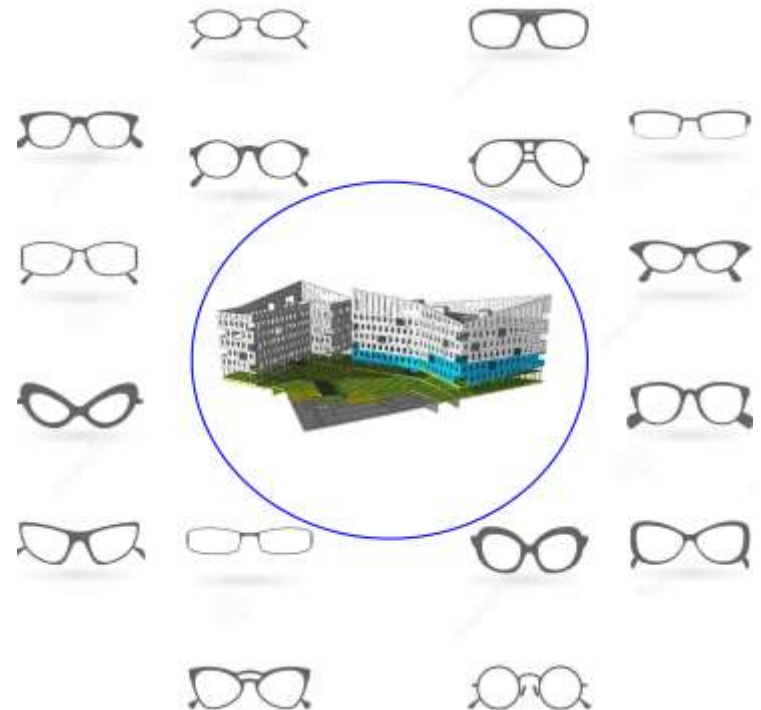StruSoft AB

Introduction

- **The BIM(M) word**
    - Building Information Modelling
    - Silent M for Management
        - Managing multi disciplinary processes (companies/people)

- **Focus BIM for Precast**
    - Key to successful implementation
    - Process
        - Design, Project and Production
        - Main process "On Site Project"
    - What's in it for me?

What is BIM for StruSoft?

- **Sharing BIM data between Design, Production and Project**
  - Share the same data in real time
  - Makes it easier for all the categories to prioritize
  - Model in centre with different views(glasses)
  - All the involved people see the main goal the "on site project"
  - Doesn't require the same mindset

What is BIM for StruSoft?

- **BIM is a way of working not a software**
- **You need to rethink (change) processes**
- **Early 3D models**
  - The skeleton for the planning process
  - The backbone from tender to design, production and erection
  - First rough and later on add details
- **Reversing the process**
  - Start by planning site erection
  - Step backwards through the time for production and shop drawing delivery

Technical Seminar 2015, October 21-22, Malmö - Sweden

What is BIM for StruSoft?

- **Information comes in many formats to a precast factory**
    - ArchiCAD, Revit and Tekla etc.
    - A big risk when taking it on high level is that it's not trustworthy
- **We see reading it from the source is needed**
    - Converting to native objects via IFC is not reliable enough
    - Plugins into the software the data is born is more reliable
    - We believe that the IFC shall be used as a reference

What is BIM for StruSoft?

- **Real time sharing is the base of BIM**
    - Data changes frequently
    - Weekly snapshots is not good enough
    - Common storing gives flexibility
- **The Precast process**
    - Is iterative
    - With manual snapshots you loose time and quality
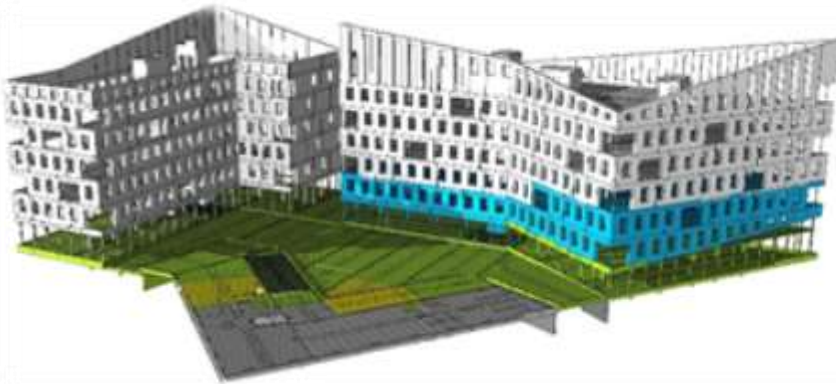   - Requires online data connections

"Malmö Live" Snapshot April 5, 2013

What is BIM for StruSoft?

- **Outsourcing of services**
  - Common language needed
  - 3D model is the structure in the language
  - Bind information to the model
  - Different countries is involved
  - Project in one country production in another
 - Common data storage needed

What is BIM for StruSoft?

- **Right information in right time**
  - Relevant for each person or category
  - Snapshots requires continuous updates
  - Work on real time data
  - Production picks their own Bill of Materials based on this weeks planned molds from the BIM database

How can StruSoft tools be used today?

- **In to the Precast process**
  - AutoCAD used as external references
  - Revit or Tekla models through native plugins
  - IFC files through Revit or Tekla interfaces

- **Inside the Precast company**
  - Interaction through our BIM database using different interfaces

- **Out to the main process**
  - IFC files for clash control
  - IFC files with property sets
    - Element information
    - Component information
    - Planning dates and status
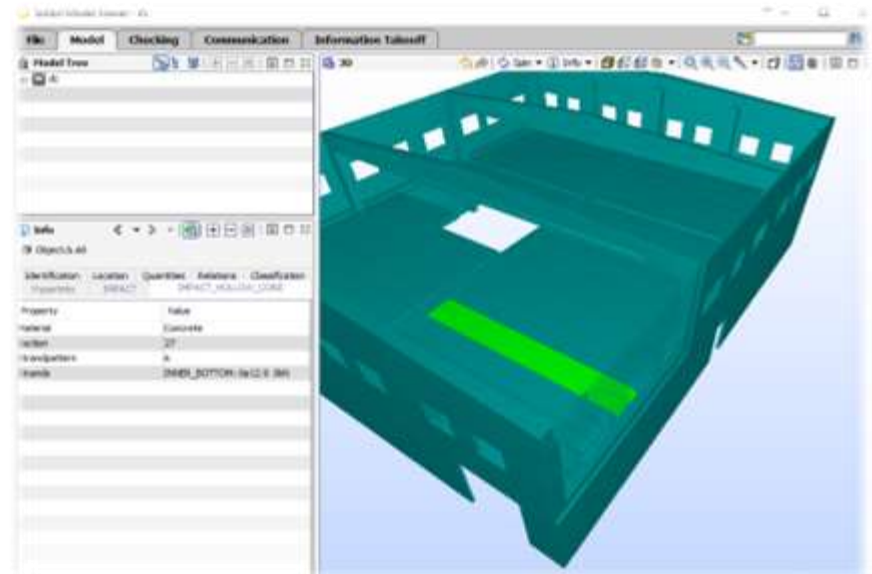
How can StruSoft tools be used today?

- **Design starts by making a rough 3D model**

- ❑ Rough?
  - Not all element connections are solved
 - No shop drawings are produced

- ❑ Using the IMPACT base tools plugins into AutoCAD, Revit and Tekla
  - All connected to the IMPACT BIM database

Project
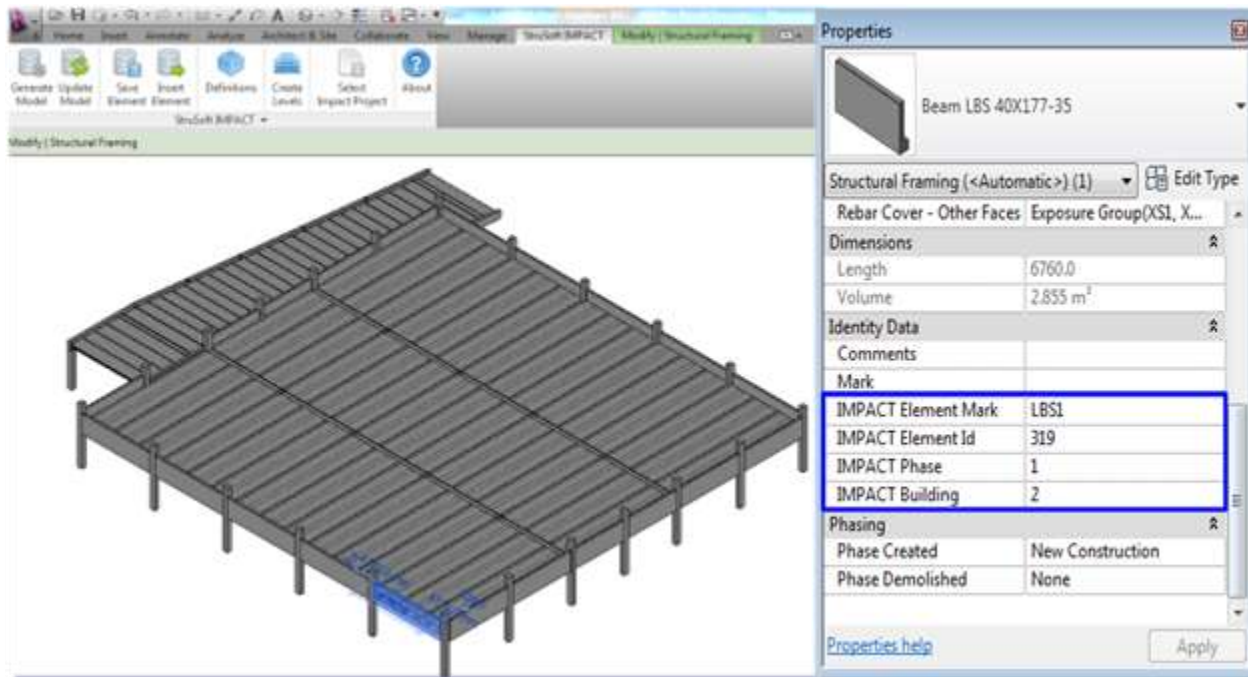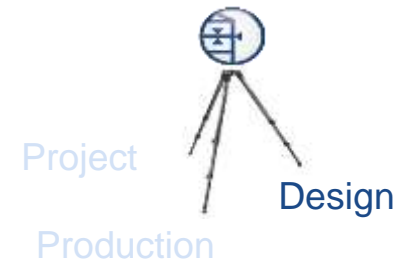
Design

Production

How can StruSoft tools be used today?

- **Project then continues to make the rough planning**

  - Use design rough 3D model

  - Start by planning the site erection

  - Steps backwards in time for delivery/transport, storage and production to planned drawing date

  - Use a model based software Project Manager that interacts directly with the IMPACT BIM database

    - Common platform for design, project and production
    - Simulates time and erection sequence
    - Check with project cranes to plan the erection

Project

Design
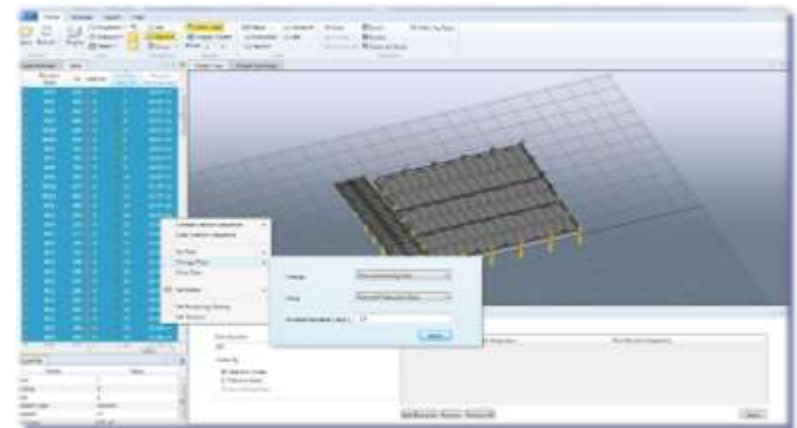
Production

How can StruSoft tools be used today?

- **Simulate and analyze in the planning stage**
    - See the problems virtually before the actual production
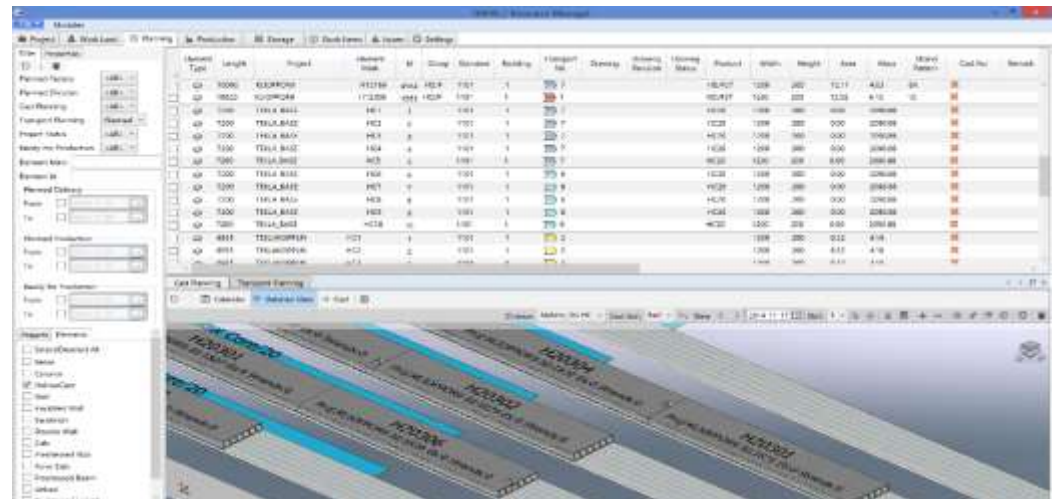
Project
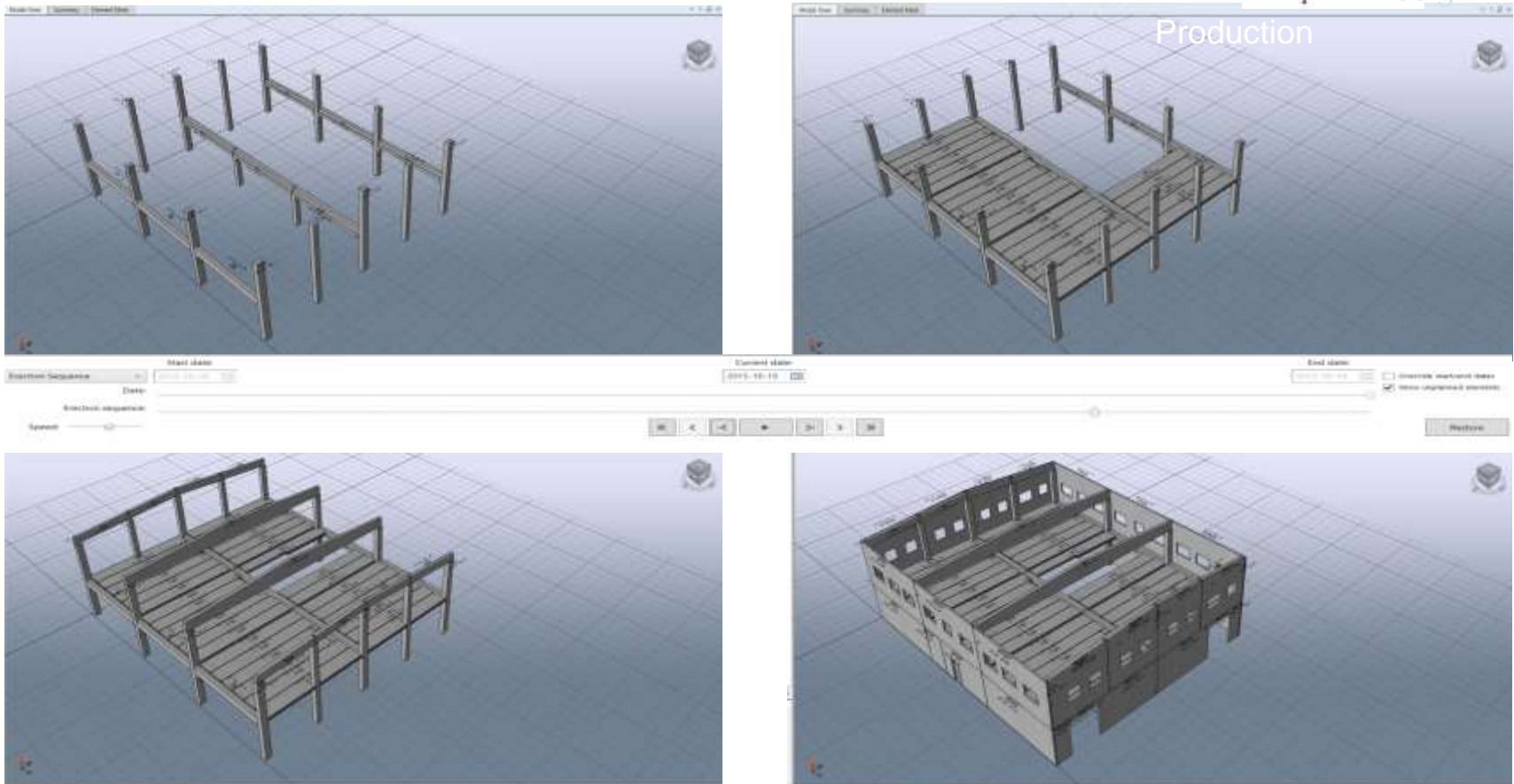
Design

Production

How can StruSoft tools be used today?

- **Production continues with the fine planning**
- Use time frames from the rough planning
- Simultaneously design work with detailed design
- Plan their molds and beds to be as effective as possible
- Coordinate with storage and transportation
- Use a factory based software Resource Manager that interacts directly with the IMPACT BIM database
- Use Element Tracker (mobile app) that interacts directly with the IMPACT BIM database
  - To report storage location
  - To set as loaded
  - To Reject element
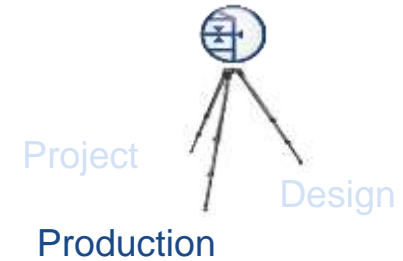
Project
Design
Production

How can StruSoft tools be used today?

- **Plan your transports and visualize the truck loads**
- ❑ Get complete overview of the project
- ❑ Share with transport company
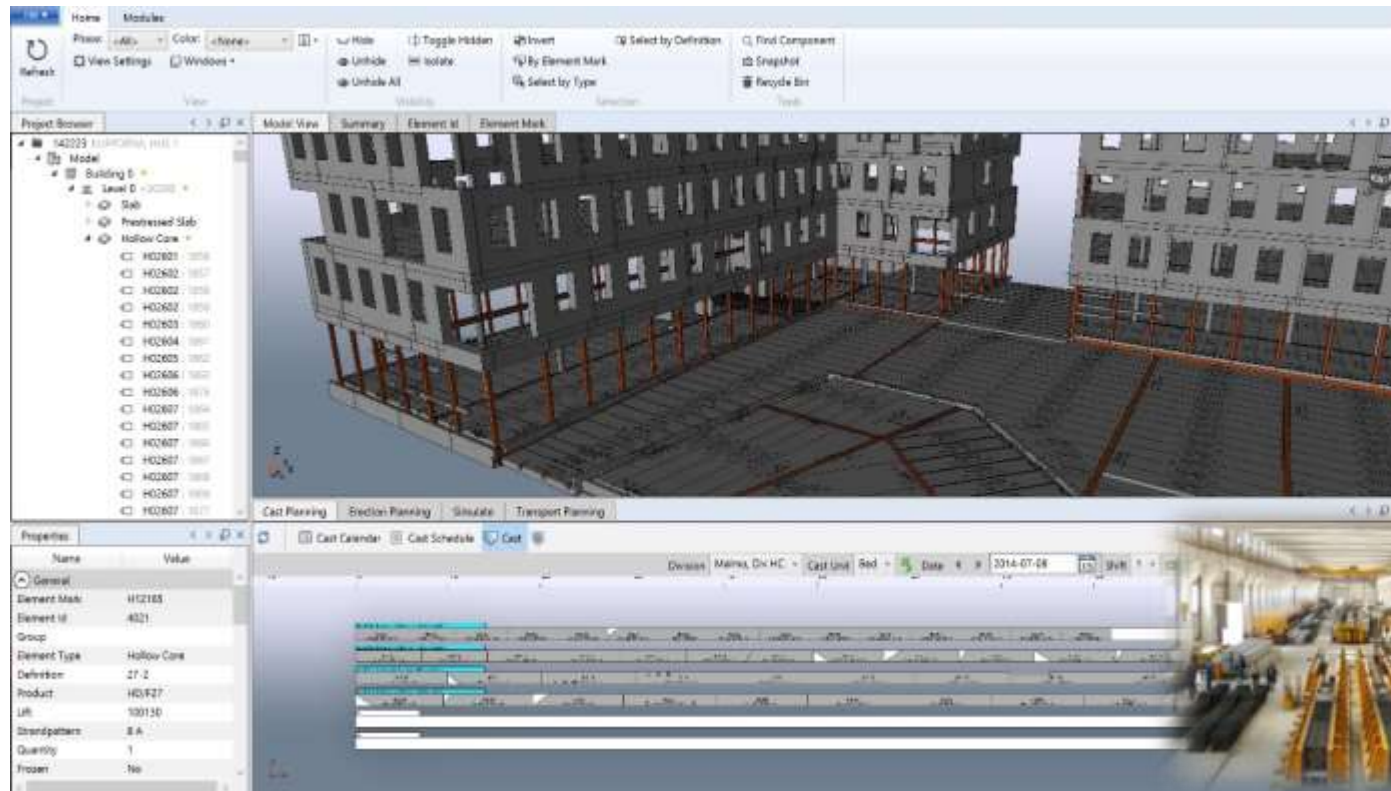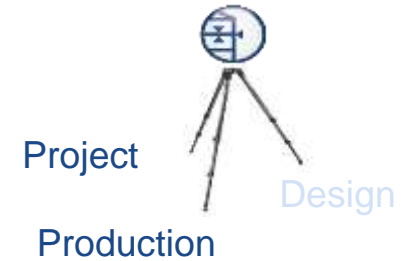- ❑ See the corresponding item in the model

Project

Design

Production

How can StruSoft tools be used today?

- **Plan your cast and visualize your production**
  - See the corresponding item in the model
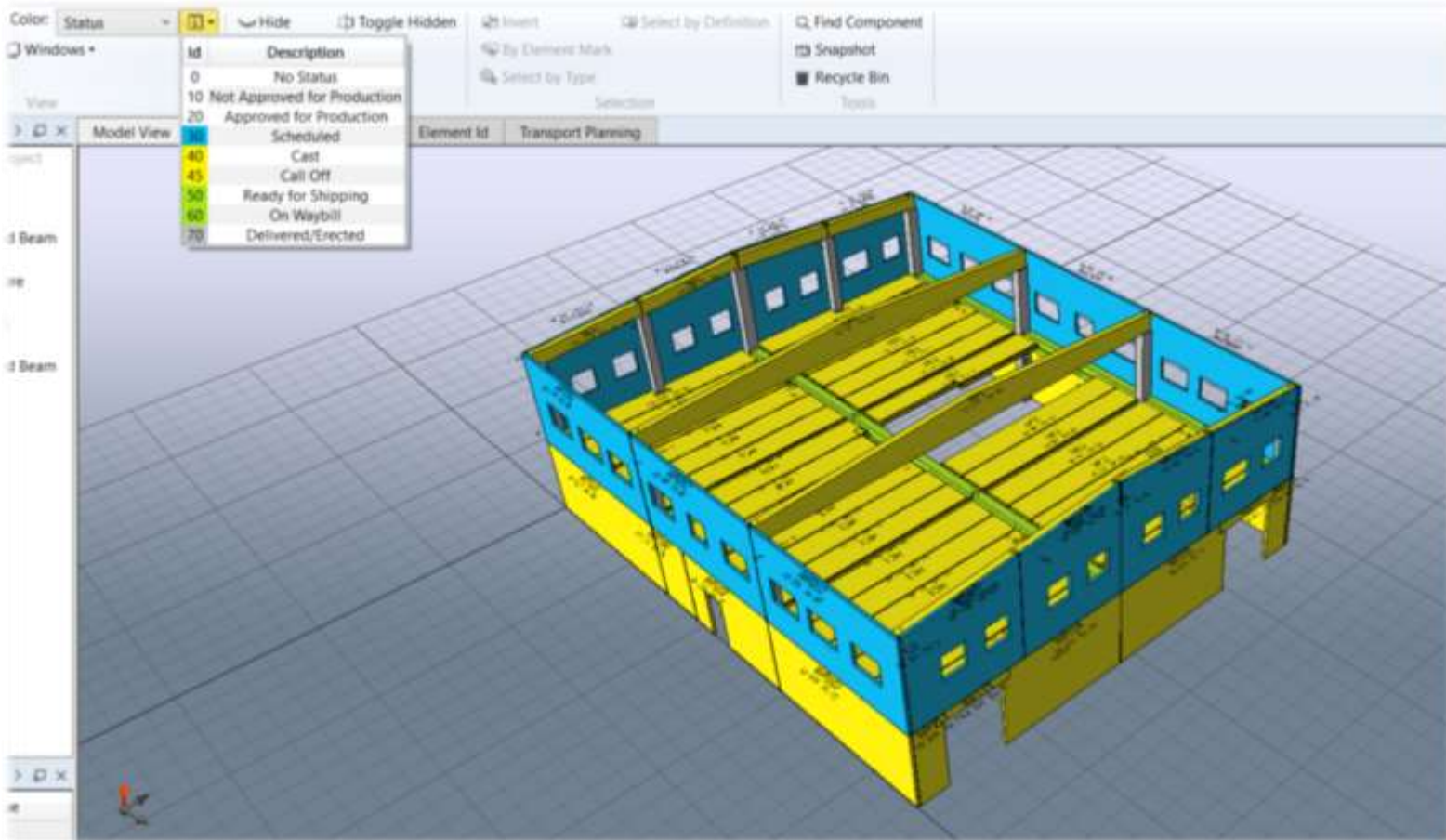
Project

Design

Production

How can StruSoft tools be used today?

- **All involved can follow the main process**
- ❑ Using the Project Manager
- ❑ Follow on status
- ❑ Exception reporting against planned delivery

Project

Design

Production
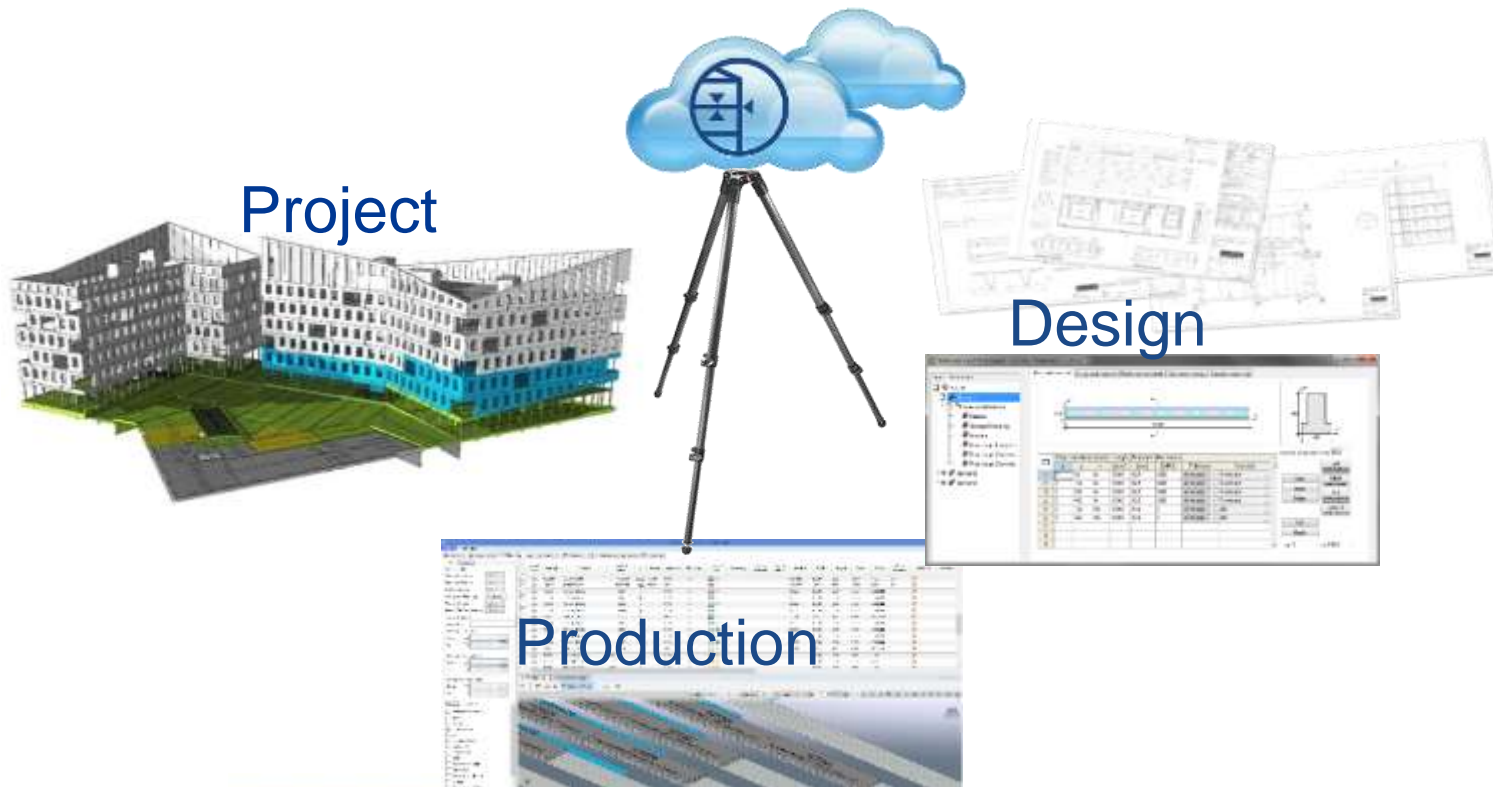
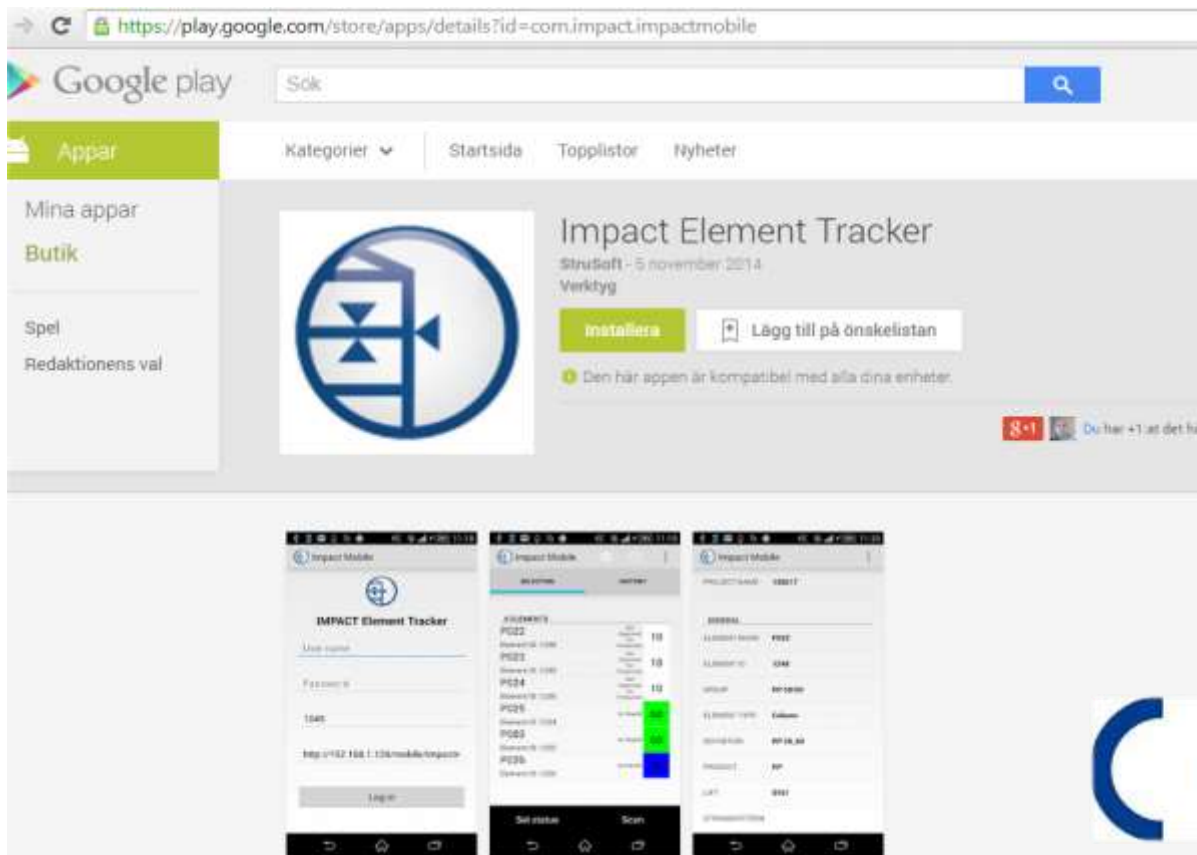# How can StruSoft tools be used today?

- **Instant visible feedback**
- for all the stakeholders in the project of the current situation

How can StruSoft tools be used today?

- **IMPACT Element Tracker**
- ❏ Traceability that is required for the CE marking
- ❏ Works with QR code and Android device with mobile internet

What is the future of BIM as StruSoft sees it?

- **A plurality of different applications**
    - Cloud connectivity and
    - Open programmable interfaces
    - Creates a fertile ground for a plethora of applications
    - Which provides more benefit to the user

- **Apps joined together with multilinked cloud databases**
    - "The Internet of Precast" if you like

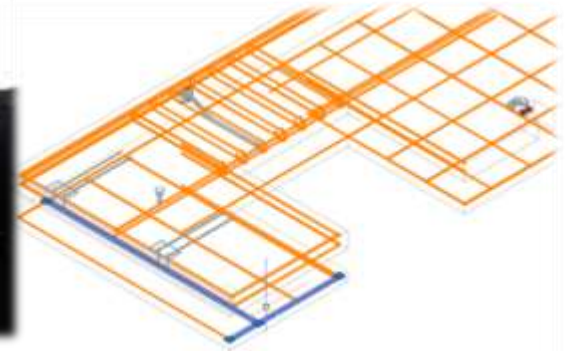# What is the future of BIM as StruSoft sees it?

- **Online functionality to the machinery of the production**
  - For instance a designer connects with the interface of the mesh machinery
  - Check the producibility for the reinforcement
  - In real time receive the response in his 3D model for correction
  - Get calculated production time
 - Designer could sit on the other side of the globe

ONLINE ☑

OFFLINE ☐

What is the future of BIM as StruSoft sees it?

- **Today BIM is used to detect clashes in space**

- **Future is to use BIM too see clashes in time as well**
  - Share time information between different systems
  - Setup transports and enables just in time delivery and production

- **The data is online**
  - The precast process
    - Is reliable for planning for hourly precision of production and delivery
    - communicates with real time interface to the main process time schedule
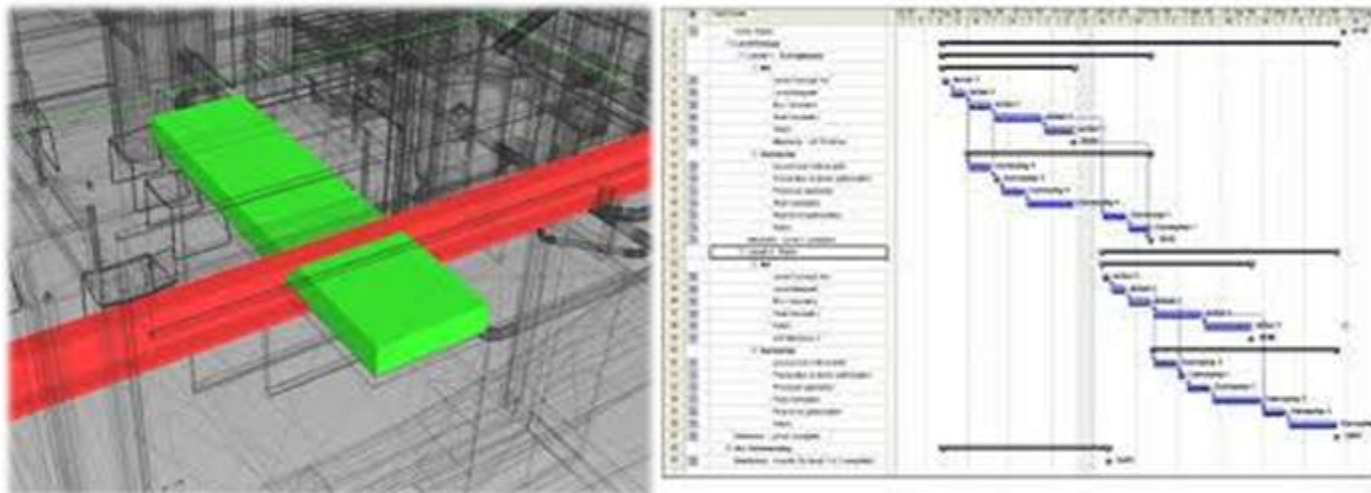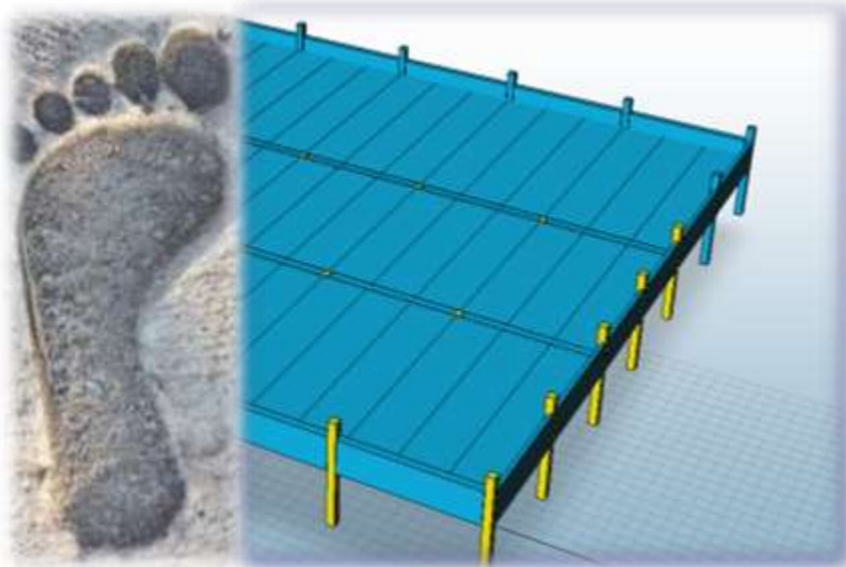
What is the future of BIM as StruSoft sees it?

- **Use it to support outsourcing**
    - Let your consultants connect directly
    - You control the environment in the cloud
    - Instant delivery
    - You can check the progress
    - Share the data needed so that they can make the right decisions for you

What is the future of BIM as StruSoft sees it?

- **Use it with project life-cycle management information (6D BIM)**
    - Environmental footprint of the precast concrete structure
    - Visible for all in the project
    - Don't wait until your customer demands it "be one step ahead"
    - Invite your customer to see your progress and increase your sales
    - Creates awareness among all involved

What is the future of BIM as StruSoft sees it?

- **Use it to buy from your suppliers with greater precision**
  - Ask the vendors for price through the vendors cloud based system
  - Communicate using your high level data directly from your BIM database
  - Let the vendors system respond with price and delivery time
  - Let the vendors system check producibility
  - If the vendor fulfils your expectations, accept and place the order directly
  - Get competitive tendering without long response times

The future is in the cloud.
Be sure you are ready for it when it comes.