IPHA Technical Seminar 2015

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BIM in the Precast Concrete Industry

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Precast Software Engineering

IPHA
INTERNATIONAL PRESTRESSED HOLLOWCORE ASSOCIATION

in cooperation with StruSoft

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SOFTWARE & SERVICES FOR INDUSTRIALISED CONSTRUCTION

Content

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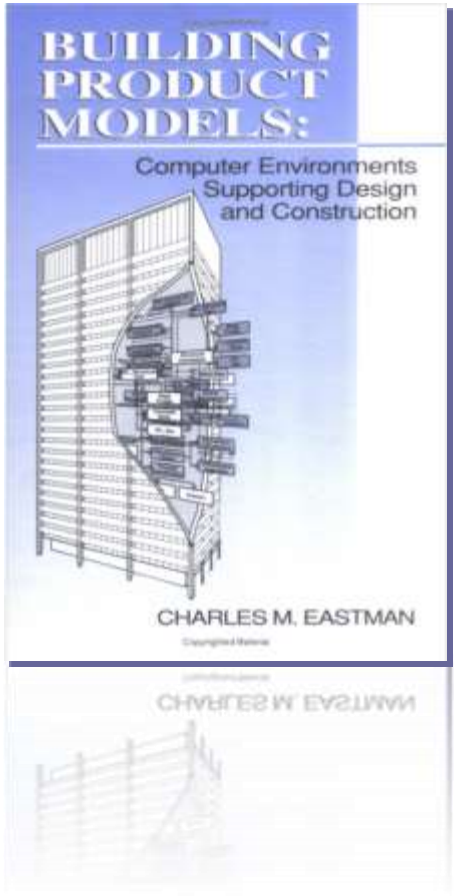
- **BIM**
  - What is BIM - what is BIM not
  - Potential
  - OpenBIM @ Nemetschek Group
- **BIM in the Precast Industry / Past & Present**
- **Selected Key Factors**
  - Interoperability
  - Large Project Handling
  - Integration Services
  - Online Information - mTIM
- **Integrated Planning**

BIM: History



Building Product Model

Eastman used the term „building product model“ in his papers and books since the late 1970s.

A building product model is basically an information or data model.

Eastman C., *Building Product Models: Computer Environments Supporting Design and Construction*, CRC Press, Boca Raton FL, (1999).

BIM: A Definition

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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.[17]

US National Building Information Model Standard Project Committee

BIM: What it is not / Requirements

Robert Green
CAD management expert, trainer and consultant

What's the BIM Deal?
Cadalyst, August 26, 2009

What BIM Is Not

- BIM isn't a software or software upgrade
- BIM isn't something you install over the weekend
- BIM doesn't design buildings by itself
- BIM doesn't make architects or engineers obsolete
- BIM tools don't install and manage themselves
- BIM tools don't have a "magic button" that automates implementation

What BIM Requires

- User training
- Active management
- A file format strategy
- New attitudes / Methodology

BIM: Potential

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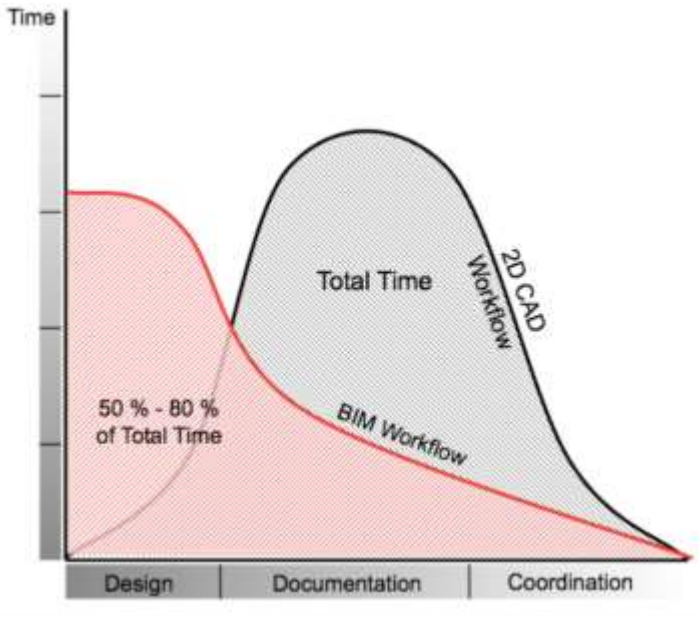
- Improved **visualization**
- Improved **productivity** due to easy retrieval of information
- Increased **coordination** of construction documents
- **Embedding and linking of vital information** such as vendors for specific materials, location of details and quantities required for estimation and tendering
- Increased **speed** of delivery
- **Reduced costs**



Source: www.graphisoft.com

BIM: Lifecycle

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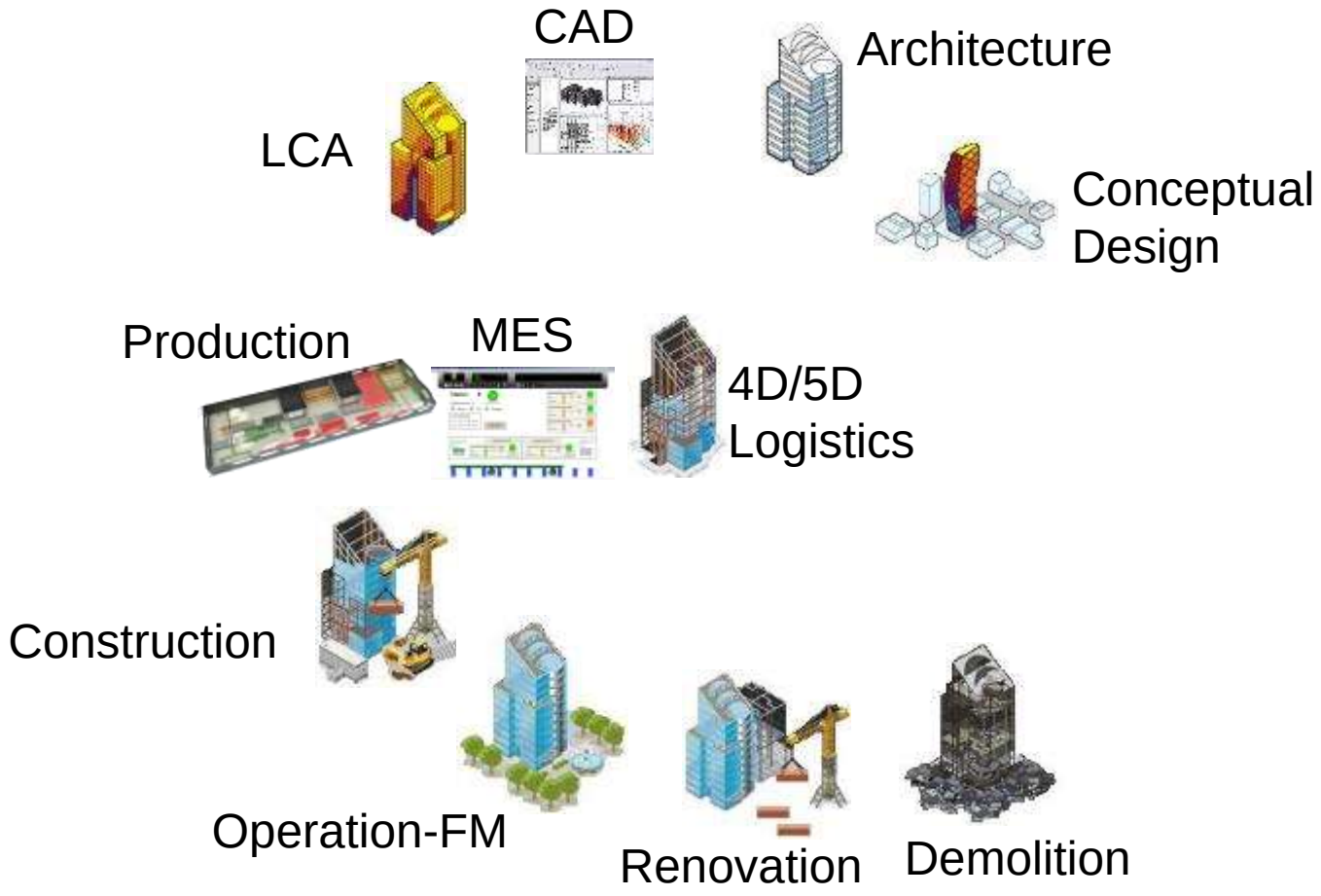

OPEN BIM™

- Initiative by leading manufacturers of construction software
- Target: Implementation of Open BIM standards (open, manufacturer-independent standard) in the construction industry
- Method that facilitates smooth and efficient design, construction and operation of buildings by means of integrated information processing and with open standards
- IFC is of central importance

buildingSMART®
International home of openBIM®

BIM in Precast

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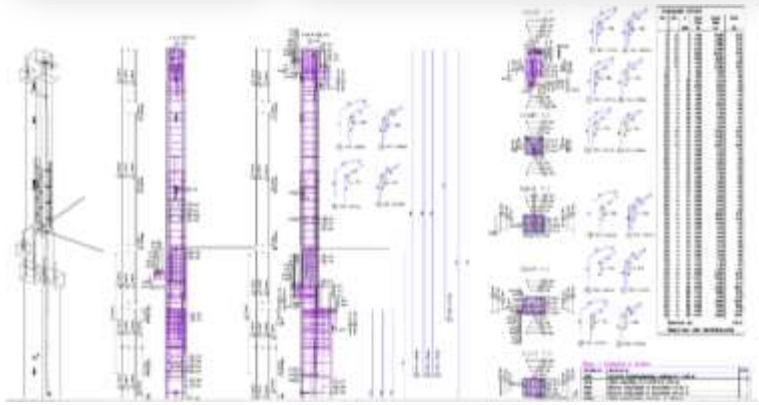
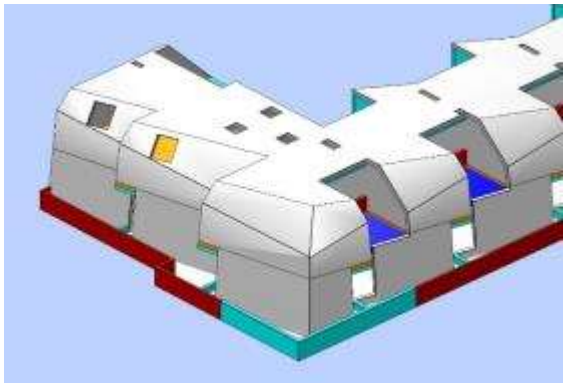
- **Complexity:** Projects - Products
- **Time:** Planning during construction process
- Increasing (production) **capacity** coupled with increased architectural and structural requirements
- How does **information** come *lossless* from design to operations scheduling, to production and to assembly?

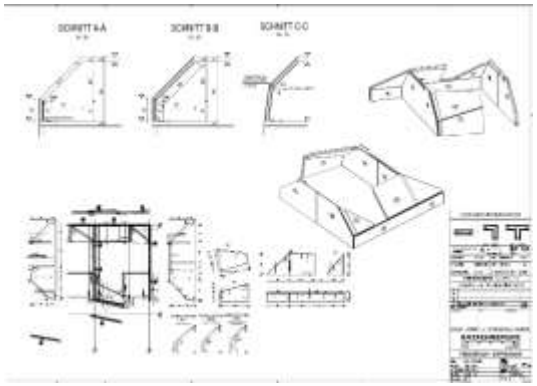


Project Casa Cascada 2005

From 2D to 3D

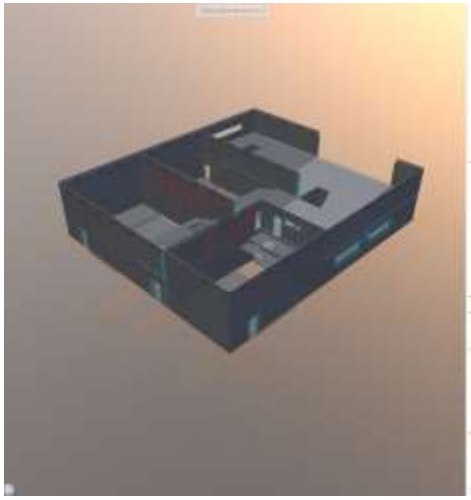
Vienna 2005/2006



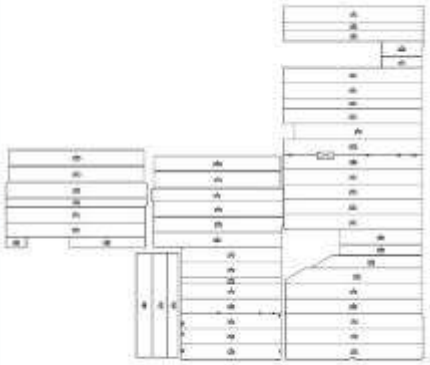


Project Bioscoop Wijchen (Live demo) 2015

BIM Coordination with IFC model exchange



nipa engineering



BRULS PREFAB-BETON

Interoperability

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- Data is transmitted from a *Sender* to a *Receiver*
- *Translation* is required
- Common *standards* and *settings*

- **Coordination** is a key success factor

Interoperability for HVAC

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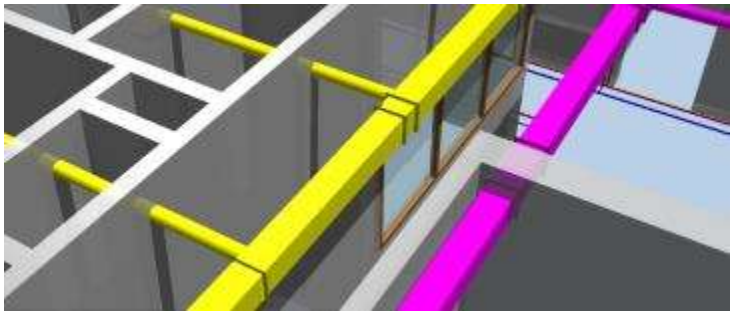
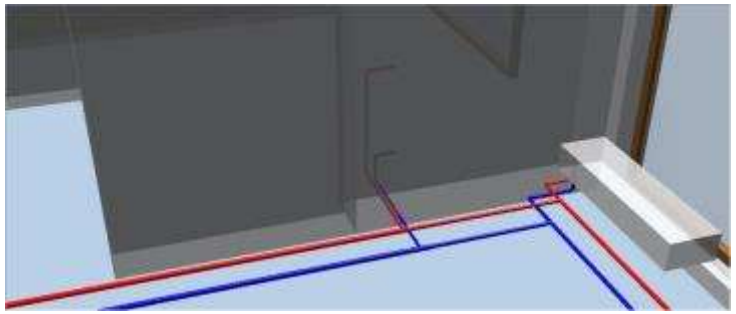
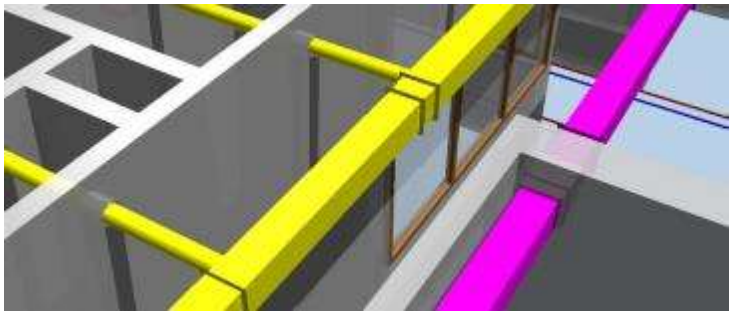
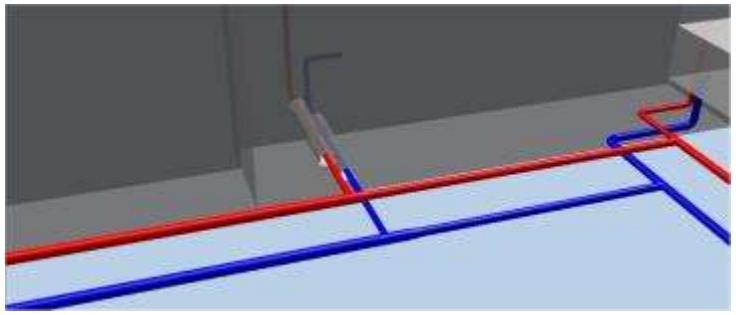
- Integration of the results of HVAC planning into the precast model
- Automatic recognition and placing of openings









Large Project Handling

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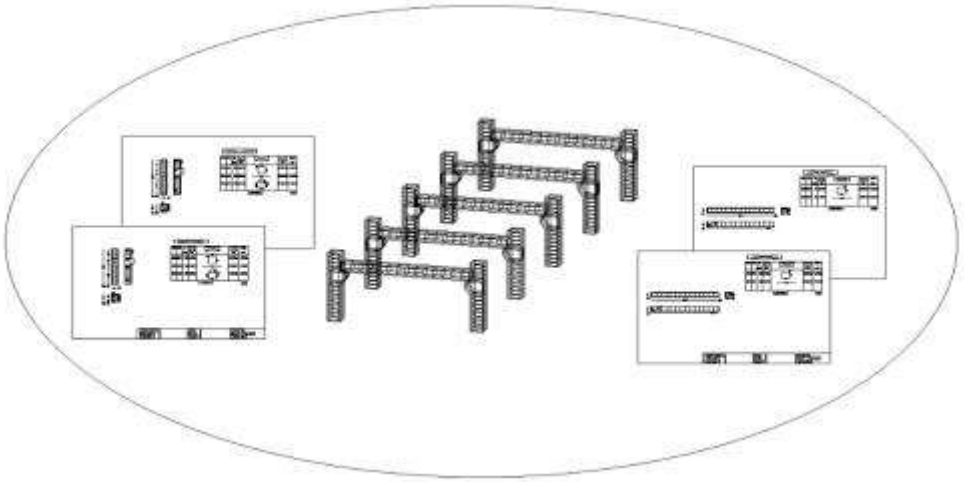
- Project size
- Number of elements
- Level of information



Large Project Handling: BIM Booster

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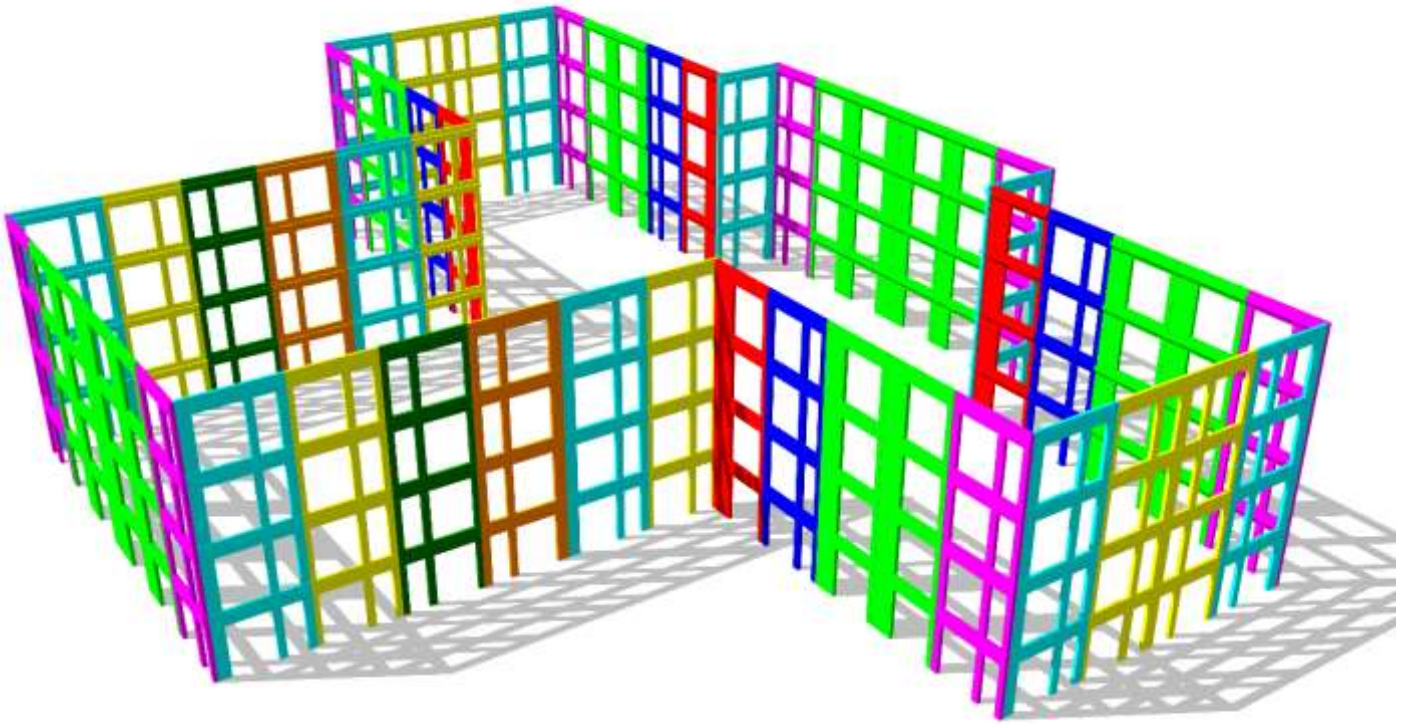
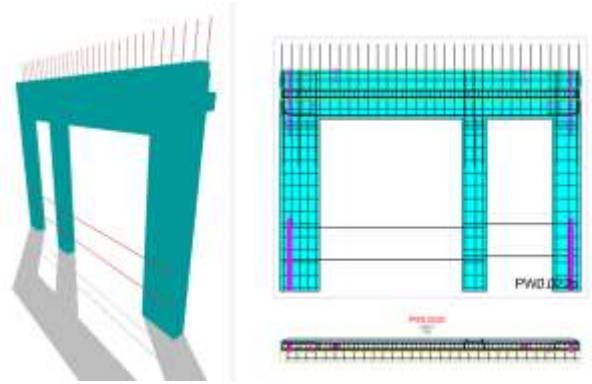
- Identical precast elements
- Several floors



Large Project Handling: BIM Booster

- Different floors on different drawing files
- Identical precast elements
- Only few data for the precast elements in the model
- Geometry, Attributes



- One Precast on one Detail drawing file
- One Detail for identical precast elements
- Synchronised connection of Model and Detail
- Elementplan

Integration Services

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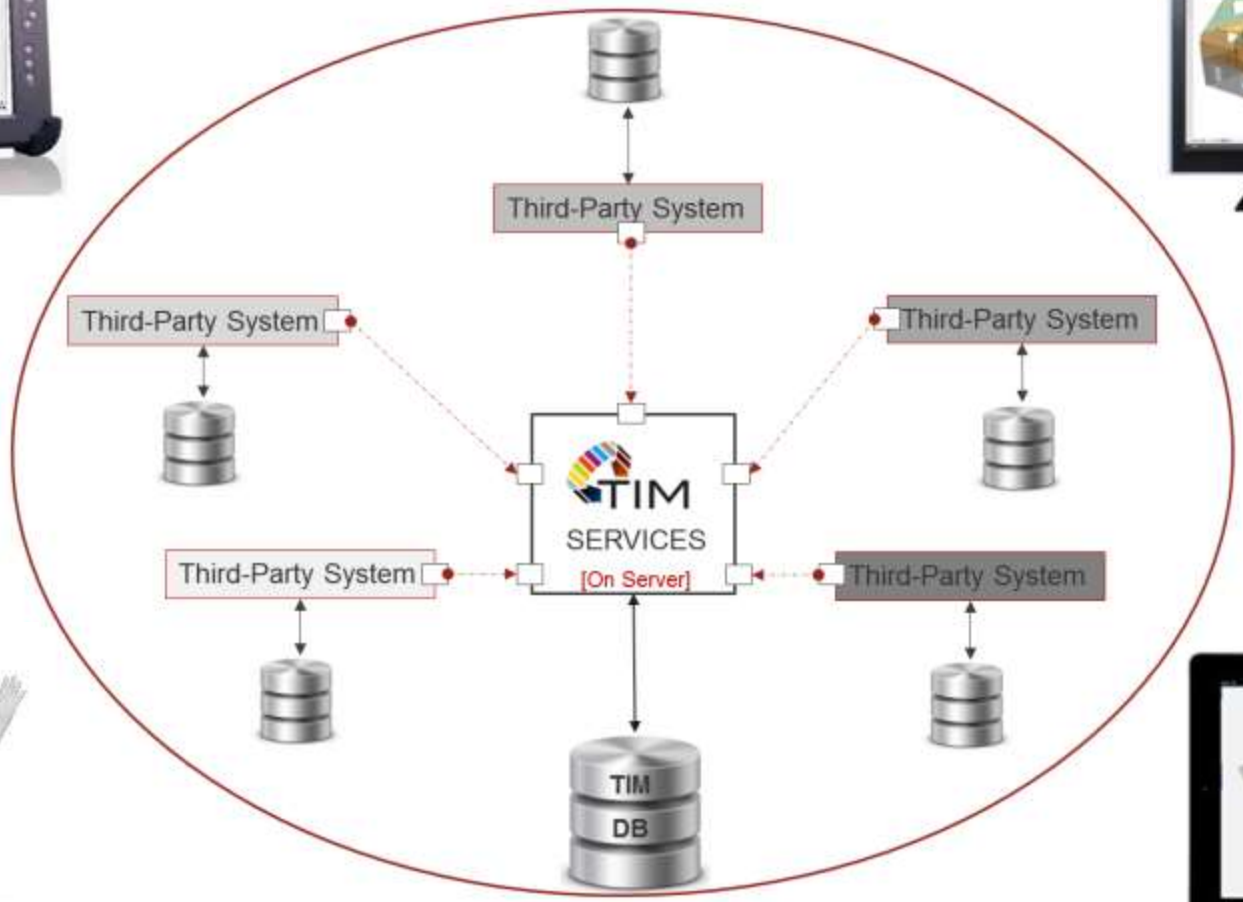

Online Information - mTIM

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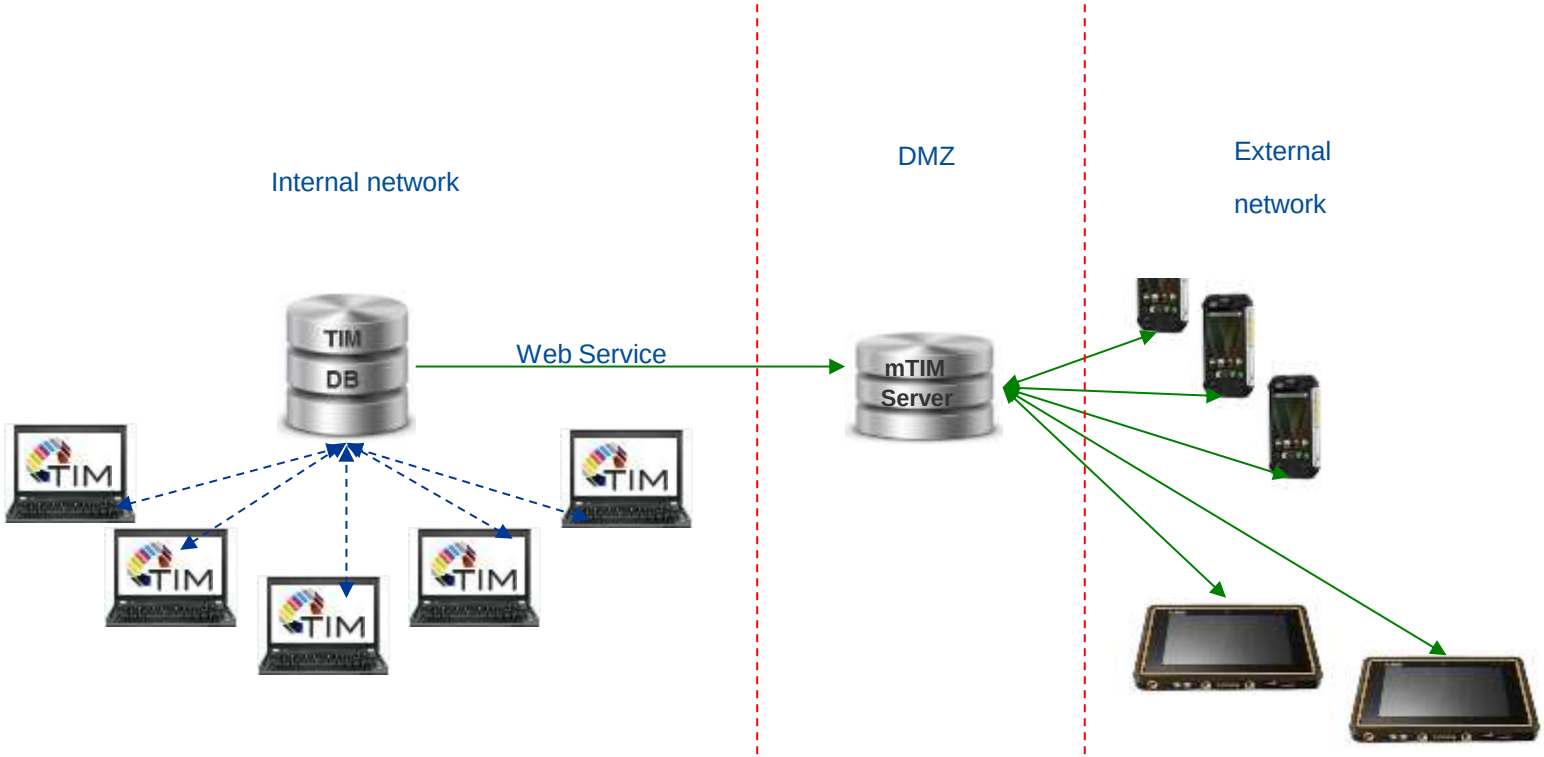
- Assembly control
- Online information on phone/tablet instead of paper reports

Online Information - mTIM



Integrated Planning

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THINK FUTURE!

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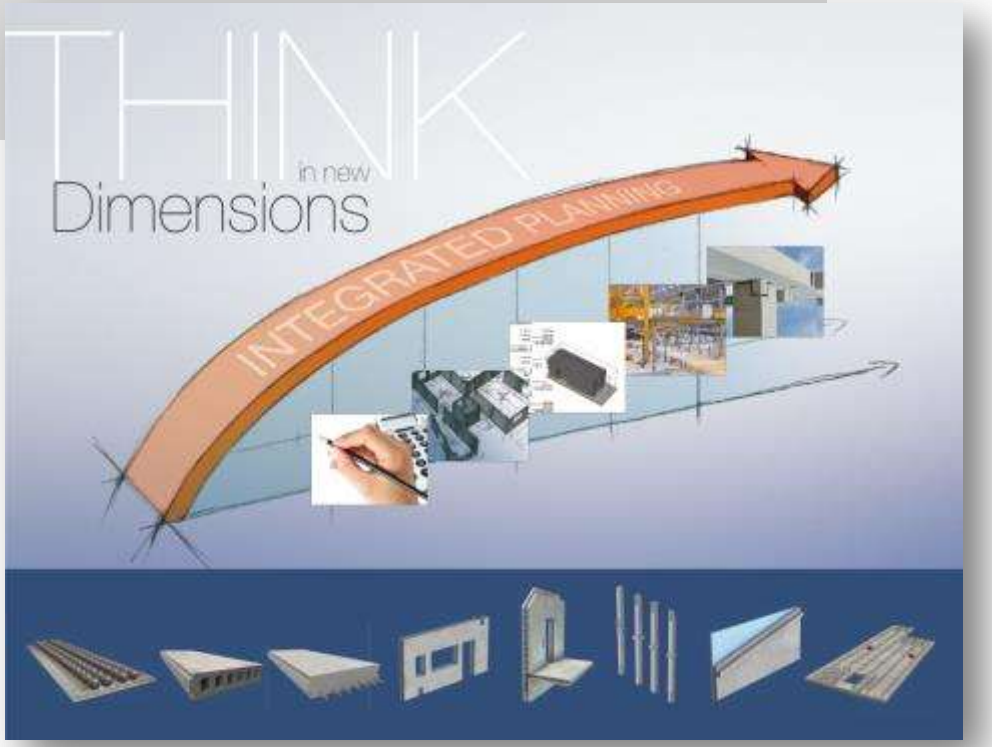
"As for the future, your task is not to foresee it, but to enable it…"

Antoine de Saint-Exupéry
French Pilot and Writer (1900-1944)