



# Building Information Modelling

Current Developments and Challenges

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INTERNATIONAL WORKSHOP  
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HERITAGE CONSTRUCTION TECHNOLOGIES  
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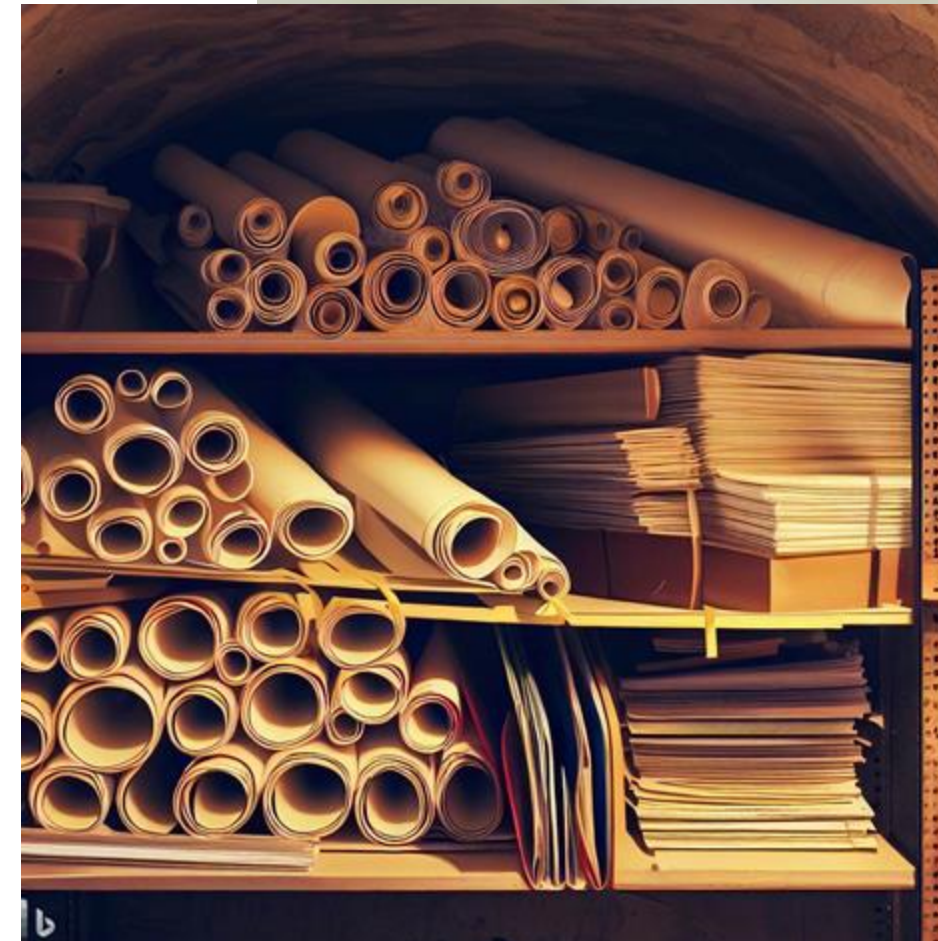
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# Concepts and general aspects



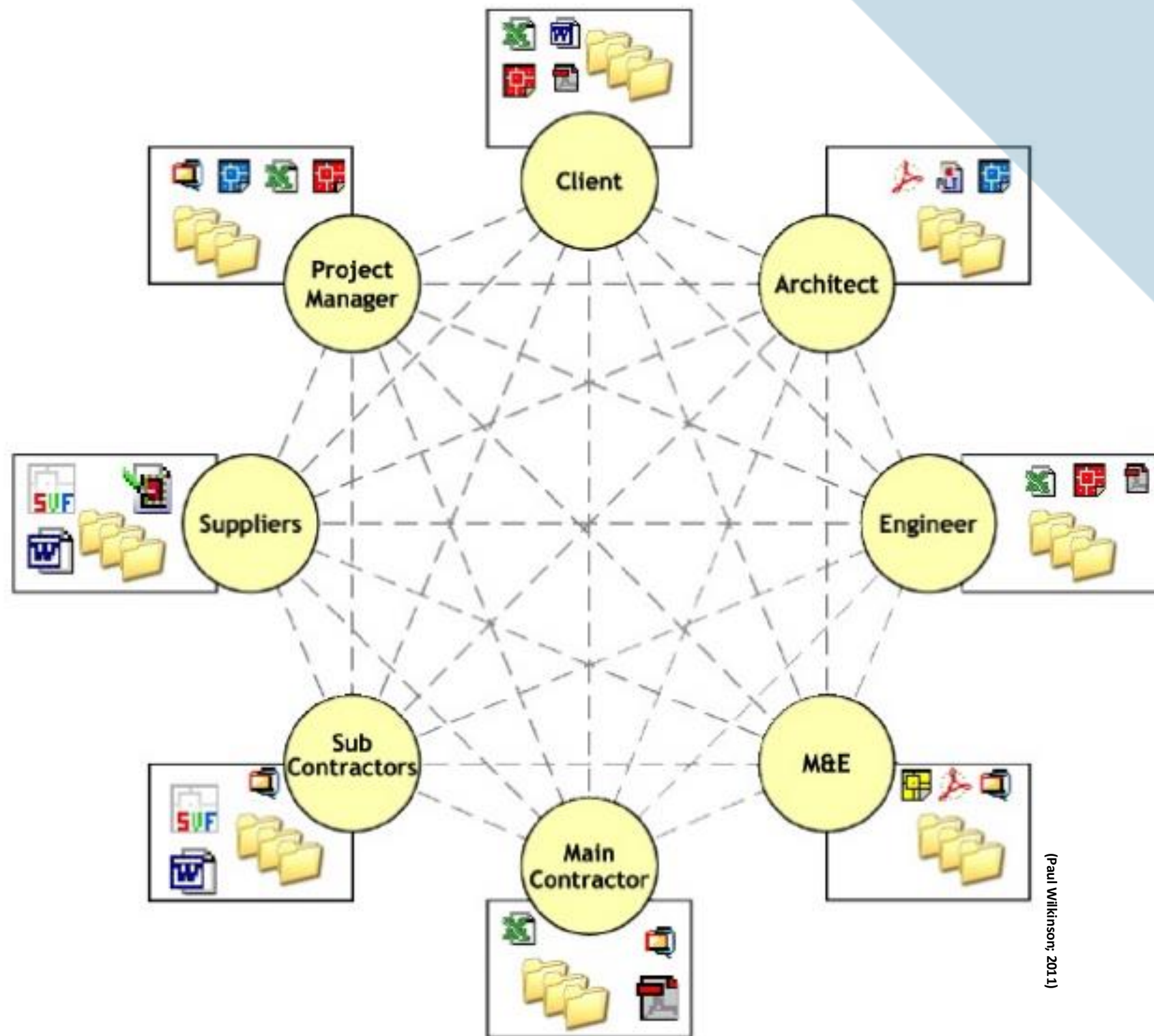
# The AECO Industry (AECO)

Architecture, Engineering, Construction, Operations





# The traditional collaborative processes



## Disadvantages:

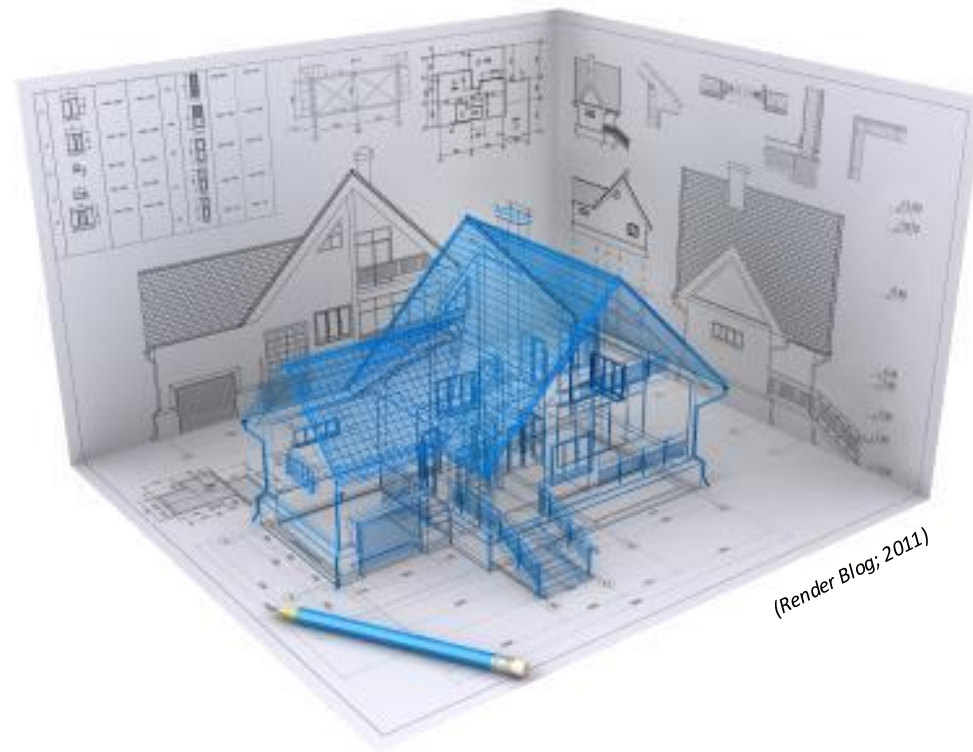
- Disorganized work;
- Sequenced processes - waiting times;
- Faulty communications;
- Lack of information sharing.

## Consequences:

- Errors in design.
- Inefficiency

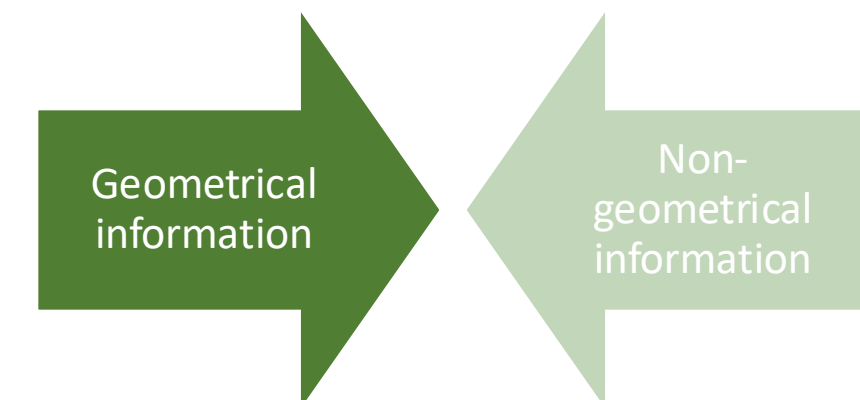
# The need and purpose of BIM

## Building Information Modelling



*“If an image is worth more than a 1000 words, a model is worth more than a 1000 images.”*

*BIM is a methodology for information sharing and communication between all stakeholders and all the stages of the lifecycle of a construction, which is supported in a digital model, that is accessible through software and allows the virtual manipulation of the construction.*

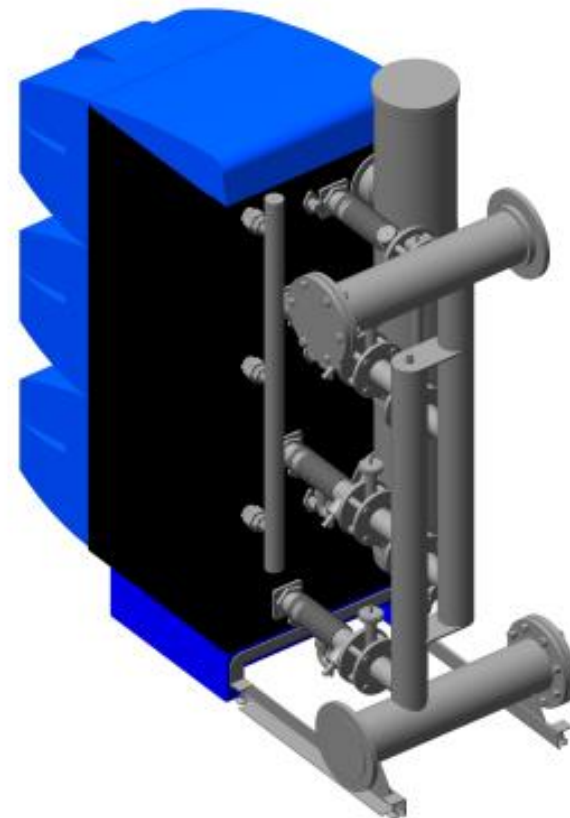
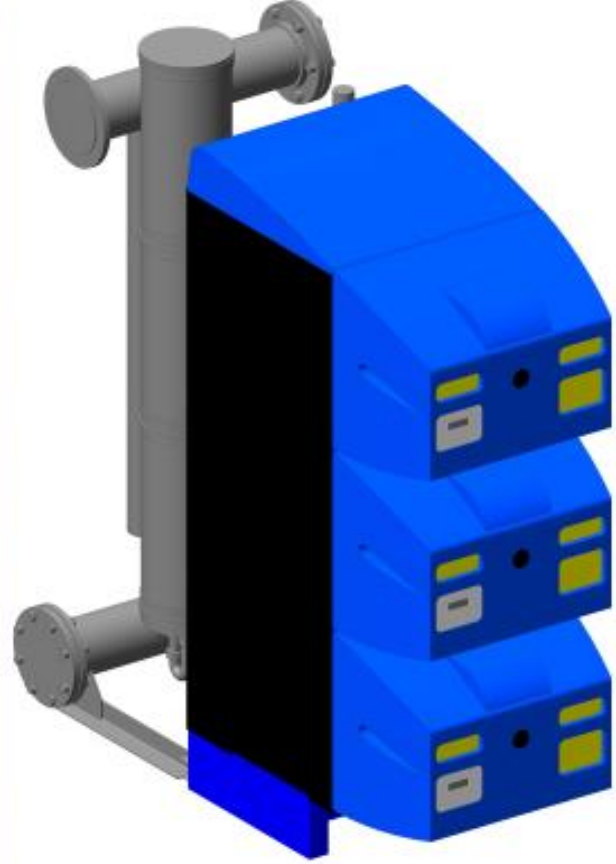


# Why now, and not before?

- . Hardware*
- . Software*
- . Interoperability*
- . Standards and normalization*
- . Market demand*
- . Government demand and awareness*

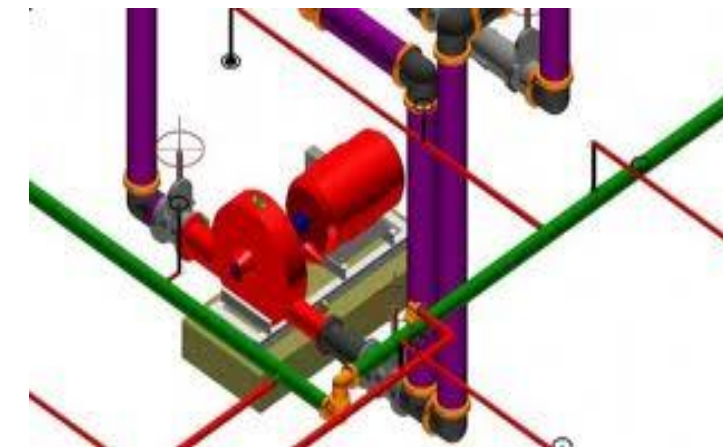
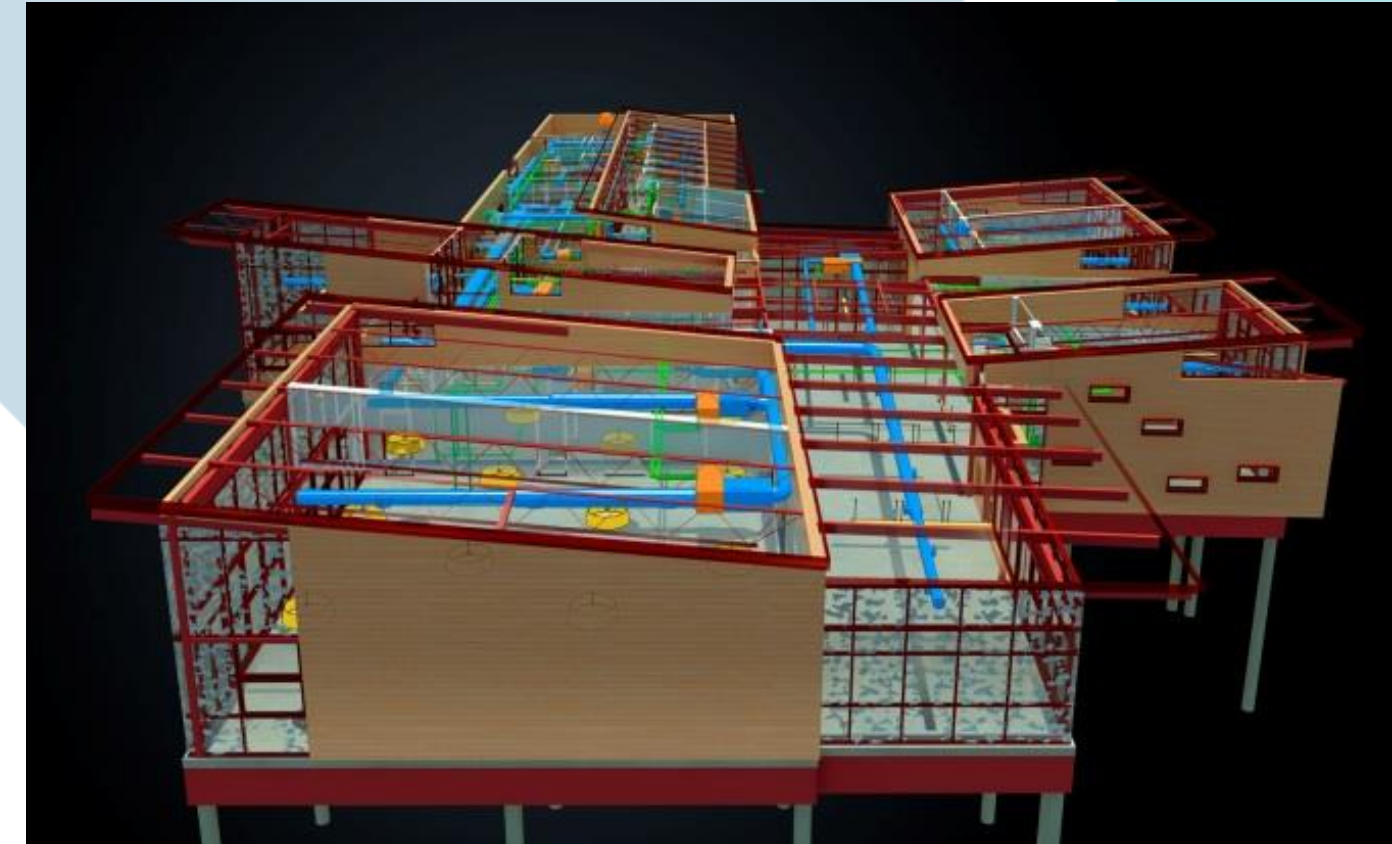
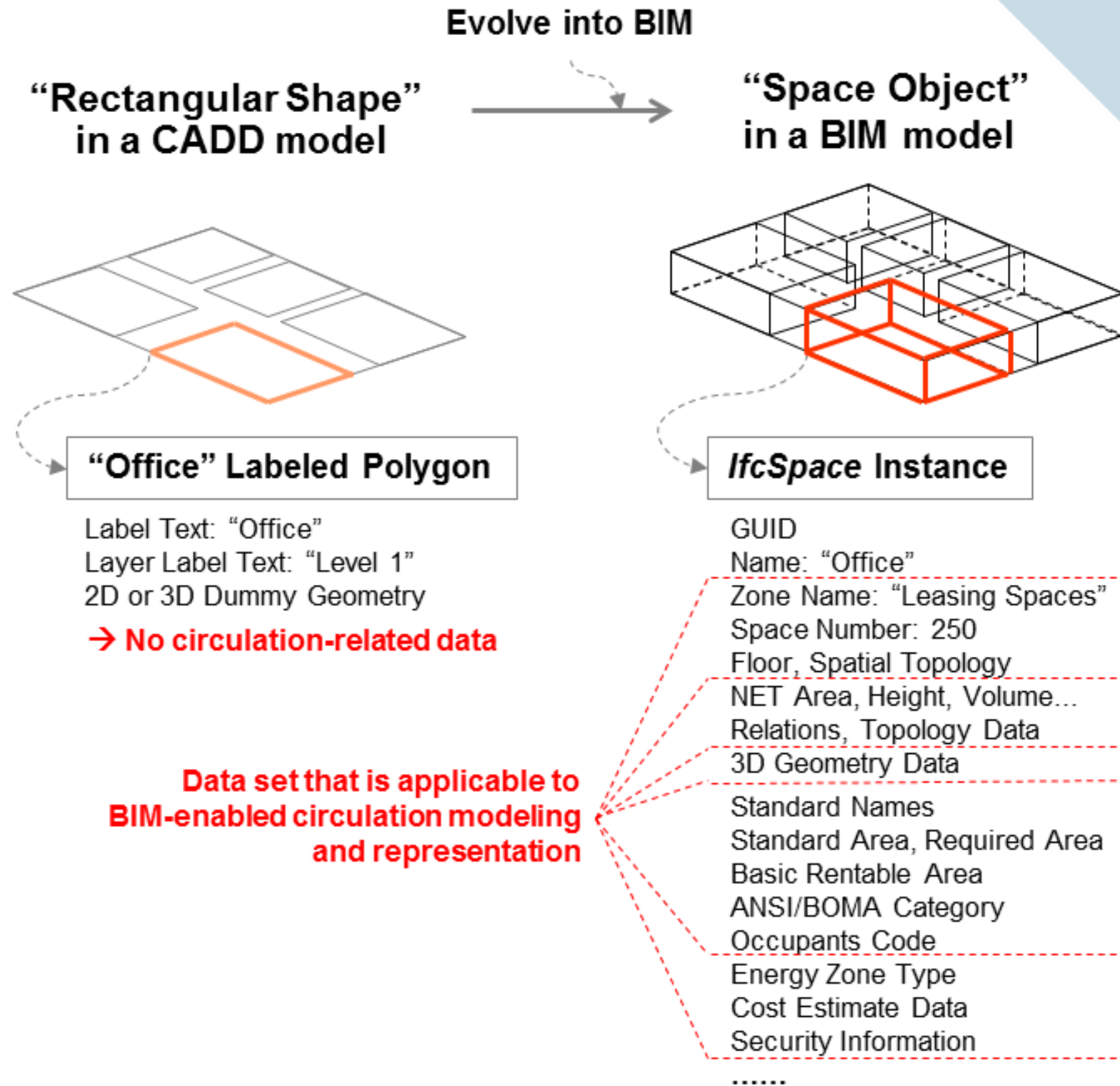


# Object-oriented modelling



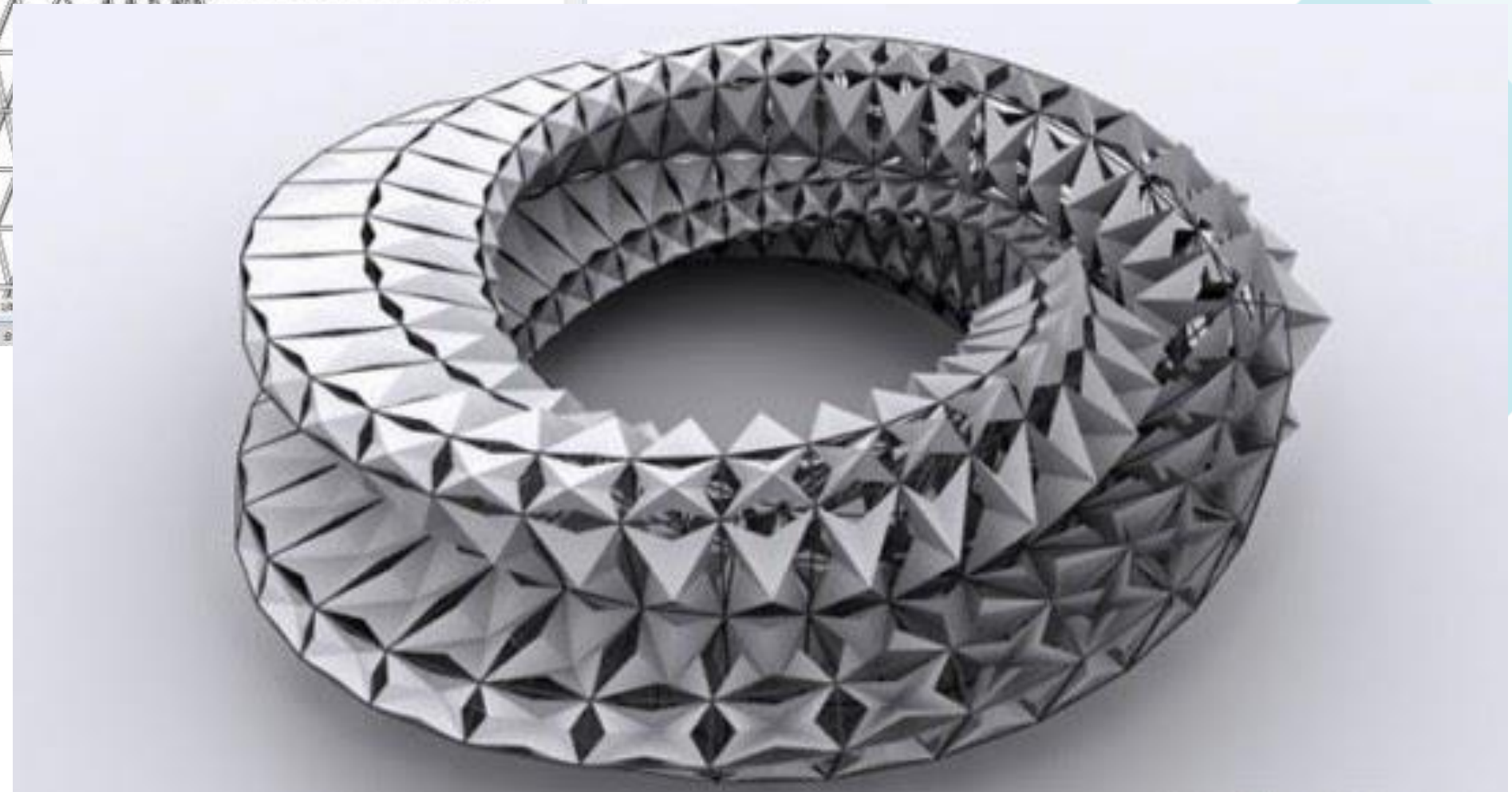
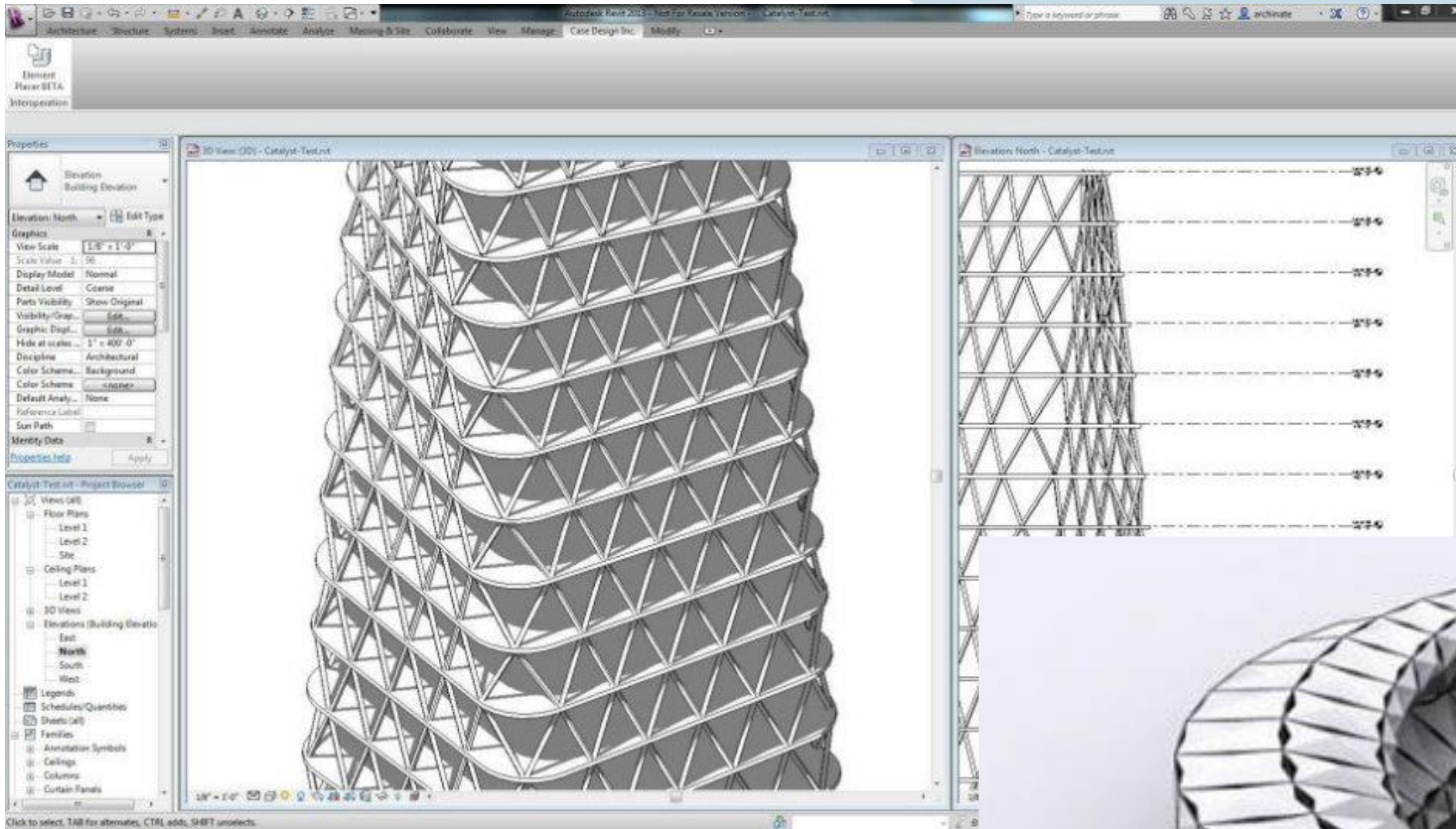


# Emphasis on data/information



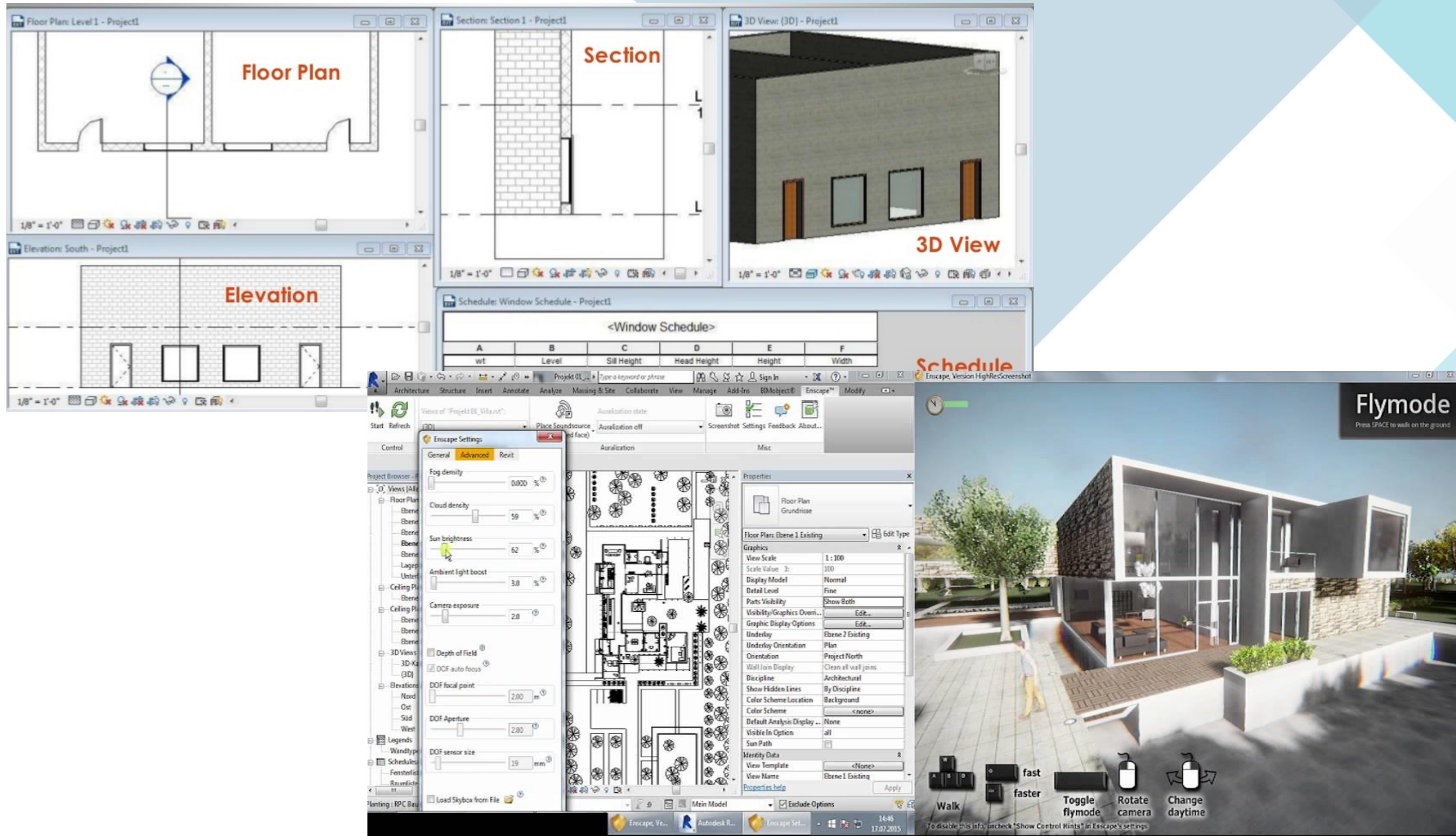


# Parametric modelling

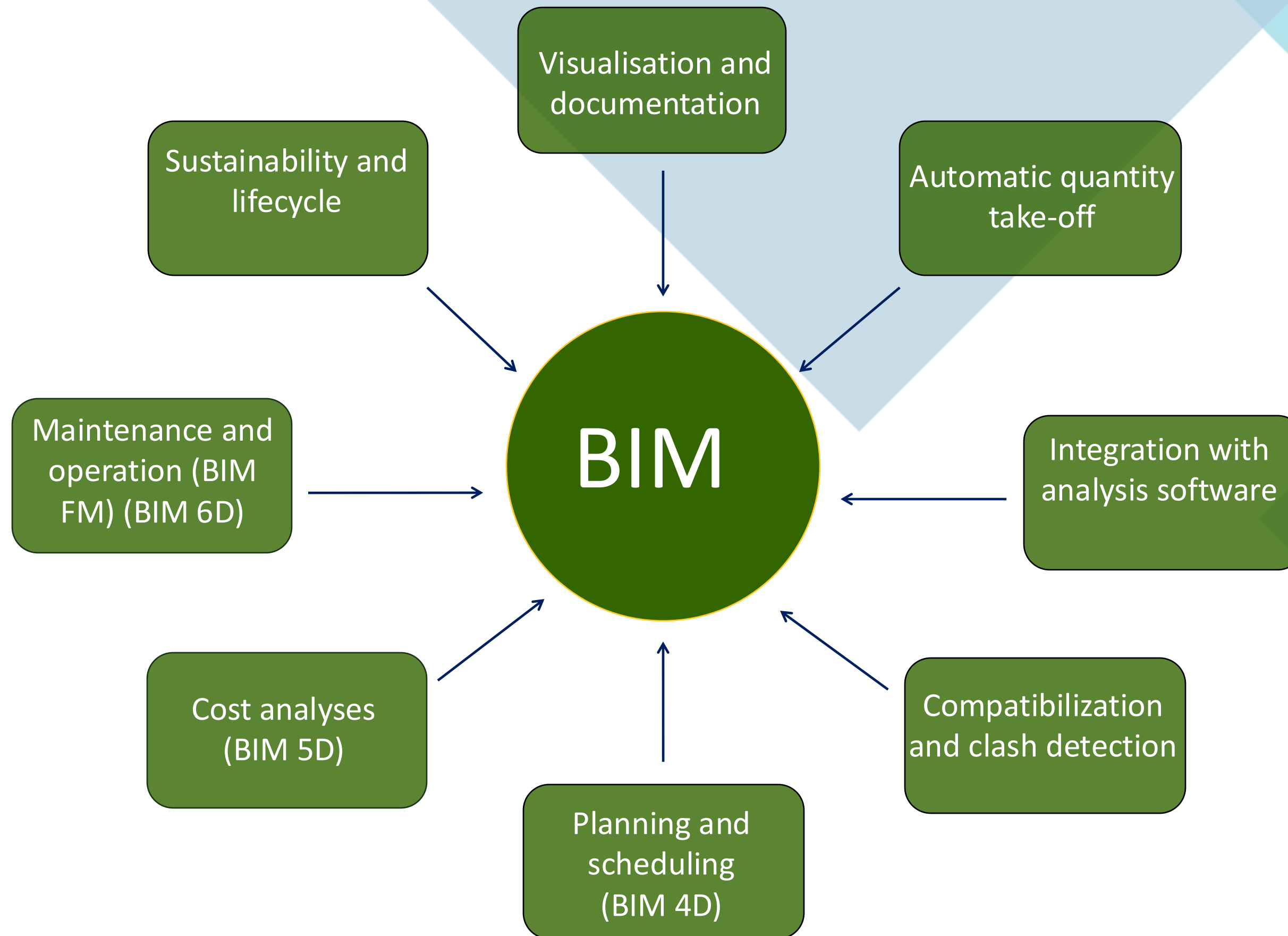




# Working in a BIM platform

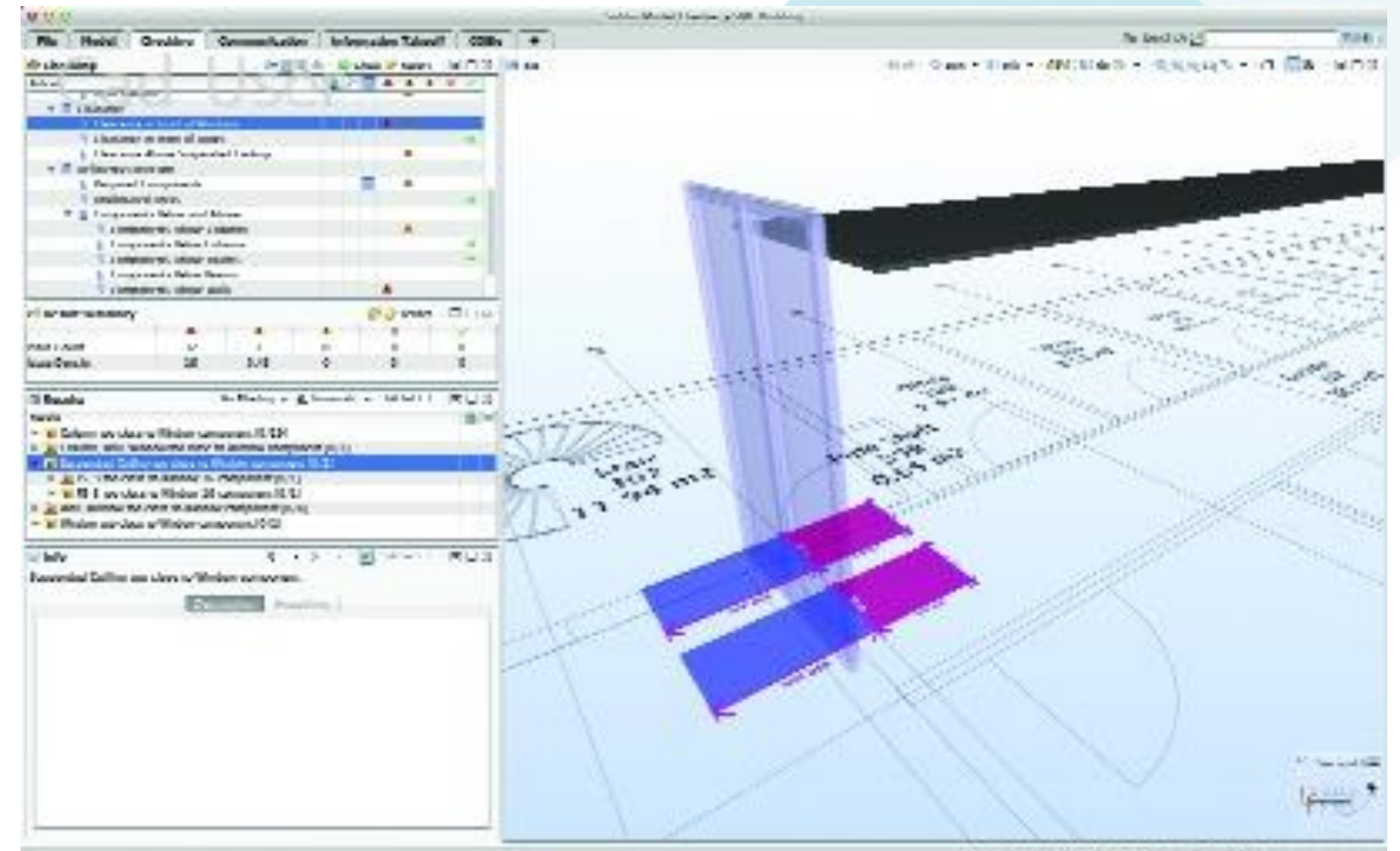
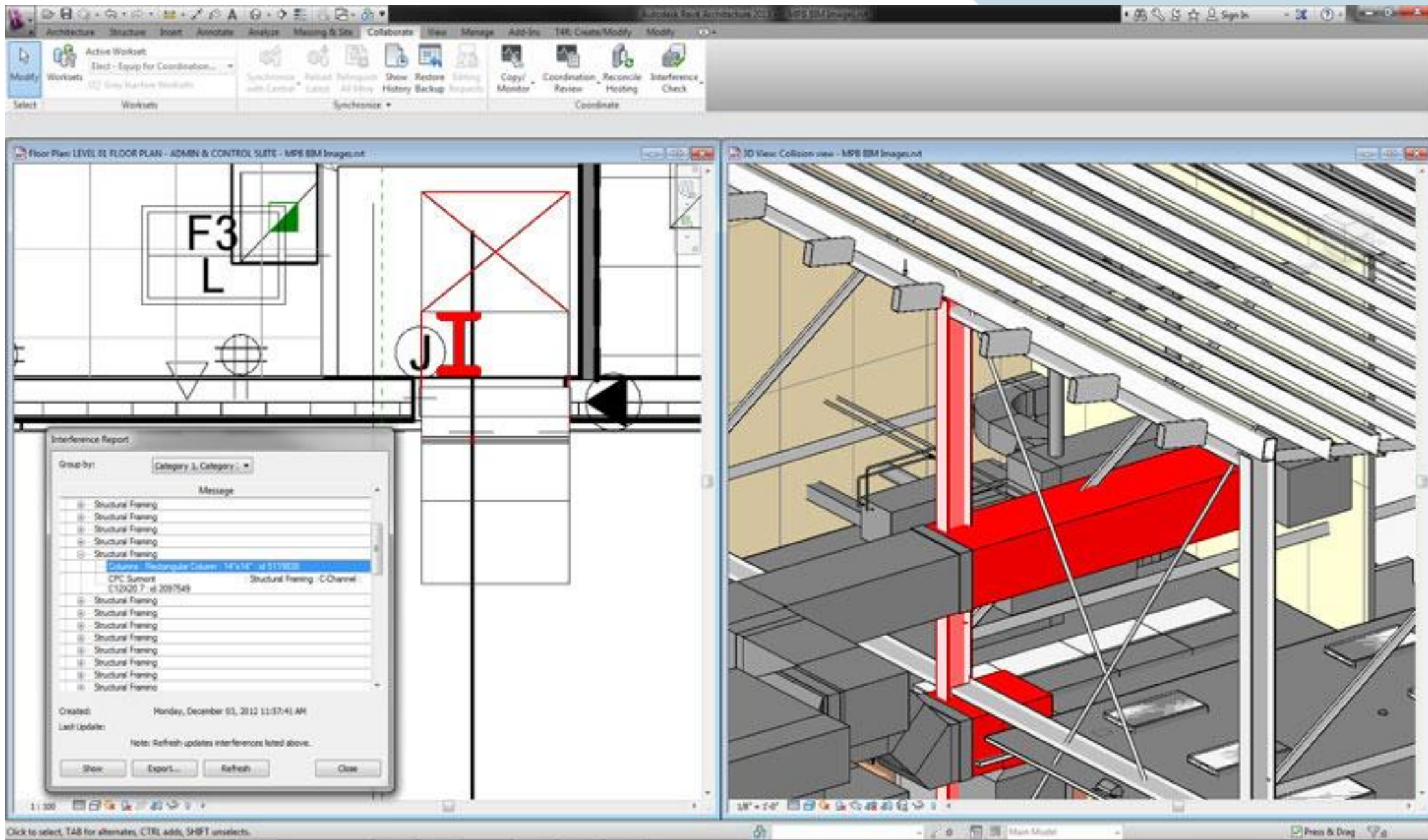


# Functionalities and potentialities of BIM



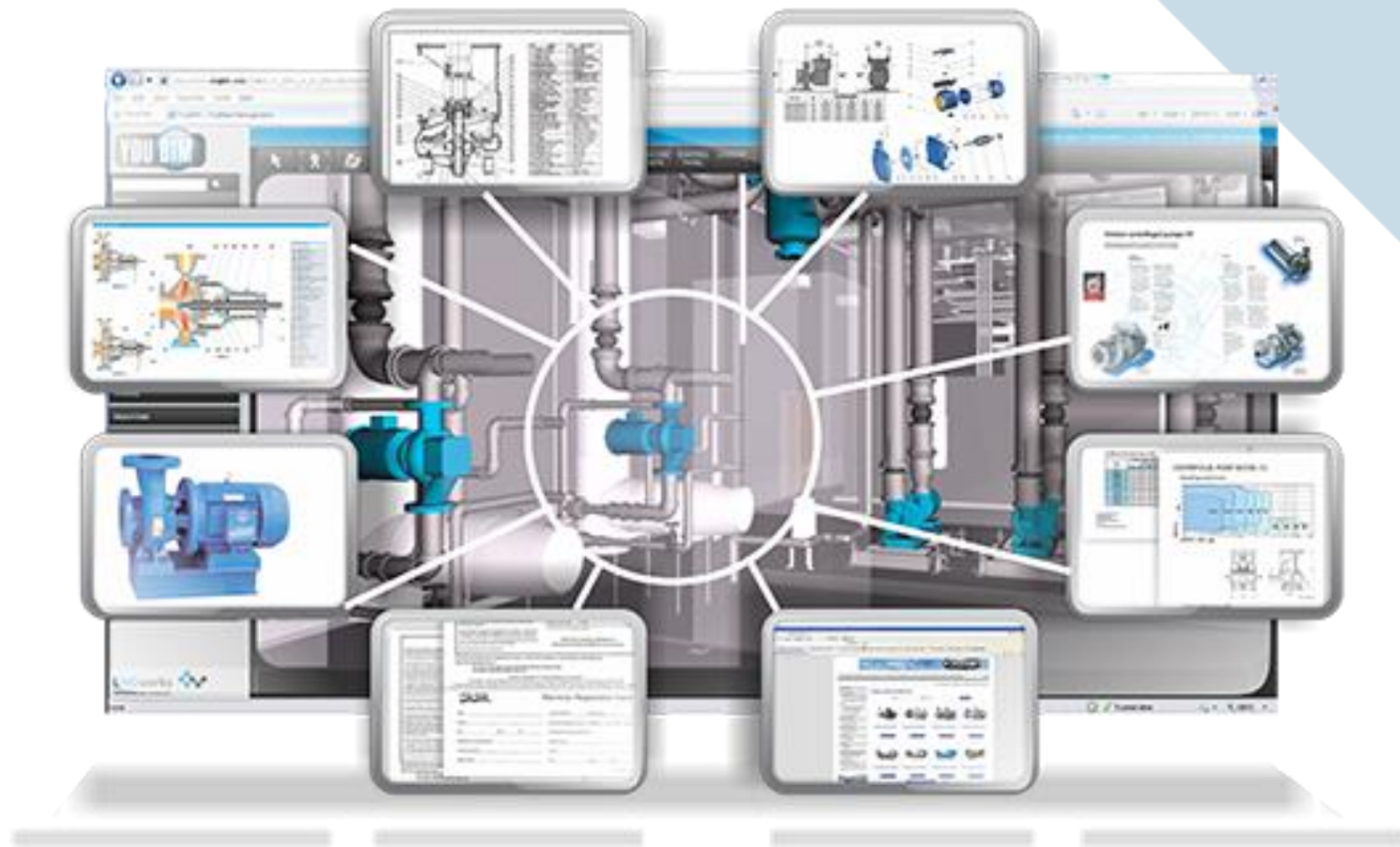


# Enhanced collaboration



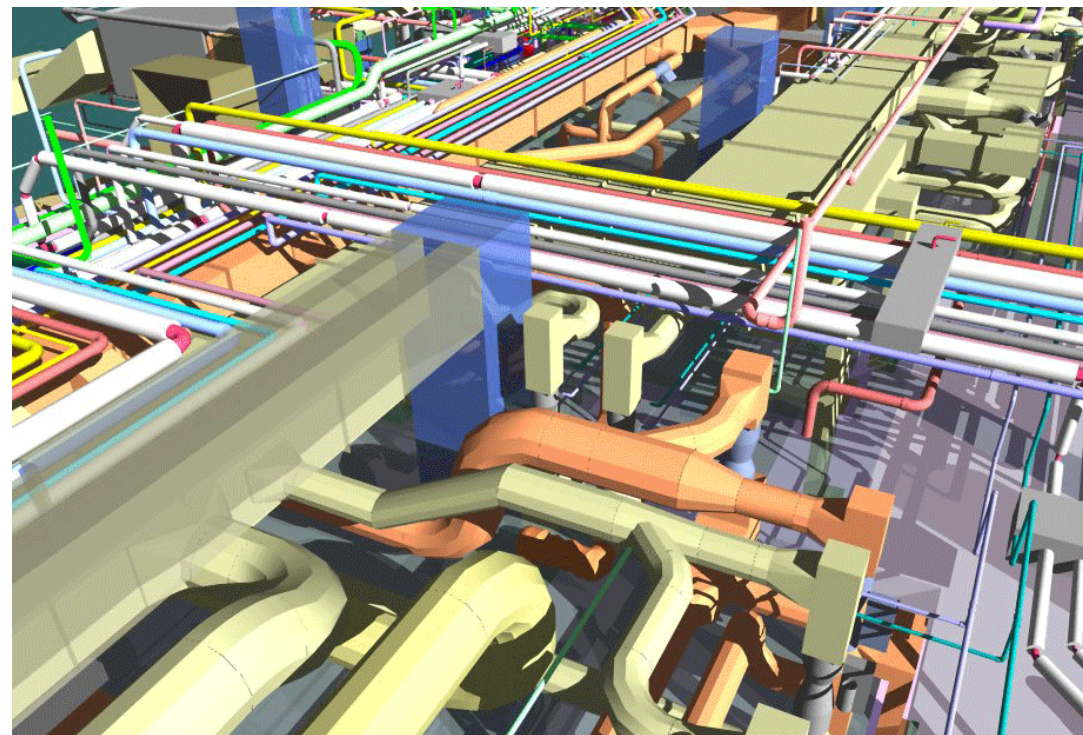


# Facilities management



## Advantages:

- Faster information sharing;
- Improved management of space;
- Simplified maintenance;
- Efficient use of energy;
- Optimization of management cycles;
- Easy simulations.







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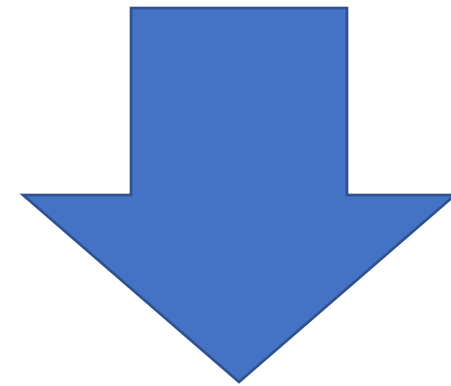
# Interoperability



# Definition and scope

Cambridge Business Dictionary - Interoperability

*“the degree to which two products, programs, etc. can be used together, or the quality of being able to be used together.”*



It is intended that the need for “manual copy” between distinct computer applications is eliminated, thus accelerating processes and minimizing errors.

# buildingSMART International





Verify Authenticity Code: yFTaJQJVVH

### Professional Certification Foundation Basic



This is to certify that **José Carlos Lino**

has successfully passed the Professional Certification - Foundation Basic exam.

This certificate attests to the knowledge and comprehension of openBIM fundamentals for the named individual and to the level stated above, according to the buildingSMART International Professional Certification Program.

Date: 19 December 2022



Céline Bent,  
Compliance Director  
buildingSMART International



Sergio Muñoz,  
Presidente  
buildingSMART Spain



Miguel Azenha,  
Academic Coordinator of CursoBIM  
TecMinho, Universidade do Minho



Program



Chapter



Provider



# buildingSMART International and OpenBIM

***Collaborative approach to design, construction and operation of the built environment based on open workflows and open formats.***



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# Standardization



# Standardization



buildingSMART  
International home of openBIM



ISO/TC 59/SC 3



CEN TC 442 BIM

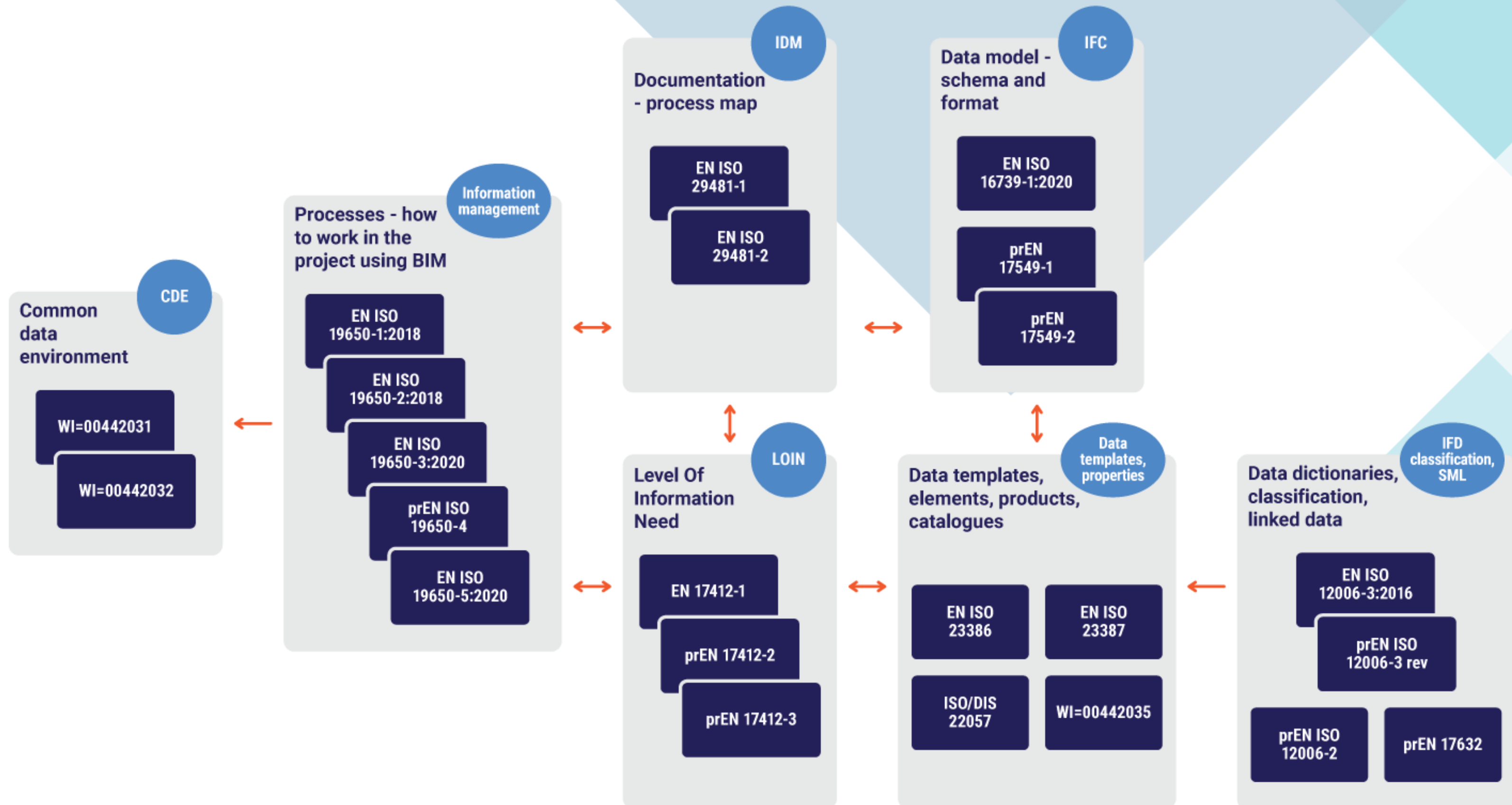


IPO,

NB  
CT197 BIM

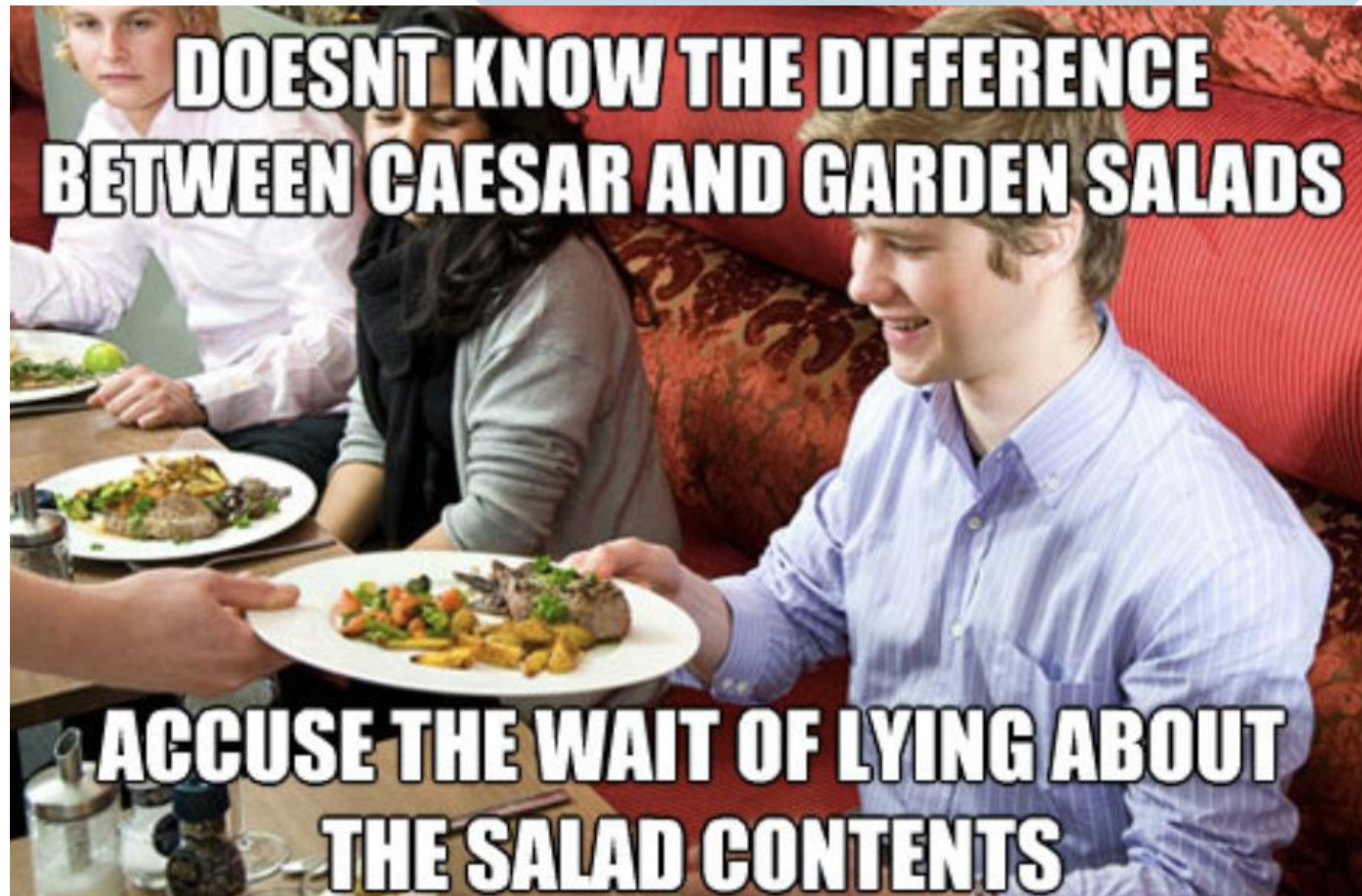
IPQ CT197- BIM

# Standards for information management in construction





## Importance of educating owners, government, markets

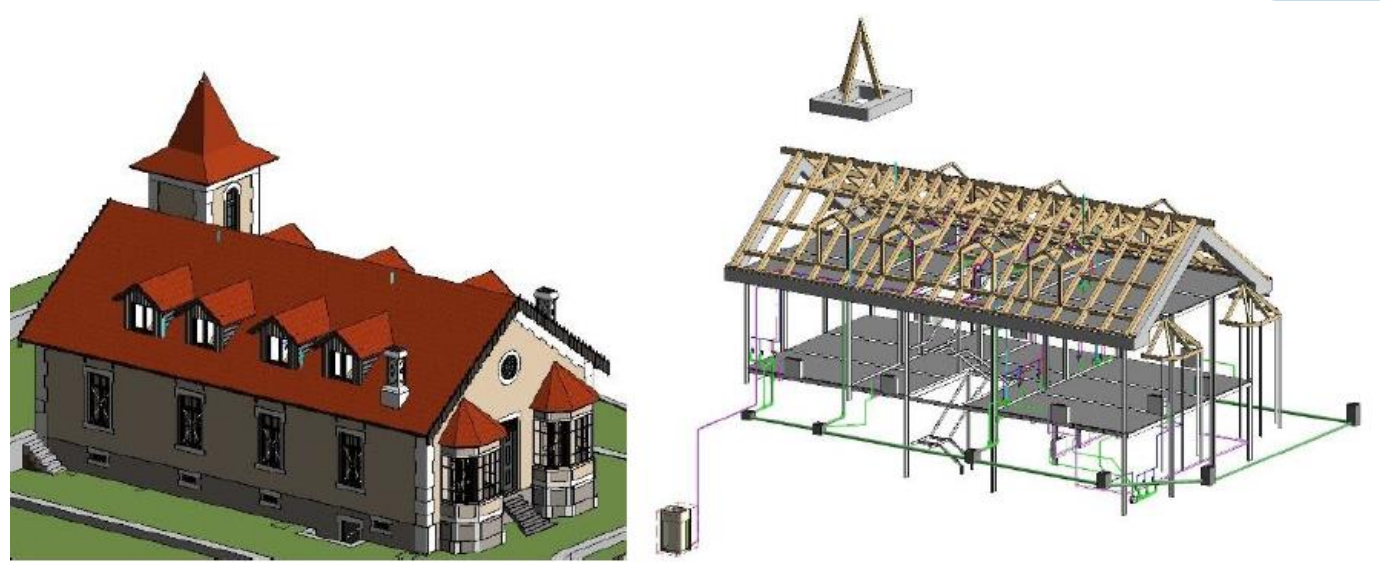


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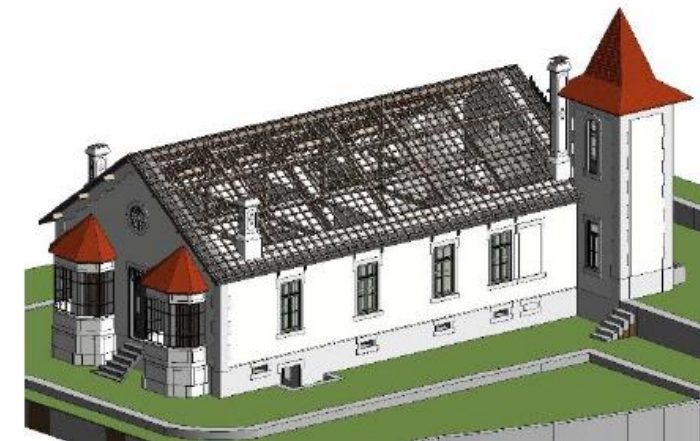
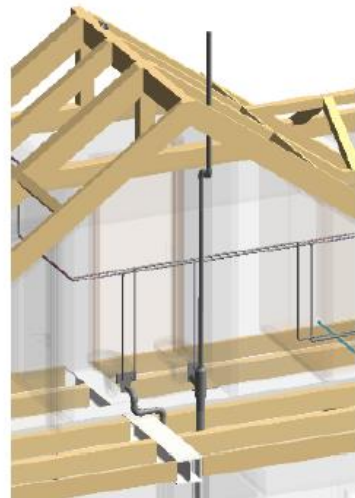
# Final thoughts and considerations



# Yes, BIM in historic constructions is possible! Also in Archaeology!



(Campos, 2018)



## Yes, BIM in SME's is possible!

BonsaiBIM -> free!

# Some final thoughts on possibilities and challenges

- . Benefits and viability of BIM have been demonstrated.*
- . Government and owner awareness increasing.*
- . Hardware, software, standards, interoperability -> enablers*
- . BIM in historic constructions and archaeology -> demonstrated*
- . Challenge to educate **people**/market (benefits not harvested immediately)*
- . Data to be stored/available for AI (Ontologies, Semantic web)*



# Thanks for your attention!

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