



26-09-2019 – 12H – 18H30 – VUB BRUSSELS

LE POINT SUR LE BIM 'BUILDING INFORMATION MODELING' VU PAR LES TECHNIQUES SPÉCIALES
EEN UPDATE OVER HVAC SPECIALE TECHNIEKEN EN BUILDING INFORMATION MODELING (BIM)

WELKOM BIENVENUE

Management of a BIM project

Platform & CDE Concept

Dr. Ir. Arch. Stefan Boeykens (D-studio + KU Leuven)

INTRODUCTION

Who?

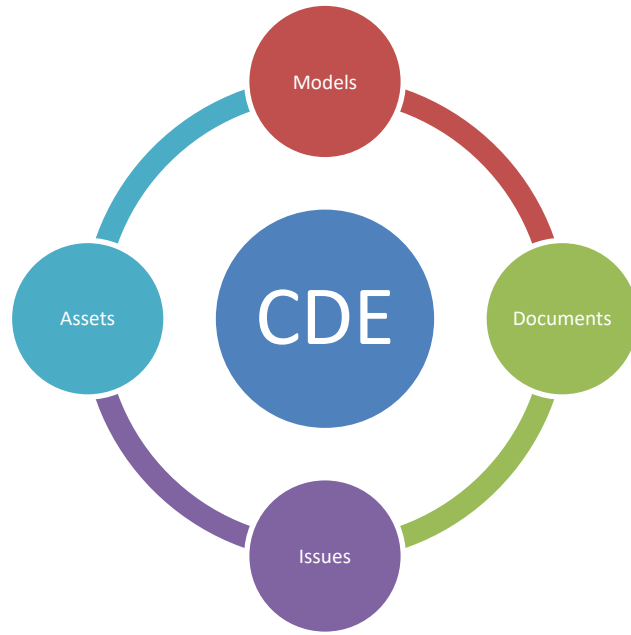
- Stefan Boeykens
- PhD. KU Leuven 2007
- Guest Professor KU Leuven, Departement of Architecture
- Sr. BIM Manager D-Studio (Mechelen)



KU LEUVEN

What?

- Research & Education BIM (KU Leuven, Ugent, Howest, UCL)
- BIM-procesmanagement @dstudio
- Innovation manager @dstudio
- Co-Author of Belgian BIM Protocol and BIM Execution Plan
- Expert member of CEN/TC 442
- Supporter of Open BIM



THE COMMON DATA ENVIRONMENT (CDE)

What is a Common Data Environment?

NBN EN ISO 19650-1:2019, §3.3.15

- Agreed **source** of information for any given **project or asset**, for collecting, managing and disseminating each **information container** through a **managed process**

Plain Language

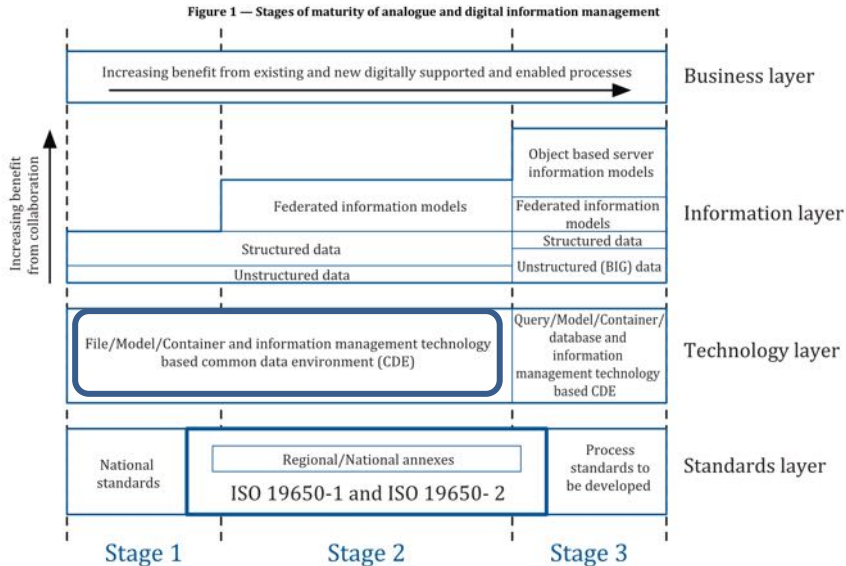
- **Single Source of Truth**
- **Project-specific**
- **“Information Containers”**
 - Files / Documents
 - Models
 - Sections of models
 - Databases
- **Managed (workflows)**

What is a Common Data Environment?

NBN EN ISO 19650-1:2019

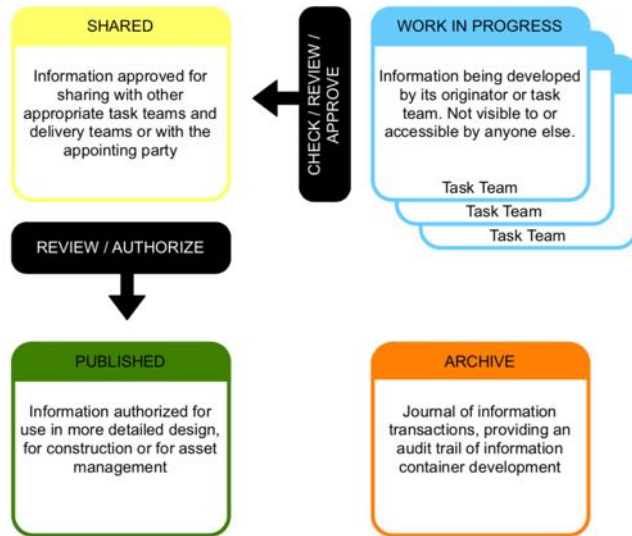
§12 CDE solution and workflow

- Not only technology!
- About the process



What is a Common Data Environment?

NBN EN ISO 19650-1:2019



Concept

- Document flow
- Verification
 - It is according to specs
- Validation
 - It does what it should do
- Review procedure + Audit Trail
- Metadata: revision & status

Figure 10 — Common data environment concept

CDE according to Belgian BIM Protocol

§1.44 Common Data Environment (CDE)

- Virtual place for information
 - Collected
 - Stored
 - Managed
 - Shared
- Multiple Systems



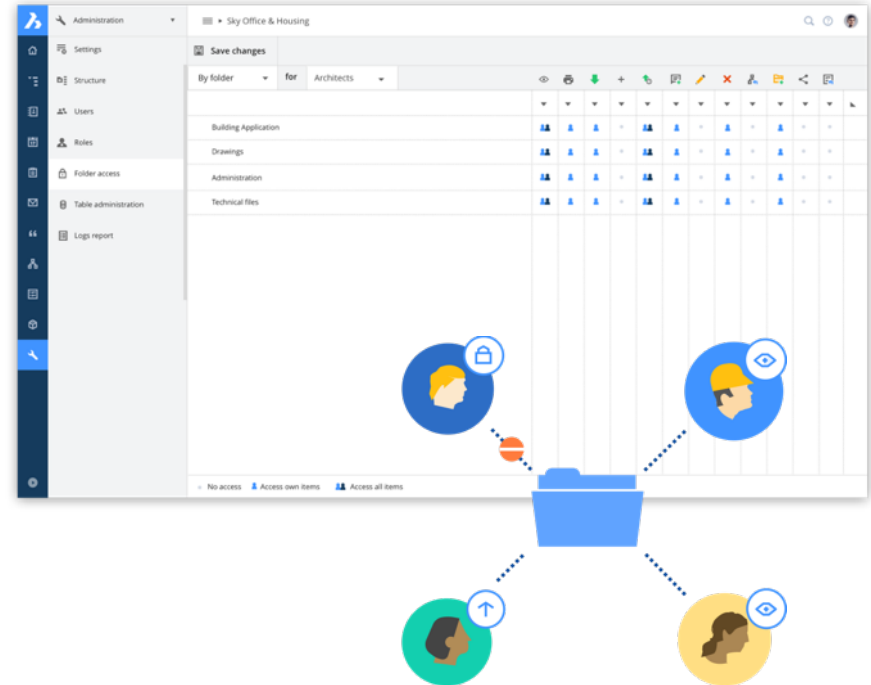
§6.5 Common Data Environment (CDE)

- Shared Platform(s)
- Central access (online)
- Upload/Download project information
- Take GDPR into account
- Safe & Secure
- Capacity
- Version/Revision
- Metadata

Document Management System (DMS)

Document/File Management

- Users (offices + people)
 - Secure Access
 - Upload/Download files
 - Comments
 - Workflows (document flow)
 - Metadata
-
- Price/user? Price/MB? Fixed Price?

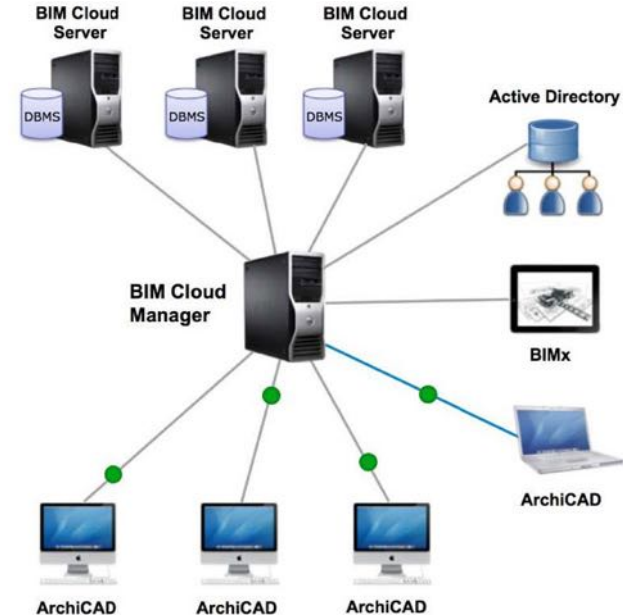


Model Management System (MMS)

Model Management

- Sharing Models
- Direct collaboration (high trust)
- (Often) Software specific
 - Revit Worksharing, Vectorworks Project Sharing, Graphisoft BIMcloud (ARCHICAD)

Example: Graphisoft BIMcloud

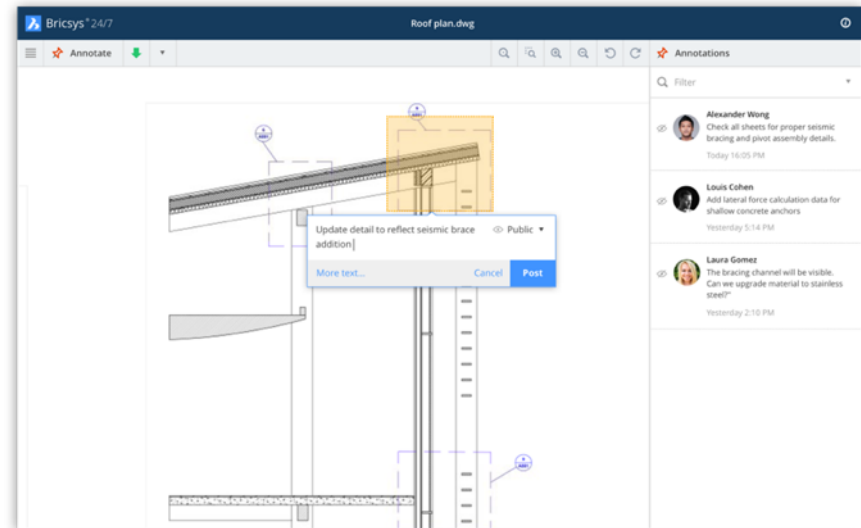


Issue Management System (IMS)

Issue Tracking & Management

- Conflict/Clash = possible problem
- Problem/Issue = relevant, unplanned event which requires action
- Workflow

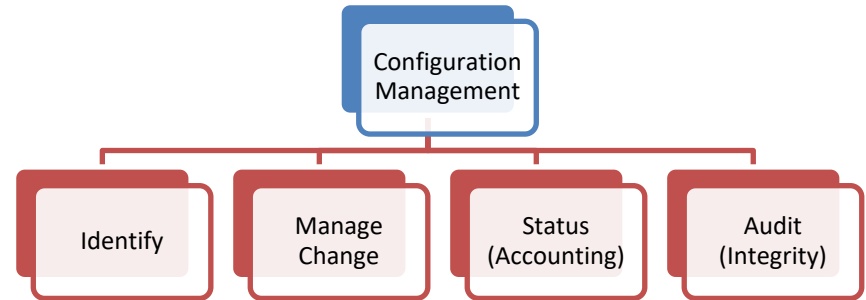
A vertical list of user avatars and names: 'You', 'Luc Bezier, John Williams, Peter Johnson', and 'Alexander Meyer'. To the right of this list are three buttons: a blue 'Respond' button, an orange 'WAITING FOR RESPONSE' button, and a green 'RESPONDED' button. Below the user list is a link that says 'View complete task history'.



Configuration Management System (CMS)

Change or Configuration management

- Managing “changes”
 - Design Changes (owner, architect)
 - Variants (contractor)
- Key Decision Points / RFC
- Evaluate impact before implementation
- Currently limited use
- Mostly in larger projects



Asset Management System (AMS)

Asset & Facility Management

- Asset = "of value" for organization
- Final as-built status
- Extract information to be managed
 - Cleanup
 - Remove temporary information
 - Remove non-managed information
- Handover / Convert
- In-use / Exploitation

Project Information Model
(design + construct)

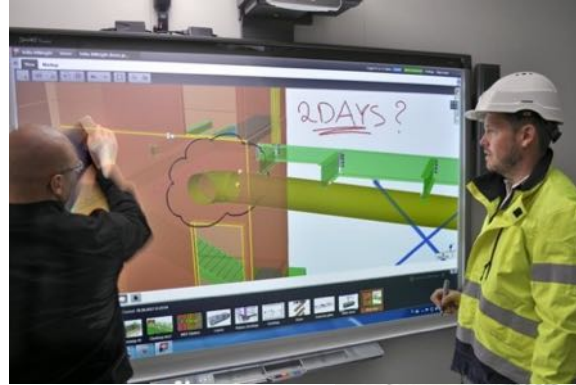
As-built Model (handover)

Asset Information Model
(in use)

Towards collaborative BIM platforms



<https://www.tekla.com/about/news/mota-engil-relies-heavily-bim>



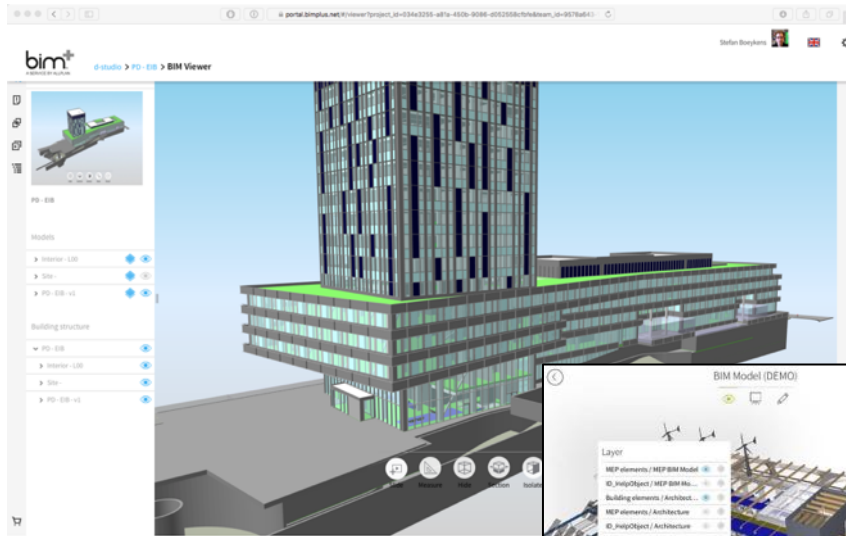
<https://www.aconex.com/sites/default/files/cross-discipline-collaboration-1-1.png>
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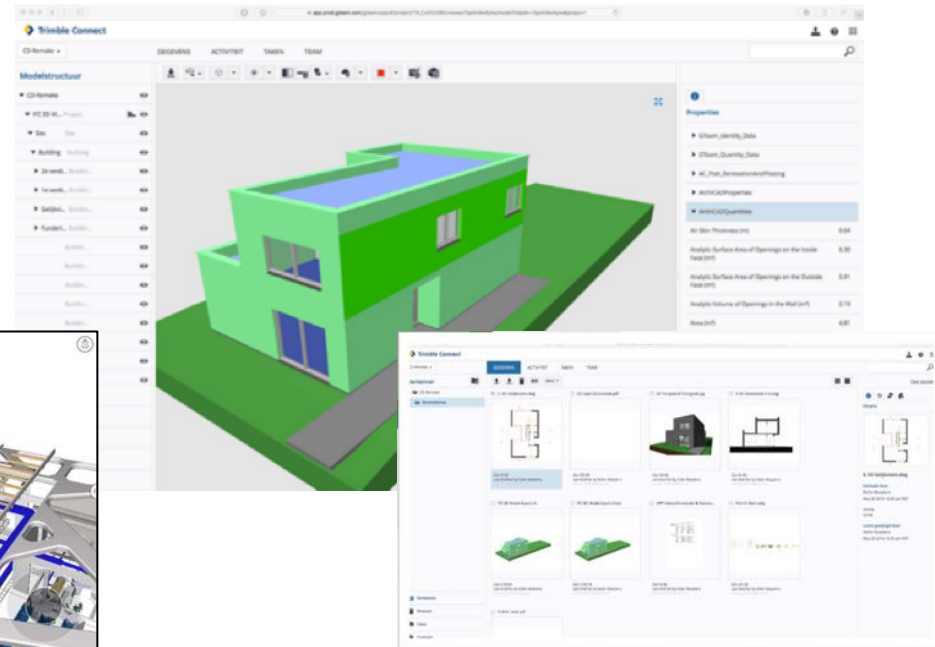
<http://www.graphisoft.com/images/bimcloud/bimcloud-concept-thumbail.jpg>

Towards collaborative BIM platforms

BIM+ Allplan

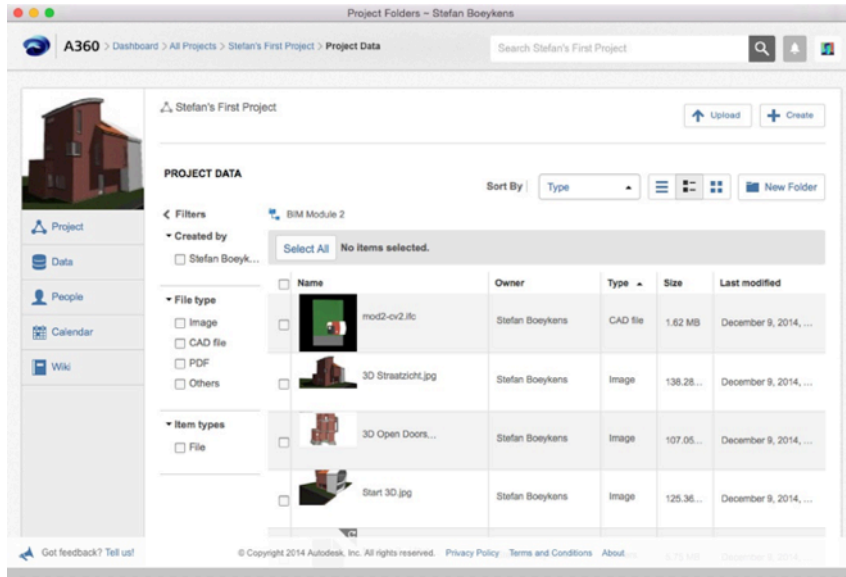


Trimble Connect



Towards collaborative BIM platforms

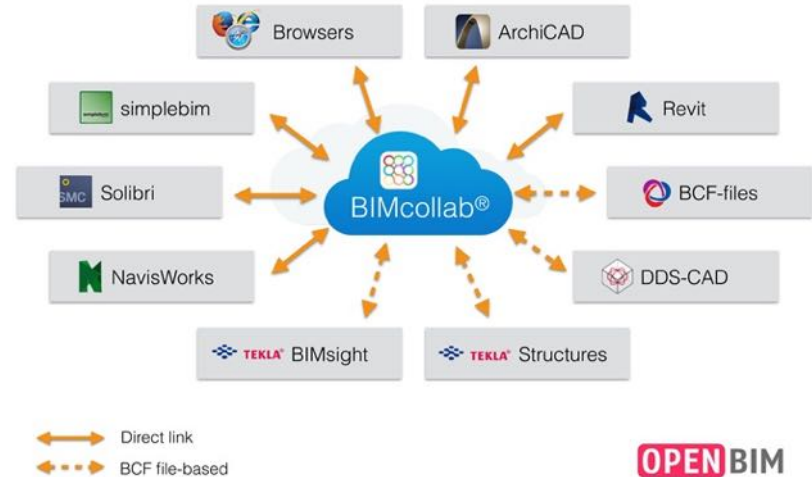
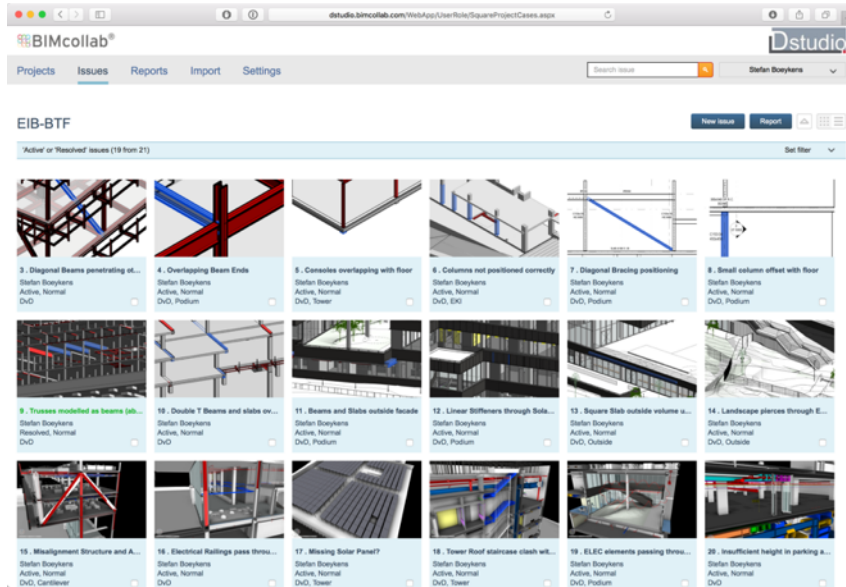
Autodesk A360 / BIM 360

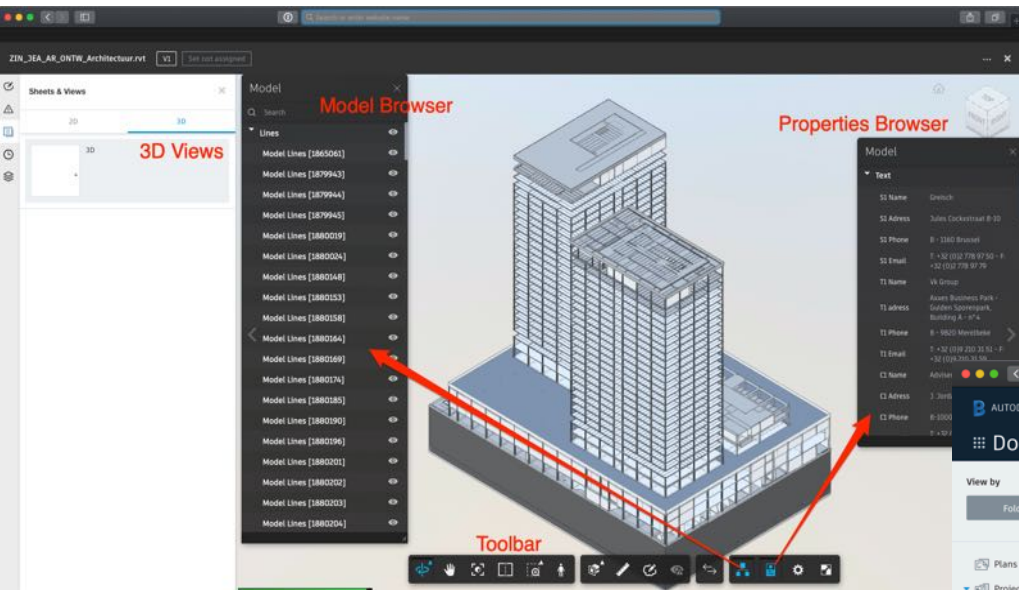


Towards collaborative BIM platforms

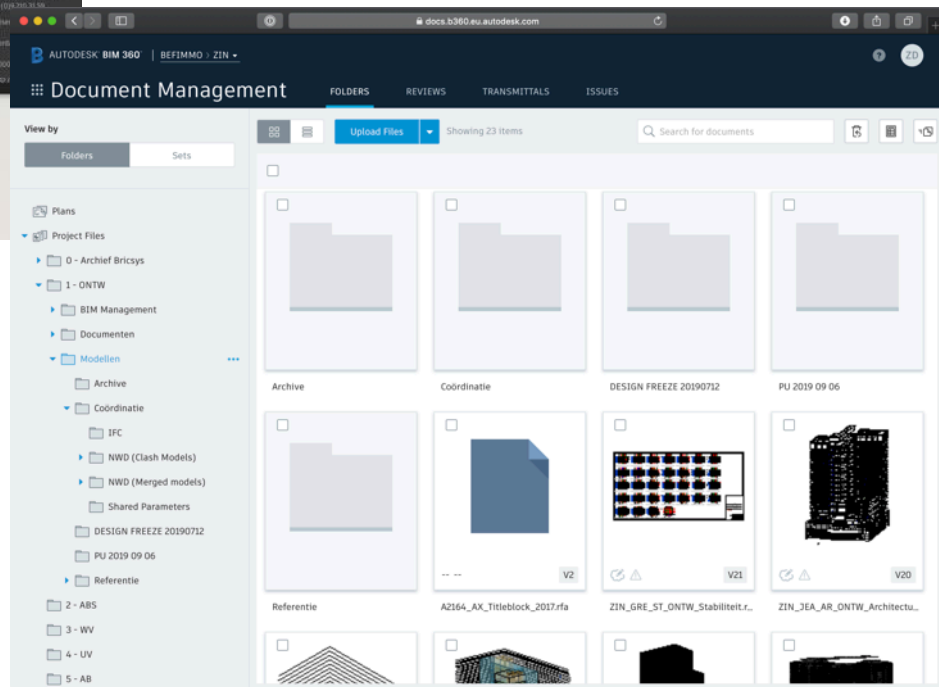


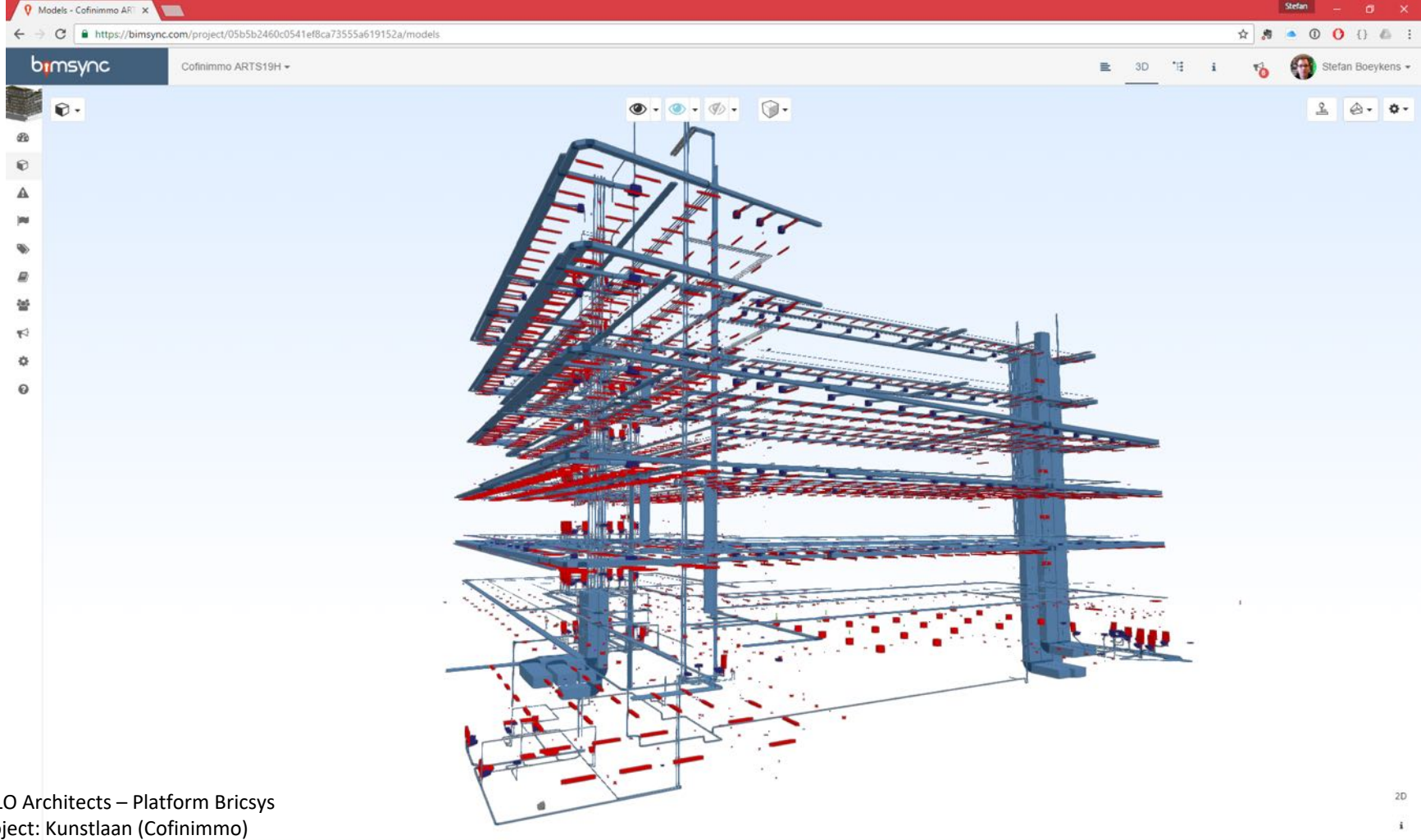
Kubus BIMcollab





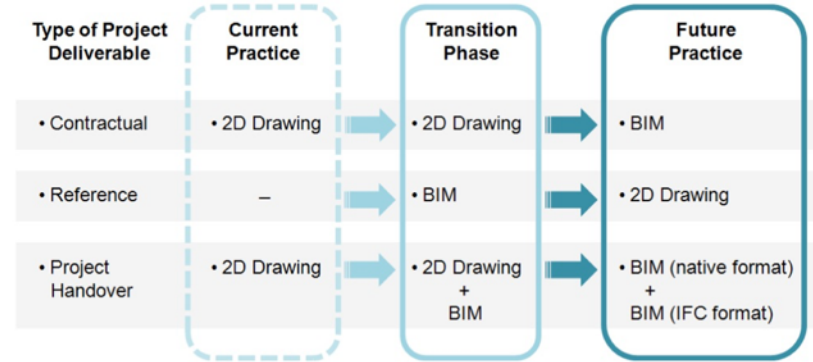
© THV Zin In No(o)rd – Platform BIM 360 Docs
Project Zin In No(o)rd (Befimmo)





Struggles within projects

- BIM often applied (too) late
- Too much focus on geometry/3D
- Lack of experience
 - Software
 - Standards
 - Processes
- Lack of transparency
- Resistance to change



Source: Singapore BIM Guide Version 2.0

The changing status of 2D drawings and BIM from current to future practice



Hwang Hyun-Soo "Life Full of Competition"
(Korea Museum of Modern & Contemporary Art)

Opportunities

- More mature platforms
- Integration
 - Modelviewers
 - Link to modelling software
 - Workflows (e.g. issue tracking)
- Standards (new & upcoming)
 - National (e.g. CLUSTER BIM)
 - International (ISO + CEN)
 - Best Practices, Guidelines



OPEN BIM (IFC, CDE, STANDARDS)

What is Open BIM?

What?

- Open
 - Free to implement & use
 - Documented
- Long term access to information
- Software & platform independence
- No vendor lock-in
- Freedom to adopt technical solutions

Closed BIM vs Open BIM vs OPEN BIM™

- Closed BIM = working exclusively with a single, proprietary platform
- Open BIM = applying BIM processes using open standards
- OPEN BIM™ = marketing initiative from buildingSMART + software vendors to promote open BIM

Industry Foundation Classes (IFC)



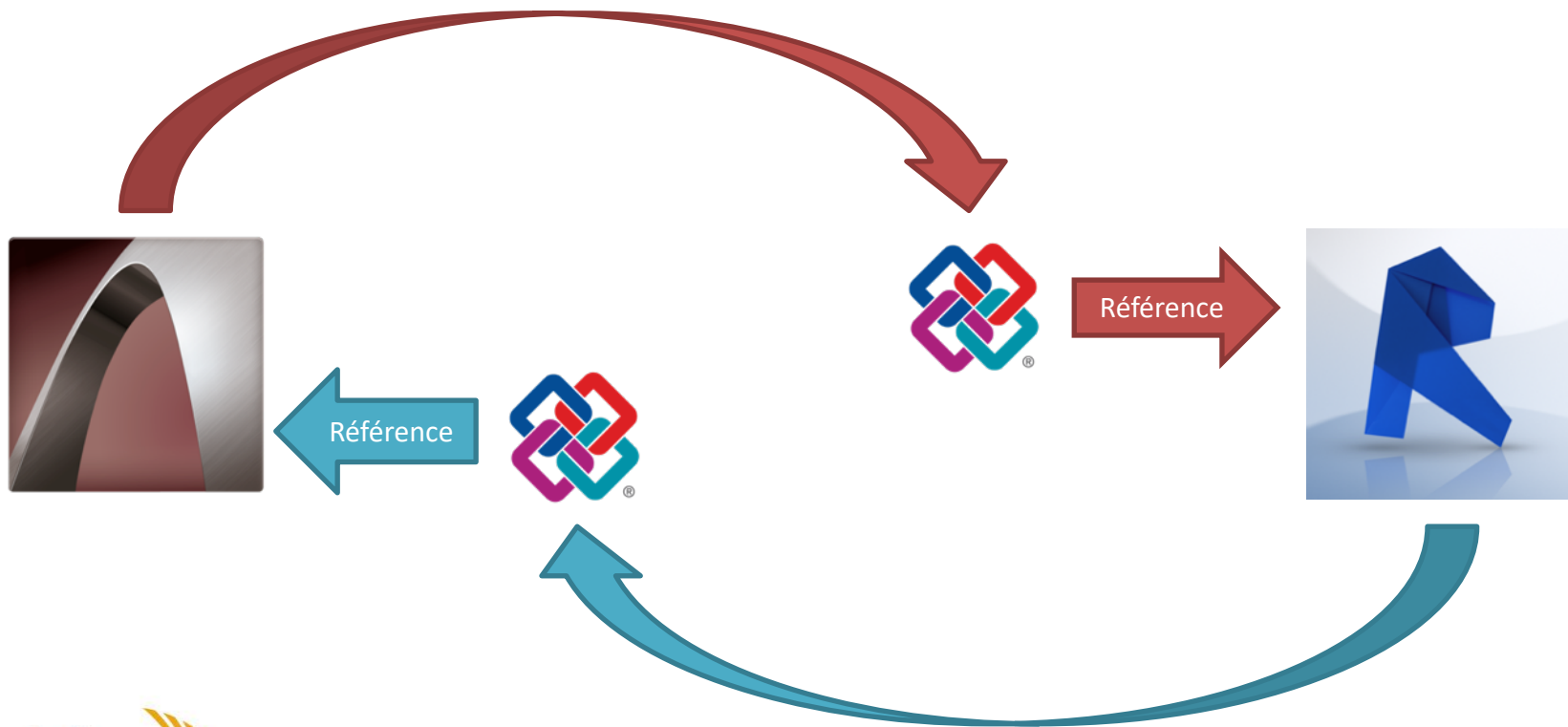
What is IFC?

- Open and standardized
 - Schema
 - Ontology (terms, descriptions, relations)
 - File Format
- Supported by all BIM software
- Industry-wide support
 - buildingSMART International
 - NBN EN ISO 16739
 - Software vendors + Certification

Simplified Description



Exchange Workflow IFC



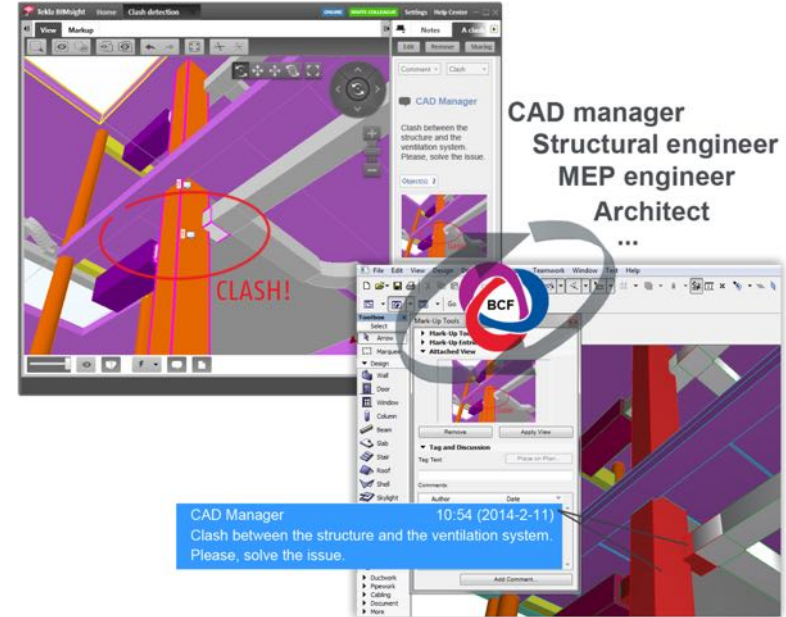
BIM Collaboration Format (BCF)



What is BCF?

- Comments "about" model
- Issue, Clash, Remark, Info
- Priority + Responsibility
- Comments + Screenshots + Viewpoint
- No model, no geometry
- File-based or transaction-based
- Integration with software via plug-ins

Simplified description



Open CDE

What is OpenCDE?

- New initiative
- Upcoming International Standard
 - German VDI 91391
 - Adopted as CEN/TC 442 New Work Item



Simplified Description

- Exchange between CDE
- Standardized API
- Platform-independent
- Support from software vendors

IFC to exchange “models”

OpenCDE to exchange “CDE information”

Questions? Comments? Follow-up?

sb@dstudio.be – stefan.boeykens@kuleuven.be

THANK YOU FOR YOUR ATTENTION!