

BIM Coordination

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Learning outcomes

At the end of this lecture, the learner is expected to be able to:

- Explain the role of discipline-specific BIM models
- Understand why the specific models are merged to final model
- Assess the main advantages of Common Data Environment

BIM is a process

- BIM is long-term process, not just a 3D model of a building
- Many models are created during time in the BIM process
- Many participants and stakeholders are involved

Appointing Party



Client

Lead Appointed Party



Main Contractor /
Builder

Appointed Parties



Architect



Structural

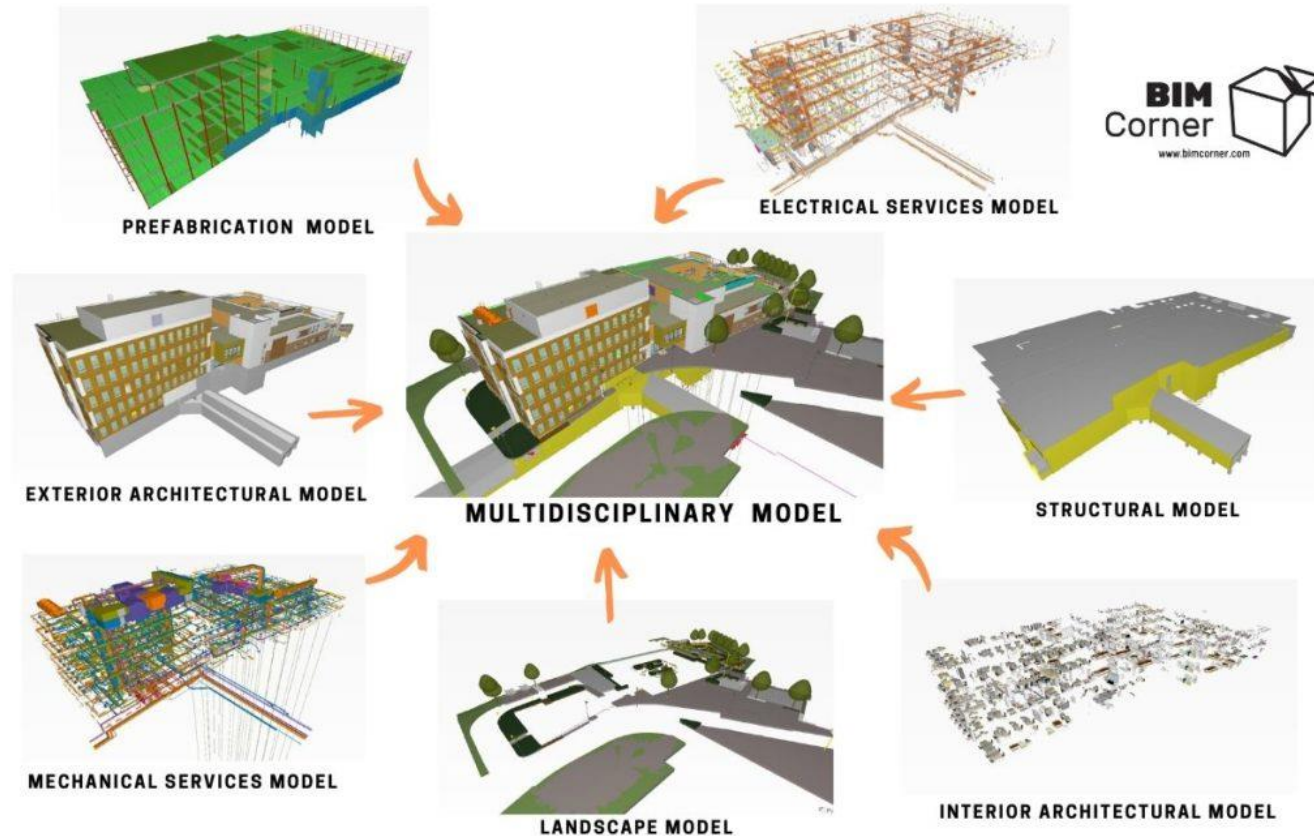


MEP

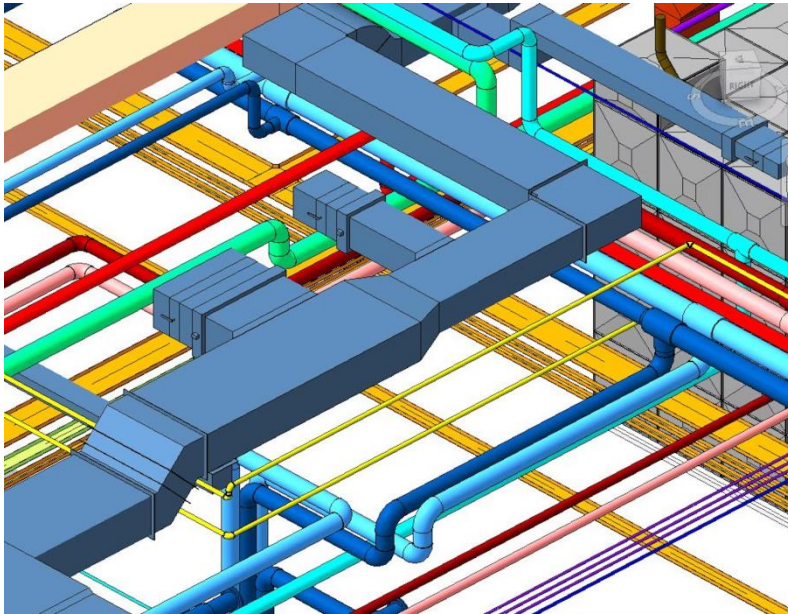
<https://bimimplementer.wordpress.com/2021/01/13/appointing-appointed-and-lead-appointed-which-party-am-i/>

Discipline Specific Models

- Every discipline creates individual models
- E.g. architectural, structural, mechanical model etc.
- Then merged into multidisciplinary model

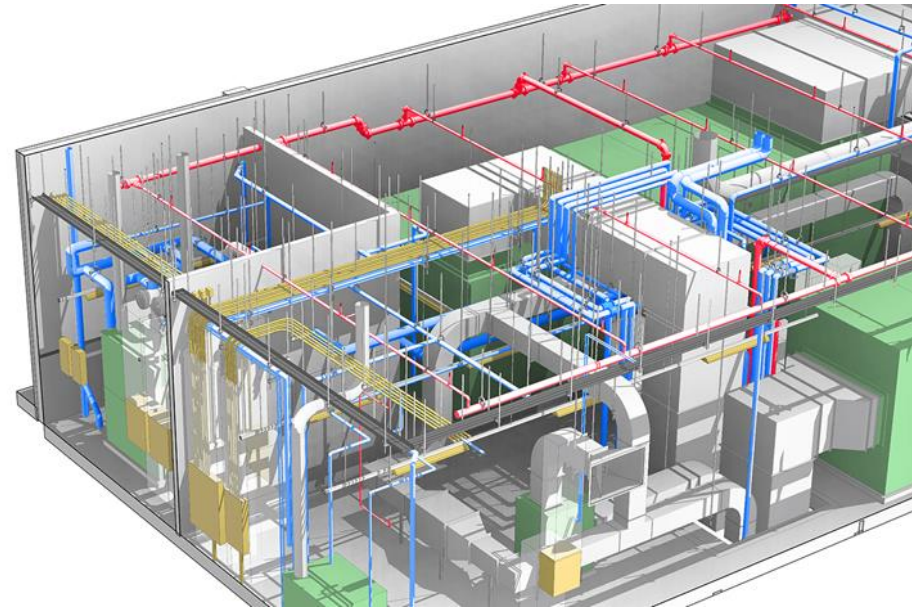


MEP and HVAC models



<https://architizer-prod.imgix.net/media/mediadata/uploads/1501069320666C12.JPG?q=60&auto=format,compress&cs=strip&w=1680>

<https://i.pinimg.com/originals/ed/32/8e/ed328eaeff80cb955b7914828e95d2d9.png>

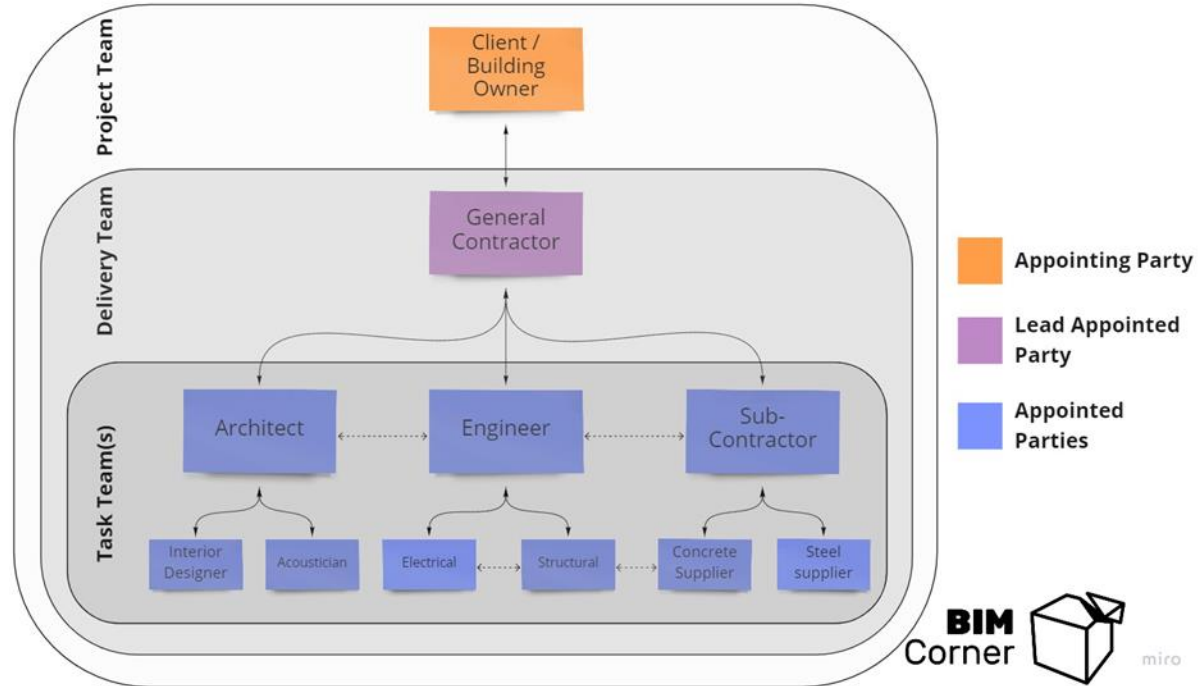


HVAC (above) - Heating, Ventilation, and Air Conditioning

MEP (left) - Mechanical, Electrical (Systems) and Plumbing

BIM Stakeholders

- Several equivalent names exist on each level
- ISO 19650 terms try to unify these names
- Task Teams
(Appointed Parties)
are coordinated by
Delivery Team (Lead
Appointed Party,
General Contractor)



<https://bimcorner.com/iso-19650-terms-explained-in-this-simple-way/>

BIM role levels

There are three levels of BIM roles in any organisation

- BIM developers = engineers specialised in a discipline
- BIM coordinator responsible for the technical implementation of BIM
- BIM manager putting together merged BIM model and performing its checks

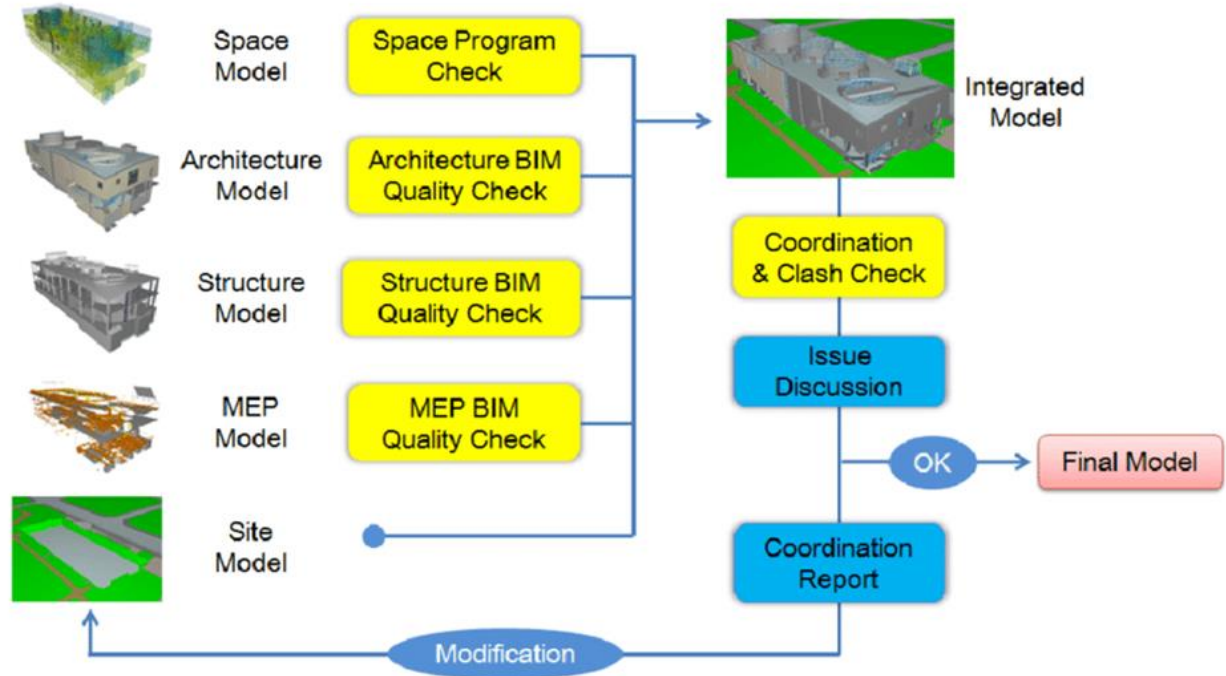


[The Ultimate Guide to BIM PMP \(Project Management Plan\) - BibLus \(accasoftware.com\)](#)

BIM Quality Checks

Checks are done regularly and according to BEP, looking for :

- appropriate software
- code and syntax
- required parameters and their values
- compliance with BIM standards, legislations and requirements



https://www.researchgate.net/publication/298698060_BIM-Based_Quality_Control_for_Safety_Issues_in_the_Design_and_Construction_Phases/figures?lo=1

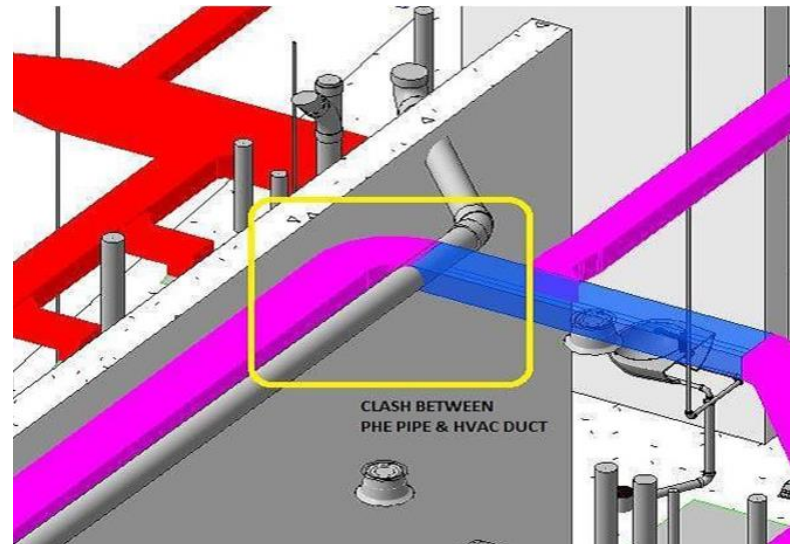
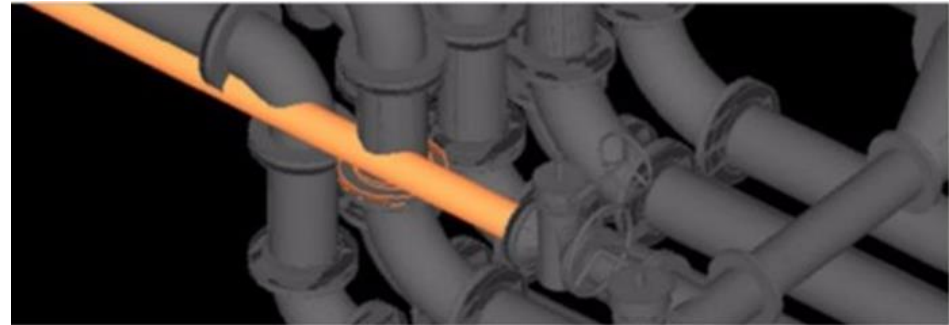
Clash Detection

3D geometry checks of:

- Clashes
- Distances
- Duplicates
- Presence / absence of building elements
- Overall design

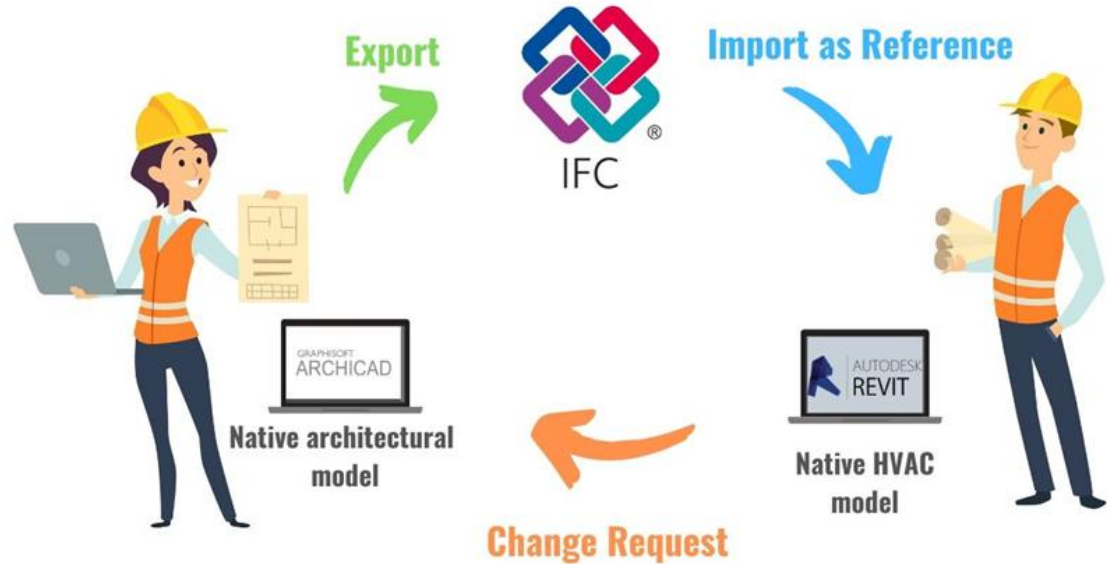
Upper figure: [clash-detection.jpg \(632×337\) \(schmidt-arch.com\)](#)

Lower figure: [bim-clash-detection-and-resolutions-full.jpg \(724×609\) \(olilo.ae\)](#)



Using IFC - Format for Quality Checks

- IFC – Industry Foundation Classes – is a standard format to share BIM models among disciplines
- Experts export discipline specific file formats to IFC, send it to BIM Manager for quality checks, then do changes back in the native format



<https://bimcorner.com/everything-worth-knowing-about-the-ifc-format/>

Common Data Environment, CDE

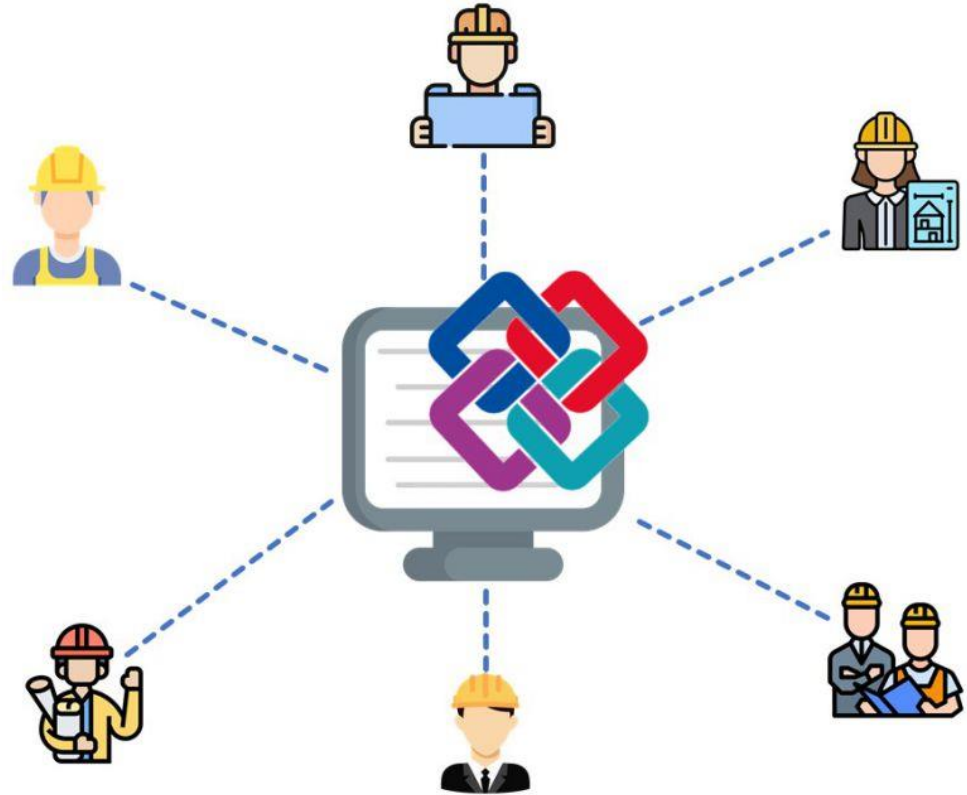
- BIM project = huge amount of data
- Data is usually stored in a cloud-based application called CDE
- Data-sharing and communication among stakeholders
- Authorization of access to relevant parts of data



<https://constructible.trimble.com/productivity/what-is-a-common-data-environment-and-how-is-it-used-in-construction>

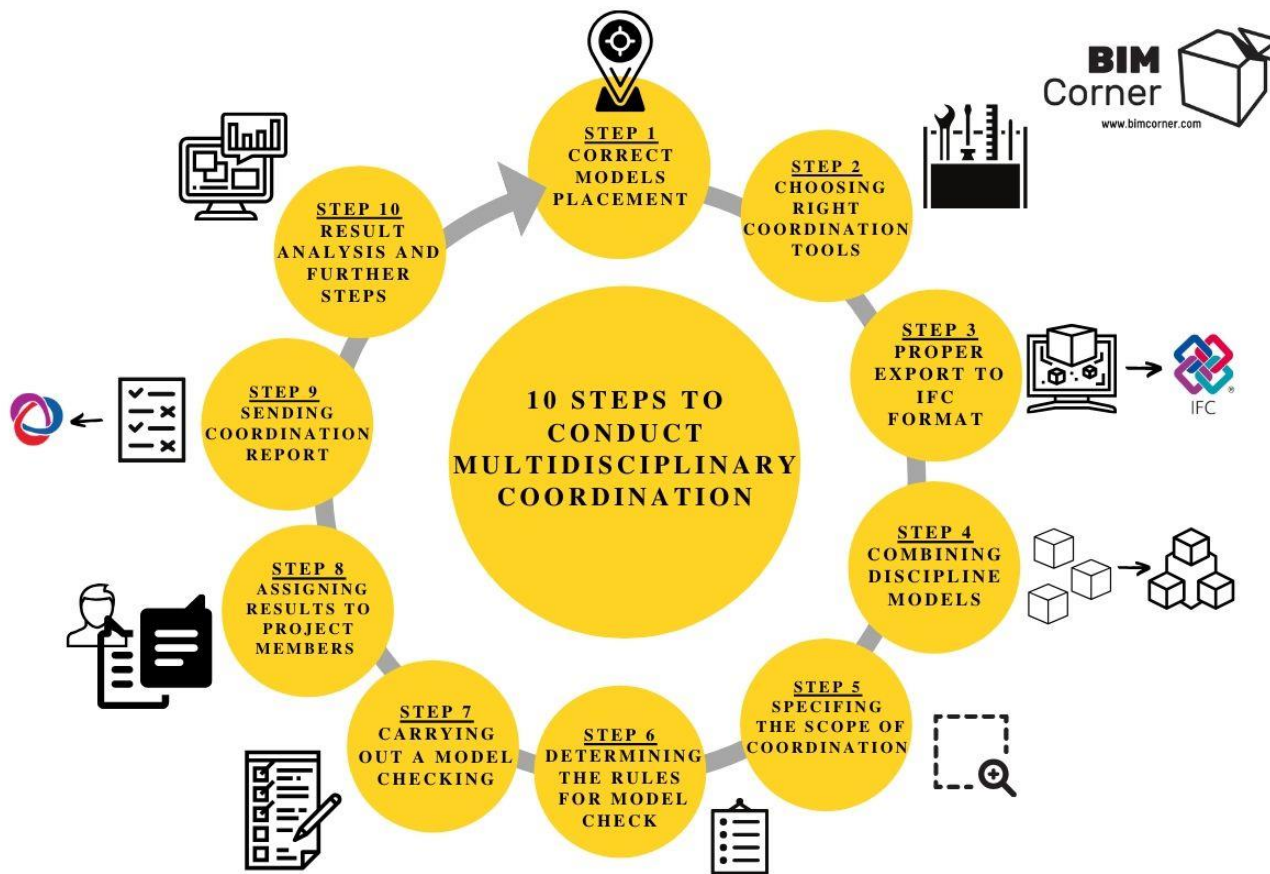
CDE Good Practices I

- Access to right people to right data in right time
- Possible need of subcontractors' own CDEs
- Work automation using APIs



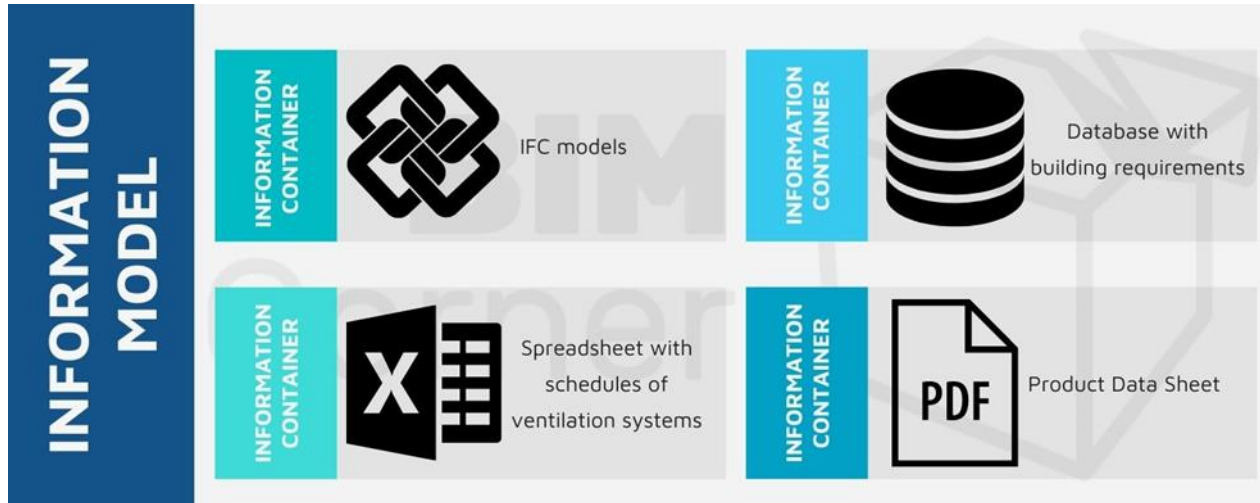
CDE Good Practices II

- Use interactive model – updates directly from discipline-specific tools
- Use open standard (such as IFC) for data sharing
- IFC allows access to people without BIM software



BIM Model according to ISO 19650

- BIM model is set of “Information Containers” in ISO terms
- Information Container is any form of unique file



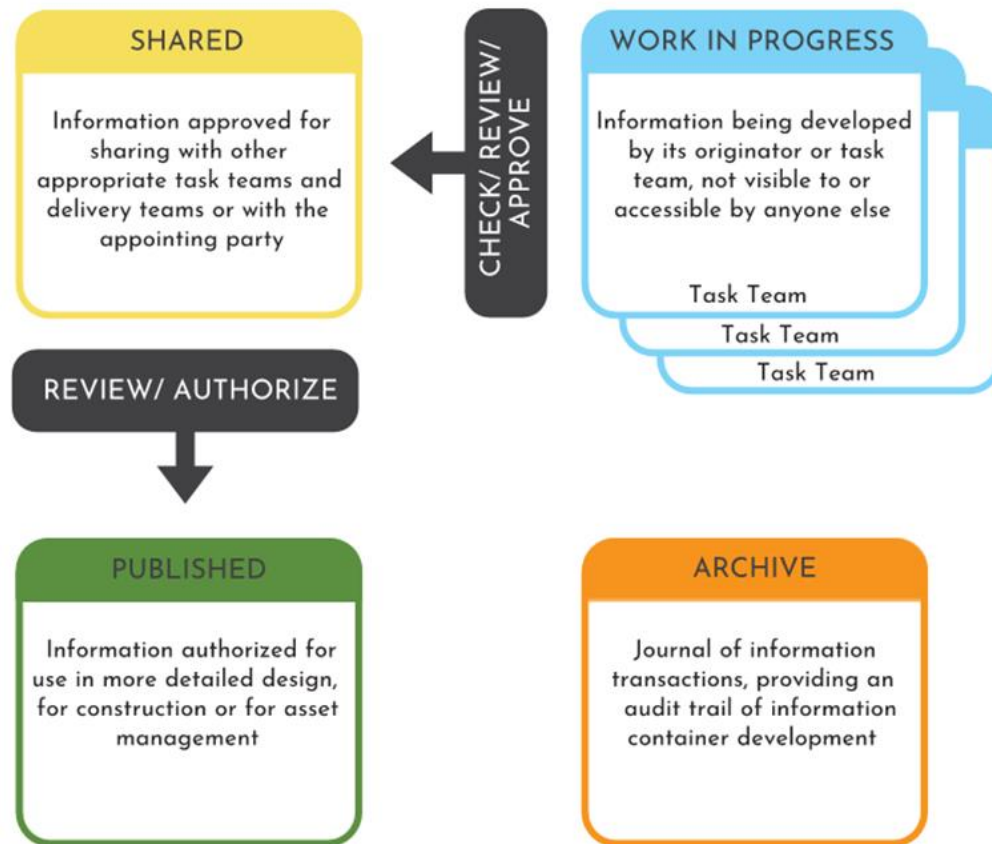
- Each file has unique ID
- Naming strategy is given by BEP
- PIM – Project Information model
- AIM – Asset Information Model

Stages of file in CDE

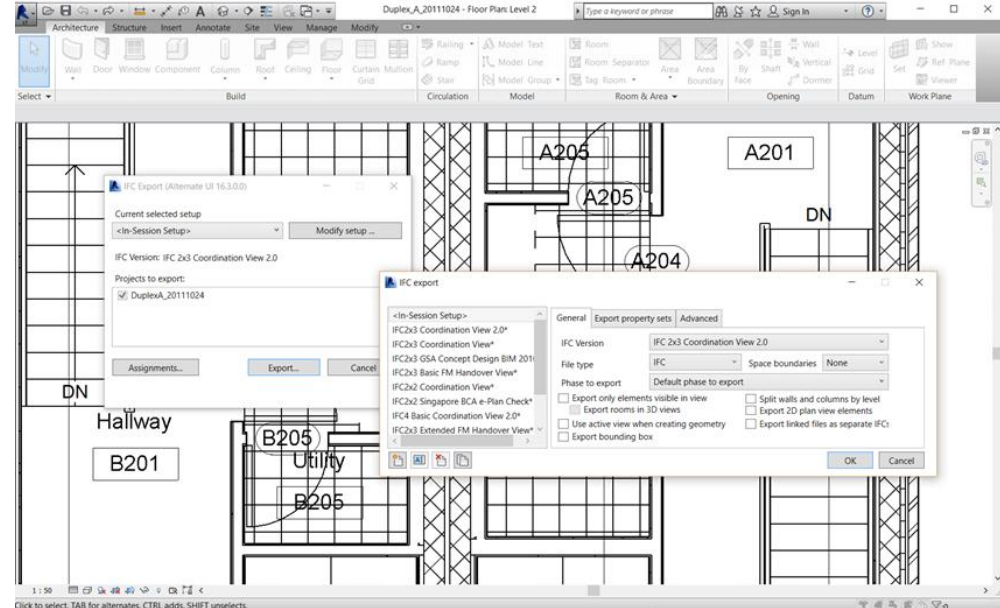
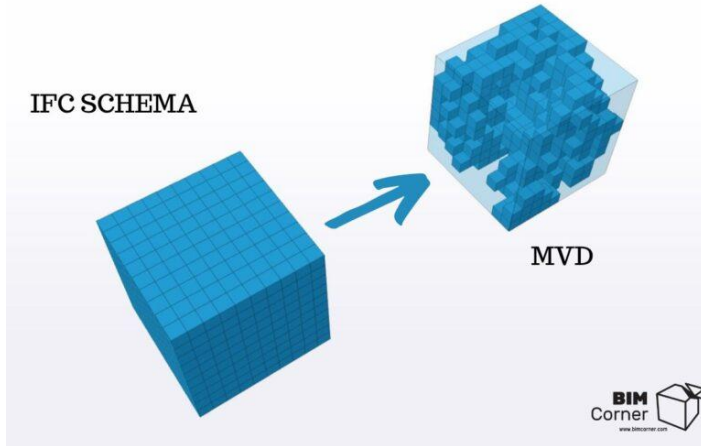
- Work in progress
- Shared
- Published
- Archived

Transition steps between

- Work in Progress and Shared
- Shared and Published



Model View Definition, MVD



- Smart filters to export relevant subset of BIM data only
- Predefined in BIM software or user-defined
- e.g. MVD for Quantity Surveying, Facility Management Handover MVD

Implementing BIM in a Company

- Diverse aspects to meet to start with BIM
- Expertise, employee training and IT solutions



The Holy Grail of Successful BIM Adoption





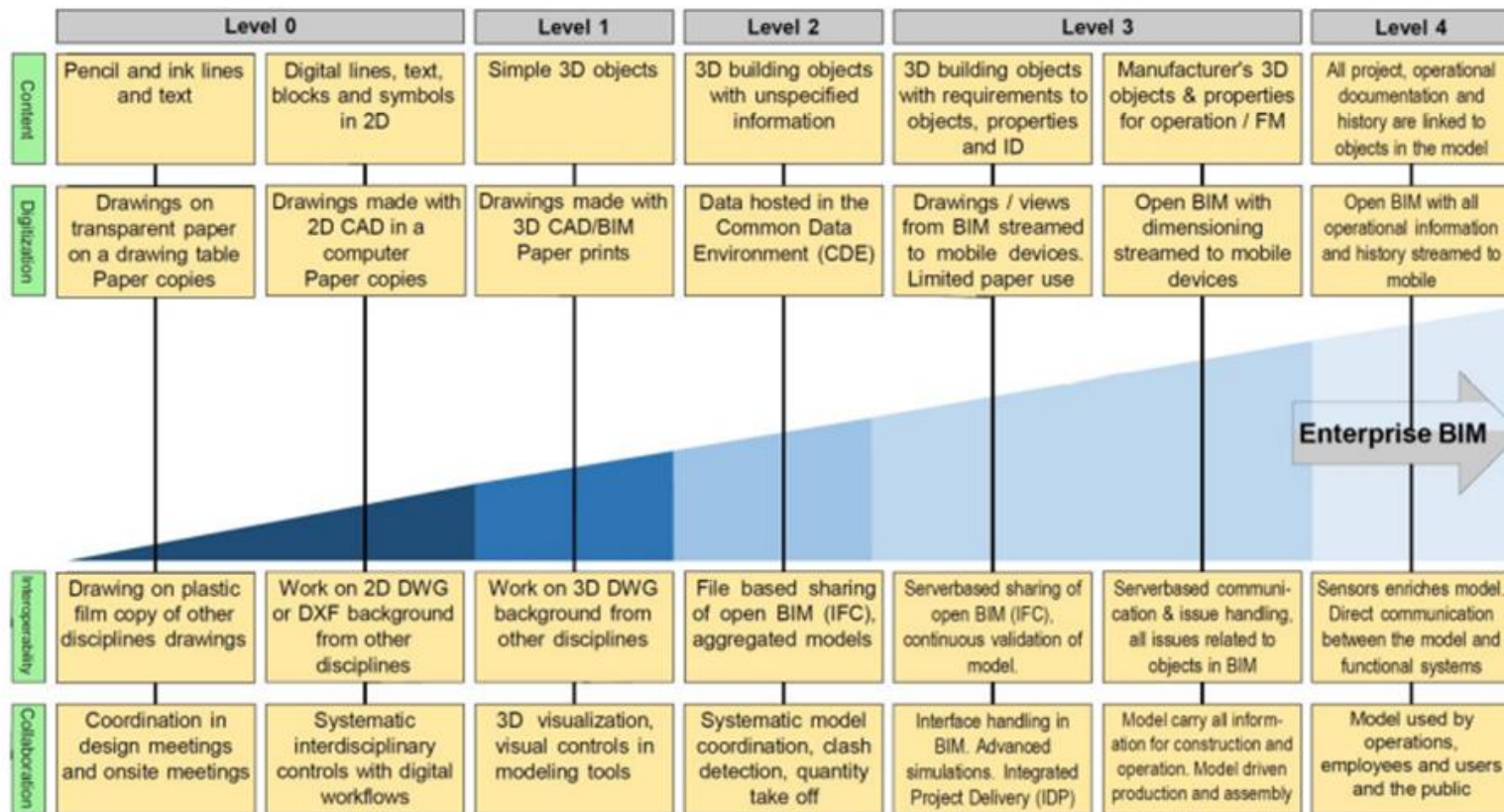
BIM Implementation Strategy

- Take a holistic approach
- Have your goals for BIM use, aligned with business objectives
- Start with a pilot project
- Training is crucial
- Change and improve communication
- Keep evolving

<https://www.advenser.com/wp-content/uploads/2019/07/BIM-Implementation-Strategy-1024x1024.jpg>

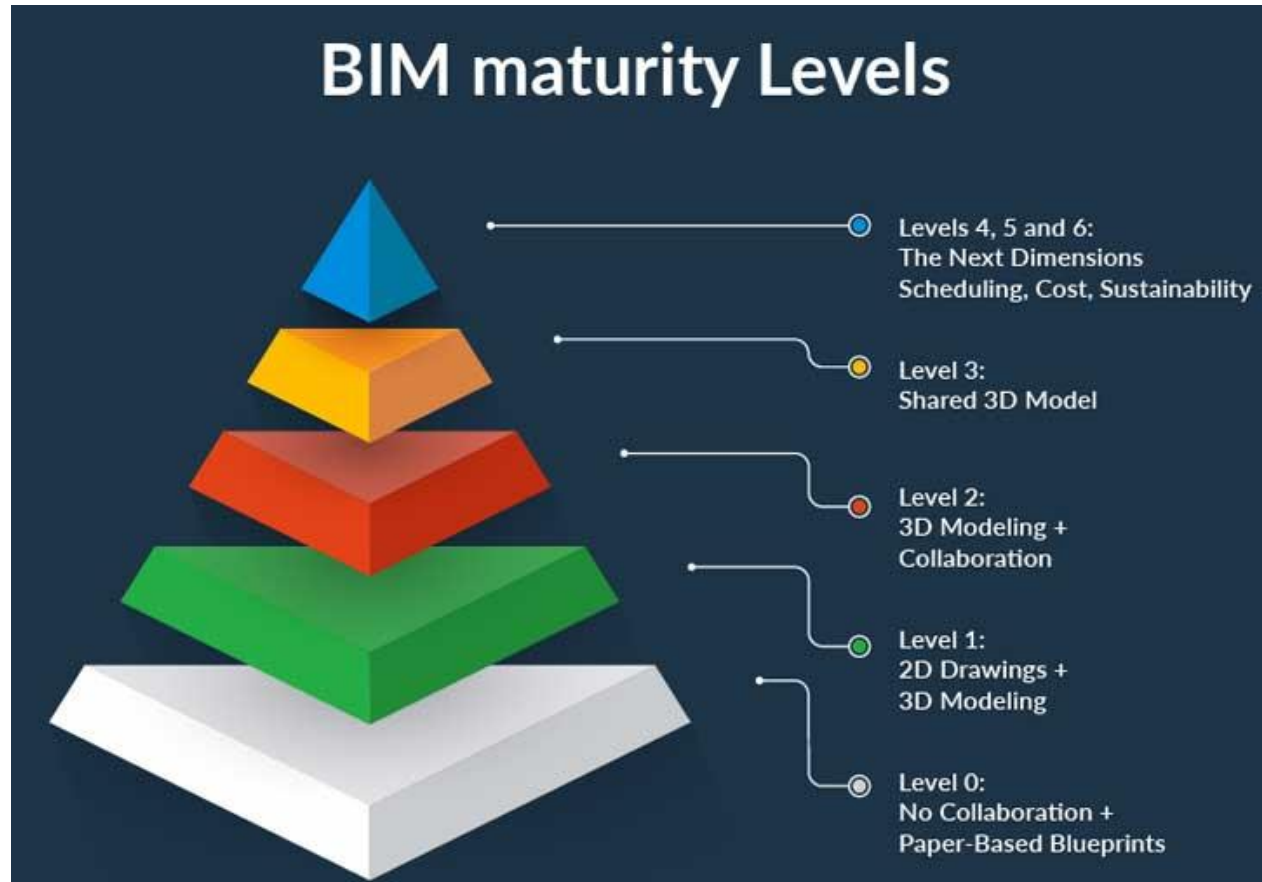
BIM Maturity Levels I

- It takes time to switch to BIM
- EU defines 5 levels



BIM Maturity Levels II

- At least Level 3 required in EU tenders
- It means integrated and interoperable BIM data (= use of CDE and IFC)
- Next level – other BIM dimensions (= 4D-10D BIM)



Thank you for your attention



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