CERTIFICATE COURSE IN BIM MODELLING

Architecture Track

Certificate Course in BIM Modelling (Architecture Track)

Topic Overview

	Day 1	Day 2	Day 3	Day 4
AM	BIM Fundamentals & Revit Interface	BIM e-Submission Guidelines & Template Overview	(Assignment – 3D part finish)	(Assignment – 2D Documentation, Family)
	Starting a BIM project: Project template, Insert files, Project base point, Grids & Levels, Create views	Basic 3D modeling : staircase, railing, roof, ceiling		
PM	Site & Mass Modelling	(Assignment – 3D part)	Family editor interface & simple family creation	
	Basic 3D modeling : Wall, floor, ramp, doors & windows		Basic 2D elements: rooms, area, annotation, dimension, tags, schedule, sheets, titleblock, exporting files.	
	Industry Foundation Classes (IFC)			

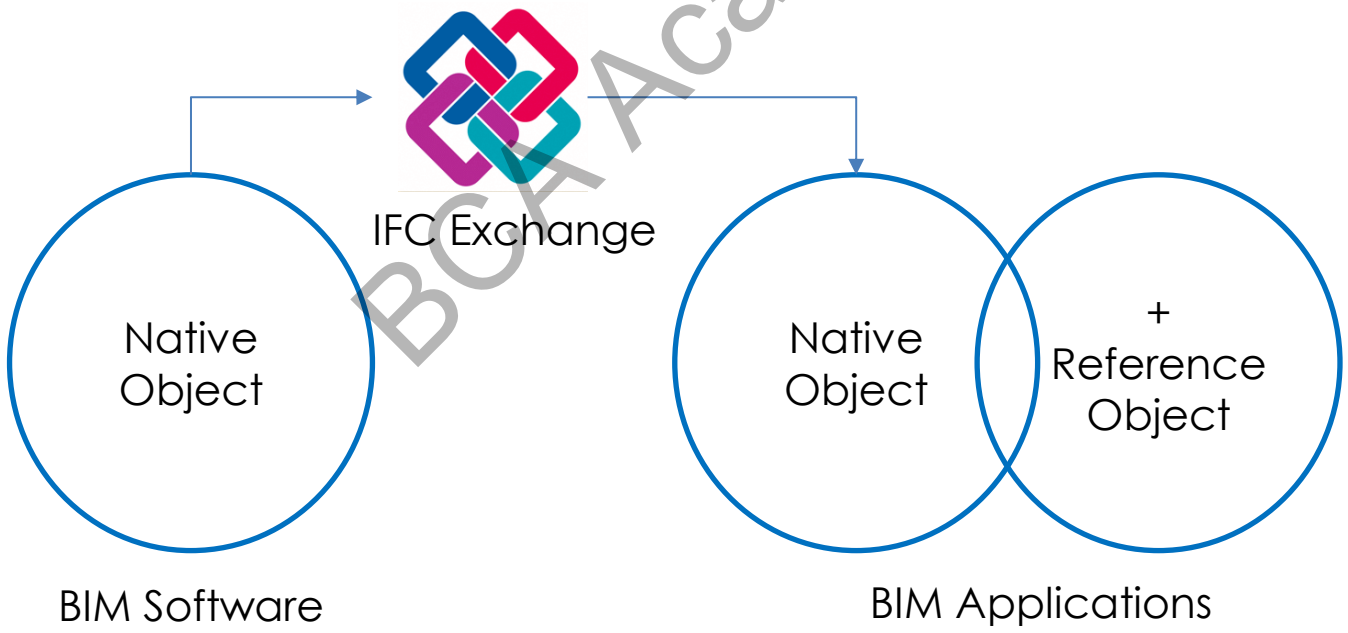
DAY 4

Industry Foundation Classes (IFC)

Industry Foundation Classes (IFC)

What is IFC

1. Neutral open BIM Standard format to facilitate interoperability in building and construction industry
2. Used to facilitates exchange of information across domains and use cases in software platforms and applications
3. IFC is also published as an international open standard – ISO 16793



ROADMAP – CORENET X

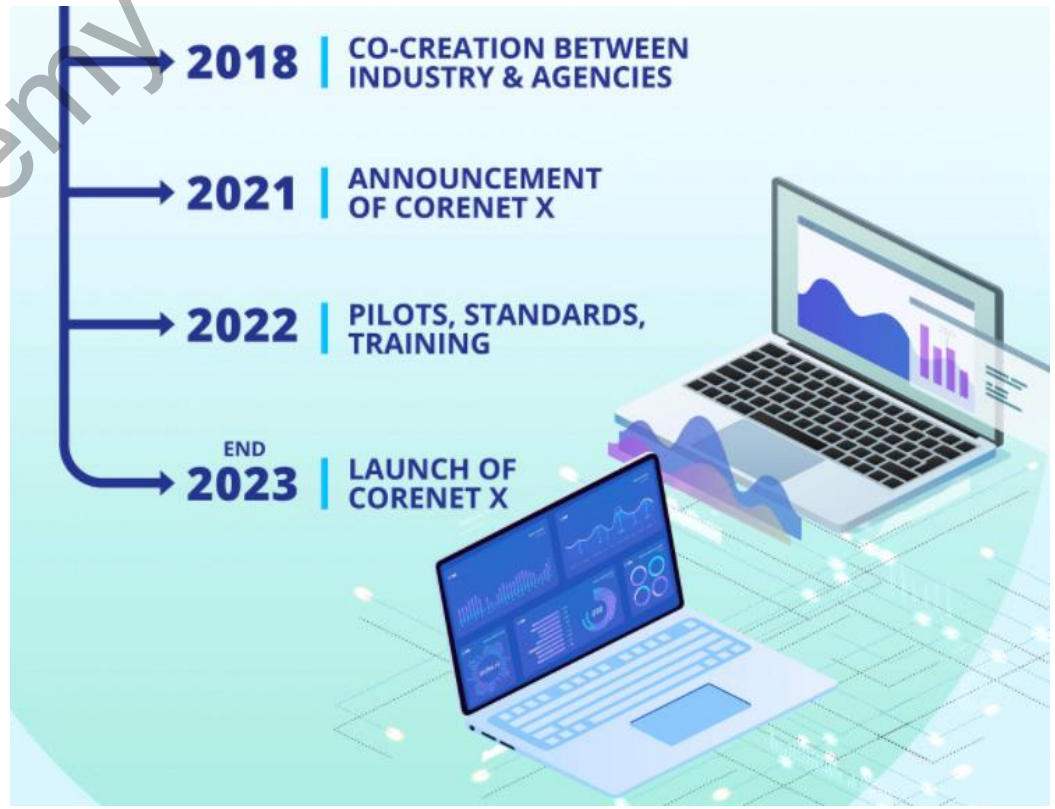
Why IFC?

Vision

- **One-Stop Integrated Digital Shopfront**
- A Future Ecosystem of Regulatory Approval of Building Works
- Redefining Government to Business interactions

Key Transformation aspects

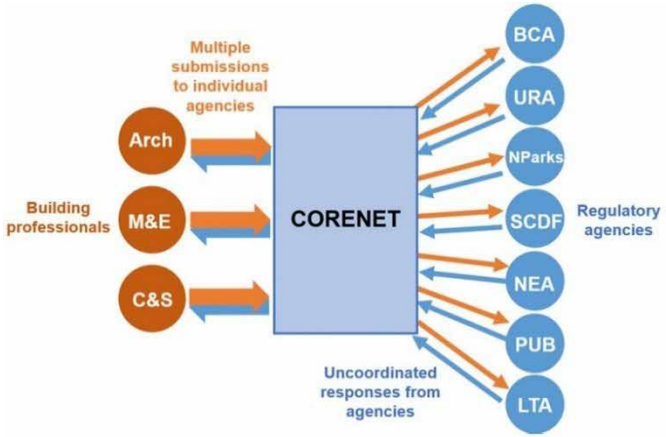
- Re-designing the current approval process
- Utilising Technological Enablers to bring about
  - Collaboration - Collaboration Platform (for inter-agency collaboration)
  - Automation - Automated Model Checker
  - Interoperability - **openBIM Format**

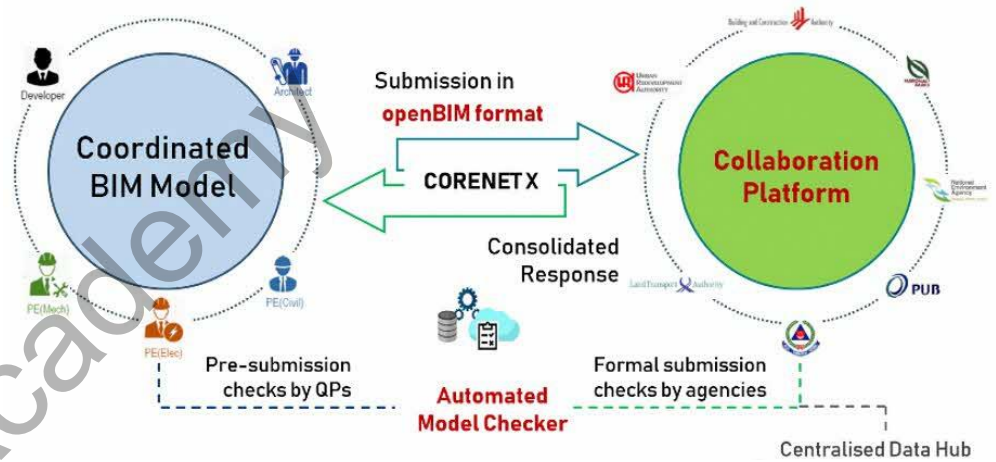


Industry Intro Toolkit: https://info.corenet.gov.sg/

CORENET X

CX Website: https://info.corenet.gov.sg/
For more information: https://support.corenet.gov.sg/hc/en-us





	CORENET 2.0	CORENET X
Process	- Individual consultants submit plans to various regulatory agencies separately - Result in uncoordinated and discrepancies	- Project team collaborate upfront to de-conflict their designs and submit one coordinated BIM model to the agencies in the **openBIM format**.
	- Agencies receive submissions at different points in the project and assess them independently - Result in conflicting comments	- All agencies review the submission collectively at the same time - Provide one coordinated response to the project team
Technology	- E-Submission platform serves as a conduit for submissions	- E-Submission experience is redesigned allowing industry practitioners to preview and check the project's coordinated BIM model before submission - Agencies will use the Collaboration Platform to collectively review each project's coordinated BIM model at the same time

OpenBIM Format

Adoption of IFC

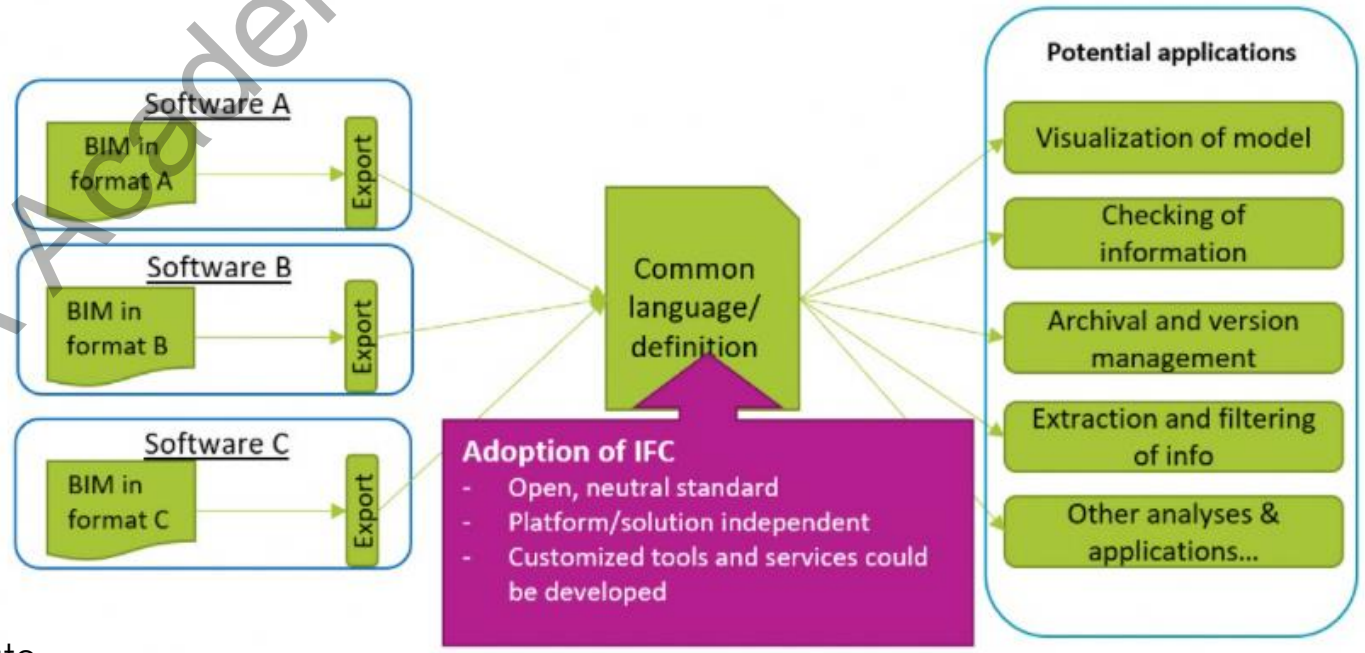
BCA CX IFC resource: https://info.corenet.gov.sg/ifc-sg/bim-data-(ifc-sg)/ifc-sg-resource-toolkit

In the current industry, different BIM software are used that makes challenging for project parties to come together for information exchange and collaboration

- Proprietary format
- Inconsistency data structure

Benefits

1. Serves as a common language to enhance information exchange and collaboration
2. Facilitate a common data environment for users to develop workflows, applications and technology automation on top of it
3. Helps to serve data preservation against obsolesce of software versions
4. Information is structured in a consistent manner to facilitate analysis and extraction of information



CORENET X

What is open standard?

Example, when we preparing a report.

Tools to prepare a report:

Native files

Export

File to share with receiver:

- PDF is a open standard file.
- It can be viewed with PDF viewer.
- It is a light weight file but it still has a lot of functionality.
- Receiver can view the file, search for words, add markup or comment but they cannot change the original text.

Why you don't share your native file?

1. Anyone can make changes to your native file without you knowing.
2. Native files are closed format, meaning receiver needs to have the similar or compatible application to view the file.

CORENET X

What is open standard?

For all the agencies, Only one platform is used to open the submissions regardless of the tool used to prepare

Tools to prepare a 3D model:

AUTODESK® REVIT®

GRAPHISOFT® Archicad®

AECOsim Building Designer CONNECT Edition

Tekla®

Native files

Export

IFC

File to share with agencies:

- IFC is a open standard file.
- It can be viewed with IFC viewers.
- It is a light weight file but the model data is freely viewable, measurable and usable.
- Model content is protected, changes cannot be made in IFC file.

NativeBIM

When we exchange the model data with an open standard, such as IFC, then we are in openBIM environment.

IFC+SG

Adapting IFC for our Local Regulatory Requirements

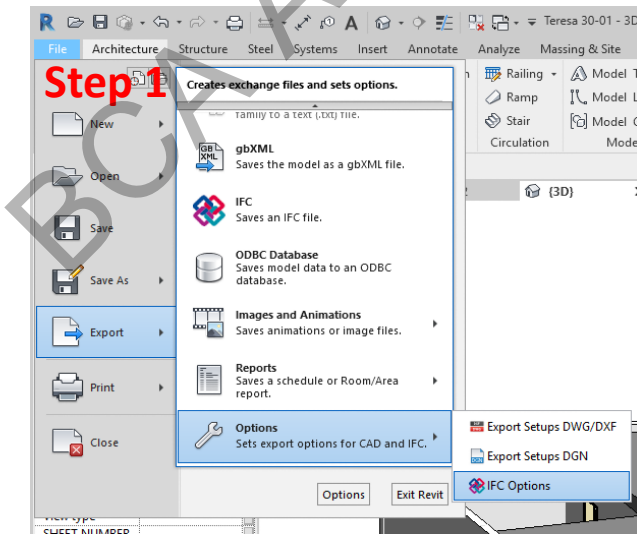
1. For industry and practitioners to use in the preparation and export of BIM models for submissions
2. Preparing OpenBIM submissions using IFC+SG

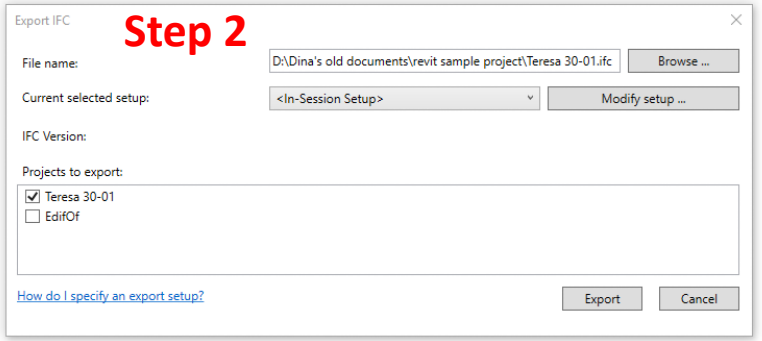
a) IFC+SG trainings (https://info.corenet.gov.sg/resources/corenet-x-training---funding)

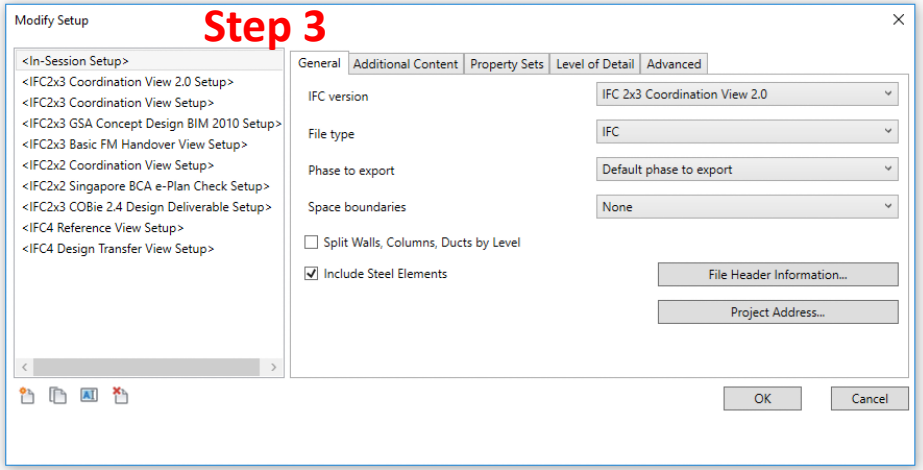
b) Resource toolkit is provided with recommended steps and materials to prepare an IFC+SG model for submission via Corenet X (https://info.corenet.gov.sg/ifc-sg/bim-data-(ifc-sg)/ifc-sg-resource-toolkit)

Process Workflow (IFC 2x3)

- Open a View (Plan or 3D View)
- Go to File > Export > Options > IFC Options
- An Export IFC window will appear, where you can select which projects you want to export and a file name for your exported file.
- If you are experiencing problems with the IFC export output you might want to modify export setup: Click "Modify setup…", in the new opened window make sure you have IFC version IFC 2×3 Coordination View 2.0 selected
- After you're satisfied with your export settings, click OK and Export

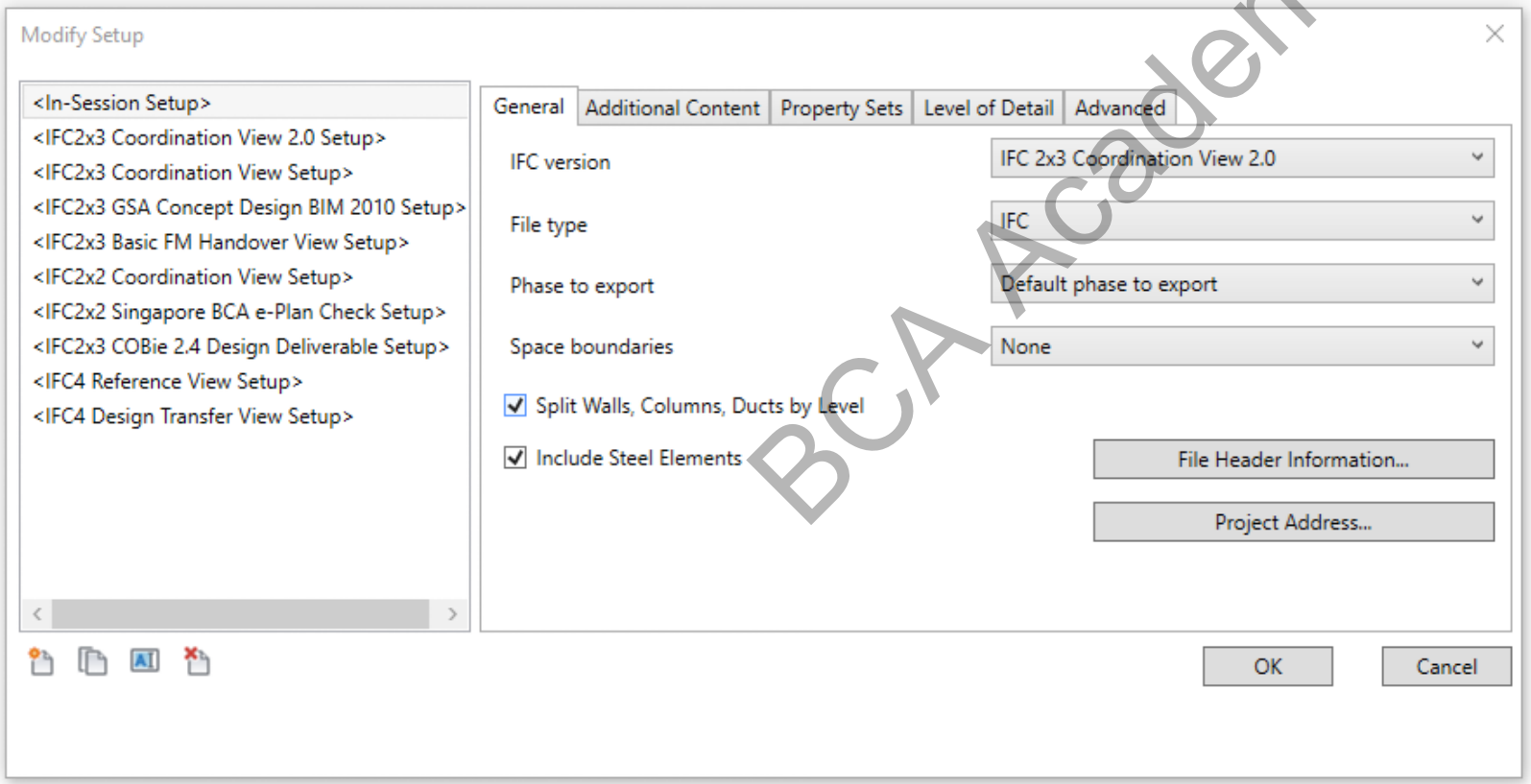






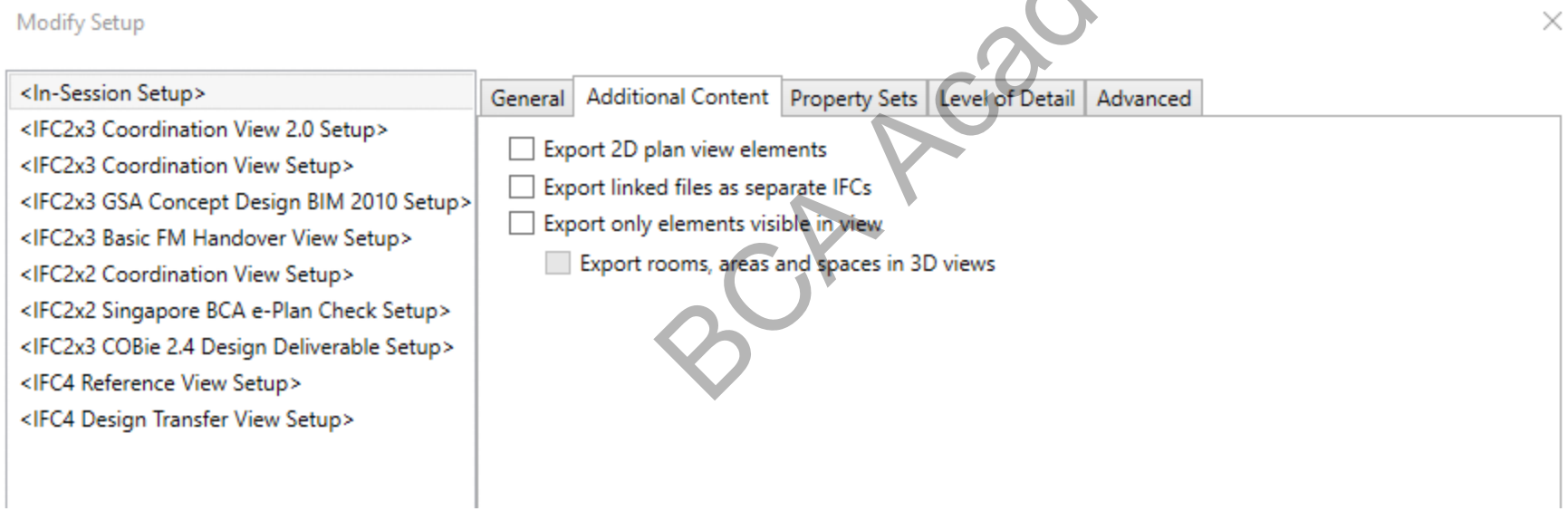
Modify IFC Export Setting: General

- used continuous multi-level structures you might want to Split walls, columns, ducts by level, for example to make sure a piece of column is present on each floor when you view model floor-by-floor.



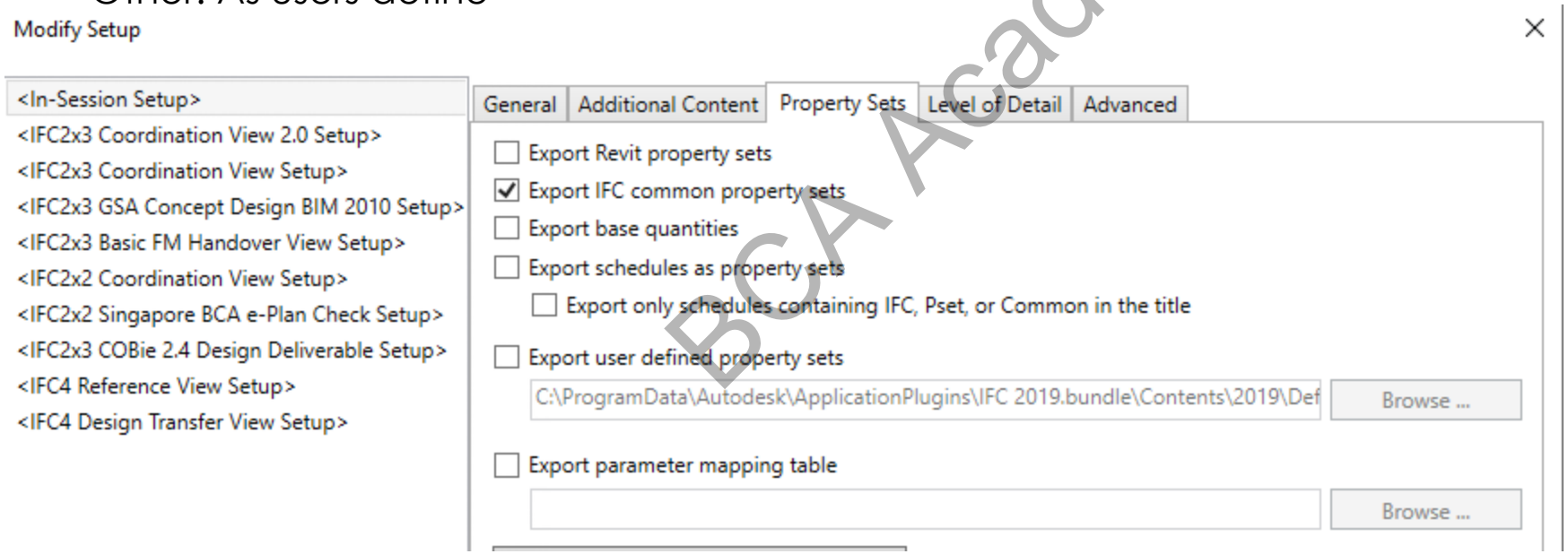
Modify IFC Export Setting: Additional Content

- Any other information that need to export based on project requirements:
  - Plan
  - Other Link file
  - Other 3D Elements



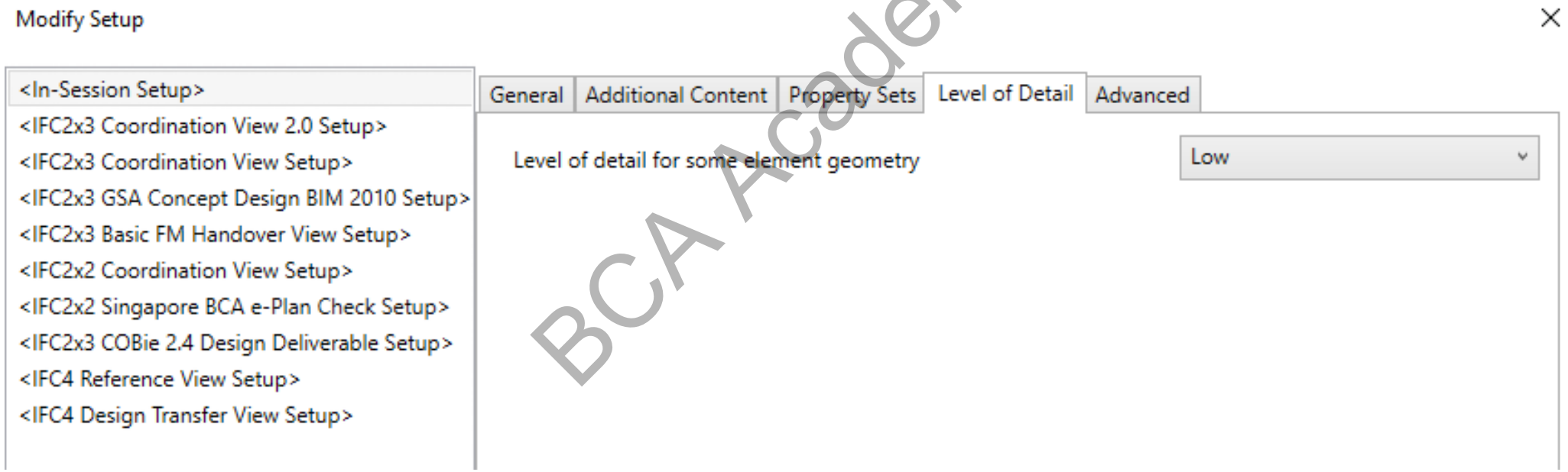
Modify IFC Export Setting: Properties Set

- Based on office standards and practice / Project requirement, user require to define what are the information to include in IFC.
  - Office Standards : Export Revit property Set: All family and formula setting
  - Project Requirement: IFC Common property set
  - Other: As users define



Modify IFC Export Setting: Level of Detail

- If you have complex curved elements or shells and they do not display correctly after the IFC export, consider checking option Keep Tessellated Geometry as Triangulation under Level of Detail tab, as well as changing Level of Detail to High. Keep in mind that it might produce a very heavy IFC file.



Modify IFC Export Setting: Advanced

- If you happen to use Walls or other generic model as Parts in your project make sure to check out Advanced tab and select Export parts as building elements as the IFC export might ignore walls that are comprised of parts, and might not include them in IFC export output.