

Building Information Modelling as a Total Contractor



Samir Alzeer
Office BIM Manager
25.10.2016

AGENDA

- ROYAL BAM GROUP AT A GLANCE
- CHALLENGES & SOLUTIONS
- PROJECT CASE STUDY FELIX PLATTER-HOSPITAL
- BIM COORDINATION
- COLLABORATION THROUGH OPEN BIM STANDARDS
- ISSUE MANAGEMENT IN THE CLOUD
- BIM2FM THROUGH OPEN BIM STANDARDS
- DIGITAL DOCUMENTATION

ROYAL BAM GROUP AT A GLANCE



Construction and M&E services



Civil engineering



Property



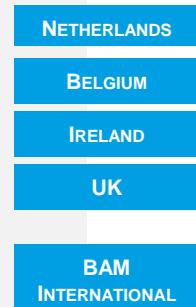
PPP

Head office

Bunnik, the Netherlands

Employees

approximately 21,500



ROYAL BAM GROUP AT A GLANCE

BIM RESEARCH & DEVELOPMENT



European Network of Construction Companies for Research and Development



5D-Initiative (Ballast Nedam, Royal BAM Group, CCC, Max Bögl and Strabag)



Energy-Efficient Embedded

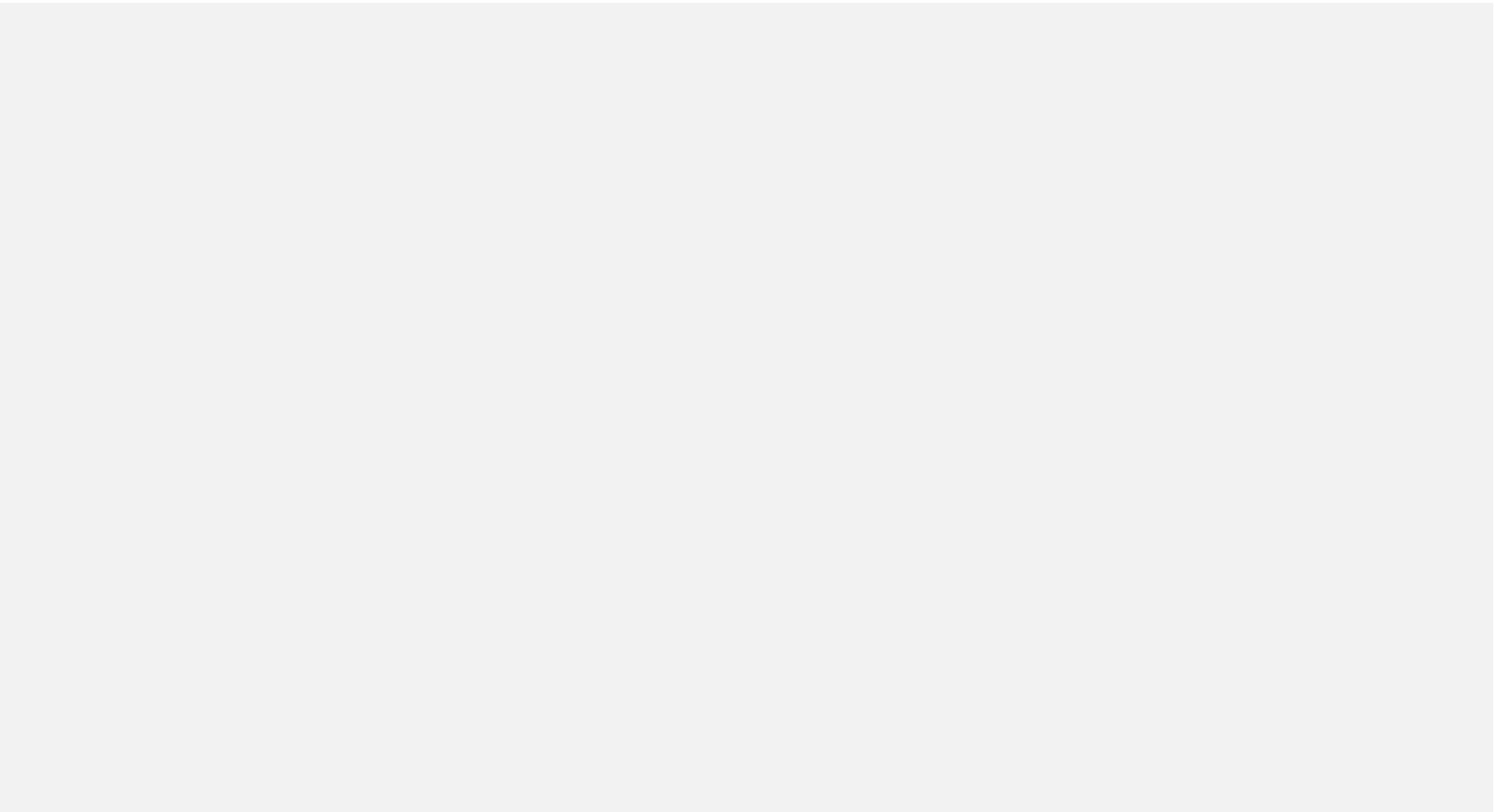


Holistic and Optimized Life-Cycle Integrated Support for Energy-Efficient Building Design and Construction

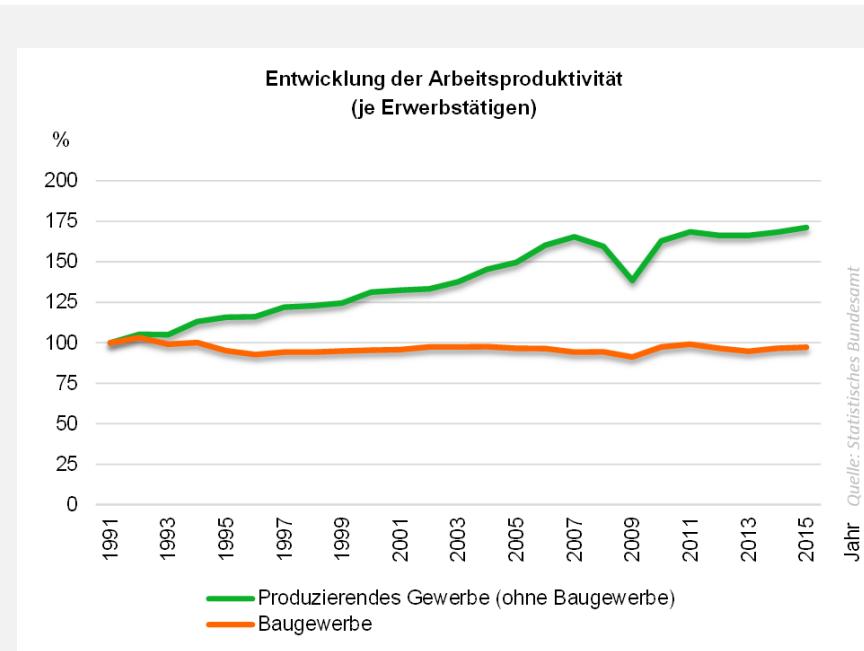
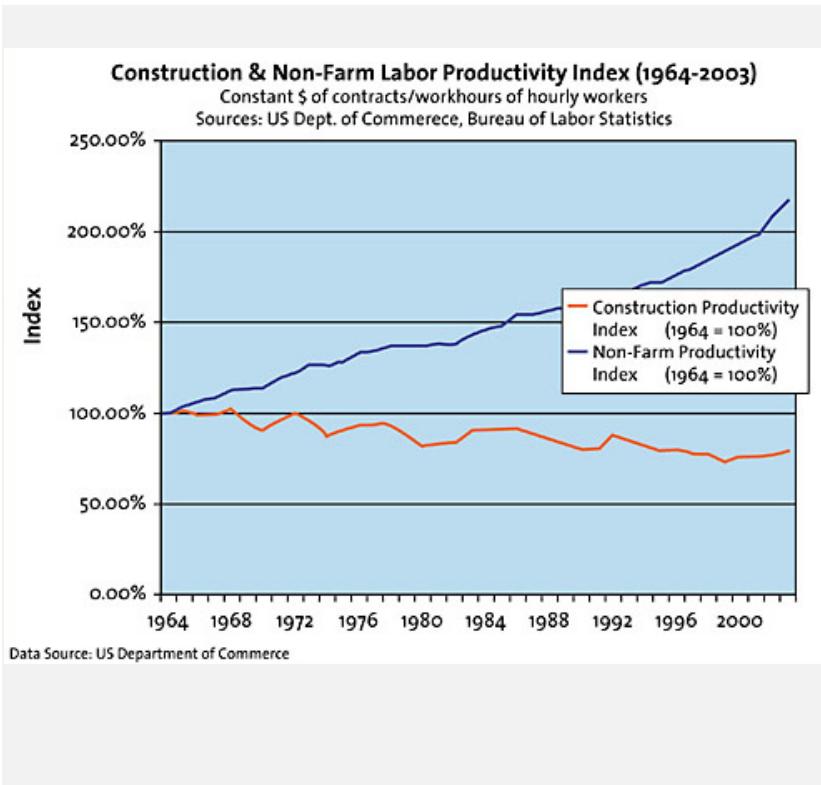
ROYAL BAM GROUP AT A GLANCE BIM PROJECTS IN GERMANY & SWITZERLAND



CHALLENGES



CHALLENGES



Productivity

CHALLENGES



Tools



Person



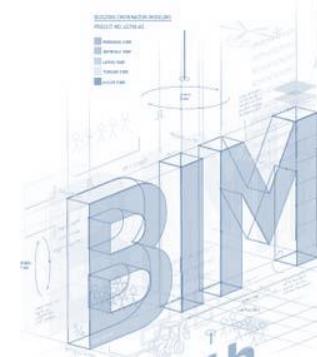
Material



Technology



Methods



Productivity

CHALLENGES



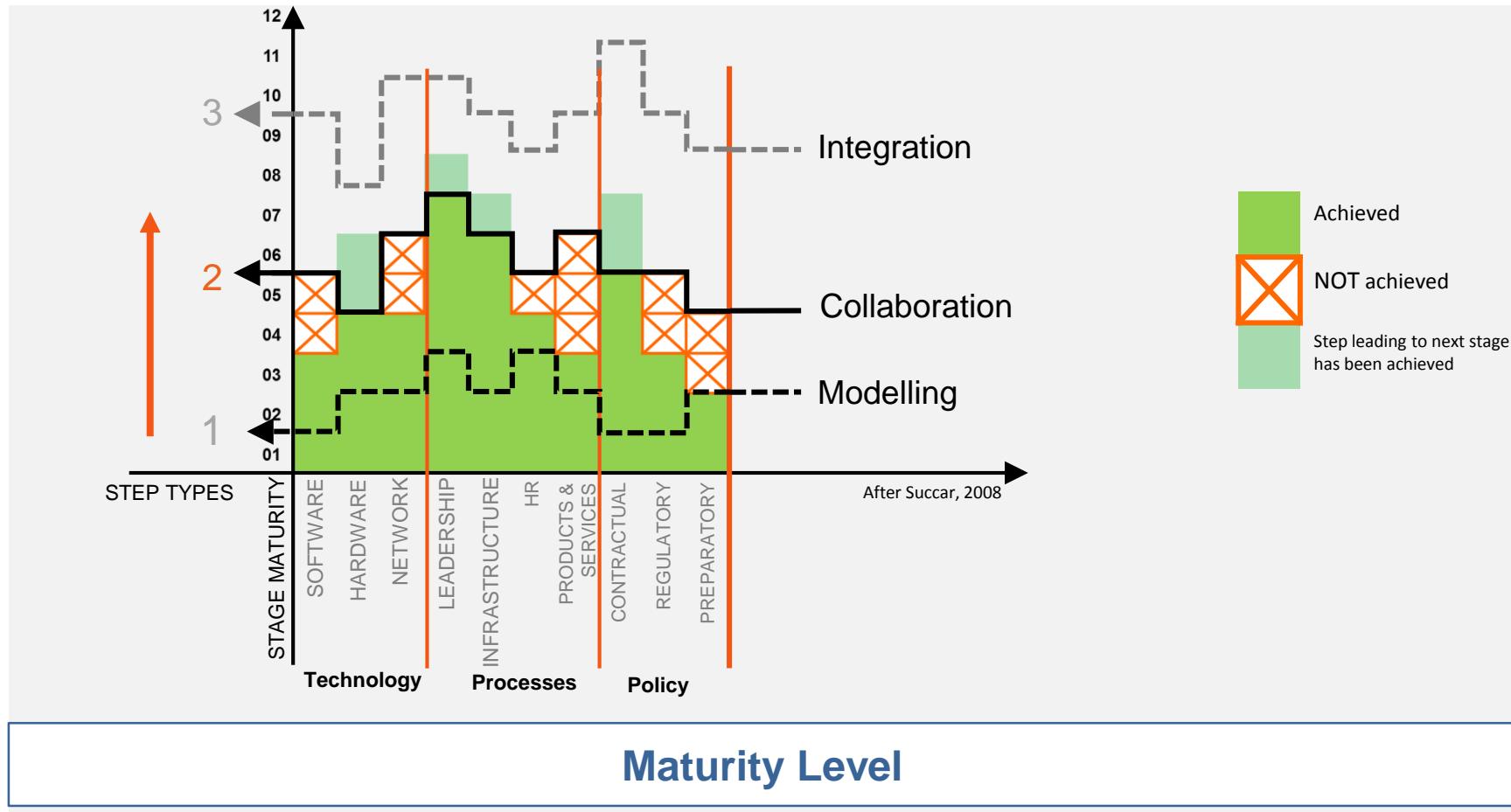
Buildingsmart.de, Berlin, 19.10.2016

Patrick MacLeamy: It's not about my business or about your business...it's about our industry!!

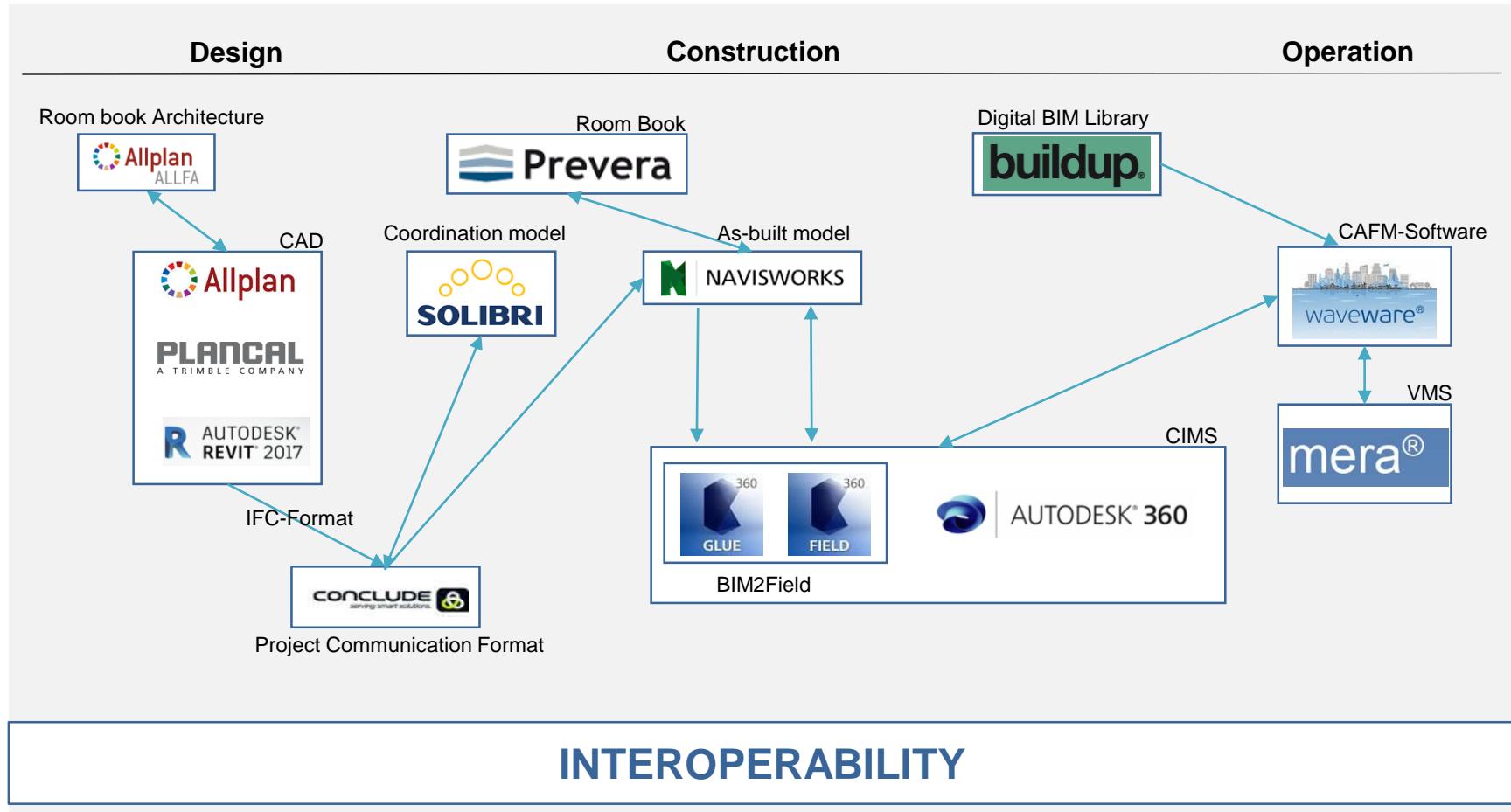
Patrick MacLeamy: Chairman of BuildingSMART International & HOK Architects

Productivity

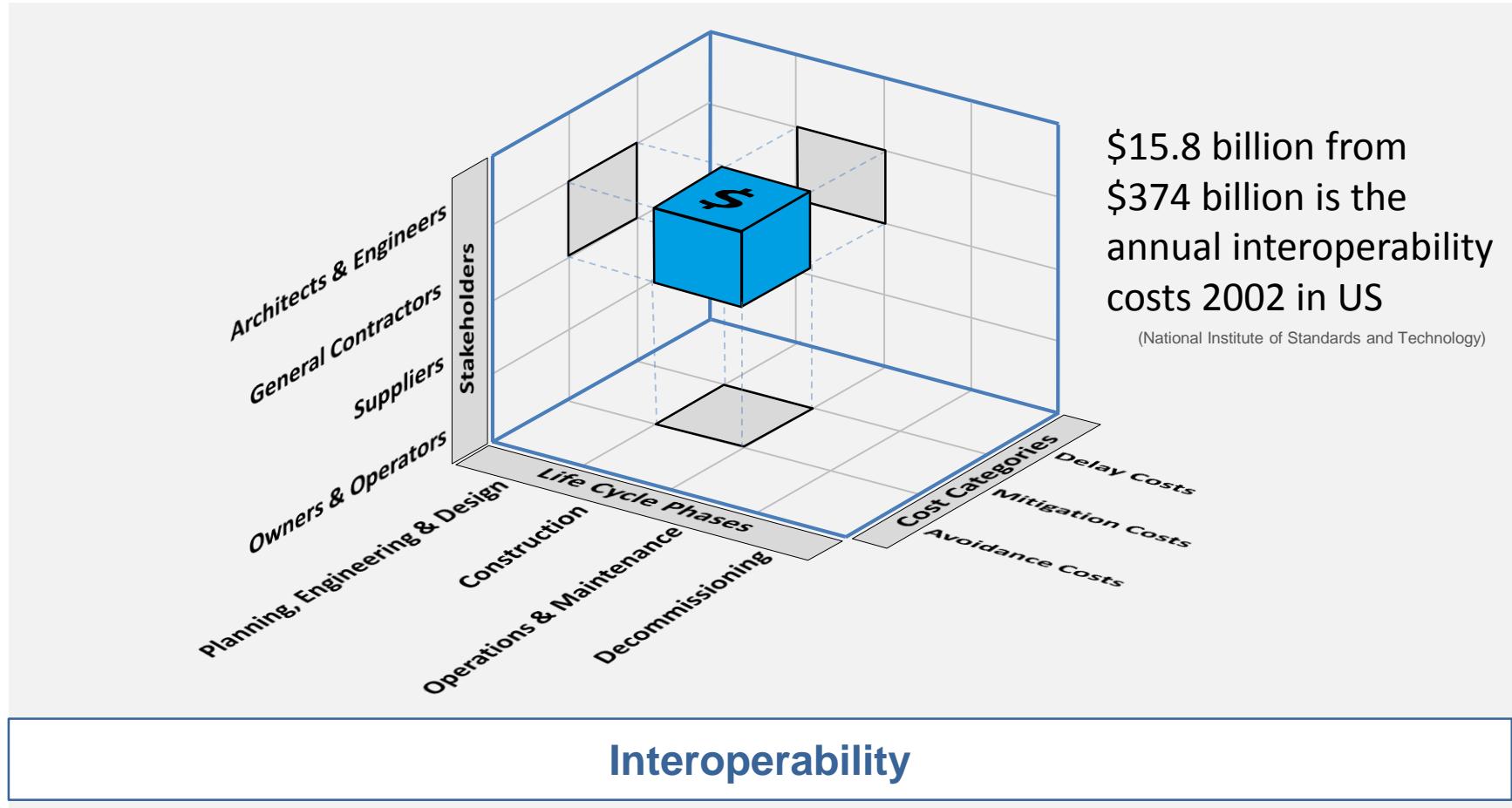
CHALLENGES



CHALLENGES



CHALLENGES



CHALLENGES

● Pre BIM



Architect



Structure



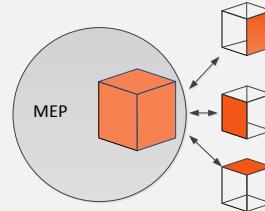
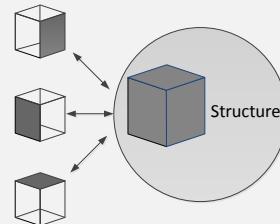
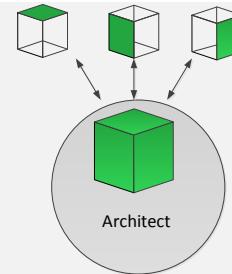
MEP

BIM Level 0

CHALLENGES

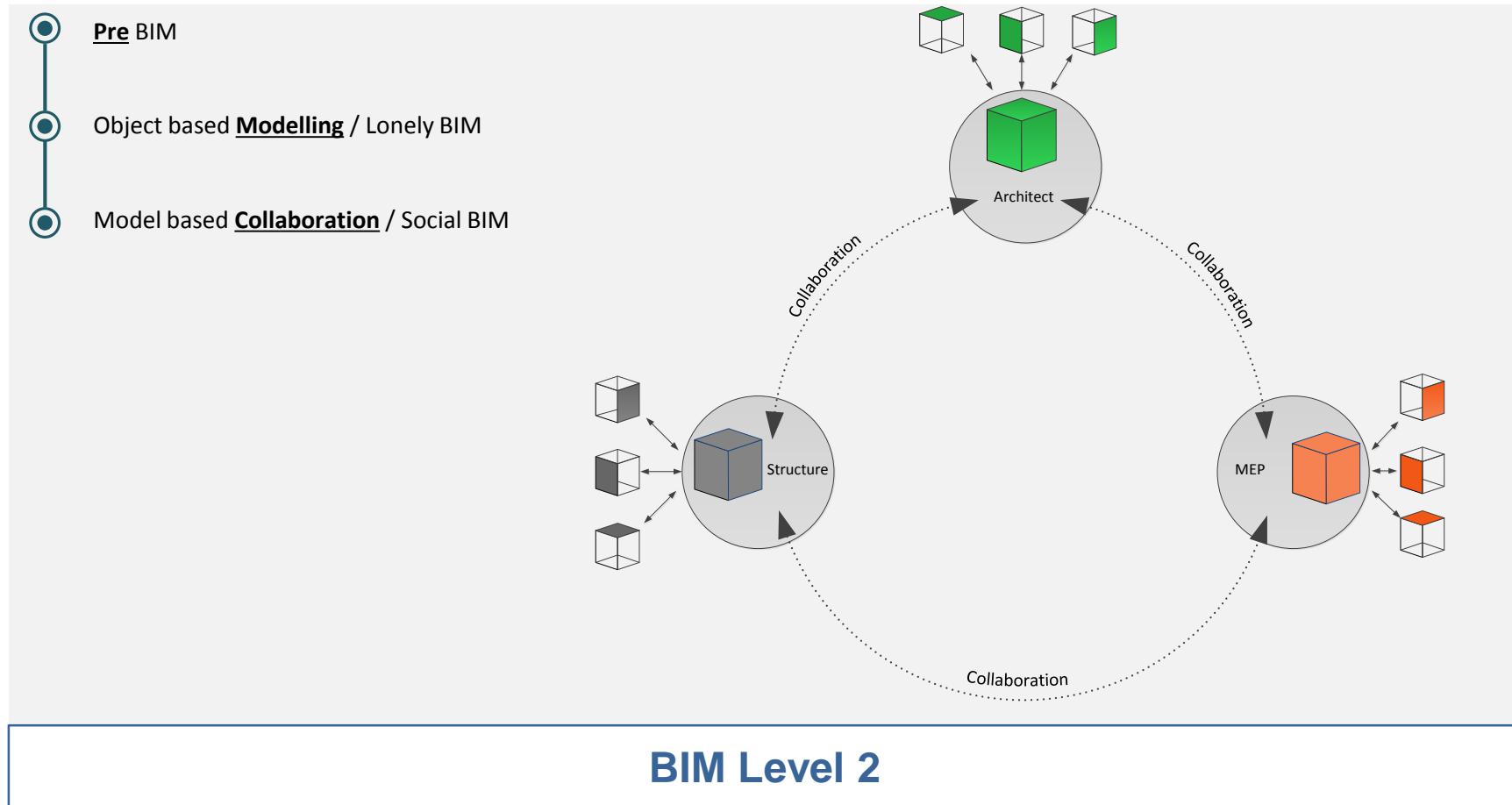
Pre BIM

Object based Modelling / Lonely BIM

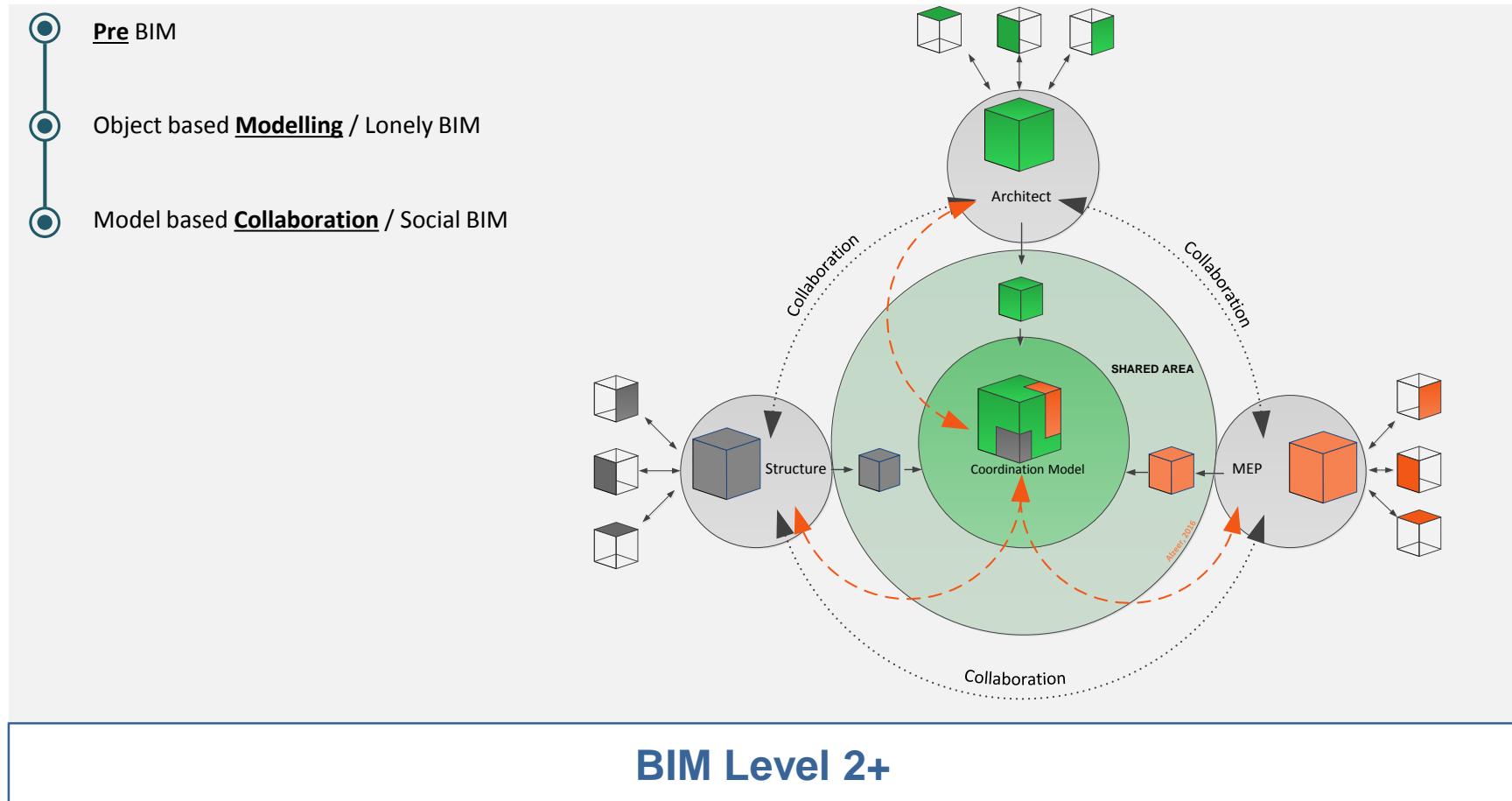


BIM Level 1

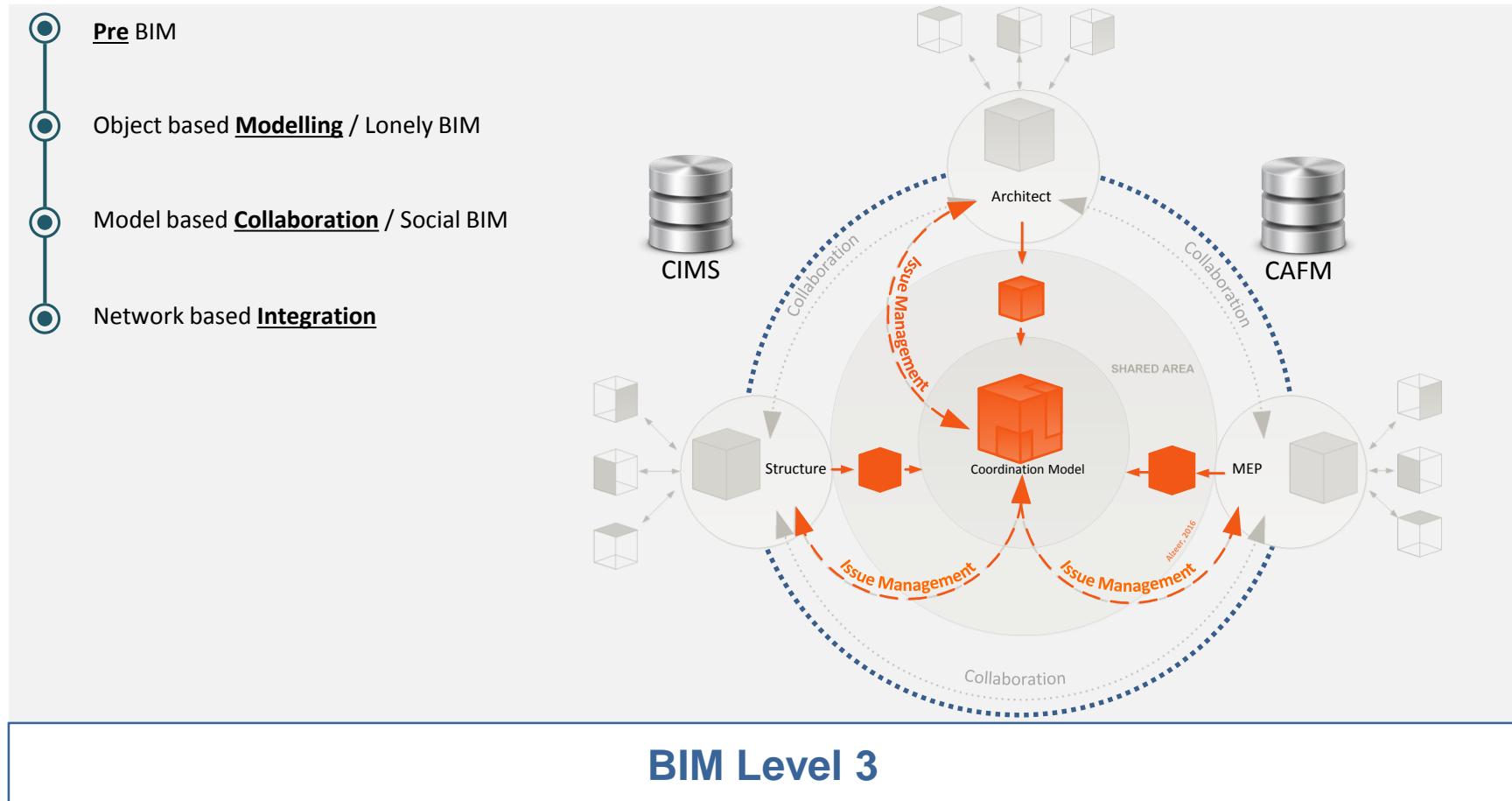
CHALLENGES



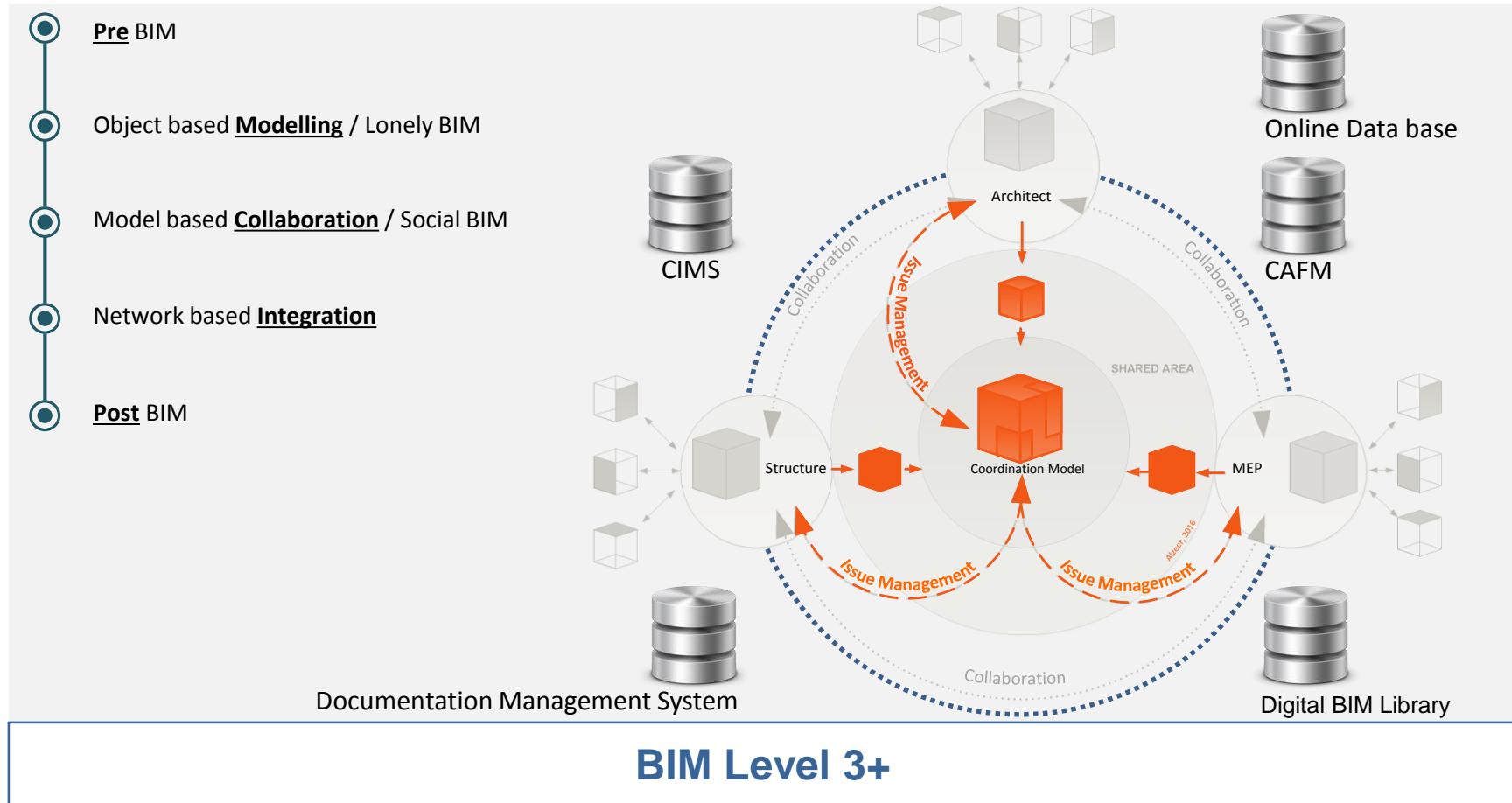
CHALLENGES



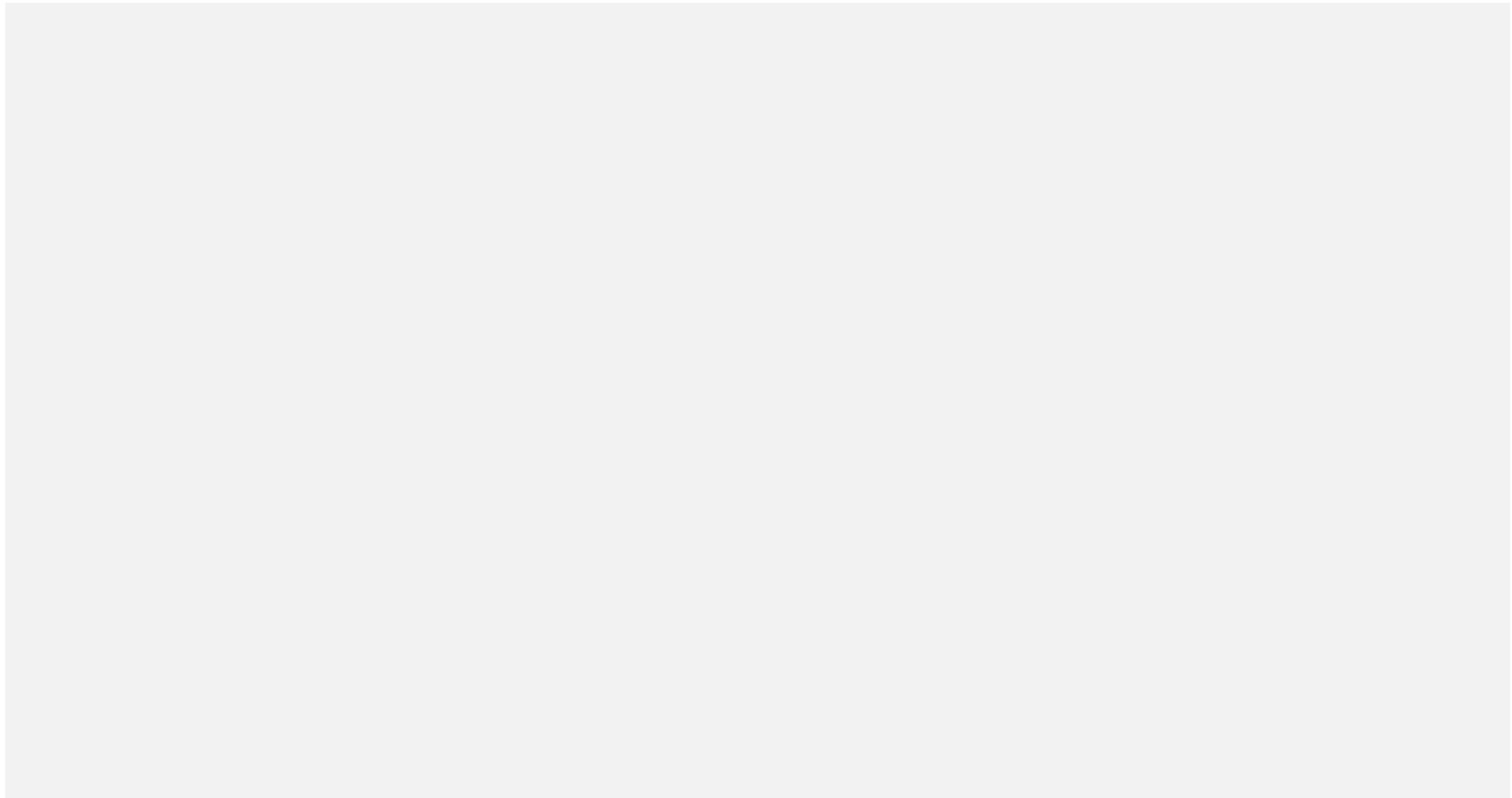
CHALLENGES



CHALLENGES



SOLUTION



SOLUTION

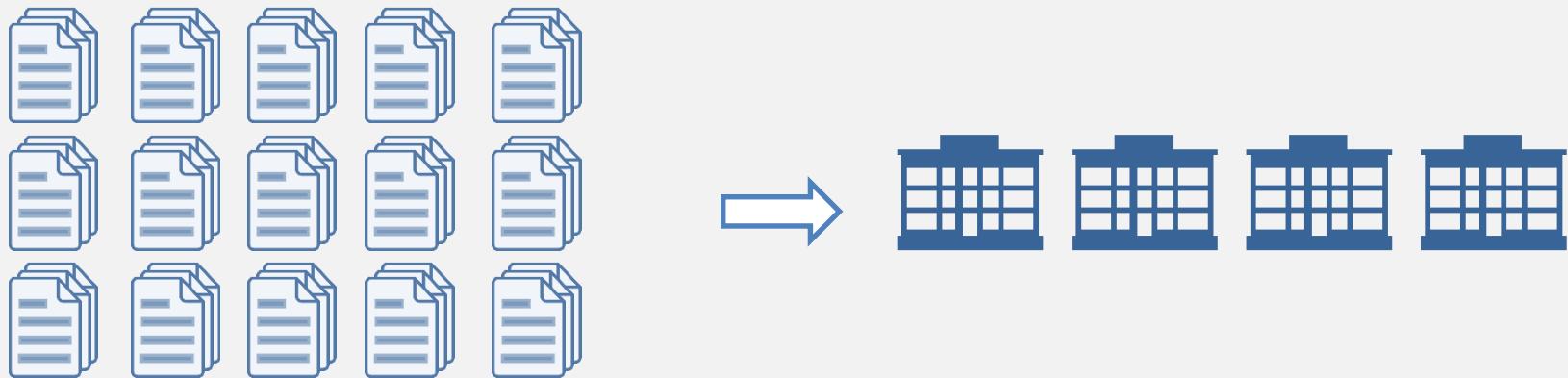


SPEAK THE SAME LANGUAGE



Standardization

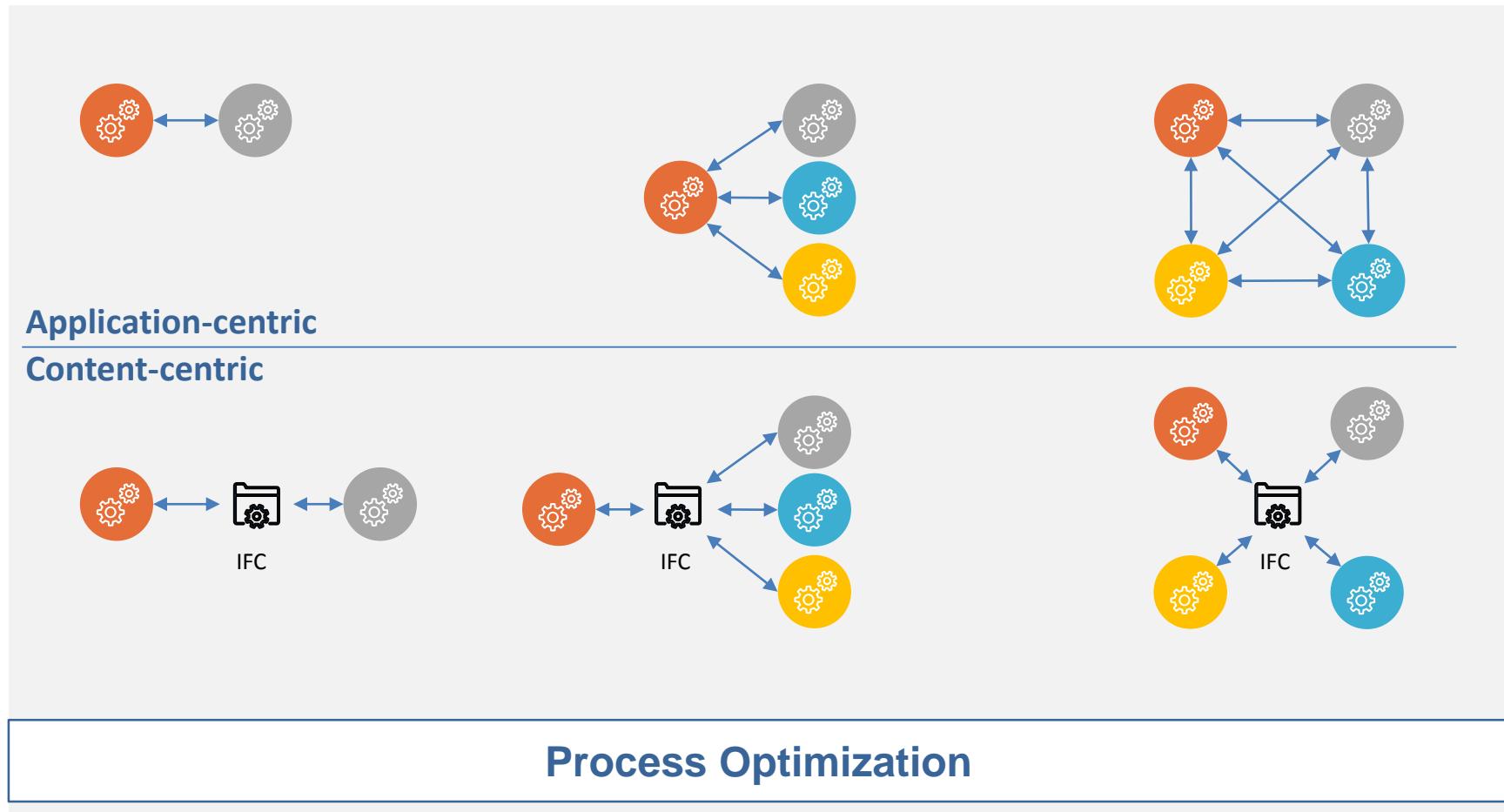
SOLUTION



ELIMINATE WASTEFUL TASKS

Efficiency

SOLUTION

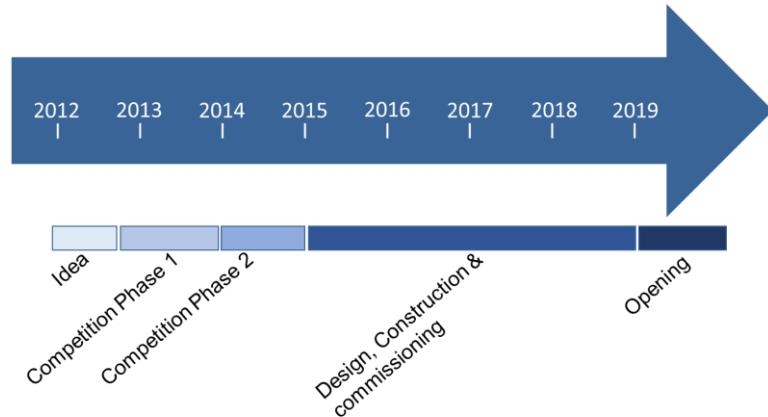


PROJECT CASE STUDY FELIX PLATTER-HOSPITAL



PROJECT CASE STUDY FELIX PLATTER-HOSPITAL

PROJECT INTRODUCTION

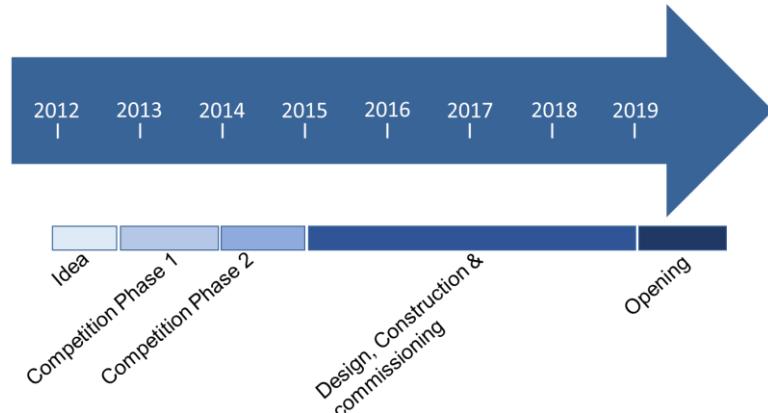


- **GFA:** 45,262 m²
- **Contract value:** 194 million SFr.
- **Construction period:** 01/2015 – 10/2018
- **Contract Type:** Design-Build



PROJECT CASE STUDY FELIX PLATTER-HOSPITAL

PROJECT INTRODUCTION



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Winner of buildingSMART International Award 2016

“Operation & Maintenance using open technology”



Evaluation criteria

- The use of open BIM Technologies
- Level of innovation
- Level of collaboration

FELIX PLATTER-HOSPITAL THE BIM USES

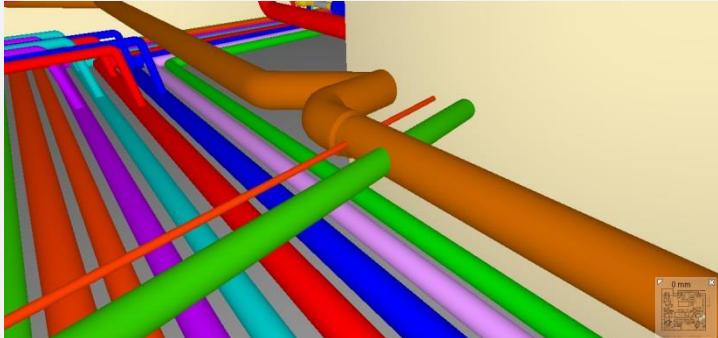
		PRELIMINARY STUDIES	DEVELOPMENT DESIGN	DETAILED DESIGN	CONSTRUCTION	OPERATION
GATHER	CAPTURE	CAPTURE EXISTING FACILITY/SITE		AS-BUILT		
	QUANTIFY					
	GENERATE					
	COORDINATE		BIM COORDINATION			
	FORECAST		5D (COST ESTIMATION)	LCC ESTIMATION, ENERGY ANALYSIS, PROCESS ANALYSIS		
	VALIDATE		CODE VALIDATION, ATTRIBUTE VALIDATION, ESCAPE ROUTES, INSERTION ROUTES			
	VISUALIZE		3D VISUALIZATION AND DESIGN VALIDATION			
	TRANSFORM		COLLABORATION THROUGH OPEN STANDARDS			
	DRAW		BIM2FM THROUGH OPEN STANDARDS			
	DOCUMENT		BIM-BASED DRAWINGS PRODUCTION		DIGITAL DOCUMENTATION	
REALIZE	FABRICATE					
	ASSEMBLE				DIGITAL CONSTRUCTION	
	CONTROL			CONSTRUCTION INFORMATION MANAGEMENT SYSTEM		
	REGULATE					

CLIENT BIM USES

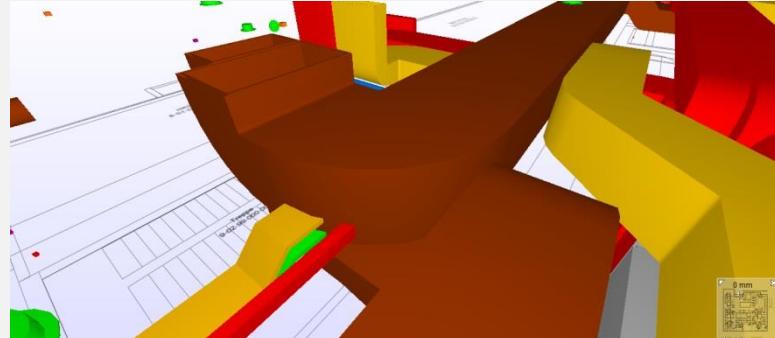
FELIX PLATTER-HOSPITAL THE BIM USES

	PRELIMINARY STUDIES	DEVELOPMENT DESIGN	DETAILED DESIGN	CONSTRUCTION	OPERATION
GATHER	CAPTURE				
	QUANTIFY				
	GENERATE				
ANALYZE	COORDINATE		BIM COORDINATION		
	FORECAST				
	VALIDATE				
COMMUNICATE	VISUALIZE				
	TRANSFORM				
	DRAW				
	DOCUMENT				
REALIZE	FABRICATE				
	ASSEMBLE				
	CONTROL				
	REGULATE				

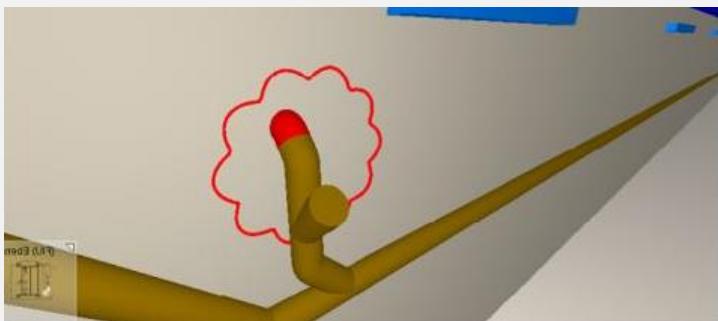
BIM COORDINATION



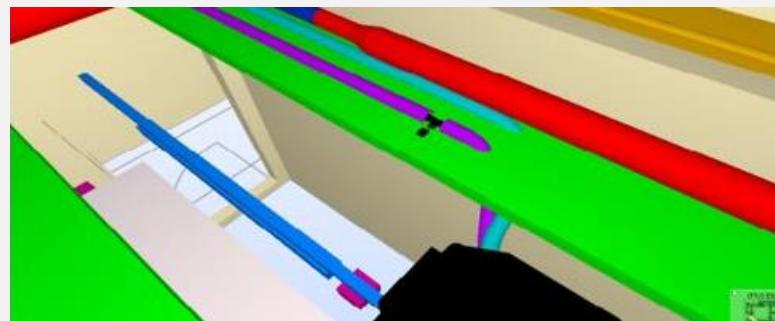
- Physical clashes (pipe with pipe)



- Physical clashes (electrical with ducts)



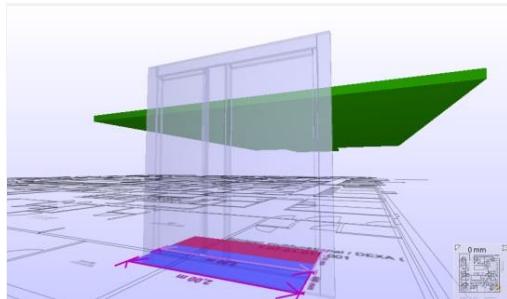
- Physical clashes (pipe with wall)



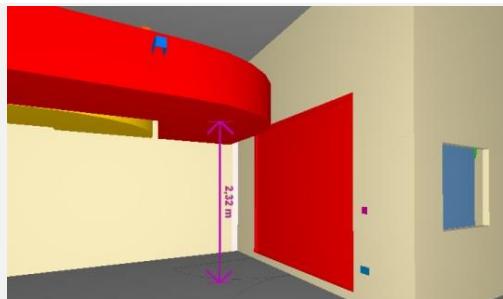
- Physical clashes (pipe with electrical)

PHYSICAL CLASHES

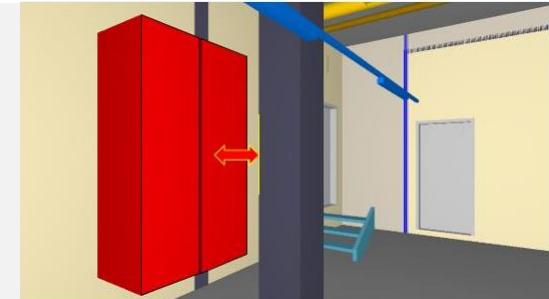
BIM COORDINATION



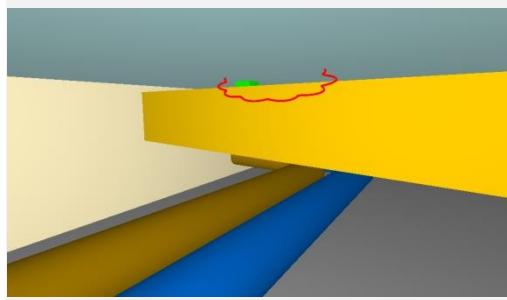
- Clear space in front of windows



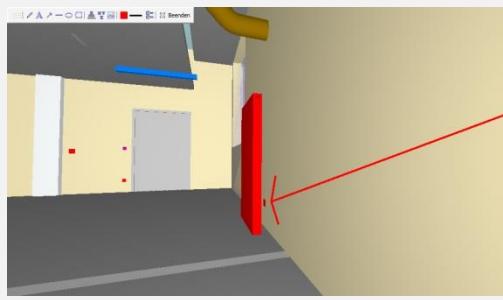
- Clear Space in front of doors



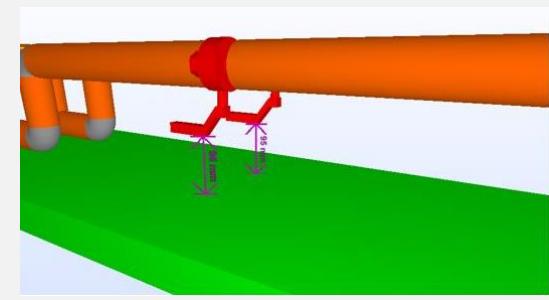
- Clear Space in front of electrical Cabinets



- Accessibility to fire alarm indicators



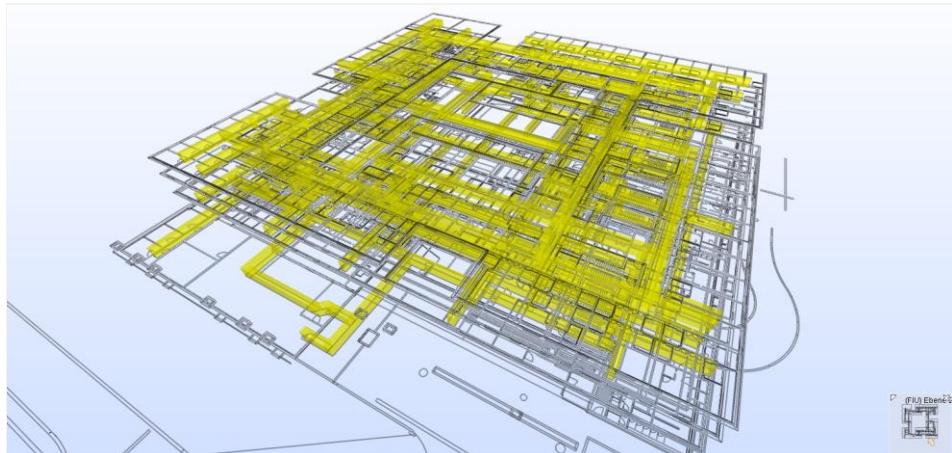
- Clear space in front of electrical sockets



- Accessibility to mechanical equipment

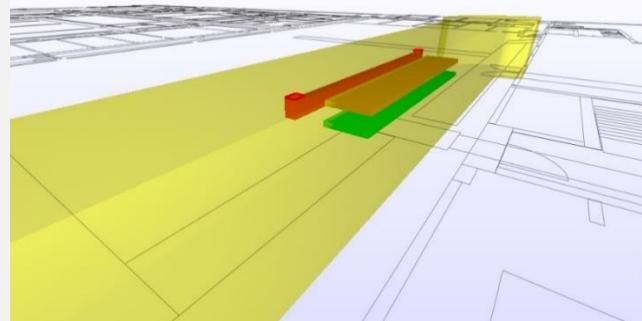
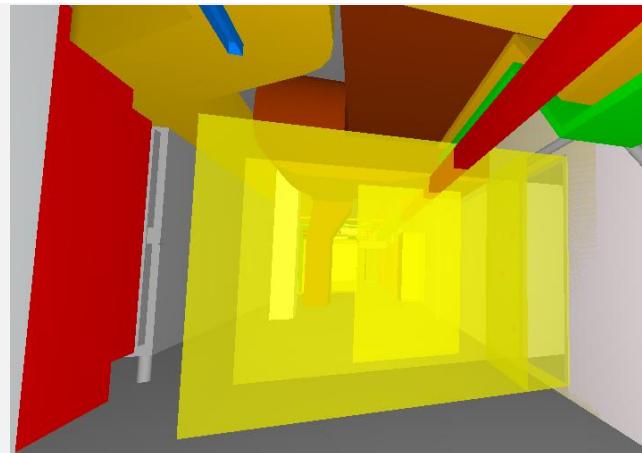
NON-PHYSICAL CLASHES

BIM COORDINATION



- review of escape routes

- review insertion routes

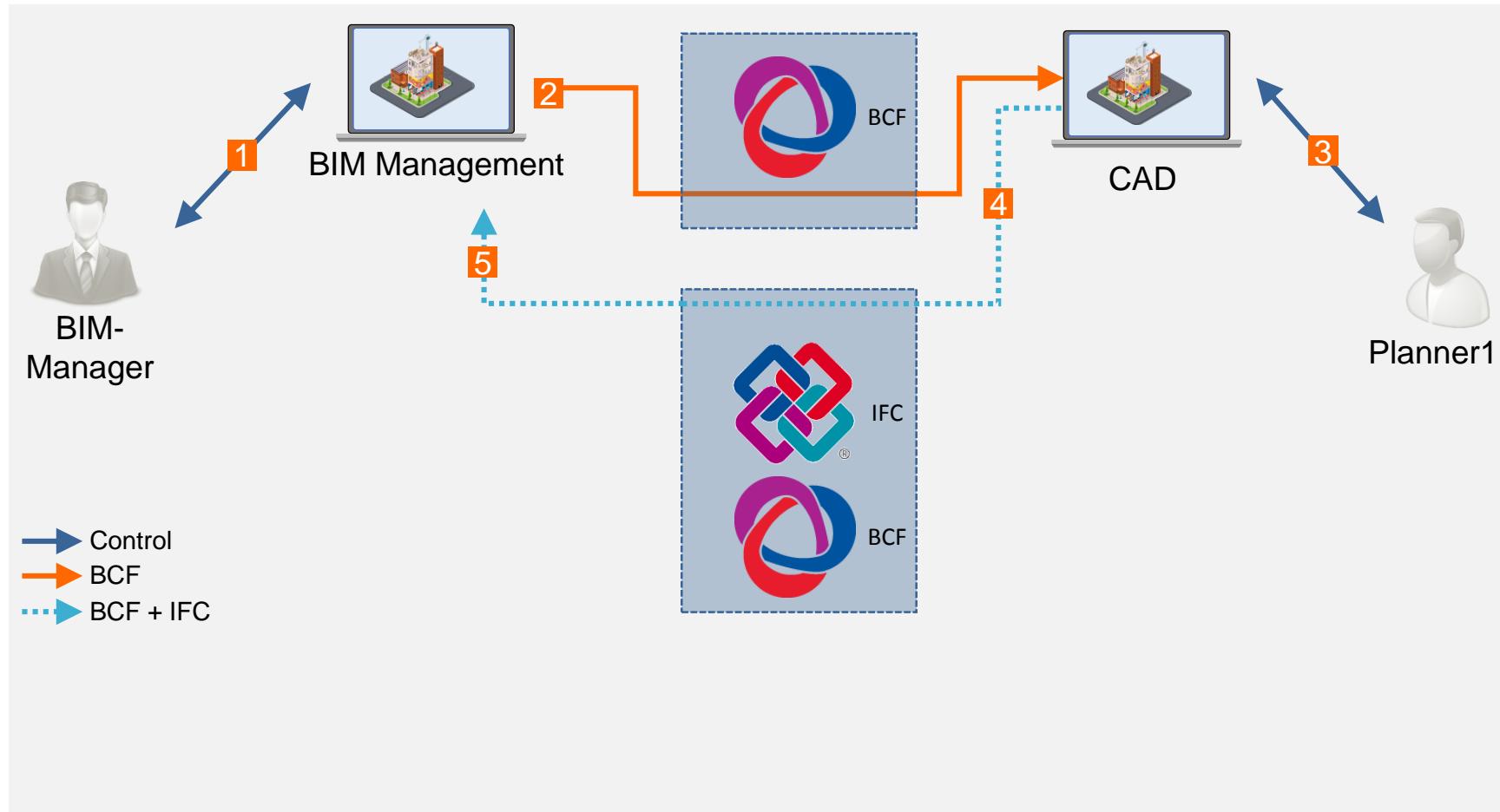


CODE VALIDATION

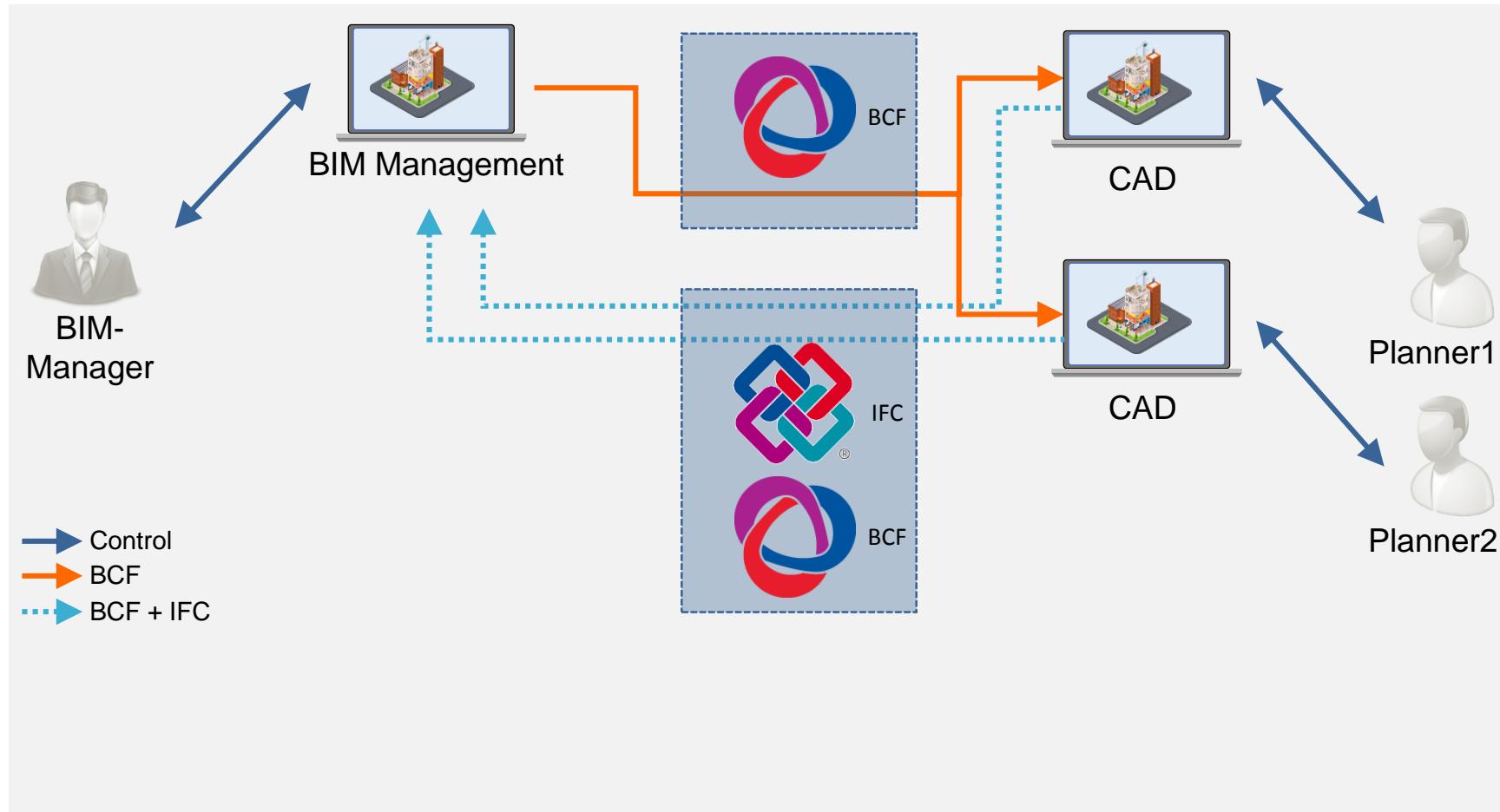
FELIX PLATTER-HOSPITAL THE BIM USES

	PRELIMINARY STUDIES	DEVELOPMENT DESIGN	DETAILED DESIGN	CONSTRUCTION	OPERATION
GATHER	CAPTURE				
	QUANTIFY				
	GENERATE				
ANALYZE	COORDINATE				
	FORECAST				
	VALIDATE				
COMMUNICATE	VISUALIZE				
	TRANSFORM		COLLABORATION THROUGH OPEN STANDARDS		
	DRAW				
	DOCUMENT				
REALIZE	FABRICATE				
	ASSEMBLE				
	CONTROL				
	REGULATE				

COLLABORATION THROUGH OPEN STANDARDS ISSUE MANAGEMENT

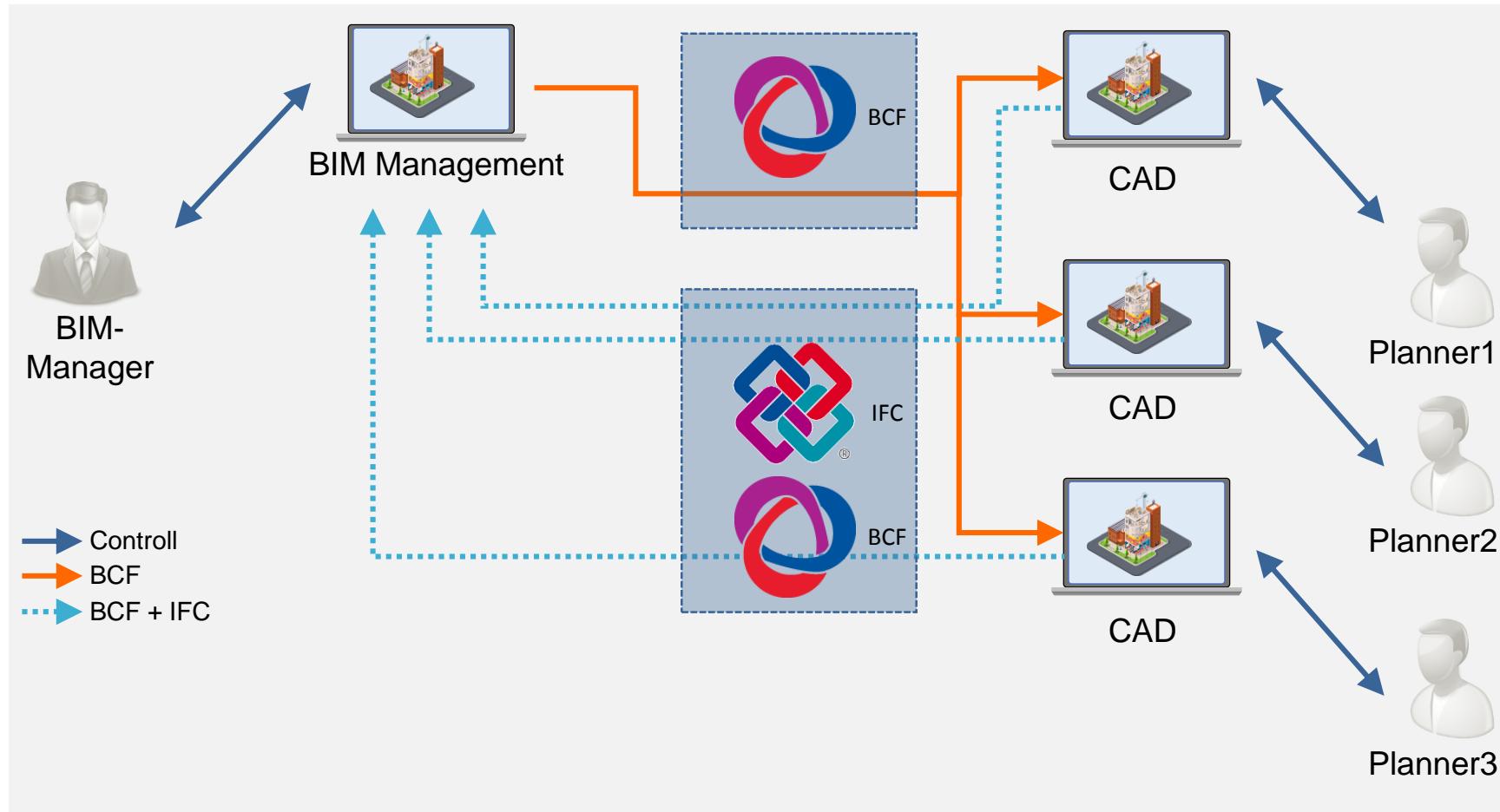


COLLABORATION THROUGH OPEN STANDARDS ISSUE MANAGEMENT



COLLABORATION THROUGH OPEN STANDARDS

ISSUE MANAGEMENT



ISSUE MANAGEMENT IN THE CLOUD

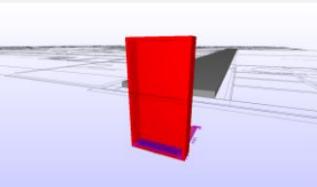
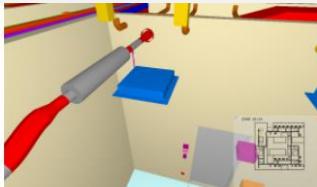
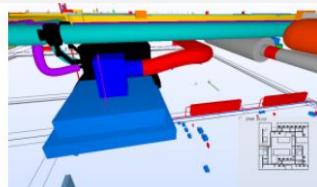
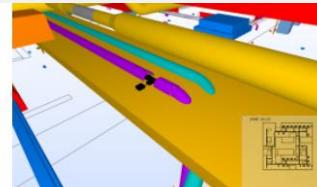
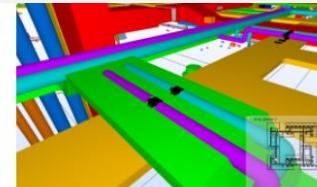
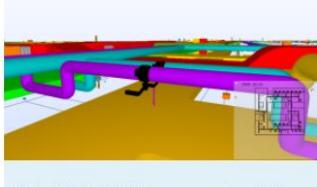
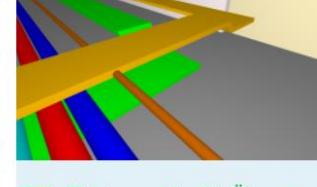
BIMcollab



ISSUE MANAGEMENT IN THE CLOUD

BIMcollab

- Online Plattform / Always accessible

 859 . (ARC. EG) Belag.-2.93.1 zu n... Daniel Dorner Closed, Normal Undecided <input type="checkbox"/>	 967 . (LUE. EG) Objekt.-1.4494 Samir Alzeer Closed, Normal Undecided <input type="checkbox"/>	 966 . (HEI. 01) Mengenregler.1.94 Alexander Wallensteiner Active, Normal Undecided <input type="checkbox"/>	 965 . (HEI. 01) Mengenregler.1.72 Alexander Wallensteiner Active, Normal Undecided <input type="checkbox"/>	 964 . (HEI. 01) Mengenregler.1.68 Alexander Wallensteiner Active, Normal Undecided <input type="checkbox"/>
 963 . (HEI. 01) Mengenregler.1.60 Samir Alzeer Active, Normal Undecided <input type="checkbox"/>	 962 . (HEI. 01) Mengenregler.1.50 Alexander Wallensteiner Active, Normal Undecided <input type="checkbox"/>	 746 . Medium, Rohrbogen, und Sta... Alexander Wallensteiner Resolved, Normal Undecided <input type="checkbox"/>	 750 . Elektro und HLKS überschne... Alexander Wallensteiner Resolved, Normal Undecided <input type="checkbox"/>	 752 . Elektro und Sanitär Übersch... Alexander Wallensteiner Resolved, Normal Undecided <input type="checkbox"/>

ISSUE MANAGEMENT IN THE CLOUD

BIMcollab

- Online Plattform / Always accessible
- Clear responsibilities through Filtering

All 967 issues in this project

Show all All open Open for me Filter ^

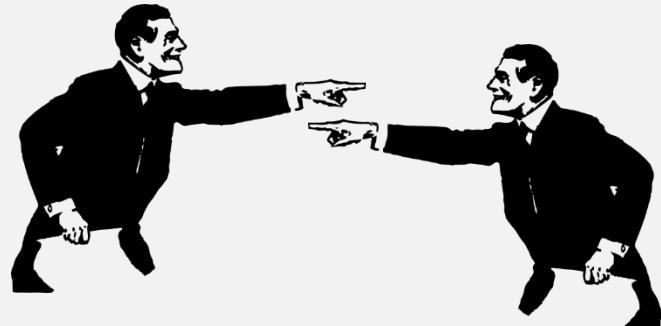
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All	All	All	All	<input checked="" type="checkbox"/> Active <input checked="" type="checkbox"/> Resolved <input checked="" type="checkbox"/> Closed
Priority:	Assigned to:	Deadline:	Created by:	Sorted on:
All	All		All	Modified date <input checked="" type="checkbox"/> Reverse

Reset **Cancel** **Set filter**

ISSUE MANAGEMENT IN THE CLOUD

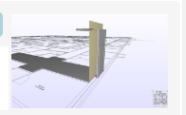
BIMcollab

- Online Plattform / Always accessible
- Clear responsibilities through Filtering
- Changes are documented



No more finger pointing

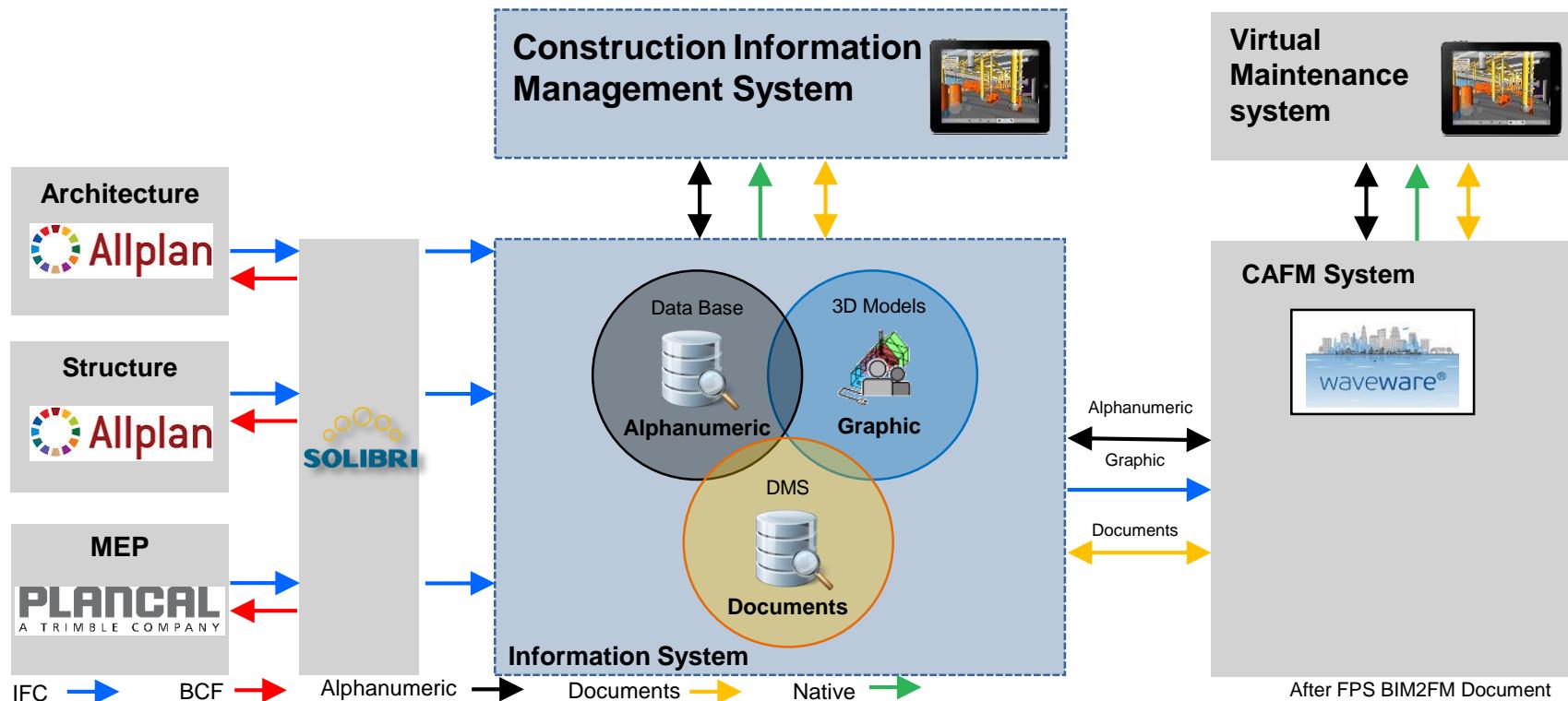
858. Abgehängte Decke, Belag, Wand zu nah an der Komponente Tür

Type: Issue Priority: Normal	Area: - Assigned to: Daniel Dorner	Milestone: Undecided Deadline: -	Labels: -	
Creator: Samir Alzeer	Created: 31-03-2016 14:59	Modified: 01-04-2016 15:25	Visibility: All	Status: Resolved
<p>Edited by Samir Alzeer 31-03-2016 14:59</p> <p>wird angepasst</p> <p>Edit </p>				
<p>Created by Samir Alzeer 31-03-2016 14:59</p> <p>Title set to 'Abgehängte Decke, Belag, Wand zu nah an der Komponente Tür'. Type set to 'Issue'. Assigned to 'Daniel Dorner'.</p> <p>Viewpoint modified by Samir Alzeer 01-04-2016 15:25.</p> <p>History Edit </p>				
<p>Status von Öffnen zu Resolved geändert.</p>				

FELIX PLATTER-HOSPITAL THE BIM USES

	PRELIMINARY STUDIES	DEVELOPMENT DESIGN	DETAILED DESIGN	CONSTRUCTION	OPERATION
GATHER	CAPTURE				
	QUANTIFY				
	GENERATE				
ANALYZE	COORDINATE				
	FORECAST				
	VALIDATE				
COMMUNICATE	VISUALIZE				
	TRANSFORM				BIM2FM THROUGH OPEN STANDARDS
	DRAW				
	DOCUMENT				
REALIZE	FABRICATE				
	ASSEMBLE				
	CONTROL				
	REGULATE				

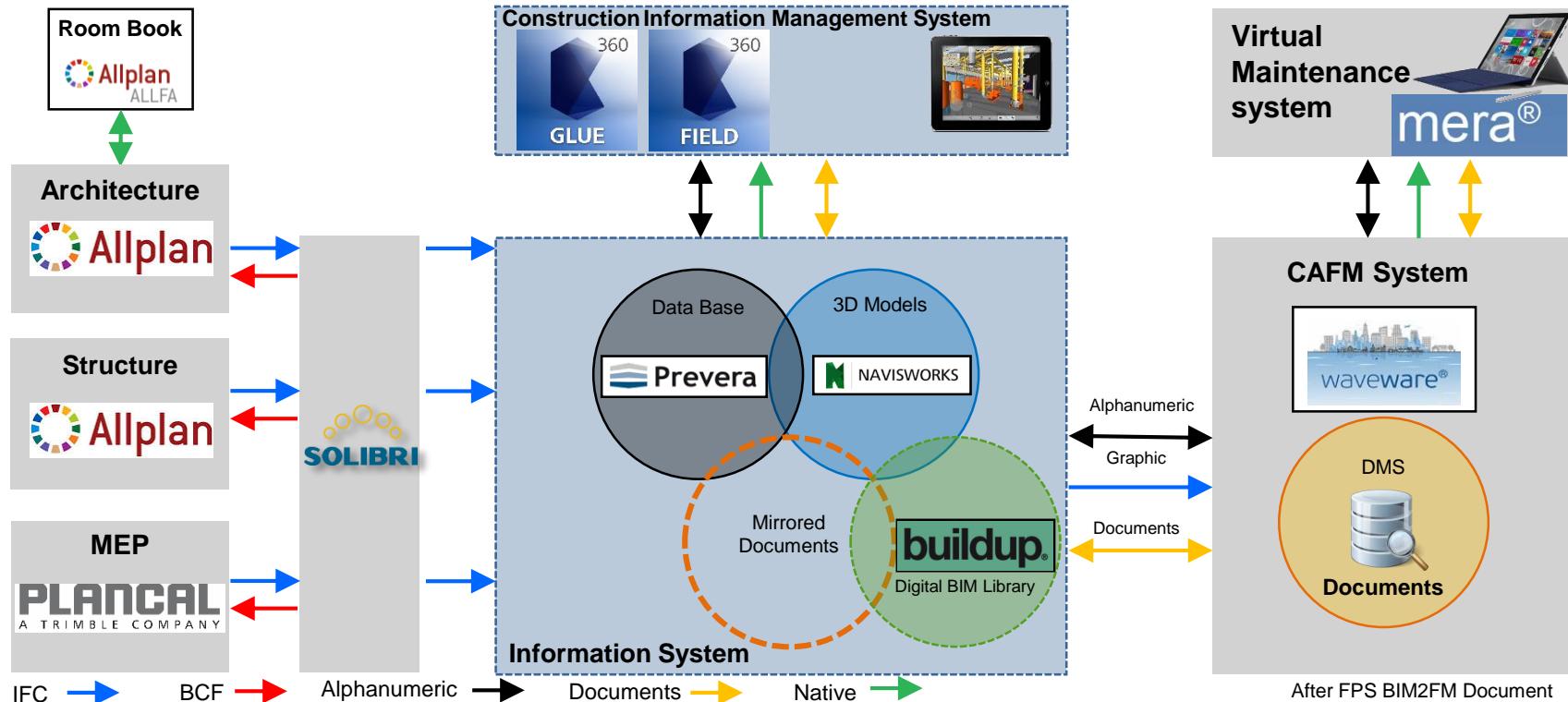
BIM2FM THROUGH OPEN BIM STANDARDS



Employer's Information Requirements

BIM2FM THROUGH OPEN BIM STANDARDS

CURRENT CONCEPT

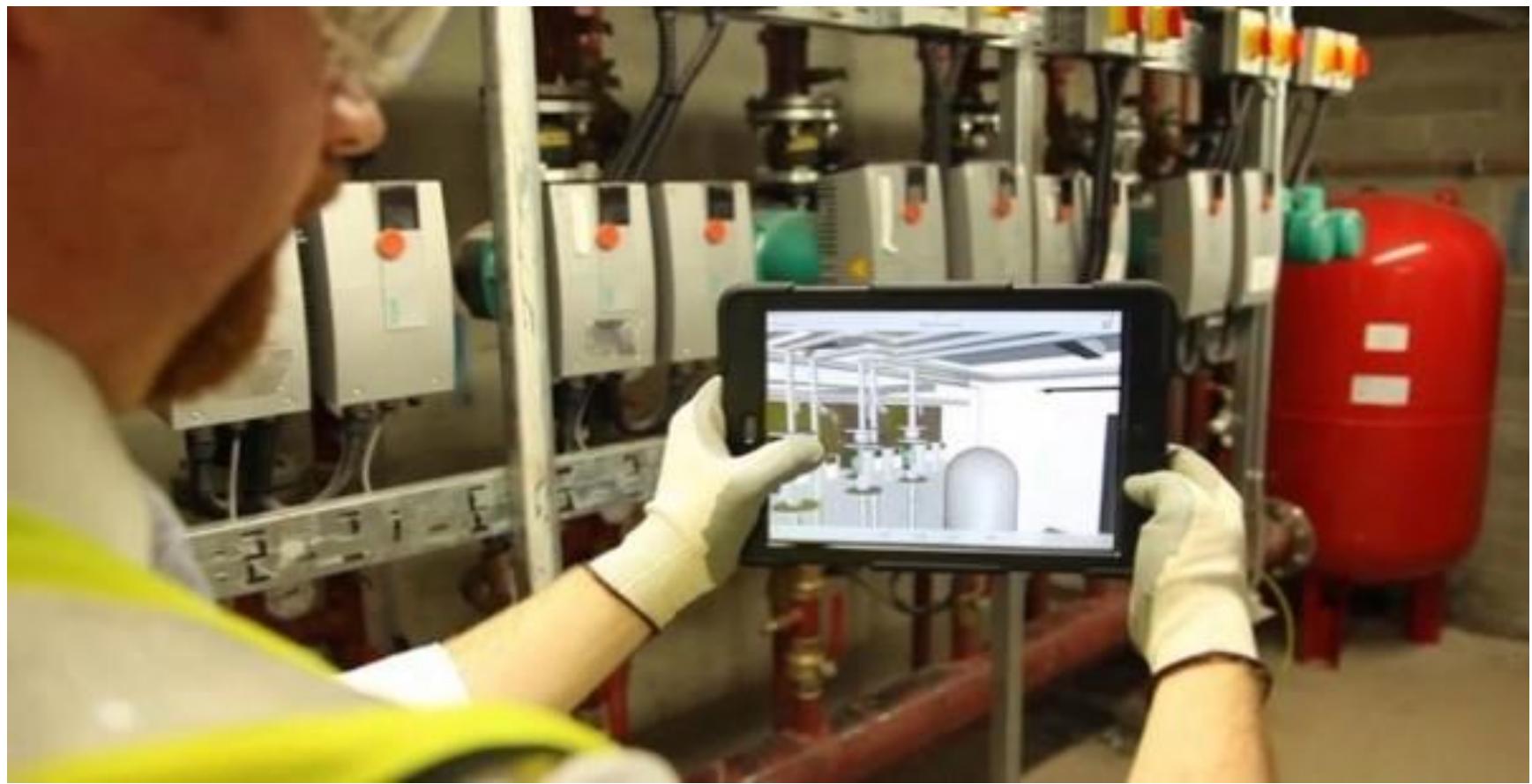


Common Data Environment

FELIX PLATTER-HOSPITAL THE BIM USES

	PRELIMINARY STUDIES	DEVELOPMENT DESIGN	DETAILED DESIGN	CONSTRUCTION	OPERATION
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	GENERATE				
ANALYZE	COORDINATE				
	FORECAST				
	VALIDATE				
COMMUNICATE	VISUALIZE				
	TRANSFORM				
	DRAW				
	DOCUMENT				DIGITAL DOCUMENTATION
REALIZE	FABRICATE				
	ASSEMBLE				
	CONTROL				
	REGULATE				

DIGITAL DOCUMENTATION



DIGITAL DOCUMENTATION

TRADITIONAL DOCUMENTATION VS. DIGITAL DOCUMENTATION



- Difficult to gather, edit and update
- Storage space is an issue
- Vanishes through project phases



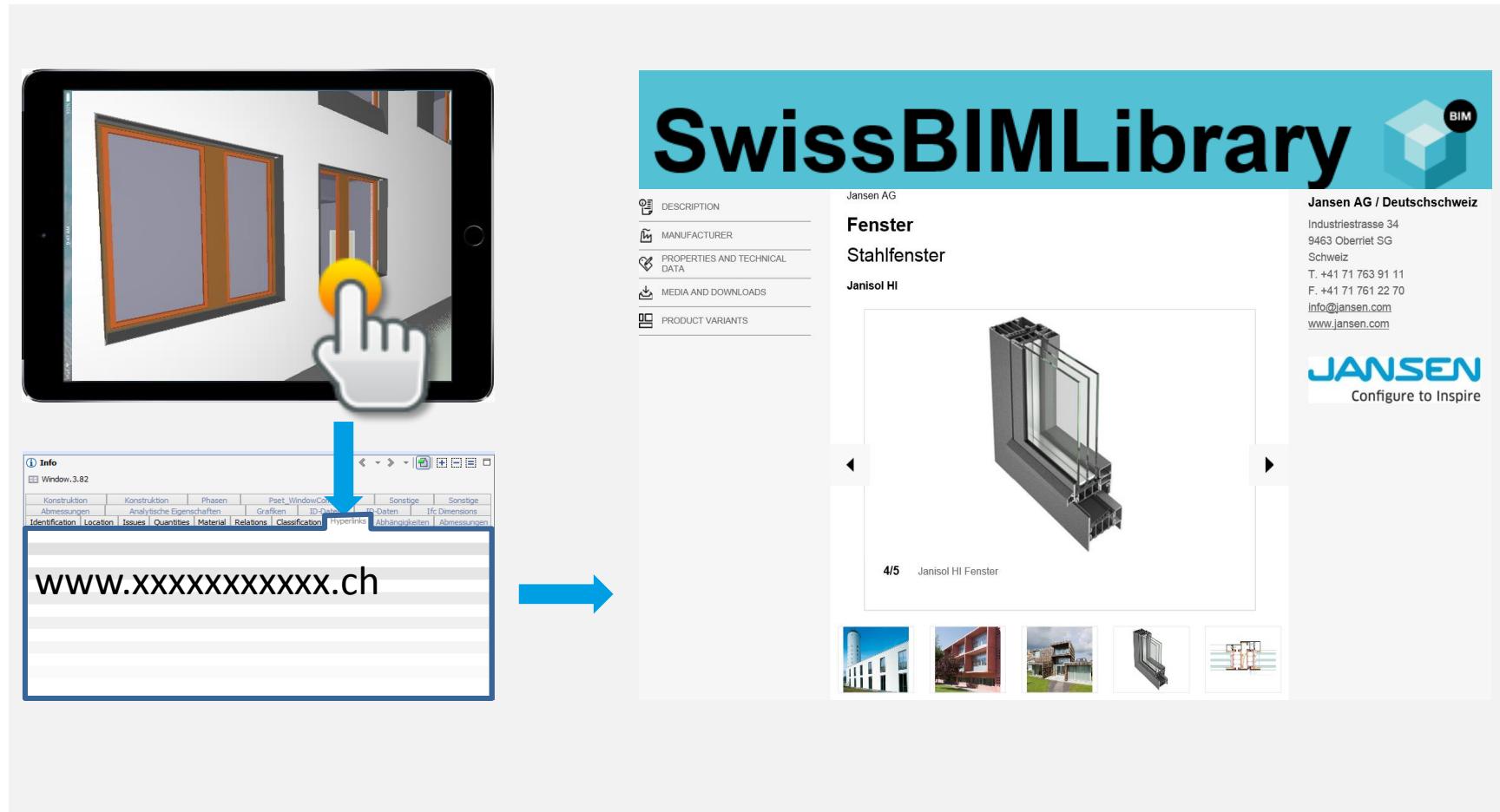
- Easy to access (online)
- documents can be retrieved from mobile devices
- Easy to edit and update
- Ideal for Facility Managers

TRADITIONAL DOCUMENTATION

DIGITAL DOCUMENTATION

DIGITAL DOCUMENTATION

CASE STUDY



The diagram illustrates a workflow for digital documentation. On the left, a smartphone displays a 3D rendering of a window. A hand cursor is shown interacting with the screen. Below the phone is a screenshot of a software interface titled "Info" showing a table of properties for a "Window 3.82" object. A blue arrow points from the "Hyperlinks" column in this table to the right side of the diagram. On the right, a screenshot of the "SwissBIMLibrary" website is shown. The main heading is "SwissBIMLibrary" with a "BIM" logo. Below it, the manufacturer "Jansen AG" is listed, followed by the product "Fenster" and "Stahlfenster". The specific model "Janisol HI" is highlighted. A large image shows a cross-section of the window frame. Below the main image are five smaller images: a building facade, a building entrance, a modern building exterior, a window frame detail, and a window assembly detail. The URL "www.xxxxxxxxxxx.ch" is displayed in a box at the bottom left.

DIGITAL DOCUMENTATION CASE STUDY



The diagram illustrates the integration of digital documentation across three platforms:

- Mobile Device:** Shows a 3D rendering of a window unit.
- Software Interface:** Displays a table with columns like Konstruktion, Abmessungen, Analytische Eigenschaften, Material, Relations, Classification, and Hyperlinks. A blue arrow points from the "Hyperlinks" column to a URL: www.XXXXXXXXXXX.ch.
- SwissBIMLibrary Website:** Features a large title "SwissBIMLibrary" and a detailed product page for "Janisol HI Fenster". The page includes sections for Description, Manufacturer, Properties and Technical Data, Media and Downloads, Product Variants, and specific details about the window's construction, materials, and unique features.

DIGITAL DOCUMENTATION CASE STUDY



The diagram illustrates the integration of digital documentation into a 3D modeling environment. On the left, a smartphone displays a 3D rendering of a window. A hand cursor points to a yellow circular button on the screen, which triggers a transition. Below the phone is a screenshot of a software interface showing a navigation bar with tabs like 'Info', 'Konstruktion', 'Abmessungen', 'Identification', 'Location', 'Issues', 'Quantities', 'Material', 'Relations', 'Classification', and 'Hyperlinks'. The 'Hyperlinks' tab is highlighted with a blue border. A large blue arrow points from this interface to the right side of the diagram.

SwissBIMLibrary

The right side shows the SwissBIMLibrary interface, featuring a large title and a sidebar with categories: Plans, Catalogues, Certificates, and Technical specifications. Under 'Plans', there is a listing for 'Architekturkatalog Janisol HI Fenster / mit integrierten DXF-Dateien'. Under 'Catalogues', there are links to 'Architekturkatalog Janisol HI Fenster', 'Bestellkatalog Lieferprogramm Janisol HI Fenster', 'Architekturkatalog Ausgeführte Objekte', and 'Prospekt & Information Janisol HI Fenster und Türen'. Under 'Certificates', there is a link to 'Zertifikat Minergie Janisol HI Fenster'. Under 'Technical specifications', there is a link to 'Technische Hinweise Zink-Eisen-Liegierungen ZF 100'. The interface also includes several thumbnail images of buildings and technical drawings.

DIGITAL DOCUMENTATION CASE STUDY



The diagram illustrates a workflow for digital documentation:

- Mobile Device View:** A smartphone displays a 3D rendering of a window. A large white hand cursor is positioned over the window, indicating interaction.
- Software Interface:** Below the phone is a screenshot of a software interface titled "Info". It shows a navigation bar with tabs like "Konstruktion", "Abmessungen", "Analytische Eigenschaften", etc., and a "Hyperlinks" tab highlighted with a blue border. A blue arrow points from the "Hyperlinks" tab to a URL field containing "www.XXXXXXXXXXX.ch".
- Search Result:** To the right, a search result page for "SwissBIMLibrary" is shown. The search term "Janisol" is entered in the search bar. The results list five product variants:
 - Janisol**: Anwendungsbereiche: Einbruchhemmung | Anwendungsbereiche: Sondergeometrien | Anwendungsbereiche: Wärmegedämmt
 - Janisol HI**: Anwendungsbereiche: Hochwärmegedämmt | Anwendungsbereiche: Stahlfenster | Werkstoffe: Stahl
 - Janisol Primo**: Anwendungsbereiche: Einbruchhemmung | Anwendungsbereiche: Sicherheit | Anwendungsbereiche: Hochwärmegedämmt
 - Janisol Arte**: Anwendungsbereiche: Fenster nach innen und aussen öffnend | Anwendungsbereiche: Filigrane Profile für den Denkmalschutz
 - Janisol Arte Schwingflügel**: Anwendungsbereiche: Filigrane Profile für den Denkmalschutz | Anwendungsbereiche: Wärmegedämmt | Anwendungsbereiche:

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**THANK YOU FOR
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