



# How to do Revit to IFC properly!

Kevin Fielding

BIM Lead – Sheppard Robson LLP

Join the conversation #AULondon

# Agenda

- What is IFC?
- Why IFC?
- How?
- Conclusions
- Questions



What is IFC?

# What is IFC?

- Industry Foundation Class
- A global standard used to describe, share and exchange construction and facilities management information.
- Vendor neutral format
- Developed by BuildingSmart



```
38634 #67052= IFCEXTRUDEDAREASOLID (#67048,#67051,#19,399.999999999999);
38635 #67053= IFCSHAPEREPRESENTATION (#102,'Body','SweptSolid',(#67028,#67036,#67044,#67052));
38636 #67055= IFCAXIS2PLACEMENT3D (#6,$,$);
38637 #67056= IFCREPRESENTATIONMAP (#67055,#67053);
38638 #67057= IFCDUCTFITTINGTYPE ('0w8uOrF2v9FP0_e4NygSiz',#41,'Standard',$,$,(#67091),(#67056),'651315',$,.NOTDEFINED.);
38639 #67059= IFCMAPPEDITEM (#67056,#9962);
38640 #67061= IFCSHAPEREPRESENTATION (#102,'Body','MappedRepresentation',(#67059));
38641 #67063= IFCPRODUCTDEFINITIONSHAPE ($,$,(#67061));
38642 #67065= IFCARTESIANPOINT ((30994.975194635,28019.6579430773,3300.));
38643 #67067= IFCAXIS2PLACEMENT3D (#67065,#19,#17);
38644 #67068= IFCLOCALPLACEMENT (#122,#67067);
38645 #67069= IFCFLOWFITTING ('0w8uOrF2v9FP0_e4NygT4S',#41,'Rectangular Square Tee - Flanged:Standard:649746',$,'Standard',#67068,#67063,'649746');
38646 #67072= IFCPROPERTYSET ('0w8uOrF2v9FP0_gxVygt4S',#41,'Pset_DistributionFlowElementCommon',$,(#66610));
38647 #67074= IFCPROPERTYSINGLEVALUE ('Size',$,IFCTEXT ('400 mmx300 mm-300 mmx300 mm-300 mmx300 mm'),$);
38648 #67075= IFCPROPERTYSET ('25xMWu8FH7Tvd1F0$7J6Op',#41,'COBie_Specification',$,(#67074));
38649 #67077= IFCPROPERTYSINGLEVALUE ('Name',$,IFCTEXT ('Standard'),$);
38650 #67078= IFCPROPERTYSET ('1k5w2V2yL5nxywlaXj2FSv',#41,'COBie_Component',$,(#67077));
38651 #67080= IFCRELDEFINESBYPROPERTIES ('1qv34oN6j5AxRuGapEwMWZ',#41,$,$,(#67069),#67072);
38652 #67084= IFCRELDEFINESBYPROPERTIES ('1bOI0xrcPBXvMDCYQGZHLp',#41,$,$,(#67069),#67075);
38653 #67087= IFCRELDEFINESBYPROPERTIES ('0E0Kz2b8fEjRysVchcMQfT',#41,$,$,(#67069),#67078);
38654 #67090= IFCPROPERTYSINGLEVALUE ('Category',$,IFCTEXT ('Duct Fittings'),$);
38655 #67091= IFCPROPERTYSET ('2sCxBARqXFTPe5pARdACBN',#41,'COBie_Type',$,(#67090));
38656 #67095= IFCAXIS2PLACEMENT3D (#6,$,$);
38657 #67096= IFCLOCALPLACEMENT (#122,#67095);
38658 #67097= IFCARTESIANPOINT ((0,-2.17426077142591E-12));
38659 #67099= IFCAXIS2PLACEMENT2D (#67097,#23);
38660 #67100= IFCRECTANGLEPROFILEDEF (.AREA.,'Flanged Square Bend / Tee',#67099,592.244131482626,400.);
38661 #67101= IFCARTESIANPOINT ((30969.975194635,28597.7800088186,3150.));
38662 #67103= IFCAXIS2PLACEMENT3D (#67101,#19,#17);
38663 #67104= IFCEXTRUDEDAREASOLID (#67100,#67103,#19,300.);
38664 #67105= IFCSHAPEREPRESENTATION (#102,'Body','SweptSolid',(#67104));
38665 #67107= IFCPRODUCTDEFINITIONSHAPE ($,$,(#67105));
38666 #67109= IFCFLOWSEGMENT ('0w8uOrF2v9FP0_e4NygT4T',#41,'Rectangular Duct:Flanged Square Bend / Tee:649747',$,'Rectangular Duct:Flanged Square Bend / Tee:636179',#67096,#67107,'649747');
38667 #67112= IFCPROPERTYSET ('0w8uOrF2v9FP0_gxVygt4T',#41,'Pset_DistributionFlowElementCommon',$,(#66236));
38668 #67114= IFCPROPERTYSINGLEVALUE ('Size',$,IFCTEXT ('400 mmx300 mm'),$);
38669 #67115= IFCPROPERTYSET ('1dMbCe5056xRTV4RyvE26i',#41,'COBie_Specification',$,(#67114));
38670 #67117= IFCPROPERTYSINGLEVALUE ('Name',$,IFCTEXT ('Flanged Square Bend / Tee'),$);
38671 #67118= IFCPROPERTYSET ('2Mpfn9V0z6F8nq$YWmdhhL',#41,'COBie_Component',$,(#67117));
38672 #67120= IFCRELDEFINESBYPROPERTIES ('2H4OCDjpb0uOS9PtBF4j_4',#41,$,$,(#67109),#67112);
38673 #67124= IFCRELDEFINESBYPROPERTIES ('3yJ0VUJB500vuYrY4BiMRP',#41,$,$,(#67109),#67115);
38674 #67127= IFCRELDEFINESBYPROPERTIES ('0XCd5J8XXDPRfEpe6hQL86',#41,$,$,(#67109),#67118);
38675 #67130= IFCMAPPEDITEM (#66330,#9962);
38676 #67131= IFCSHAPEREPRESENTATION (#102,'Body','MappedRepresentation',(#67130));
38677 #67133= IFCPRODUCTDEFINITIONSHAPE ($,$,(#67131));
38678 #67135= IFCARTESIANPOINT ((24566.2185957874,28019.6579430772,3300.));
38679 #67137= IFCAXIS2PLACEMENT3D (#67135,#19,#13);
38680 #67138= IFCLOCALPLACEMENT (#122,#67137);
38681 #67139= IFCFLOWFITTING ('0w8uOrF2v9FP0_e4NygT4M',#41,'Rectangular Square Bend - Flanged1:Standard 2:649752',$,'Standard 2',#67138,#67133,'649752');
38682 #67141= IFCPROPERTYSET ('0w8uOrF2v9FP0_gxVygt4M',#41,'Pset_DistributionFlowElementCommon',$,(#66346));
38683 #67144= IFCPROPERTYSINGLEVALUE ('Size',$,IFCTEXT ('300 mmx300 mm-300 mmx300 mm'),$);
38684 #67145= IFCPROPERTYSET ('2LZieF2Vv9oA7pOcaAp9d9',#41,'COBie_Specification',$,(#67144));
38685 #67147= IFCPROPERTYSINGLEVALUE ('Name',$,IFCTEXT ('Standard 2'),$);
38686 #67148= IFCPROPERTYSET ('1QvJ7uhg9AUxtQ63b2$YvJ',#41,'COBie_Component',$,(#67147));
38687 #67150= IFCRELDEFINESBYPROPERTIES ('0cH6X2ybL8VfqYdlI0EpAu',#41,$,$,(#67139),#67142);
```

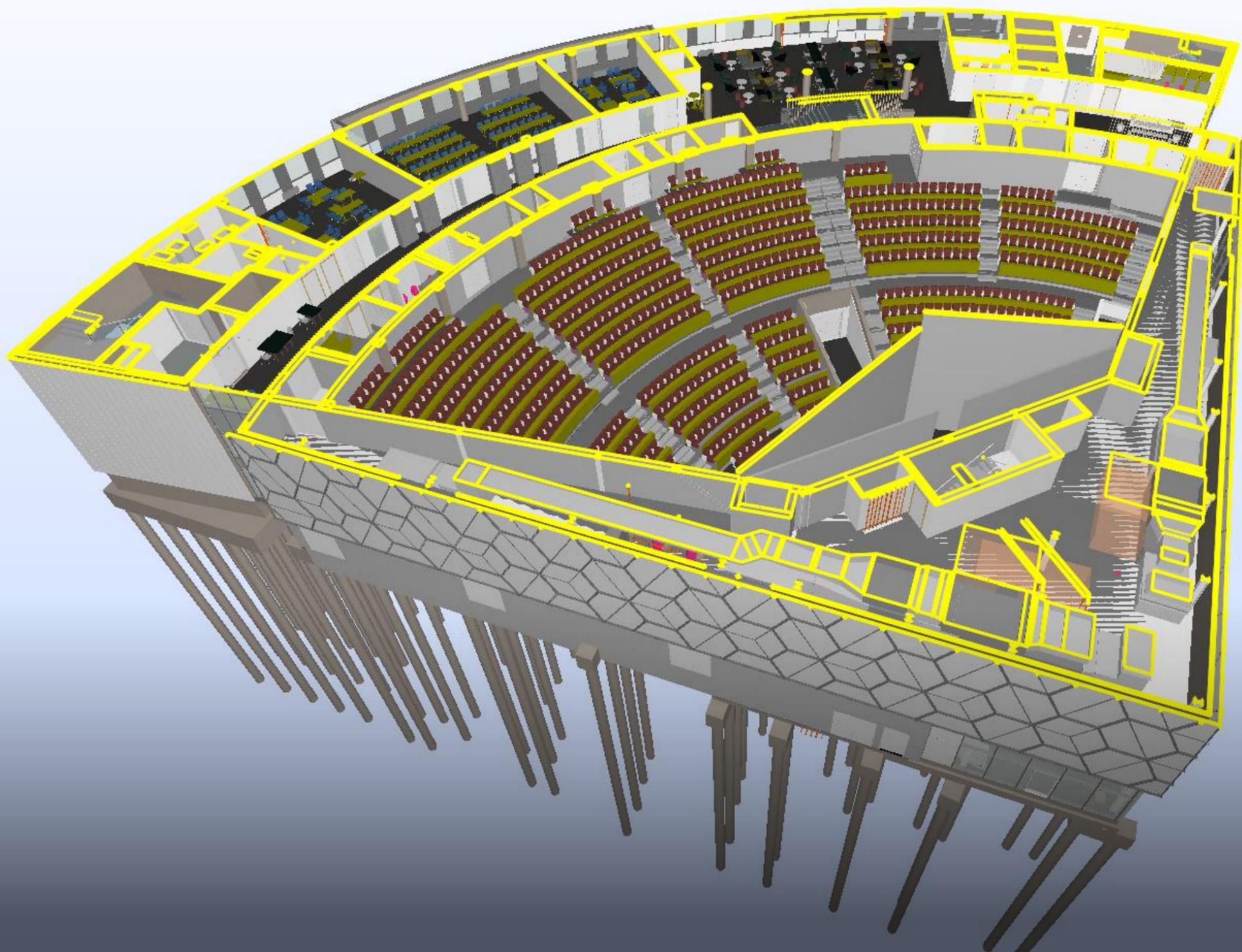
This is IFC

```
<?xml version="1.0" encoding="UTF-8" standalone="true"?>
- <IfcXML xsi:schemaLocation="http://www.buildingsmart-tech.org/ifcXML/IFC4/RC4/MVD/ProductLibrary/beta1 ../xsd/IFC4_RC4_MVD-ProductLibrary_beta3.xsd" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns="http://www.buildingsmart-tech.org/ifcXML/IFC4/RC4/MVD/ProductLibrary/beta1" id="IFC4_RC4_MVD-ProductLibrary_beta3" xmlns:ifc="http://www.buildingsmart-tech.org/ifcXML/IFC4/RC4/MVD/ProductLibrary/beta1">
  - <IfcProject id="i1" Name="DDS Project" GlobalId="3G6O4ZUar1_BmQrk9gWFvV">
    - <OwnerHistory id="i2" xsi:type="IfcOwnerHistory" LastModifiedDate="0" CreationDate="1346231584" ChangeAction="nochange">
      - <OwningUser id="i8" xsi:type="IfcPersonAndOrganization">
        <ThePerson id="i39" xsi:type="IfcPerson" GivenName="th" FamilyName=""/>
        <TheOrganization id="i40" Name="DDS" xsi:type="IfcOrganization"/>
      </OwningUser>
      - <OwningApplication id="i9" xsi:type="IfcApplication" Version="Version 8.1 Win32 build 28/8-2012" ApplicationIdentifier="DDS-CAD Version 8.1 Win32 build 28/8-2012" ApplicationFullName="DDS-CAD">
        <ApplicationDeveloper xsi:type="IfcOrganization" xsi:nil="true" ref="i40"/>
      </OwningApplication>
    </OwnerHistory>
    - <IsDecomposedBy GlobalId="3mIpM90PD7_RNCTNI218OT" xsi:type="IfcRelAggregates">
      - <RelatedObjects>
        <IfcSite xsi:nil="true" ref="i3"/>
      </RelatedObjects>
    </IsDecomposedBy>
    - <RepresentationContexts>
      - <IfcGeometricRepresentationContext id="i4" Precision="1E-005" CoordinateSpaceDimension="3" ContextType="Model" ContextIdentifier="Body">
        - <WorldCoordinateSystem>
          - <IfcAxis2Placement3D id="i13">
            <Location id="i14" xsi:type="IfcCartesianPoint" Coordinates="0. 0. 0."/>
            <Axis id="i15" xsi:type="IfcDirection" DirectionRatios="0. 0. 1."/>
            <RefDirection id="i16" xsi:type="IfcDirection" DirectionRatios="1. 0. 0."/>
          </IfcAxis2Placement3D>
        </WorldCoordinateSystem>
        - <HasSubContexts>
          <IfcGeometricRepresentationSubContext id="i17" CoordinateSpaceDimension="199820168" ContextType="Model" ContextIdentifier="Body" TargetView="model_view" TargetScale="0"/>
        </HasSubContexts>
      </IfcGeometricRepresentationContext>
      - <IfcGeometricRepresentationContext id="i5" Precision="1E-005" CoordinateSpaceDimension="2" ContextType="Plan" ContextIdentifier="Footprint">
        - <WorldCoordinateSystem>
          <IfcAxis2Placement3D xsi:nil="true" ref="i13"/>
        </WorldCoordinateSystem>
        - <HasSubContexts>
          <IfcGeometricRepresentationSubContext id="i18" CoordinateSpaceDimension="199820168" ContextType="Model" ContextIdentifier="Footprint" TargetView="plan_view" TargetScale="0"/>
        </HasSubContexts>
      </IfcGeometricRepresentationContext>
    </RepresentationContexts>
    - <UnitsInContext id="i6" xsi:type="IfcUnitAssignment">
      - <Units>
        <IfcSIUnit id="i19" Name="metre" UnitType="lengthunit"/>
        <IfcSIUnit id="i20" Name="square_metre" UnitType="areaunit"/>
        <IfcSIUnit id="i21" Name="ampere" UnitType="electriccurrentunit"/>
        <IfcSIUnit id="i22" Name="volt" UnitType="electricvoltageunit"/>
        <IfcSIUnit id="i23" Name="ohm" UnitType="electricresistanceunit"/>
        <IfcSIUnit id="i24" Name="watt" UnitType="powerunit"/>
        <IfcSIUnit id="i25" Name="gram" UnitType="massunit"/>
        <IfcSIUnit id="i26" Name="steradian" UnitType="solidangleunit"/>
        <IfcSIUnit id="i27" Name="degree_celsius" UnitType="thermodynamictemperatureunit"/>
        <IfcSIUnit id="i28" Name="pascal" UnitType="pressureunit"/>
        <IfcSIUnit id="i29" Name="lumen" UnitType="luminousfluxunit"/>
        <IfcSIUnit id="i30" Name="lux" UnitType="illuminanceunit"/>
        <IfcSIUnit id="i31" Name="hertz" UnitType="frequencyunit"/>
        <IfcSIUnit id="i32" Name="cubic_metre" UnitType="volumeunit"/>
        <IfcSIUnit id="i33" Name="second" UnitType="timeunit"/>
        - <IfcDerivedUnit id="i34" UnitType="volumetricflowrateunit">
          - <Elements>
            <IfcDerivedUnitElement id="i48" Exponent="-1">
              <Unit xsi:type="IfcSIUnit" xsi:nil="true" ref="i33"/>
            </IfcDerivedUnitElement>
            - <IfcDerivedUnitElement id="i49" Exponent="1">
              <Unit xsi:type="IfcSIUnit" xsi:nil="true" ref="i32"/>
            </IfcDerivedUnitElement>
          </Elements>
        </IfcDerivedUnit>
      </Units>
    </UnitsInContext>
  </IfcProject>
</IfcXML>
```

This is IFC

- Model Tree
- Air Terminal
- Beam
- Cable Carrier
- Cable Carrier Fitting
- Column
- Covering
- Curtain Wall
- Distribution Element
- Door
- Duct
- Duct Fitting
- Fan
- Flow Terminal
- Furniture
- Light Fixture
- Member
- Object

Info



This is IFC

File Home Insert Page Layout Formulas Data Review View Developer Add-Ins Team

Clipboard Font Alignment Number Styles Cells Editing

Calibri 11 A A Wrap Text Merge & Center

Normal Bad Good Neutral Calculation Check Cell Explanatory... Hyperlink Input Linked Cell

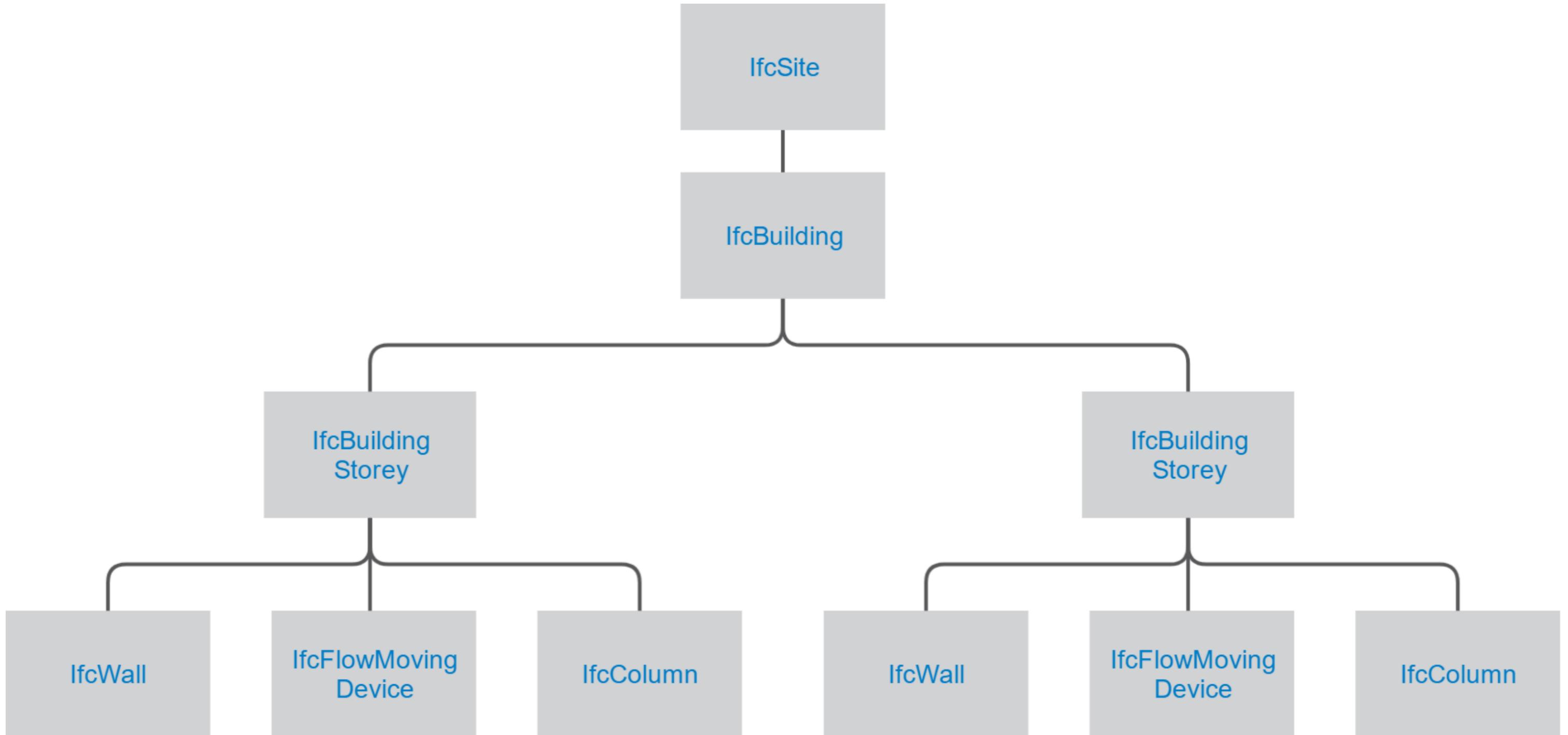
AutoSum Fill Clear Sort & Find & Filter Select

G2 Autodesk Revit 2017 (ENU)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	Name	CreatedBy	CreatedOn	Category	FloorName	Description	ExtSystem	ExtObject	ExtIdentifier	RoomTag	UsableHeight	GrossArea	NetArea								
2	00.001	kevin.fielding@sf	2017-06-06T00:01:14	SL_20_15 : Administrative spaces	00	Reception	Autodesk Revit 2017 (ENU)	lfcSpace	3CZPGQu	00.001	n/a	91.160	91.160								
3	00.002	kevin.fielding@sf	2017-06-06T00:01:14	SL_20_15 : Administrative spaces	00	Collaboration	Autodesk Revit 2017 (ENU)	lfcSpace	3CZPGQu	00.002	n/a	22.390	22.390								
4	00.003	kevin.fielding@sf	2017-06-06T00:01:14	SL_20_15 : Administrative spaces	00	Workspace (18)	Autodesk Revit 2017 (ENU)	lfcSpace	3CZPGQu	00.003	n/a	63.520	63.520								
5	00.004	kevin.fielding@sf	2017-06-06T00:01:14	SL_90_10 : Circulation spaces	00	Circulation	Autodesk Revit 2017 (ENU)	lfcSpace	1KmUUy8	00.004	n/a	15.880	15.880								
6	00.005	kevin.fielding@sf	2017-06-06T00:01:14	SL_90_10 : Circulation spaces	00	Circulation	Autodesk Revit 2017 (ENU)	lfcSpace	1KmUUy8	00.005	n/a	116.500	116.500								
7	00.006	kevin.fielding@sf	2017-06-06T00:01:14	SL_90_20 : Common spaces	00	Break Out	Autodesk Revit 2017 (ENU)	lfcSpace	3CZPGQu	00.006	n/a	13.150	13.150								
8	00.007	kevin.fielding@sf	2017-06-06T00:01:14	SL_20_15 : Administrative spaces	00	Meeting Room	Autodesk Revit 2017 (ENU)	lfcSpace	3CZPGQu	00.007	n/a	10.050	10.050								
9	00.008	kevin.fielding@sf	2017-06-06T00:01:14	SL_20_15 : Administrative spaces	00	Meeting Room	Autodesk Revit 2017 (ENU)	lfcSpace	3CZPGQu	00.008	n/a	12.320	12.320								
10	00.009	kevin.fielding@sf	2017-06-06T00:01:14	SL_20_15 : Administrative spaces	00	Collaboration	Autodesk Revit 2017 (ENU)	lfcSpace	3CZPGQu	00.009	n/a	34.330	34.330								
11	00.010	kevin.fielding@sf	2017-06-06T00:01:14	SL_35_60 : Food management space	00	Kitchenette	Autodesk Revit 2017 (ENU)	lfcSpace	0EbCm1m	00.010	n/a	8.670	8.670								
12	00.011	kevin.fielding@sf	2017-06-06T00:01:14	SL_90_20 : Common spaces	00	Quiet Room	Autodesk Revit 2017 (ENU)	lfcSpace	3CZPGQu	00.011	n/a	5.380	5.380								
13	00.012	kevin.fielding@sf	2017-06-06T00:01:14	SL_90_20 : Common spaces	00	Quiet Room	Autodesk Revit 2017 (ENU)	lfcSpace	3CZPGQu	00.012	n/a	5.210	5.210								
14	00.013	kevin.fielding@sf	2017-06-06T00:01:14	SL_90_10 : Circulation spaces	00	Stair Core A	Autodesk Revit 2017 (ENU)	lfcSpace	3CZPGQu	00.013	n/a	17.510	17.510								
15	00.014	kevin.fielding@sf	2017-06-06T00:01:14	SL_20_15 : Administrative spaces	00	Collaboration	Autodesk Revit 2017 (ENU)	lfcSpace	3CZPGQu	00.014	n/a	14.000	14.000								
16	00.015	kevin.fielding@sf	2017-06-06T00:01:14	SL_20_15 : Administrative spaces	00	Workspace (12)	Autodesk Revit 2017 (ENU)	lfcSpace	3CZPGQu	00.015	n/a	39.260	39.260								
17	00.016	kevin.fielding@sf	2017-06-06T00:01:14	SL_90_60 : Unoccupied voids	00	Boiler Flue	Autodesk Revit 2017 (ENU)	lfcSpace	1KmUUy8	00.016	n/a	5.220	5.220								
18	00.017	kevin.fielding@sf	2017-06-06T00:01:14	SL_20_15 : Administrative spaces	00	Office	Autodesk Revit 2017 (ENU)	lfcSpace	3CZPGQu	00.017	n/a	8.770	8.770								
19	00.018	kevin.fielding@sf	2017-06-06T00:01:14	SL_20_15 : Administrative spaces	00	Workspace (30)	Autodesk Revit 2017 (ENU)	lfcSpace	3CZPGQu	00.018	n/a	105.510	105.510								
20	00.019	kevin.fielding@sf	2017-06-06T00:01:14	SL_20_15 : Administrative spaces	00	Office	Autodesk Revit 2017 (ENU)	lfcSpace	3CZPGQu	00.019	n/a	6.260	6.260								
21	00.020	kevin.fielding@sf	2017-06-06T00:01:14	SL_20_15 : Administrative spaces	00	Office	Autodesk Revit 2017 (ENU)	lfcSpace	3CZPGQu	00.020	n/a	5.820	5.820								
22	00.021	kevin.fielding@sf	2017-06-06T00:01:14	SL_90_10 : Circulation spaces	00	Stair Core C	Autodesk Revit 2017 (ENU)	lfcSpace	3CZPGQu	00.021	n/a	16.540	16.540								
23	00.022	kevin.fielding@sf	2017-06-06T00:01:14	SL_20_15 : Administrative spaces	00	Workspace (18)	Autodesk Revit 2017 (ENU)	lfcSpace	3CZPGQu	00.022	n/a	66.740	66.740								
24	00.023	kevin.fielding@sf	2017-06-06T00:01:14	SL_20_15 : Administrative spaces	00	Workspace (18)	Autodesk Revit 2017 (ENU)	lfcSpace	3CZPGQu	00.023	n/a	66.020	66.020								
25	00.024	kevin.fielding@sf	2017-06-06T00:01:14	SL_90_50 : Storage spaces	00	Store	Autodesk Revit 2017 (ENU)	lfcSpace	3CZPGQu	00.024	n/a	24.880	24.880								
26	00.025	kevin.fielding@sf	2017-06-06T00:01:14	SL_35_60 : Food management space	00	Kitchen	Autodesk Revit 2017 (ENU)	lfcSpace	3CZPGQu	00.025	n/a	49.550	49.550								
27	00.026	kevin.fielding@sf	2017-06-06T00:01:14	SL_20_15_59 : Offices	00	Upper Collaboratio	Autodesk Revit 2017 (ENU)	lfcSpace	3CZPGQu	00.026	n/a	71.490	71.490								
28	00.027	kevin.fielding@sf	2017-06-06T00:01:14	SL_35_60 : Food management space	00	Servery	Autodesk Revit 2017 (ENU)	lfcSpace	3CZPGQu	00.027	n/a	27.420	27.420								
29	00.028	kevin.fielding@sf	2017-06-06T00:01:14	SL_40_20 : Dining spaces	00	Cafe / Social Hub	Autodesk Revit 2017 (ENU)	lfcSpace	3CZPGQu	00.028	n/a	107.030	107.030								
30	00.029	kevin.fielding@sf	2017-06-06T00:01:14	SL_20_15 : Administrative spaces	00	Touch Down	Autodesk Revit 2017 (ENU)	lfcSpace	1KmUUy8	00.029	n/a	10.630	10.630								
31	00.030	kevin.fielding@sf	2017-06-06T00:01:14	SL_20_15 : Administrative spaces	00	Meeting Room	Autodesk Revit 2017 (ENU)	lfcSpace	3CZPGQu	00.030	n/a	10.420	10.420								
32	00.031	kevin.fielding@sf	2017-06-06T00:01:14	SL_20_15 : Administrative spaces	00	Meeting Room	Autodesk Revit 2017 (ENU)	lfcSpace	3CZPGQu	00.031	n/a	12.630	12.630								
33	00.032	kevin.fielding@sf	2017-06-06T00:01:14	SL_90_20 : Common spaces	00	Breakout	Autodesk Revit 2017 (ENU)	lfcSpace	3CZPGQu	00.032	n/a	19.350	19.350								
34	00.033	kevin.fielding@sf	2017-06-06T00:01:14	SL_35_60 : Food management space	00	Kitchenette	Autodesk Revit 2017 (ENU)	lfcSpace	0EbCm1m	00.033	n/a	10.560	10.560								
35	00.034	kevin.fielding@sf	2017-06-06T00:01:14	SL_20_15 : Administrative spaces	00	Collaboration	Autodesk Revit 2017 (ENU)	lfcSpace	3CZPGQu	00.034	n/a	38.520	38.520								
36	00.035	kevin.fielding@sf	2017-06-06T00:01:14	SL_90_20 : Common spaces	00	Break Out	Autodesk Revit 2017 (ENU)	lfcSpace	3CZPGQu	00.035	n/a	13.430	13.430								

This is IFC

# What is IFC?



# What is IFC?

- The IFC format is not designed for Round-tripping, or Design Transfer (Ifc2x3).
- It is an exchange format, to transfer information from Platform A to Platform B.



Why IFC?

# Why IFC?

- Interoperability and Collaboration
- To achieve the best outcome you need to use the most appropriate tool
- Not everyone uses Revit!
- Data rich format and extensible
- Established standard
- Loss of data using other formats (DWG & FBX)

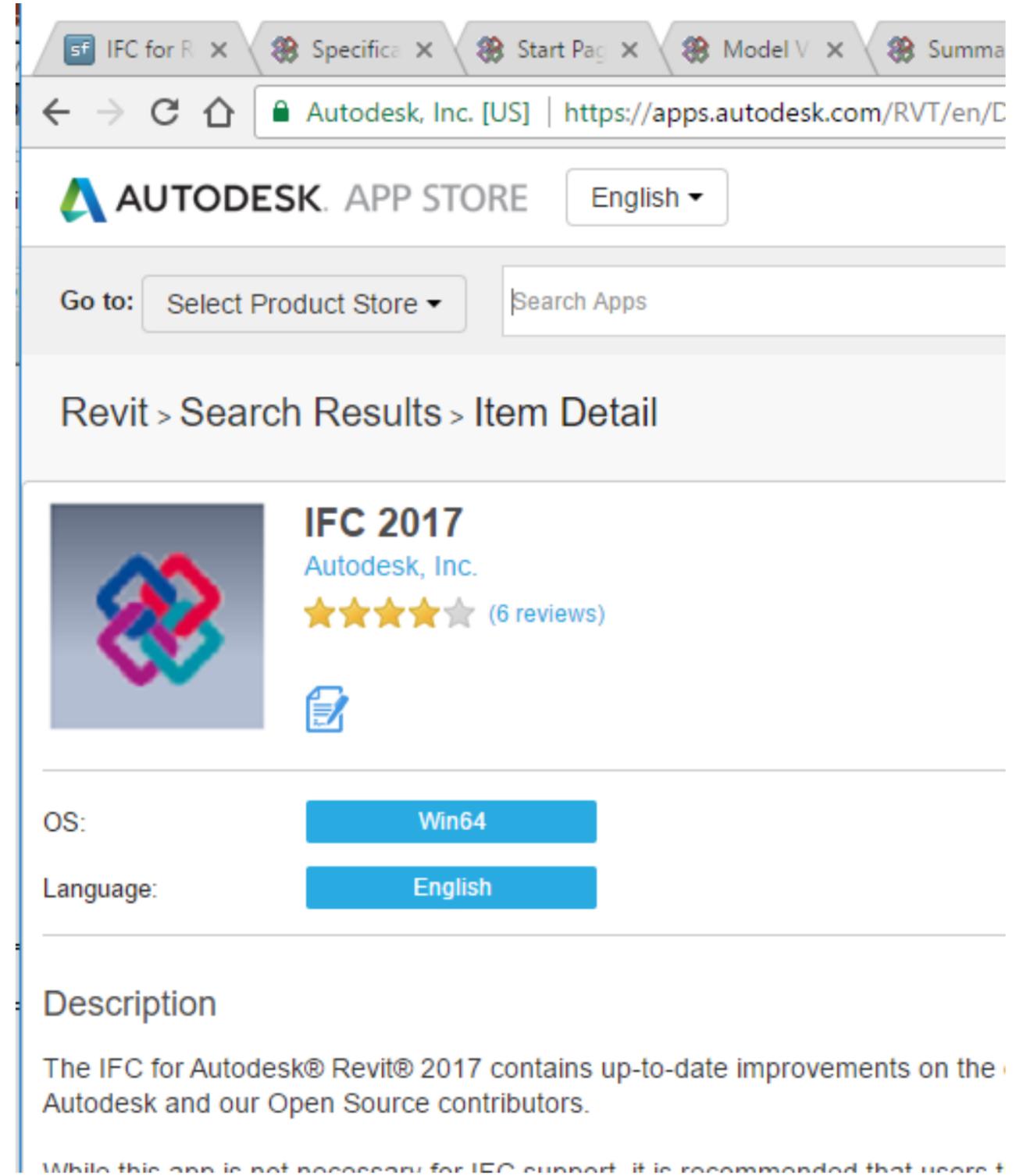




How?

# How to create an IFC?

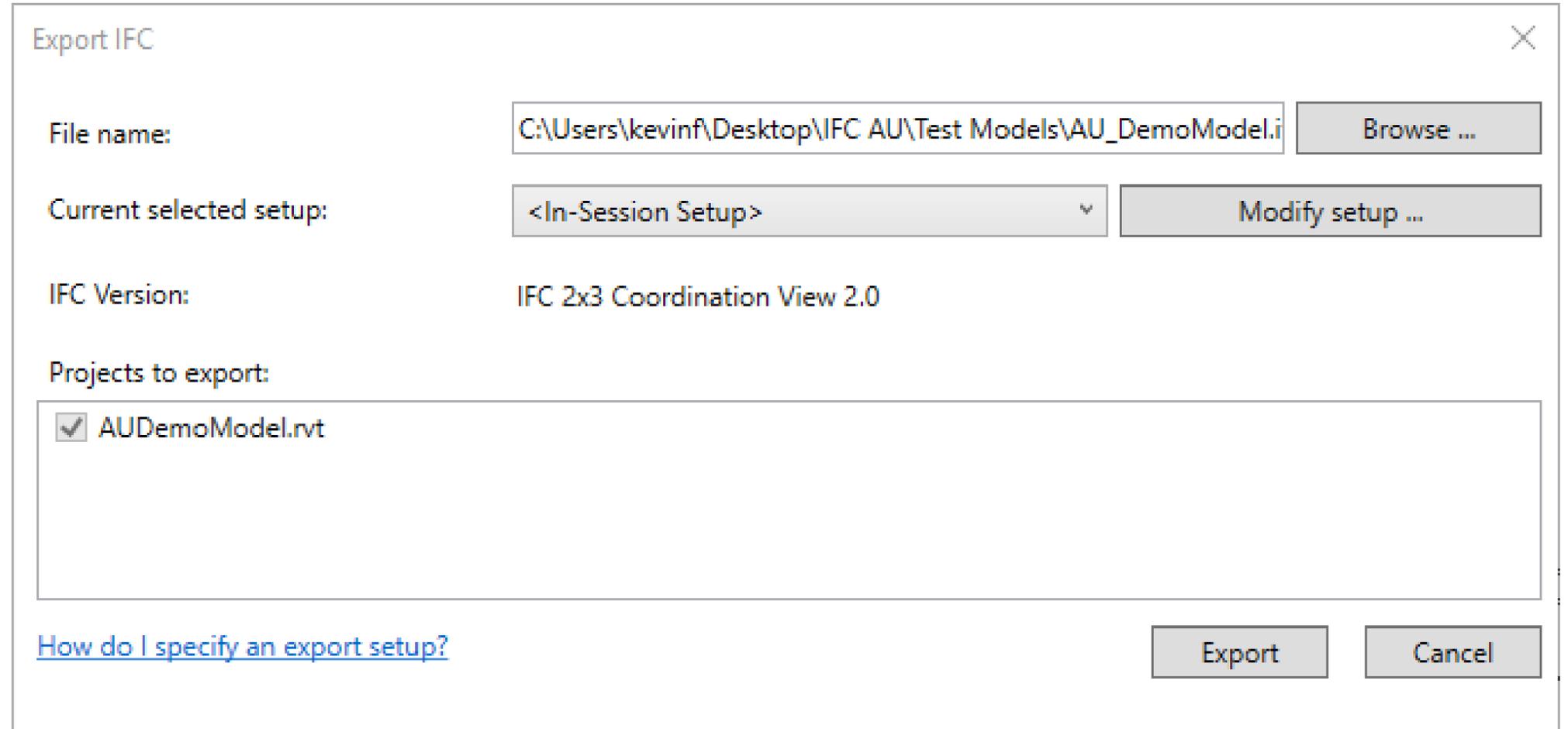
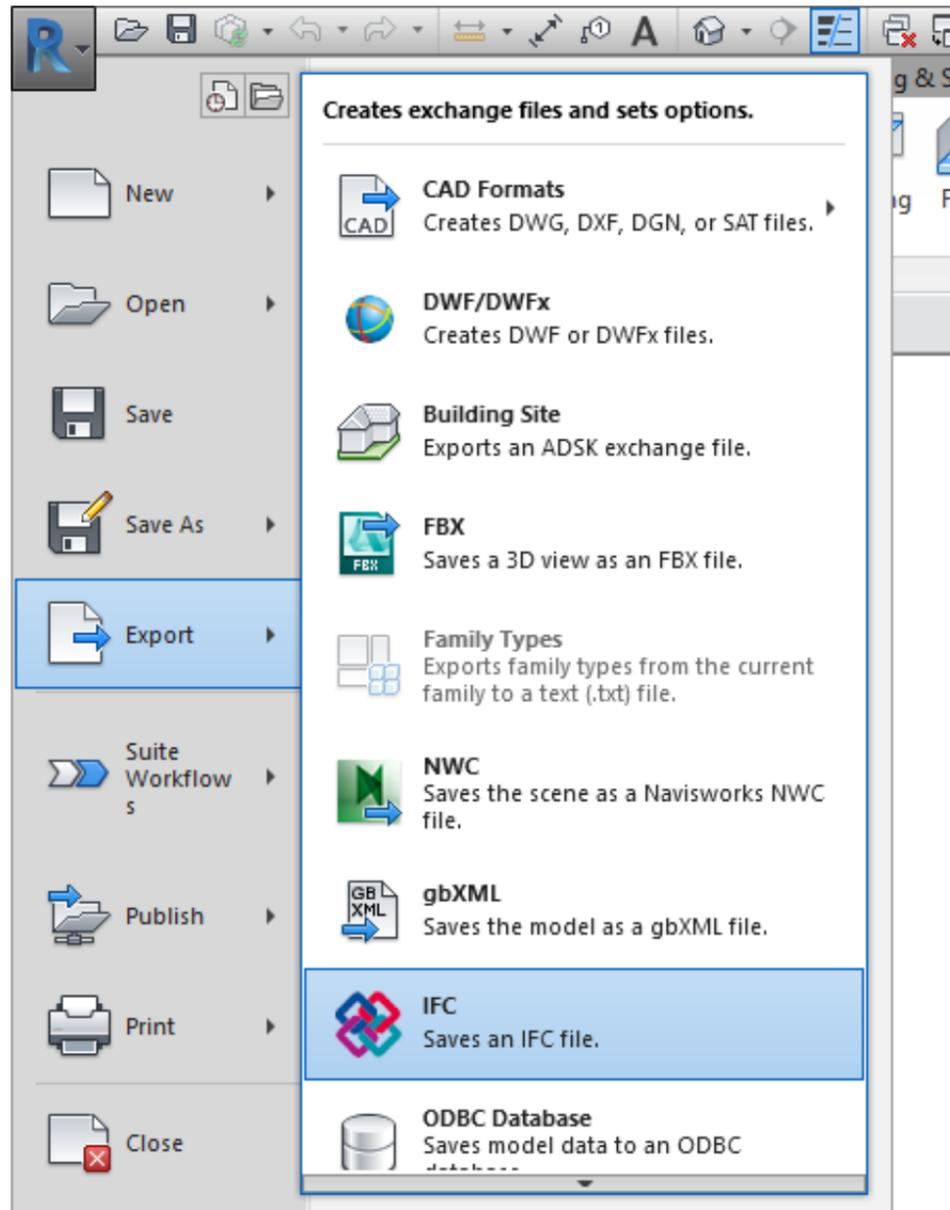
- IFC Exporter Plugin
- Free from Autodesk App Store
- Developed by Autodesk
- Adds additional functionality to the IFC Export Process



The screenshot shows a web browser window with the Autodesk App Store interface. The browser tabs include 'IFC for R...', 'Specifica...', 'Start Pag...', 'Model V...', and 'Summa...'. The address bar shows 'Autodesk, Inc. [US] | https://apps.autodesk.com/RVT/en/D...'. The page header features the Autodesk logo, 'APP STORE', and a language dropdown set to 'English'. Below the header is a search bar with a 'Go to:' dropdown set to 'Select Product Store' and a 'Search Apps' input field. The breadcrumb trail reads 'Revit > Search Results > Item Detail'. The main content area displays the 'IFC 2017' plugin by Autodesk, Inc., with a 4.5-star rating from 6 reviews. The OS is listed as 'Win64' and the language as 'English'. The description states: 'The IFC for Autodesk® Revit® 2017 contains up-to-date improvements on the Autodesk and our Open Source contributors. While this app is not necessary for IFC support, it is recommended that users t...

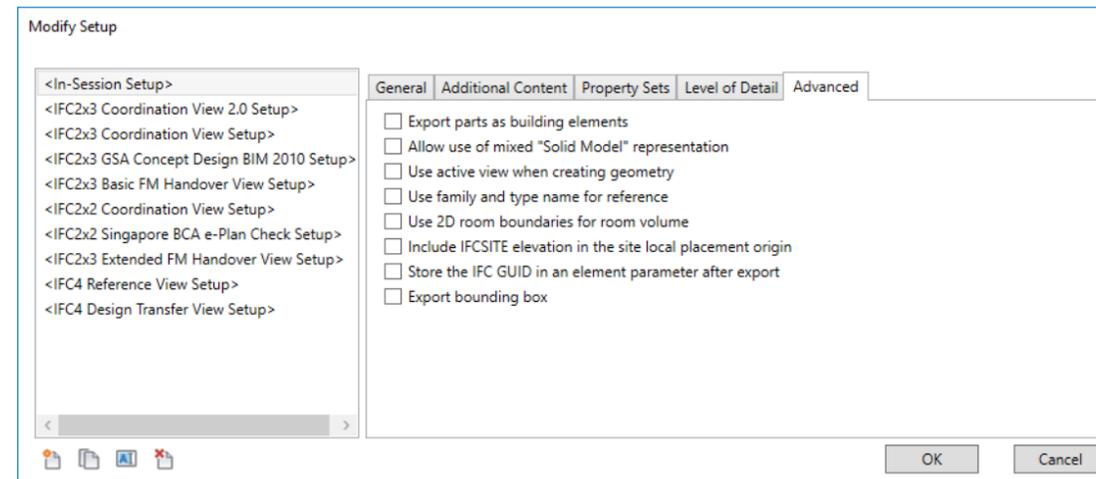
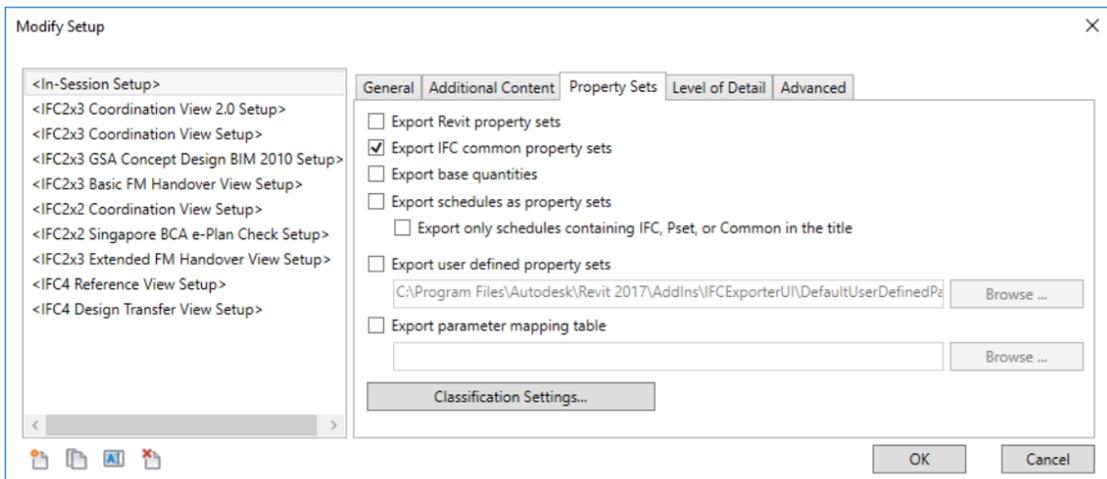
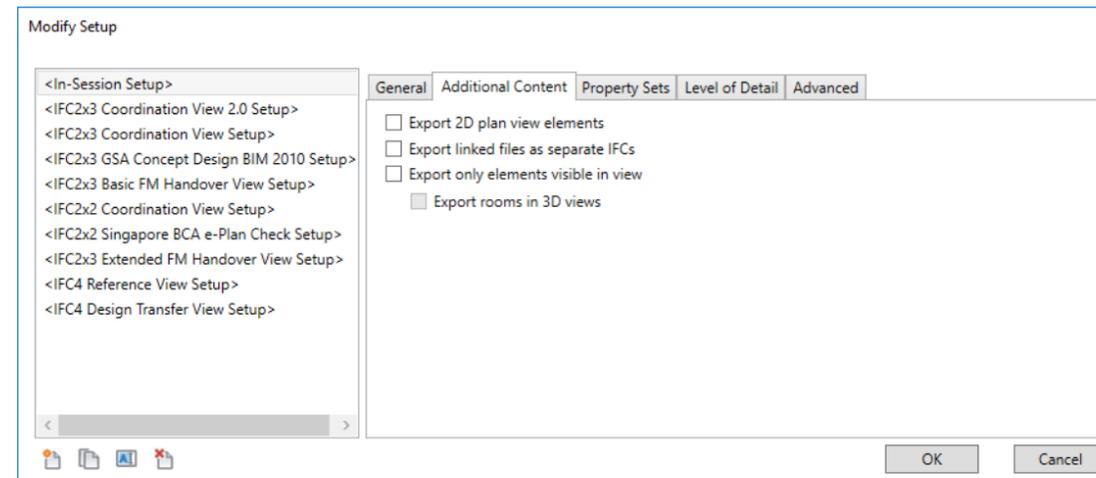
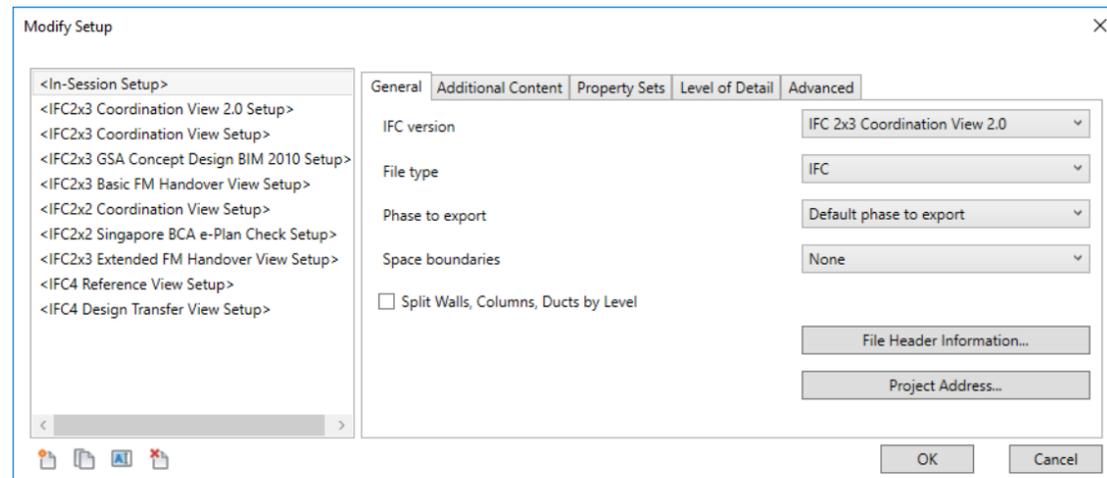
# How to create an IFC?

- Accessible through



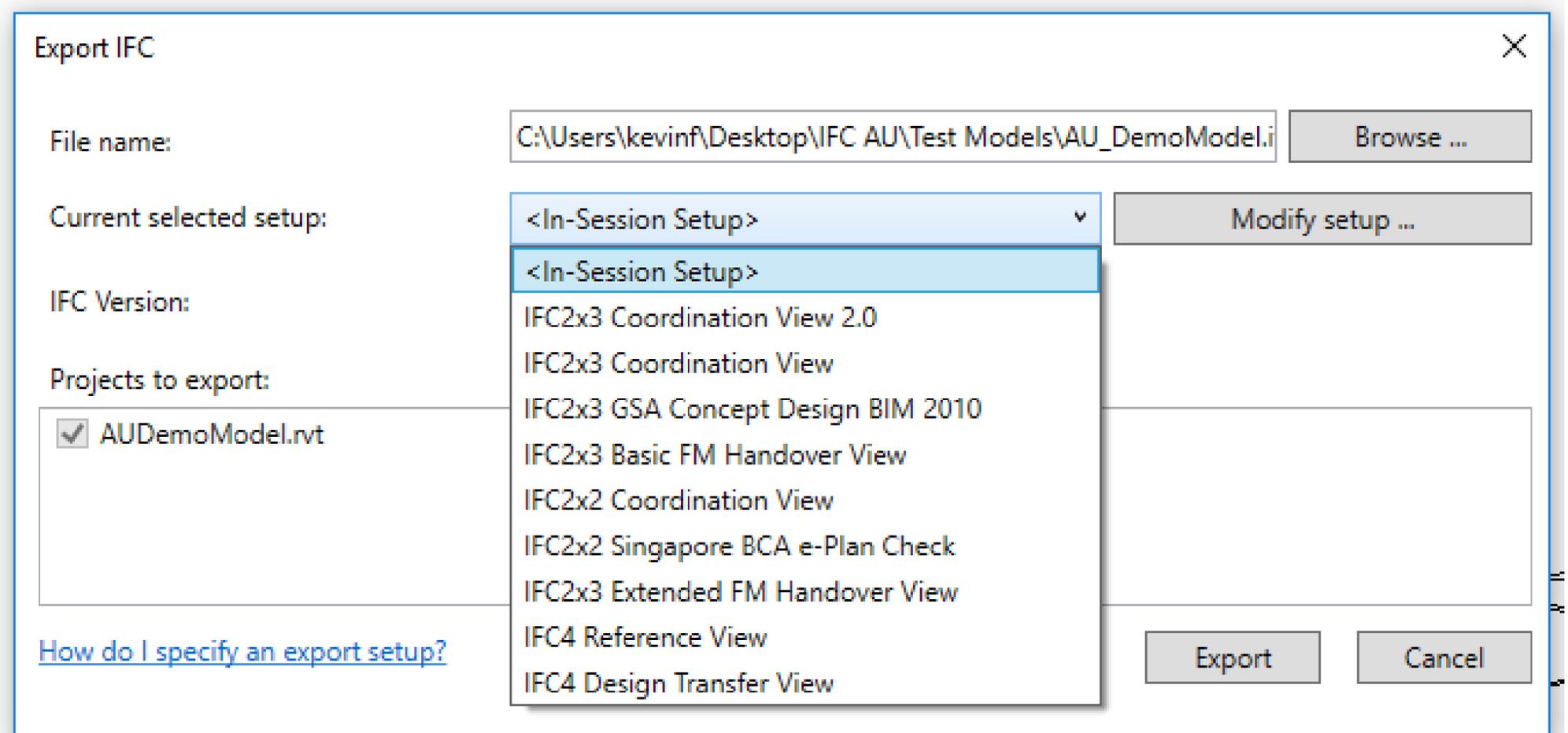
# IFC Exporter

- Just hitting export won't do
- Configuration required



# How to create an IFC?

- OOTB setups available to support standard Model View Definitions or MVDs



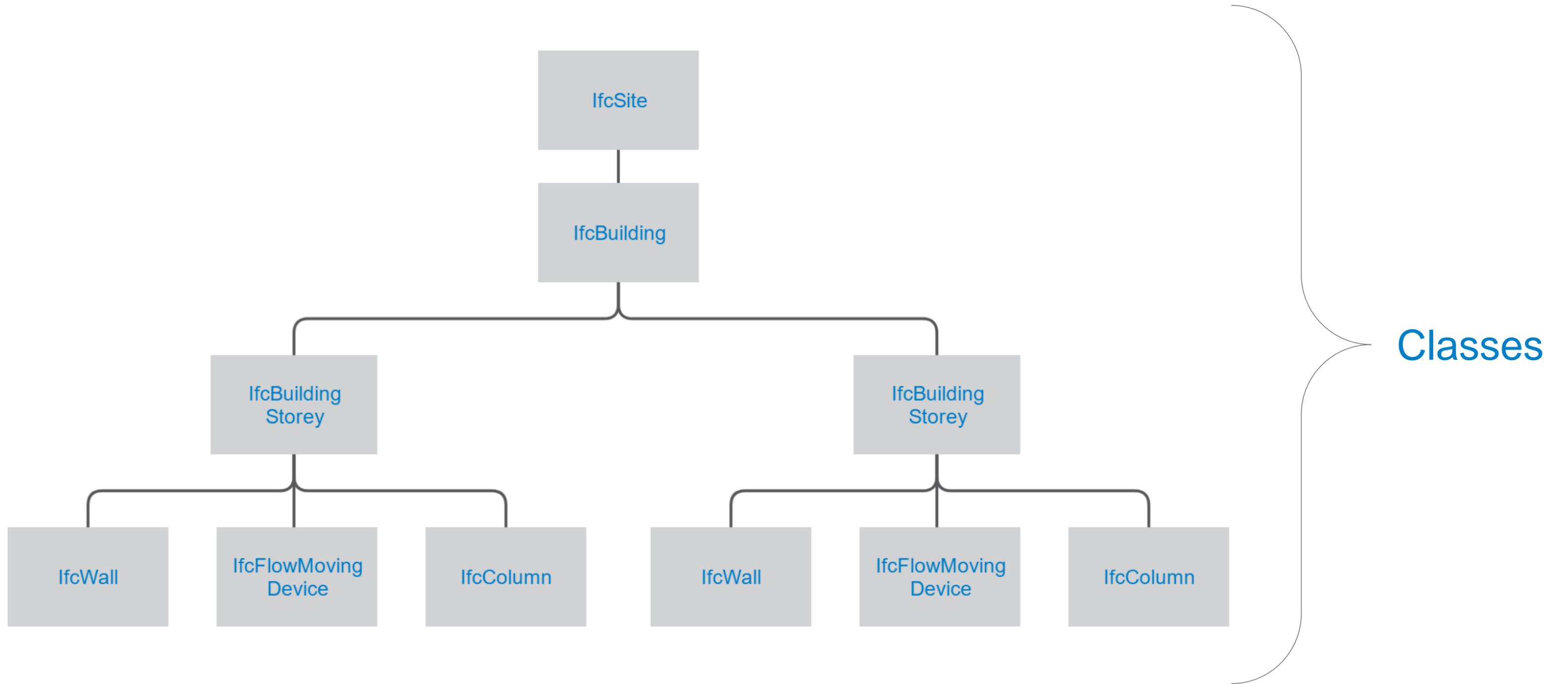
# Model View Definitions

- Model View Definitions are a subset, or a selection of the IFC schema suitable for a particular purpose.
- Some of these are specific for the transfer of geometry.
- Others for specific schemas of data such as the Extended Handover View Definition for COBie to support Level 2 BIM in the UK.

# Controlling the export

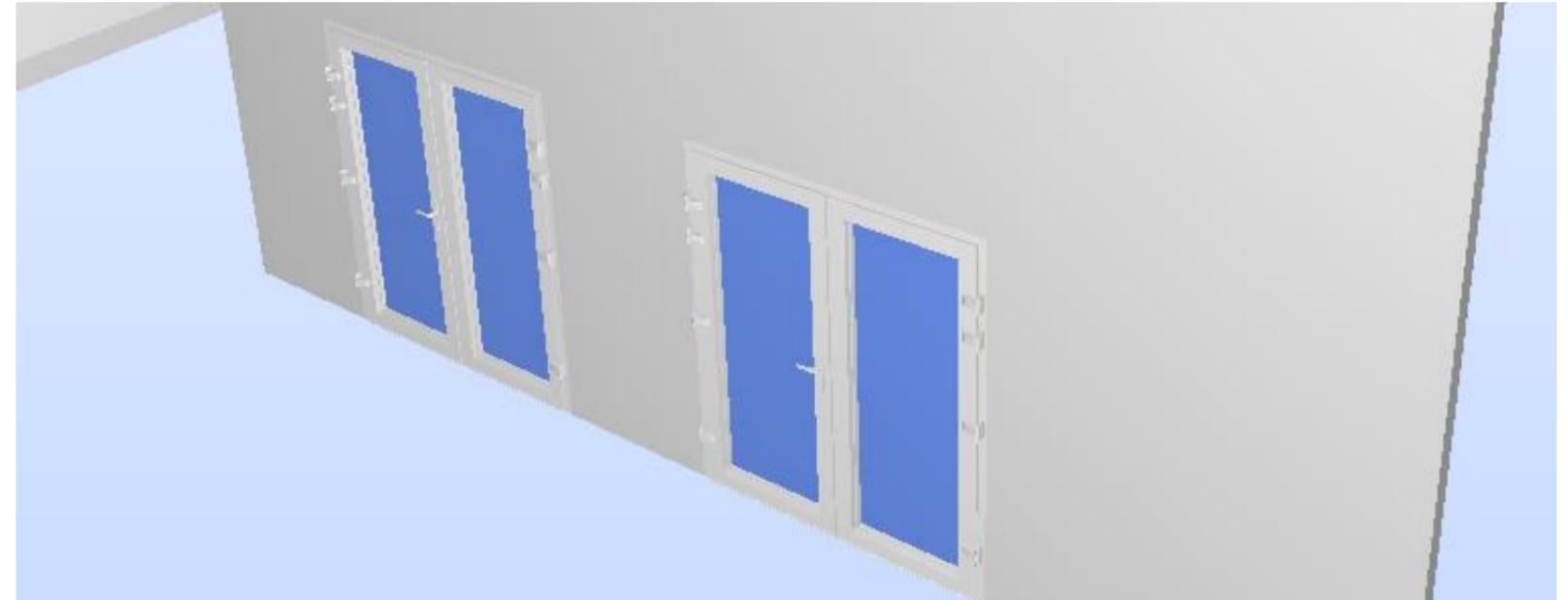
- Defining a MVD is fine, ensuring your export complies with it is another.
- Configuring your file is crucial, the following are additions to the IFC Exporter Setup
  - Class Mapping
  - Layer Mapping
  - Classification Assignment
  - Data Mapping

# Class Mapping



# Class Mapping

- Classes are collections data and information.
- An IFC Class is like a Revit Category
- If you don't get it right, it won't contain the right information.



**Info** Door.0.5

Pset_DoorWindowGlazingType			Pset_ManufacturerTypeInformation			
Ifc Dimensions		IfcDoorPanelProperties			Pset_DoorCommon	
Identification	Location	Quantities	Material	Relations	Classification	Hyperlinks

**Info** Window.0.1

Pset_DoorWindowGlazingType			Pset_ManufacturerTypeInformation		Pset_WindowCommon		
Identification	Location	Quantities	Material	Relations	Classification	Hyperlinks	Ifc Dimensions

# Class Mapping

- The BuildingSmart website defines all current IFC Classes and Types.
- <http://www.buildingsmart-tech.org/ifc/IFC2x3/TC1/html/index.htm>

## IFCSHAREDBLDGSERVICEELEMENTS

30 [Entities](#)

8 [Enumerations](#)

### **Entities (30):**

 [IfcDistributionChamberElement](#)  
 [IfcDistributionChamberElementType](#)  
 [IfcDistributionControlElement](#)  
 [IfcDistributionControlElementType](#)  
 [IfcDistributionFlowElement](#)  
 [IfcDistributionFlowElementType](#)  
 [IfcDistributionPort](#)  
 [IfcElectricalBaseProperties](#)  
 [IfcEnergyConversionDevice](#)  
 [IfcEnergyConversionDeviceType](#)  
 [IfcEnergyProperties](#)  
 [IfcFlowController](#)  
 [IfcFlowControllerType](#)  
 [IfcFlowFitting](#)  
 [IfcFlowFittingType](#)  
 [IfcFlowMovingDevice](#)  
 [IfcFlowMovingDeviceType](#)  
 [IfcFlowSegment](#)  
 [IfcFlowSegmentType](#)

- Browsing documentation by:
- Go → [architecture diagram](#)
  - Go → [alphabetical listing](#)
  - Go → [hierarchy listing](#)
  - Go → [property sets](#)
  - Go → [change log](#)
  - Go → [deprecated constructs](#)
  - Go → [what's new?](#)
  - >> [home](#)

### IFCHVACDOMAIN

- 31 [Entities](#)
- 31 [Enumerations](#)

- [IfcAirTerminalType](#)
- [IfcAirToAirHeatRecoveryType](#)
- [IfcBoilerType](#)
- [IfcChillerType](#)
- [IfcCoilType](#)
- [IfcCompressorType](#)
- [IfcCondenserType](#)
- [IfcCooledBeamType](#)
- [IfcCoolingTowerType](#)
- [IfcDamperType](#)
- [IfcDuctFittingType](#)
- [IfcDuctSegmentType](#)
- [IfcDuctSilencerType](#)
- [IfcEvaporativeCoolerType](#)
- [IfcEvaporatorType](#)
- [IfcFanType](#)
- [IfcFilterType](#)
- [IfcFlowMeterType](#)
- [IfcGasTerminalType](#)
- [IfcHeatExchangerType](#)
- [IfcHumidifierType](#)
- [IfcPipeFittingType](#)
- [IfcPipeSegmentType](#)
- [IfcPumpType](#)
- [IfcSpaceHeaterType](#)
- [IfcTankType](#)
- [IfcTubeBundleType](#)
- [IfcUnitaryEquipmentType](#)
- [IfcValveType](#)
- [IfcVibrationIsolatorType](#)

## IfcSpaceHeaterType

**Definition from IAI:** The element type *IfcSpaceHeaterType* defines a list of commonly shared property set definitions of a space heater and an optional set of product representations. It is used to define a space heater specification (i.e. the specific product information, that is common to all occurrences of that product type).

NOTE: This entity subsumes the entities *IfcHydronicHeater* and *IfcUnitHeater* from IFC R2x.

NOTE: The product representations are defined as representation maps (at the level of the supertype *IfcTypeProduct*, which get assigned by an element occurrence instance through the *IfcShapeRepresentation.Item[1]* being an *IfcMappedItem*.

A space heater type is used to define the common properties of a space heater device that may be applied to many occurrences of that type. Space heaters utilize a combination of radiation and/or natural convection using a heating source such as steam or hot water. Examples of space heaters include radiators, convectors, baseboard and finned-tube heaters, etc. Space heater types (or the instantiable subtypes) may be exchanged without being already assigned to occurrences.

The occurrences of the *IfcSpaceHeaterType* are represented by instances of *IfcEnergyConversionDevice* or its subtypes.

### Property Set Use Definition:

The property sets relating to this entity are defined by the *IfcPropertySet* and attached by the *IfcRelDefinesByProperties* relationship. It is accessible by the inverse *IsDefinedBy* relationship. The following property set definitions specific to this entity are part of this IFC release:

- [Pset\\_SpaceHeaterTypeCommon](#): common property set for all space heater types
    - [Pset\\_SpaceHeaterTypeHydronic](#): property set for all hydronic space heater types
- HISTORY: New entity in IFC Release 2x2.

### EXPRESS specification:

```
ENTITY IfcSpaceHeaterType
  SUBTYPE OF (IfcEnergyConversionDeviceType);
  PredefinedType : IfcSpaceHeaterTypeEnum;
  WHERE
    NR1 : (PredefinedType <> IfcSpaceHeaterTypeEnum.USERDEFINED) OR ((PredefinedType = IfcSpaceHeaterTypeEnum.USERDEFINED) AND EXISTS(SELF\IfcElementType.ElementType));
  END_ENTITY;
```

### Attribute definitions:

**PredefinedType** : Enumeration of

### Inheritance graph

```
ENTITY IfcSpaceHeaterType;
  ENTITY IfcRoot;
    GlobalId
    OwnerHistory
    Name
    Description
  ENTITY IfcObjectDefinition;
  INVERSE
    HasAssignments : SET OF IfcRelDecomposes FOR RelatingObject;
    IsDecomposedBy : SET [0:1] OF IfcRelDecomposes FOR RelatedObjects;
    Decomposes : SET OF IfcRelAssociates FOR RelatedObjects;
    HasAssociations : SET OF IfcRelAssociates FOR RelatedObjects;
  ENTITY IfcTypeObject;
    ApplicableOccurrence : OPTIONAL IfcLabel;
    HasPropertySets : OPTIONAL SET [1:?] OF IfcPropertySetDefinition;
  INVERSE
    ObjectTypeOf : SET [0:1] OF IfcRelDefinesByType FOR RelatingType;
  ENTITY IfcTypeProduct;
    RepresentationMaps : OPTIONAL LIST [1:1] OF INSTANCE IfcRepresentationMap;
```

- [Pset\\_SpaceHeaterTypeCommon](#): common property set for all space heater types
    - [Pset\\_SpaceHeaterTypeHydronic](#): property set for all hydronic space heater types
- HISTORY: New entity in IFC Release 2x2.

- Browsing documentation by:
- [Go → architecture diagram](#)
  - [Go → alphabetical listing](#)
  - [Go → hierarchy listing](#)
  - [Go → property sets](#)
  - [Go → change log](#)
  - [Go → deprecated constructs](#)
  - [Go → what's new?](#)
- [>> home](#)

## IFC2x3 Property Set Definition Reference

### PropertySet Definition:

<b>PropertySet Name</b>	Pset_SpaceHeaterTypeCommon
<b>Applicable Entities</b>	<a href="#">IfcSpaceHeaterType</a>
<b>Applicable Type Value</b>	
<b>Definition</b>	Definition from IAI: Space heater type common attributes. SoundLevel attribute deleted in IFC2x2 Pset Addendum: Use IfcSoundProperties instead.

### Property Definitions:

Name	Property Type	Data Type	Definition
TemperatureClassification	IfcPropertyEnumeratedValue	PEnum_SpaceHeaterTemperatureClassification <ul style="list-style-type: none"> <li>• LOWTEMPERATURE</li> <li>• HIGHTEMPERATURE</li> <li>• OTHER</li> <li>• NOTKNOWN</li> <li>• UNSET</li> </ul>	Enumeration defining the temperature classification of the space heater surface temperature. low temperature - surface temperature is relatively low, usually heated by hot water or electricity. high temperature - surface temperature is relatively high, usually heated by gas or steam.
HeatingSource	IfcPropertyEnumeratedValue	PEnum_HeatingSource <ul style="list-style-type: none"> <li>• FUEL</li> <li>• GAS</li> <li>• ELECTRICITY</li> <li>• HOTWATER</li> <li>• STEAM</li> <li>• OTHER</li> <li>• NOTKNOWN</li> <li>• UNSET</li> </ul>	Enumeration defining the heating source used by the space heater.
Material	IfcPropertyReferenceValue	IfcMaterial	Primary material from which the object is constructed.
BodyMass	IfcPropertySingleValue	IfcMassMeasure / MASSUNIT	Overall body mass of the heater.
ThermalMassHeatCapacity	IfcPropertySingleValue	IfcReal / USERDEFINED	Product of component mass and specific heat
OutputCapacity	IfcPropertySingleValue	IfcPowerMeasure / POWERUNIT	Total nominal heat output as listed by the manufacturer.
ThermalEfficiency	IfcPropertySingleValue	IfcPositiveRatioMeasure	Overall Thermal Efficiency is defined as gross energy output of the heat transfer device divided by the energy input.

## IFCHVACDOMAIN

- 31 [Entities](#)
- 31 [Enumerations](#)

- [IfcAirTerminalType](#)
- [IfcAirToAirHeatRecoveryType](#)
- [IfcBoilerType](#)
- [IfcChillerType](#)
- [IfcCoilType](#)
- [IfcCompressorType](#)
- [IfcCondenserType](#)
- [IfcCooledBeamType](#)
- [IfcCoolingTowerType](#)
- [IfcDamperType](#)
- [IfcDuctFittingType](#)
- [IfcDuctSegmentType](#)
- [IfcDuctSilencerType](#)
- [IfcEvaporativeCoolerType](#)
- [IfcEvaporatorType](#)
- [IfcFanType](#)
- [IfcFilterType](#)
- [IfcFlowMeterType](#)
- [IfcGasTerminalType](#)
- [IfcHeatExchangerType](#)
- [IfcHumidifierType](#)
- [IfcPipeFittingType](#)
- [IfcPipeSegmentType](#)
- [IfcPumpType](#)
- [IfcSpaceHeaterType](#)
- [IfcTankType](#)
- [IfcTubeBundleType](#)
- [IfcUnitaryEquipmentType](#)
- [IfcValveType](#)
- [IfcVibrationIsolatorType](#)

- Browsing documentation by:
- [Go → architecture diagram](#)
  - [Go → alphabetical listing](#)
  - [Go → hierarchy listing](#)
  - [Go → property sets](#)
  - [Go → change log](#)
  - [Go → deprecated constructs](#)
  - [Go → what's new?](#)
- [>> home](#)

**IFCHVACDOMAIN**

- 31 [Entities](#)
- 31 [Enumerations](#)

- [IfcAirTerminalType](#)
- [IfcAirToAirHeatRecoveryType](#)
- [IfcBoilerType](#)
- [IfcChillerType](#)
- [IfcCoilType](#)
- [IfcCompressorType](#)
- [IfcCondenserType](#)
- [IfcCooledBeamType](#)
- [IfcCoolingTowerType](#)
- [IfcDamperType](#)
- [IfcDuctFittingType](#)
- [IfcDuctSegmentType](#)
- [IfcDuctSilencerType](#)
- [IfcEvaporativeCoolerType](#)
- [IfcEvaporatorType](#)
- [IfcFanType](#)
- [IfcFilterType](#)
- [IfcFlowMeterType](#)
- [IfcGasTerminalType](#)
- [IfcHeatExchangerType](#)
- [IfcHumidifierType](#)
- [IfcPipeFittingType](#)
- [IfcPipeSegmentType](#)
- [IfcPumpType](#)
- [IfcSpaceHeaterType](#)
- [IfcTankType](#)
- [IfcTubeBundleType](#)
- [IfcUnitaryEquipmentType](#)
- [IfcValveType](#)
- [IfcVibrationIsolatorType](#)

## IFC2x3 Property Set Definition Reference

### PropertySet Definition:

PropertySet Name	Pset_SpaceHeaterTypeCommon
Applicable Entities	<a href="#">IfcSpaceHeaterType</a>
Applicable Type Value	
Definition	Definition from IAI: Space heater type common attributes. SoundLevel attribute deleted in IFC2x2 Pset Addendum: Use IfcSoundProperties instead.

### Property Definitions:

Name	Property Type	Data Type	Definition
TemperatureClassification	IfcPropertyEnumeratedValue	PEnum_SpaceHeaterTemperatureClassification <ul style="list-style-type: none"> <li>• LOWTEMPERATURE</li> <li>• HIGHTEMPERATURE</li> <li>• OTHER</li> <li>• NOTKNOWN</li> <li>• UNSET</li> </ul>	Enumeration defining the temperature classification of the space heater surface temperature. low temperature - surface temperature is relatively low, usually heated by hot water or electricity. high temperature - surface temperature is relatively high, usually heated by gas or steam.
HeatingSource	IfcPropertyEnumeratedValue	PEnum_HeatingSource <ul style="list-style-type: none"> <li>• FUEL</li> <li>• GAS</li> <li>• ELECTRICITY</li> </ul>	Enumeration defining the heating source used by the space heater.

Material	IfcPropertyReferenceValue	IfcMaterial	Primary material from which the object is constructed.
BodyMass	IfcPropertySingleValue	IfcMassMeasure / MASSUNIT	Overall body mass of the heater.
ThermalMassHeatCapacity	IfcPropertySingleValue	IfcReal / USERDEFINED	Product of component mass and specific heat
OutputCapacity	IfcPropertySingleValue	IfcPowerMeasure / POWERUNIT	Total nominal heat output as listed by the manufacturer.
ThermalEfficiency	IfcPropertySingleValue	IfcPositiveRatioMeasure	Overall Thermal Efficiency is defined as gross energy output of the heat transfer device divided by the energy input.

- Browsing documentation by:
- Go → [architecture diagram](#)
  - Go → [alphabetical listing](#)
  - Go → [hierarchy listing](#)
  - Go → [property sets](#)
  - Go → [change log](#)
  - Go → [deprecated constructs](#)
  - Go → [what's new?](#)
  - >> [home](#)

### IFCHVACDOMAIN

- 31 [Entities](#)
- 31 [Enumerations](#)

- [IfcAirTerminalType](#)
- [IfcAirToAirHeatRecoveryType](#)
- [IfcBoilerType](#)
- [IfcChillerType](#)
- [IfcCoilType](#)
- [IfcCompressorType](#)
- [IfcCondenserType](#)
- [IfcCooledBeamType](#)
- [IfcCoolingTowerType](#)
- [IfcDamperType](#)
- [IfcDuctFittingType](#)
- [IfcDuctSegmentType](#)
- [IfcDuctSilencerType](#)
- [IfcEvaporativeCoolerType](#)
- [IfcEvaporatorType](#)
- [IfcFanType](#)
- [IfcFilterType](#)
- [IfcFlowMeterType](#)
- [IfcGasTerminalType](#)
- [IfcHeatExchangerType](#)
- [IfcHumidifierType](#)
- [IfcPipeFittingType](#)
- [IfcPipeSegmentType](#)
- [IfcPumpType](#)
- [IfcSpaceHeaterType](#)
- [IfcTankType](#)
- [IfcTubeBundleType](#)
- [IfcUnitaryEquipmentType](#)
- [IfcValveType](#)
- [IfcVibrationIsolatorType](#)

## IfcSpaceHeaterType

**Definition from IAI:** The element type *IfcSpaceHeaterType* defines a list of commonly shared property set definitions of a space heater and an optional set of product representations. It is used to define a space heater specification (i.e. the specific product information, that is common to all occurrences of that product type).

NOTE: This entity subsumes the entities *IfcHydronicHeater* and *IfcUnitHeater* from IFC R2x.

NOTE: The product representations are defined as representation maps (at the level of the supertype *IfcTypeProduct*, which get assigned by an element occurrence instance through the *IfcShapeRepresentation.Item[1]* being an *IfcMappedItem*.

A space heater type is used to define the common properties of a space heater device that may be applied to many occurrences of that type. Space heaters utilize a combination of radiation and/or natural convection using a heating source such as steam or hot water. Examples of space heaters include radiators, convectors, baseboard and finned-tube heaters, etc. Space heater types (or the instantiable subtypes) may be exchanged without being already assigned to occurrences.

The occurrences of the *IfcSpaceHeaterType* are represented by instances of *IfcEnergyConversionDevice* or its subtypes.

### Property Set Use Definition:

The property sets relating to this entity are defined by the *IfcPropertySet* and attached by the *IfcRelDefinesByProperties* relationship. It is accessible by the inverse *IsDefinedBy* relationship. The following property set definitions specific to this entity are part of this IFC release:

- [Pset\\_SpaceHeaterTypeCommon](#): common property set for all space heater types
  - [Pset\\_SpaceHeaterTypeHydronic](#): property set for all hydronic space heater types

HISTORY: New entity in IFC Release 2x2.

### EXPRESS specification:

```
ENTITY IfcSpaceHeaterType
  SUBTYPE OF (IfcEnergyConversionDeviceType);
  PredefinedType : IfcSpaceHeaterTypeEnum;
  WHERE
    WR1 : (PredefinedType <> IfcSpaceHeaterTypeEnum.USERDEFINED) OR ((PredefinedType = IfcSpaceHeaterTypeEnum.USERDEFINED) AND EXISTS (SELF\IfcElementType.ElementType));
END_ENTITY;
```

### Attribute definitions:

**PredefinedType** : Enumeration of possible types of space heater (e.g., baseboard heater, convector, radiator, etc.).

### Inheritance graph

```
ENTITY IfcSpaceHeaterType
  SUBTYPE OF (IfcEnergyConversionDeviceType);
  PredefinedType : IfcSpaceHeaterTypeEnum;
  WHERE
    HasAssociations : SET OF IfcRelAssociates FOR RelatedObjects;
  ENTITY IfcTypeObject;
    ApplicableOccurrence : OPTIONAL IfcLabel;
    HasPropertySets : OPTIONAL SET [1:?] OF IfcPropertySetDefinition;
  INVERSE
    ObjectTypeOf : SET [0:1] OF IfcRelDefinesByType FOR RelatingType;
  ENTITY IfcTypeProduct;
    RepresentationMaps : OPTIONAL LIST [1:2] OF IfcRepresentationMap;
```

- Browsing documentation by:
- Go → [architecture diagram](#)
  - Go → [alphabetical listing](#)
  - Go → [hierarchy listing](#)
  - Go → [property sets](#)
  - Go → [change log](#)
  - Go → [deprecated constructs](#)
  - Go → [what's new?](#)
- >> [home](#)

## IfcSpaceHeaterTypeEnum

Definition from IAT: Enumeration defining the functional type of space heater. The *IfcSpaceHeaterTypeEnum* contains the following:

- **SECTIONALRADIATOR**: Sectional type radiator typically fabricated from welded sheet metal sections and resembling free standing cast-iron radiators.
- **PANELRADIATOR**: Panel type radiator typically fabricated with flat panels, with or without an exposed extended fin surface attached to the rear for increased output.
- **TUBULARRADIATOR**: Tubular type radiator consisting of supply and return headers with interconnecting parallel tubes in a wide variety of lengths and heights.
- **CONVECTOR**: A heat-distributing unit that operates with gravity-circulated air.
- **BASEBOARDHEATER**: Baseboard heater designed for installation along the bottom of walls in place of the conventional baseboard.
- **FINNEDTUBEUNIT**: Fin-tube heater typically fabricated from metallic tubing, with metallic fins bonded to the tube.
- **UNITHEATER**: An assembly typically consisting of a fan, a motor, and a heating element.
- **USERDEFINED**: User-defined space heater type.
- **NOTDEFINED**: Undefined space heater type.

NOTE: This enumeration was renamed from *IfcHydronicHeaterTypeEnum* in IFC R2x.

HISTORY: New enumeration in IFC R2x.

### EXPRESS specification:

```
TYPE IfcSpaceHeaterTypeEnum = ENUMERATION OF  
( SECTIONALRADIATOR,  
  PANELRADIATOR,  
  TUBULARRADIATOR,  
  CONVECTOR,  
  BASEBOARDHEATER,  
  FINNEDTUBEUNIT,  
  UNITHEATER,  
  USERDEFINED,  
  NOTDEFINED );  
END_TYPE;
```

## IFCHVACDOMAIN

- 31 [Entities](#)
- 31 [Enumerations](#)

- [IfcAirTerminalType](#)
- [IfcAirToAirHeatRecoveryType](#)
- [IfcBoilerType](#)
- [IfcChillerType](#)
- [IfcCoilType](#)
- [IfcCompressorType](#)
- [IfcCondenserType](#)
- [IfcCooledBeamType](#)
- [IfcCoolingTowerType](#)
- [IfcDamperType](#)
- [IfcDuctFittingType](#)
- [IfcDuctSegmentType](#)
- [IfcDuctSilencerType](#)
- [IfcEvaporativeCoolerType](#)
- [IfcEvaporatorType](#)
- [IfcFanType](#)
- [IfcFilterType](#)
- [IfcFlowMeterType](#)
- [IfcGasTerminalType](#)
- [IfcHeatExchangerType](#)
- [IfcHumidifierType](#)
- [IfcPipeFittingType](#)
- [IfcPipeSegmentType](#)
- [IfcPumpType](#)
- [IfcSpaceHeaterType](#)
- [IfcTankType](#)
- [IfcTubeBundleType](#)
- [IfcUnitaryEquipmentType](#)
- [IfcValveType](#)
- [IfcVibrationIsolatorType](#)

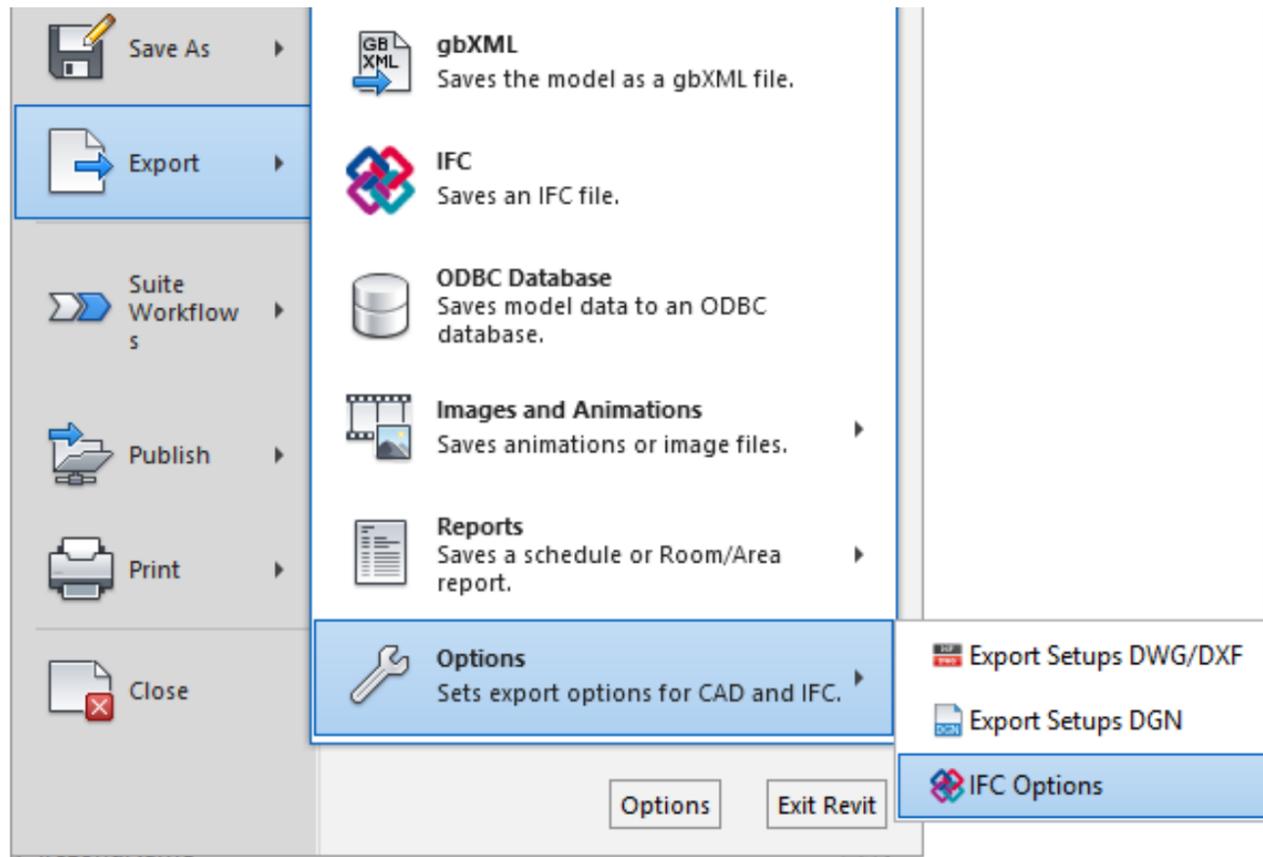
- **SECTIONALRADIATOR**: Sectional type radiator typically fabricated from welded sheet metal sections and resembling free standing cast-iron radiators.
- **PANELRADIATOR**: Panel type radiator typically fabricated with flat panels, with or without an exposed extended fin surface attached to the rear for increased output.
- **TUBULARRADIATOR**: Tubular type radiator consisting of supply and return headers with interconnecting parallel tubes in a wide variety of lengths and heights.
- **CONVECTOR**: A heat-distributing unit that operates with gravity-circulated air.
- **BASEBOARDHEATER**: Baseboard heater designed for installation along the bottom of walls in place of the conventional baseboard.
- **FINNEDTUBEUNIT**: Fin-tube heater typically fabricated from metallic tubing, with metallic fins bonded to the tube.
- **UNITHEATER**: An assembly typically consisting of a fan, a motor, and a heating element.
- **USERDEFINED**: User-defined space heater type.
- **NOTDEFINED**: Undefined space heater type.

# Class Mapping

- Class Mapping is crucial for MEP objects. A mechanical equipment objects for example could be a host of elements such as
  - IfcEnergyConversionDevice IfcBoilerType
  - IfcFlowMovingDevice IfcFanType
  - *IfcEnergyConversionDevice* IfcSpaceHeaterType

# Class Mapping

- IFC Exporter uses a Text file to map categories and subcategories to IFC Entities.



IFC Export Classes: C:\ProgramData\Autodesk\RVT 2016\exportlayers-ifc-IAI.txt

Revit Category	IFC Class Name	IFC Type
Center line	{ IfcDuctFitting }	
<b>Duct Insulations</b>	IfcCovering	
<b>Duct Linings</b>	IfcCovering	
<b>Duct Placeholders</b>	IfcDuctSegment	
<b>Ducts</b>	IfcDuctSegment	
Center line	{ IfcDuctSegment }	
Drop	{ IfcDuctSegment }	
Rise	{ IfcDuctSegment }	
<b>Electrical Equipment</b>	IfcBuildingElementProxy	
Hidden Lines	{ IfcBuildingElementProxy }	
<b>Electrical Equipment Tags</b>	Not Exported	
<b>Electrical Fixture Tags</b>	Not Exported	
<b>Electrical Fixtures</b>	IfcBuildingElementProxy	
Hidden Lines	{ IfcBuildingElementProxy }	
<b>Elevations</b>	Not Exported	
<b>Entourage</b>	IfcBuildingElementProxy	
Hidden Lines	{ IfcBuildingElementProxy }	
<b>Existing</b>	Not Exported	
<b>Fabrication Parts</b>	IfcBuildingElementProxy	
Center Line	{ IfcBuildingElementProxy }	
<b>Filled region</b>	IfcAnnotation	
<b>Fire Alarm Devices</b>	IfcAlarmType	

Buttons: Load..., Standard, Save As..., OK, Cancel, Help

# Class Mapping

- The OOTB Class mapping cover only a small percentage of scenarios. Mechanical Equipment can have many variations.

Revit Category	Count
Mechanical Equipment	3
Air Conditioning Unit	1
Air Handling Unit	1
Boiler	1
Chiller - Watercooled	1
Gas Tap	1
Heat Exchanger - Plate	1
Hidden Lines	3
Mixing Value	1
Radiator	1
Parking	3

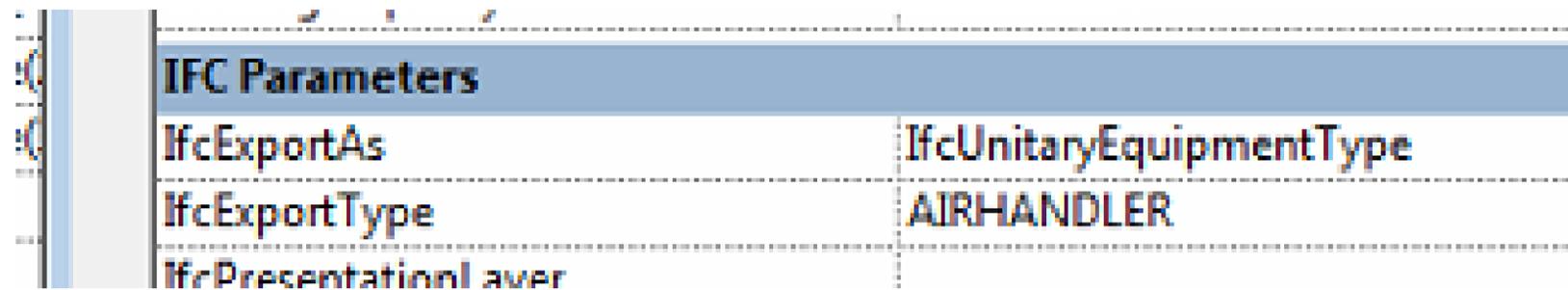
IFC Export Classes: C:\Users\kevinf\Desktop\IFC AU\ExampleClassExport.txt

Revit Category	IFC Class Name	IFC Type
Mass Skylight	Not Exported	
Mass Zone	Not Exported	
Nodes	Not Exported	
Pattern Fill	Not Exported	
Pattern Lines	Not Exported	
<b>Massing</b>	IfcBuildingElementProxy	
<b>Mechanical Equipment</b>	IfcBuildingElementProx	
Air Conditioning Unit	IfcUnitaryEquipmentType	AIRCONDITIONINGUNIT
Air Handling Unit	IfcUnitaryEquipmentType	AIRHANDLER
Boiler	IfcBoilerType	WATER
Chiller - Watercooled	IfcChillerType	WATERCOOLED
Gas Tap	IfcValveType	GASTAP
Heat Exchanger - Plate	IfcHeatExchangerType	PLATE
Hidden Lines	Not Exported	
Mixing Value	IfcValveType	MIXING
Radiator	IfcSpaceHeaterType	SECTIONALRADIATOR
<b>Mechanical Equipment Tags</b>	Not Exported	
<b>MEP Fabrication Containment</b>	IfcBuildingElementProxy	
Center Line	Not Exported	
Drop	Not Exported	
Rise	Not Exported	
Symbolary	Not Exported	

OK

# Class Mapping

- This can be controlled at element level.
- Add the following parameters to your model, and assign them to all model elements.



The image shows a screenshot of a software interface with a table of IFC Parameters. The table has two columns: the first column lists parameter names, and the second column lists their assigned values. The first row is highlighted in blue. The parameter names are IfcExportAs, IfcExportType, and IfcPresentationOver. The assigned values are IfcUnitaryEquipmentType and AIRHANDLER.

IFC Parameters	
IfcExportAs	IfcUnitaryEquipmentType
IfcExportType	AIRHANDLER
IfcPresentationOver	

- These parameters override the IfcElement Class and export Type information.

# Class Mapping

- Values should be pre-populated in your Company Libraries

NominalFrequencyRange	0.0 , 0.0	=
NominalCurrent	0.000000	=
InsulationStandardClass	Unset	=
IfcExportType	AIRHANDLER	= "AIRHANDLER"
IfcExportAs	IfcUnitaryEquipmentType	= "IfcUnitaryEquipmentType"
IP Code	n/a	=
HasProtectiveEarth	<input type="checkbox"/>	=
ElectricalDeviceNominalPower	350.000000	=
DualDeck	<input type="checkbox"/>	=

# Class Mapping

- Revit Component Elements can be mapped to most IFC Elements.
- Systems families are not as flexible.

Ceilings	IfcCovering
Roof	IfcRoof
Wall	IfcFooting
	IfcWall
	IfcWallStandardCase

Stairs	IfcStair
Ramps	IfcRamp
Curtain Panels (System Panels)	IfcPlate
	IfcObject

Curtain Panels (Component Panels)	IfcObject
	IfcPlate
	IfcDoor
	IfcWindow

~~Revit Hacks~~

# Class Mapping

- There are multiple methods of entering the IFC Type, and Pre-defined types.

Code Name	
<b>IFC Parameters</b>	⤴
IfcExportAs	IfcElectricApplianceType.WATERHEATER
IfcExportType	
<b>Data</b>	⤴

Code Name	
<b>IFC Parameters</b>	⤴
IfcExportAs	IfcElectricApplianceType
IfcExportType	WATERHEATER
<b>Data</b>	⤴

# Class Mapping

- In this instance, both are valid, achieve the same results

The screenshot shows a software interface with a table titled 'Pset\_DistributionFlowElementCommon'. The table has columns for 'Identification', 'Location', 'Quantities', 'Material', 'Profile', 'Relations', and 'Classification'. The 'Functional Type' row is highlighted, and the value 'WATERHEATER' is enclosed in a yellow box. The 'Electric Appliance.0.1' header is also highlighted in a yellow box.

Hyperlinks		Pset_DistributionFlowElementCommon				
Identification	Location	Quantities	Material	Profile	Relations	Classification
Property	Value					
Model	Type Test					
Discipline	Architectural					
Name	IFC Object Test2:IFC Object Test:582835					
Type	IFC Object Test					
Type Name	IFC Object Test					
Description						
Functional Type	WATERHEATER					
Layer	A-000-M-MASS					
System						

# Layer Mapping

- Revit doesn't use layers to organise object within Revit, it uses Categories.
- Layers required for effective collaboration with partners using tools such as ArchiCAD, and Tekla
- Layers need to conform to Project Standards, to ensure efficient import mapping.

# Layer Mapping

- Revit will map objects to layers by default
- Default Template aligned to BS1192 1997 and CSIfB.
- Use Uniclass 2015 instead.

Curtain Wall	A-214-M_CURT_WALL	A-Ss_25_60_35-M_GlazingSystems
Structural Frame	S-280-M_STRUCT_FRAME	S-EF_20_10-M_Frames
Duct	M-287-M_DUCT	E-EF_65-M_VentAndAitCon

# Layer Mapping

- Layer Mapping in Revit is controlled by a layer export file.
- This is a Tab delimited txt file.

```
SRA_exportlayers-dwg-Uniclass2015.txt - Notepad
File Edit Format View Help
# Revit Export Layers
# Maps Categories and Subcategories to layer names and color numbers
# Category <tab> Subcategory <tab> Layer name <tab> Color number <tab>
# Cut layer name <tab> Cut color number
# Do not remove the colon (:) after certain category names.
# -----
Air Terminal Tags           A-EF_65-T_Ventilation_And_Air_Conditioning_Functions    70      A-EF_65-
Air Terminals              A-EF_65-M_Ventilation_And_Air_Conditioning_Functions    70      A-EF_65-M_Venti
Analytical Beam Tags       A-EF_20-T_Structural_Elements    2        A-EF_20-T_Structural_Elements
Analytical Brace Tags     A-EF_20-T_Structural_Elements    2        A-EF_20-T_Structural_Elements
Analytical Column Tags    A-EF_20-T_Structural_Elements    171     A-EF_20-T_Structural_Elements
Analytical Floor Tags     A-EF_20-T_Structural_Elements    171     A-EF_20-T_Structural_Elements
Analytical Isolated Foundation Tags    A-EF_20-T_Structural_Elements    171     A-EF_20-T_Struct
Analytical Link Tags      A-EF_20-T_Structural_Elements    2        A-EF_20-T_Structural_Elements
Analytical Node Tags      A-EF_20-T_Structural_Elements    2        A-EF_20-T_Structural_Elements
Analytical Slab Foundation Tags    A-EF_20-T_Structural_Elements    171     A-EF_20-T_Structural_Ele
Analytical Wall Foundation Tags    A-EF_20-T_Structural_Elements    171     A-EF_20-T_Structural_Ele
Analytical Wall Tags      A-EF_20-T_Structural_Elements    2        A-EF_20-T_Structural_Elements
```

# Layer Mapping

- It is faster authoring and editing the file in excel.

	A	B	C	D	E	F	G
1	# Revit Export Layers						
2	# Maps Categories and Subcategories to layer names and color numbers						
3	# Category <tab> Subcategory <tab> Layer name <tab> Color number <tab>						
4	# Cut layer name <tab> Cut color number						
5	# Do not remove the colon (:) after certain category names.						
6	# -----						
169	Floors	Surface Pattern	A-EF_30_20-M_Floors	190	A-EF_30_20-M_Floors	190	
170	Floors	Thermal/Air Layer [3]	A-EF_30_20-M_Floors	192	A-EF_30_20-M_Floors	192	
171	Floors		A-EF_30_20-M_Floors	192	A-EF_30_20-M_Floors	192	
172	Foundation Span Direction Symbol		A-Zz_60_50_85-M_Span_Direction_Marker	171	A-Zz_60_50_85-M_Span_Direction_Marker	171	
173	Furniture	Clearance Zones	A-EF_40-M_Signage_Fittings_Furnishings	30	A-EF_40-M_Signage_Fittings_Furnishings	30	
174	Furniture	Overhead Lines	A-EF_40-M_Signage_Fittings_Furnishings	30	A-EF_40-M_Signage_Fittings_Furnishings	30	
175	Furniture		A-EF_40-M_Signage_Fittings_Furnishings	30	A-EF_40-M_Signage_Fittings_Furnishings	30	
176	Furniture System Tags		A-EF_40-T_Signage_Fittings_Furnishings	211	A-EF_40-T_Signage_Fittings_Furnishings	211	
177	Furniture Systems	Clearance Zones	A-EF_40-M_Signage_Fittings_Furnishings	30	A-EF_40-M_Signage_Fittings_Furnishings	30	
178	Furniture Systems	Hidden Lines	A-EF_40-M_Signage_Fittings_Furnishings	30	A-EF_40-M_Signage_Fittings_Furnishings	30	
179	Furniture Systems		A-EF_40-M_Signage_Fittings_Furnishings	30	A-EF_40-M_Signage_Fittings_Furnishings	30	
180	Furniture Tags		A-EF_40-T_Signage_Fittings_Furnishings	211	A-EF_40-T_Signage_Fittings_Furnishings	211	

# Layer Mapping

- Mapping Table defined in Revit through a Revit.ini variable.

```
ExportLayersNameDGN="P:\Autodesk\Revit\2017\<Company>-  
exportlayers-dwg-Uniclass2015.txt"
```

Note - it is best to use quotation marks for paths in case spaces exist.

# Layer Mapping

- Similar to Class Mapping, elemental overrides are possible through the custom parameter IfcPresentationLayer.

IFC Parameters	
Type IfcGUID	0w8uOrF2v9FP0_e4Nyg7Wu
IfcExportAs	
IfcExportType	
IfcPresentationLayer	A-AU_001-M_LayerOverrideExample
Data	
Classification.NRML.Description	

Type Name	AU_In-Place_Element
Description	
Material	SRA_Generic Models
Layer	A-AU_001-M_LayerOverrideExample
System	
Geometry	Extrusion

# Data Mapping

- Data is key in a BIM project, it's location within the file is almost as important as its existence.
- Many BIM Uses utilise IFC exchanges for the transfer of Project Information.
  - Clash detection
  - Quantity Take-off and Costing
  - Sequencing
  - COBie
  - CAFM Handover

# Data Mapping

- The IFC Exporter will automatically map some built-in Revit Parameters to IFC properties.
- The majority of these can be overridden if necessary.

# Data Mapping

Rooms (1) <span>Edit Type</span>	
<b>Constraints</b>	
Level	00 Ground Floor
Upper Limit	00 Ground Floor
Limit Offset	2400.0000
Base Offset	0.0000
<b>Text</b>	
SR_RoomZone	
SR_RoomNumber	
SR_RoomLevel	
<b>Dimensions</b>	
Area	289.590 m <sup>2</sup>
Perimeter	68800.0000
Unbounded Height	2400.0000
Volume	Not Computed
Computation Height	0.0000
<b>Identity Data</b>	
Number	20
Name	Room
Image	
Comments	Comments
Occupancy	Occupancy
Department	Department
Base Finish	Base Finish
Ceiling Finish	Ceiling Finish
Wall Finish	Wall Finish
Floor Finish	Floor Finish
Design Option	Main Model
<b>Phasing</b>	
Phase	New Construction
<b>IFC Parameters</b>	
IfcGUID	3u0GTc16v7WxFMDHMRA...

Space.0.1 : Room[20]	
BaseQuantities	Pset_SpaceCommon
Space Boundary Areas	Classification Hyperlinks
Relations	Space Boundaries
Identification	Location Quantities Profile
Property	Value
Model	Project2
Discipline	Architectural
Name	Room
Number	20
Type	Room 20
Type Name	
Description	Comments
Occupant	
Layer	A-SL-M_Spaces
System	
Space Group Type	
Interior	True
Geometry	Extrusion
Application	Autodesk Revit 2017 (ENU)
GUID	3u0GTc16v7WxFMDHMRA...
BATID	

Space.0.1 : Room[20]	
Space Boundary Areas	Classification Hyperlinks
Relations	Space Boundaries
Identification	Location Quantities Profile
BaseQuantities	Pset_SpaceCommon
Property	Value
Category	Rooms
CeilingCovering	Ceiling Finish
FloorCovering	Floor Finish
Reference	Room 20
WallCovering	Wall Finish

Space.0.1 : Room[20]	
Space Boundary Areas	Classification Hyperlinks
Relations	Space Boundaries
Identification	Location Quantities Profile
BaseQuantities	Pset_SpaceCommon
Property	Value
GrossFloorArea	289.59 m <sup>2</sup>
GrossPerimeter	68.80 m
GrossVolume	695,016.00 m <sup>3</sup>
Height	2.40 m
NetFloorArea	289.59 m <sup>2</sup>

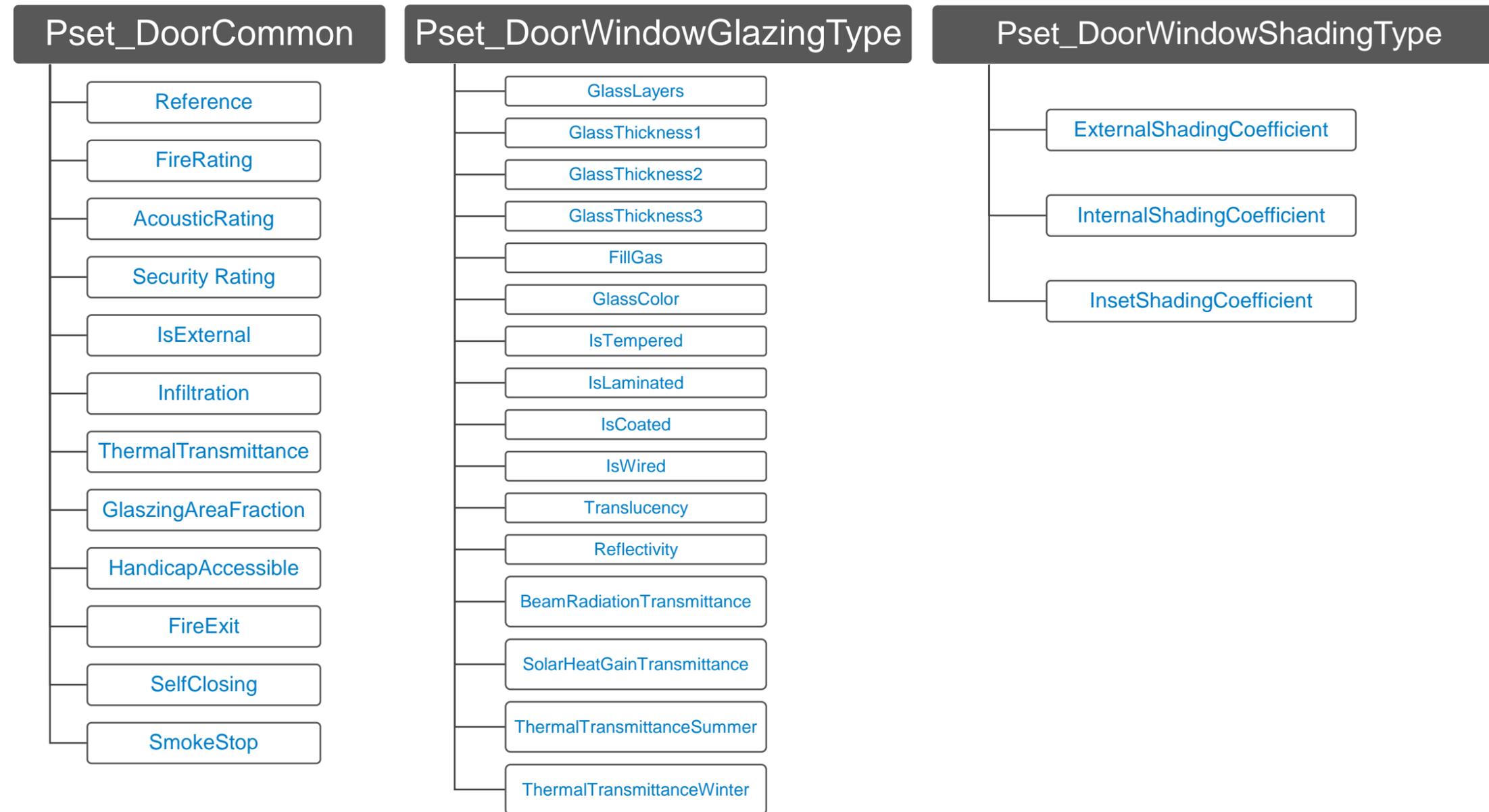
# Data Mapping

- Adding a series of shared parameters to your model, it is possible to override the standard IFC Exporter parameters.

IFC Parameter Name	Override Shared Parameter
Name	IfcName or NameOverride
LongName	IfcLongName or LongNameOverride
ObjectType	IfcObjectType or ObjectTypeOverride
Description	IfcDescription
Element Tag	IfcTag

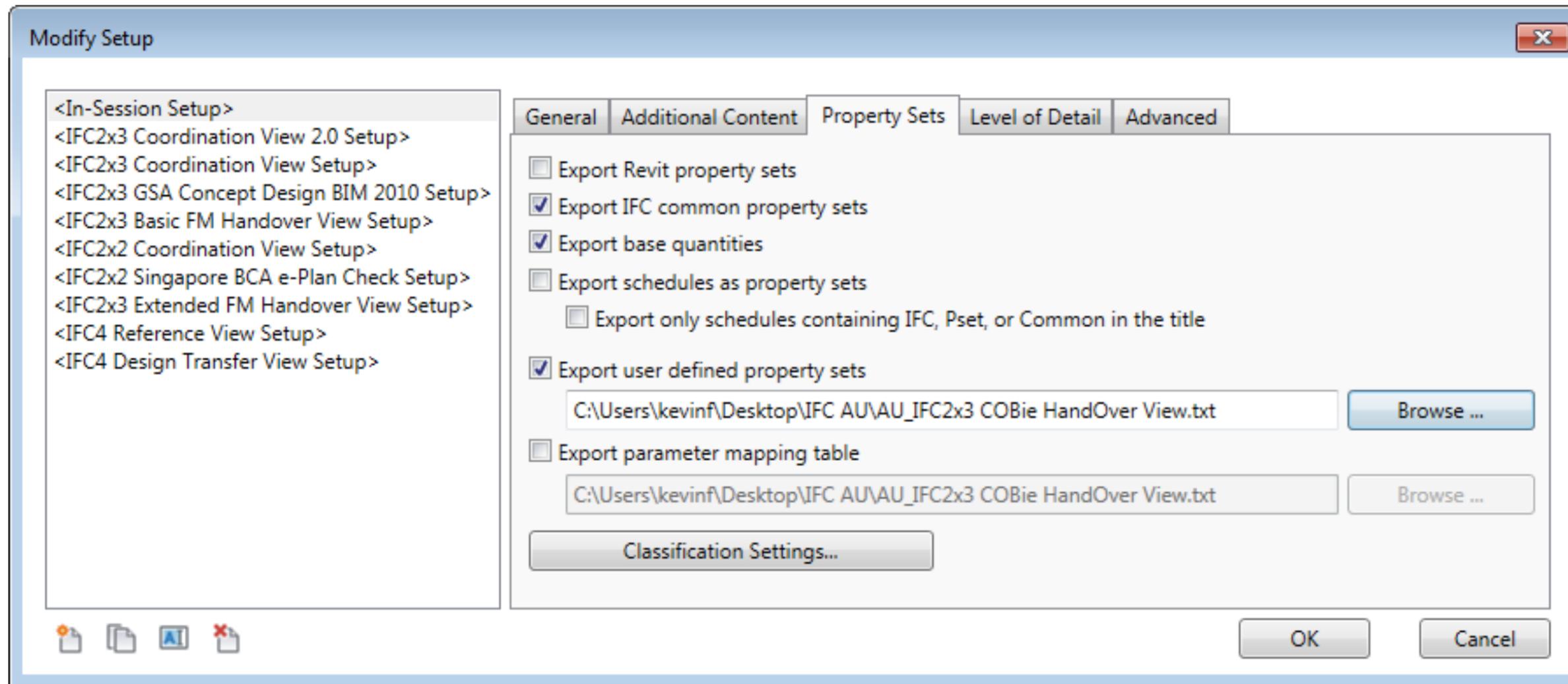
# Data Mapping

- Most IFC Classes have associated Property Sets (Psets) containing attributes specific to that class or with similar elements.
- Pset viewable on the BuildingSmart website



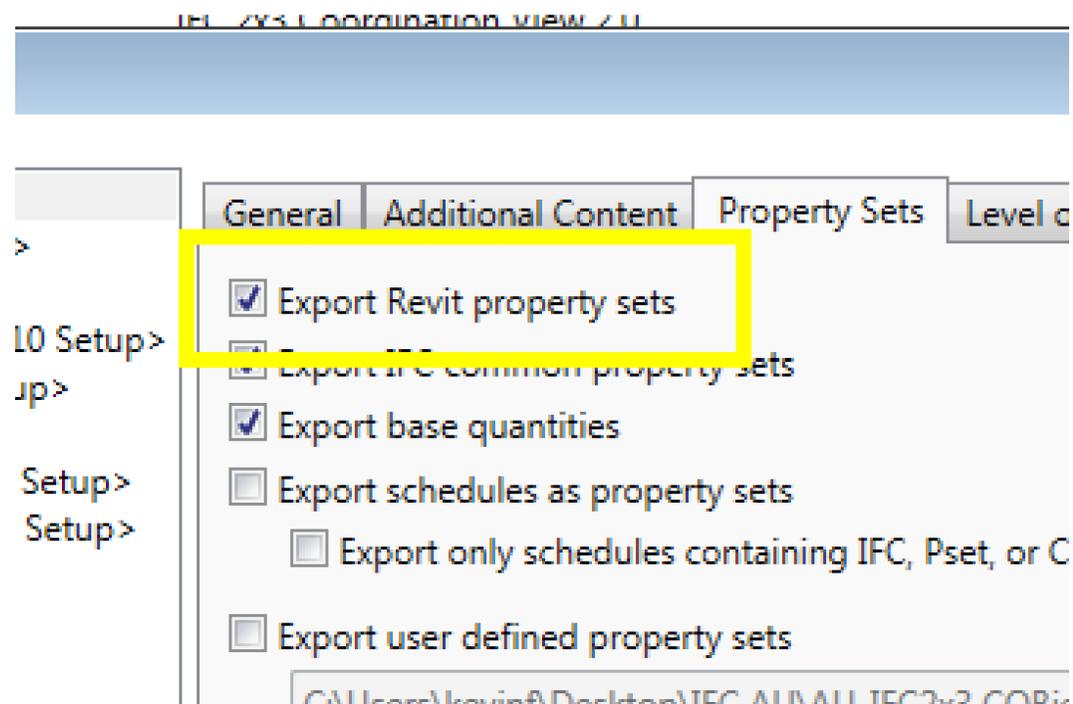
# Data Mapping

- What data you export from you BIM depends on your Export Settings



# Data Mapping

- Inexperienced users will check “Export Revit property sets”
- This will export all parameters associated to the family.



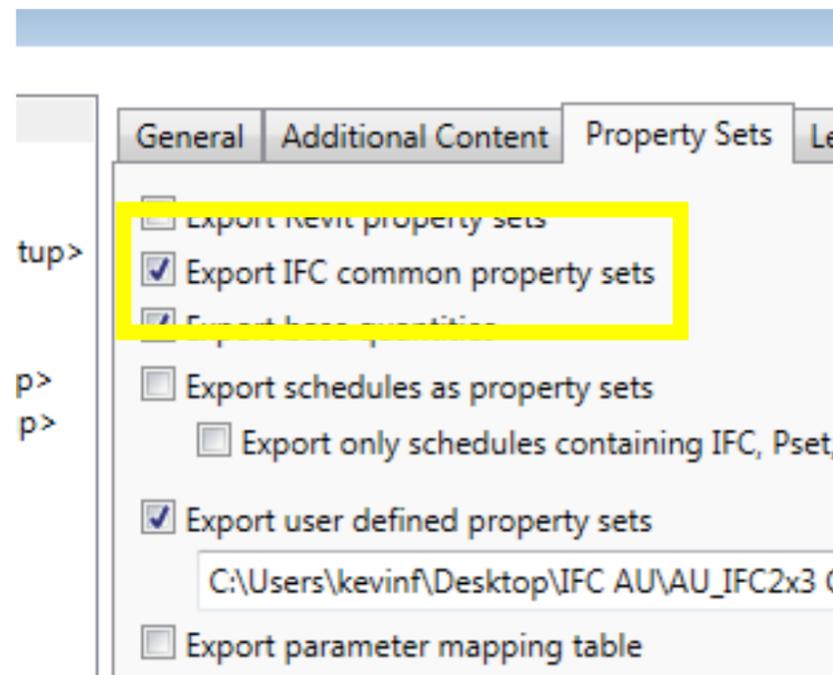
# Data Mapping

- No consistency
- Not aligned with IFC Psets
- The file sizes are unnecessarily large.
- This is an example of Bad IFC!

Pset_DoorCommon		Pset_DoorWindowGlazingType			Pset_ManufacturerTypeInformation		
<i>IfcDoorPanelProperties</i>		<i>Materials and Finishes(Type)</i>			Other	<i>Other(Type)</i>	Phasing
Dimensions	<i>Dimensions(Type)</i>	<i>General(Type)</i>	Identity Data	<i>Identity Data(Type)</i>	Ifc Dimensions		
BaseQuantities	Constraints	<i>Constraints(Type)</i>	Construction	<i>Construction(Type)</i>	Data	<i>Data(Type)</i>	
Identification	Location	Quantities	Material	Relations	Classification	Hyperlinks	<i>Analytical Properties(Type)</i>

# Data Mapping

- Use “Exporting IFC common property sets”
- The Exporter will map all parameters matching the attribute names to the correct Property Set.
- This is Good IFC!



GlassLayers	4
GlassColor	Contact Internorm
FireRating	n/a
FireExit	<input type="checkbox"/>
FillGas	Argon or Krypton
BeamRadiationTransmittance	0.000000
AcousticRating	36 dB
IfcExportAs	

Property	Value
AcousticRating	36 dB
FireExit	False
FireRating	n/a
GlazingAreaFraction	0

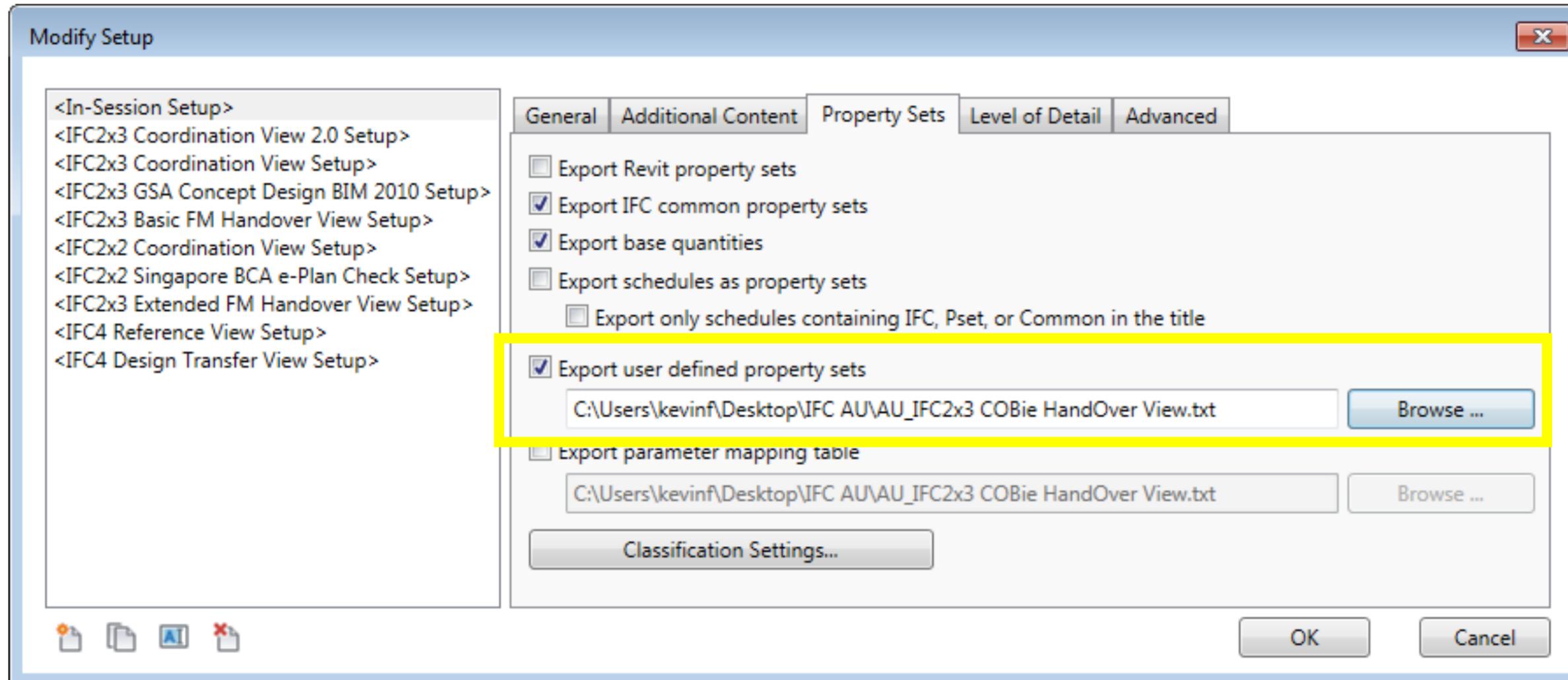
# Data Mapping

- User defined property sets can also be created using custom Pset Mapping files.
- The below example has resulted in the creation of several COBie Psets.

Pset_ManufacturerTypeInformation					Pset_ManufacturerTypeInformation			
IfcDoorPanelProperties		Pset_DoorCommon		Pset_DoorWindowGlazingType		Pset_ManufacturerOccurence		
COBie Component		COBie ServiceLife		COBie Specification		COBie Warranty		Ifc Dimensions
Identification	Location	Quantities	Material	Relations	Classification	Hyperlinks	BaseQuantities	COBie_Asset
Property					Value			
Model					AU_DemoModel			
Discipline					Architectural			
Name					NBS_InternormWindowsUKLtd_MtdDrsts_AT400Aluminium...			
Type					n/a			
Type Name					AT400AluminiumEntranceDoor			
Description					High quality aluminium entrance door			
Operation					Single Swing Left			
Layer					A-EF_25_30-M_Doors_And_Windows			

# Data Mapping

- Exporting user defined property sets can be defined within the IFC Exporter setup



# Data Mapping

- The standard MVD for COBie is the Extended FM Handover
- The exporter setup for this MVD uses a Data Mapping file to populate the attributes required into the correct property sets.
- Found in C:\ProgramData\Autodesk\ApplicationPlugins\IFC 2017.bundle\Contents\2017

 fr	20/06/2017 17:47
 Resource	20/06/2017 17:47
 DefaultUserDefinedParameterSets.txt	27/03/2017 10:29
 IFC2x3 Extended FM HandOver View.txt	27/03/2017 10:29
 IFCExporterUIOverride.addin	15/04/2016 09:33
 IFCExportUIOverride.dll	27/03/2017 11:18
 IFCExportUIOverride.sig	27/03/2017 11:18

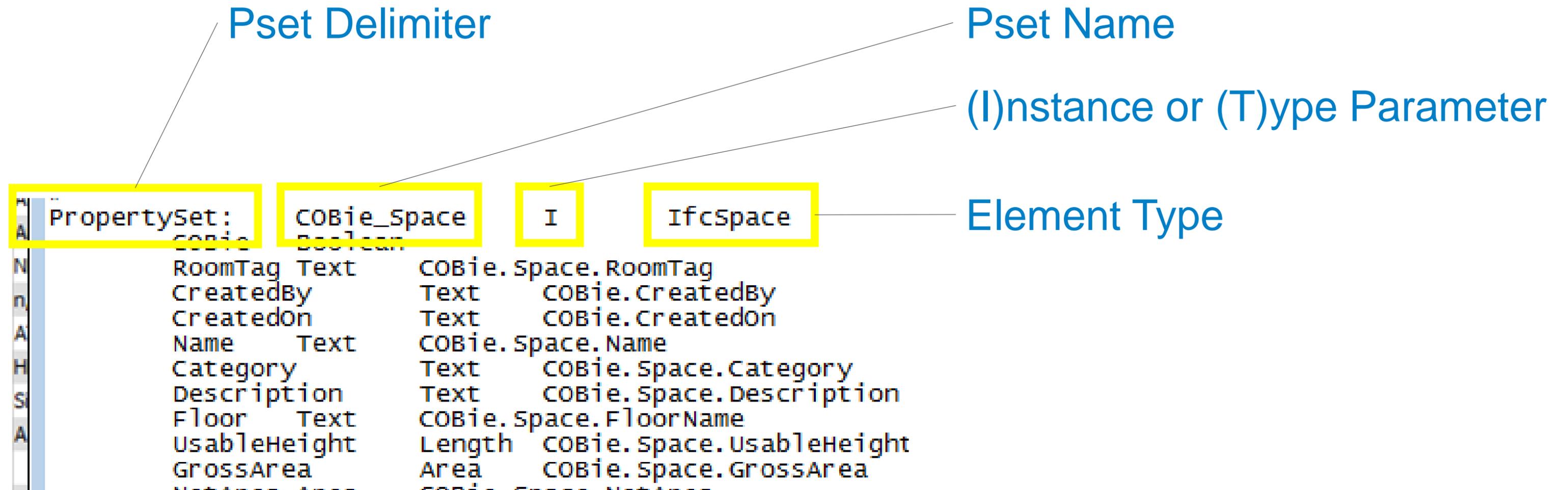
# Data Mapping

- This mapping file is tab delimited

```
#
# User Defined PropertySet Definition File
#
# Format:
#   PropertySet:   <Pset Name>      I[nstance]/T[ype]      <element list separated by ', '>
#                   <Property Name 1>   <Data type>      <Revit parameter name (if different from property name)>
#                   <Property Name 2>   <Data type>      <Revit parameter name (if different from property name)>
#                   ...
# Data type supported currently are only the primitive types: Text, Real, Integer and Boolean
#
# PropertySet definition for COBie
#
PropertySet:   COBie_Specification   T      IfcElementType
  NominalLength   Real   COBie.Type.NominalLength
  NominalWidth    Real   COBie.Type.NominalWidth
  NominalHeight   Real   COBie.Type.NominalHeight
  Shape           Text   COBie.Type.Shape
  Size            Text   COBie.Type.Size
  Color           Text   COBie.Type.Color
  Finish          Text   COBie.Type.Finish
  Grade           Text   COBie.Type.Grade
  Material        Text   COBie.Type.Material
```

# Data Mapping

- There are two parts; the Pset definition, and the parameter definition.



# Data Mapping

- There are two parts; the Pset definition, and the parameter definition.

PropertySet:	COBie_Space	I	IfcSpace	IFC Parameter Name
COBie	Boolean			Parameter Type
RoomTag	Text	COBie.Space.RoomTag		
CreatedBy	Text	COBie.CreatedBy		
CreatedOn	Text	COBie.CreatedOn		
Name	Text	COBie.Space.Name		
Category	Text	COBie.Space.Category	Revit Parameter Name	
Description	Text	COBie.Space.Description		
Floor	Text	COBie.Space.FloorName		
UsableHeight	Length	COBie.Space.UsableHeight		
GrossArea	Area	COBie.Space.GrossArea		

# Data Mapping

**Info** Door.0.2

Property	Value
AccessibilityPerformance	n/a
CodePerformance	n/a
Color	Ral 9010
Constituents	n/a
Features	Externally fitted with single colour
Finish	Standard Ral Paint Finish
Grade	n/a
Material	Aluminium alloy 6063 T5 and T6
NominalHeight	2.10 m
NominalLength	0 mm
NominalWidth	1.80 m
Shape	n/a
Size	1800x2100mm
SustainabilityPerformance	Extruded from recycled aluminium to 6...

**Type Properties**

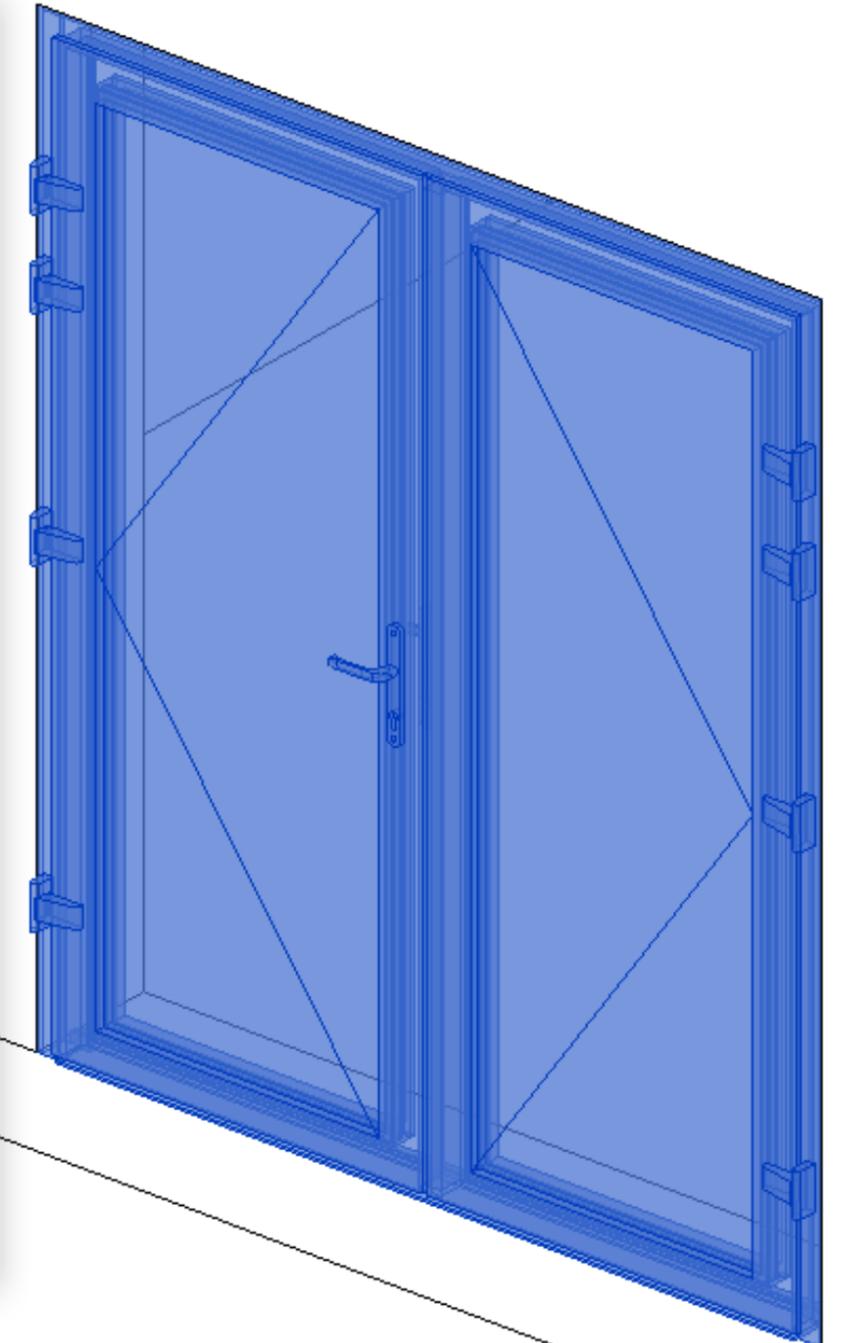
Family: NBS\_ArchitecturalAndMetalSystemsLtd\_MtD

Type: 1800x2100mm

Type Parameters

Parameter	Value
Shape	n/a
ReplacementCost	2450
NominalWidth	1800.0000
NominalLength	0.0000
NominalHeight	2100.0000
Name	MetalDoorsets_DoubleDoors:DoorC
ModelReference	Double Doors: Door Configuration
ModelNumber	n/a
Material	Aluminium alloy 6063 T5 and T6
Grade	n/a
Finish	Standard Ral Paint Finish
Features	Externally fitted with single colour
ExpectedLife	n/a
DurationUnit	year
Constituents	n/a
Color	Ral 9010
CodePerformance	n/a
Category	Pr_30_59_24_52: Metal doorsets

<< Preview OK Cancel Apply



# Data Mapping

- This approach means that the Revit parameter names are irrelevant for the exports as the mapping table and IFC Exporter standardise them.
- Each Company could prefix their parameters as necessary

Category    Text    CompanyA.Space.Category

Category    Text    CompanyB.Space.Category

- By creating a project specific Pset mapping file and defining specific settings for the IFC Exporter, you are essentially creating a Project specific Model View Definition.

# Classifications

- Classification is the categorization of objects based on specific criteria.
  - Classifications are the backbone to data interoperability
  - Crucial for Costing, Clash Detection, and COBie
- 
- Uniclass 2015 Tables En, SL, Ss, Pr, ZZ, Ef (Currently)
  - BS1192:2007
  - NRM1
  - SFG20

# Defining Classifications

- You can define object level classifications inside Revit
- Each Element can be classified multiple times.
- The IFC exporter will convert the parameter to a Classification Reference.
- The parameters need to be named based on the following convention.

ClassificationCode

ClassificationCode(2)

ClassificationCode(3)

ClassificationCode(4)

# Defining Classifications

- The data format is as follows

[ClassificationName] Value : Description

IFC Parameters	
IfcGUID	3kFQ9W8IzABhEaGokvf2Er
ClassificationCode	[Uniclass 2015 - Product] Pr_30_59_24_52 : Metal Doorsets
ClassificationCode(2)	[Uniclass 2015 - System] Ss_25_30_20 : Door, shutter and hatch systems
ClassificationCode(3)	[NRM1] 2.6.2 : External Door

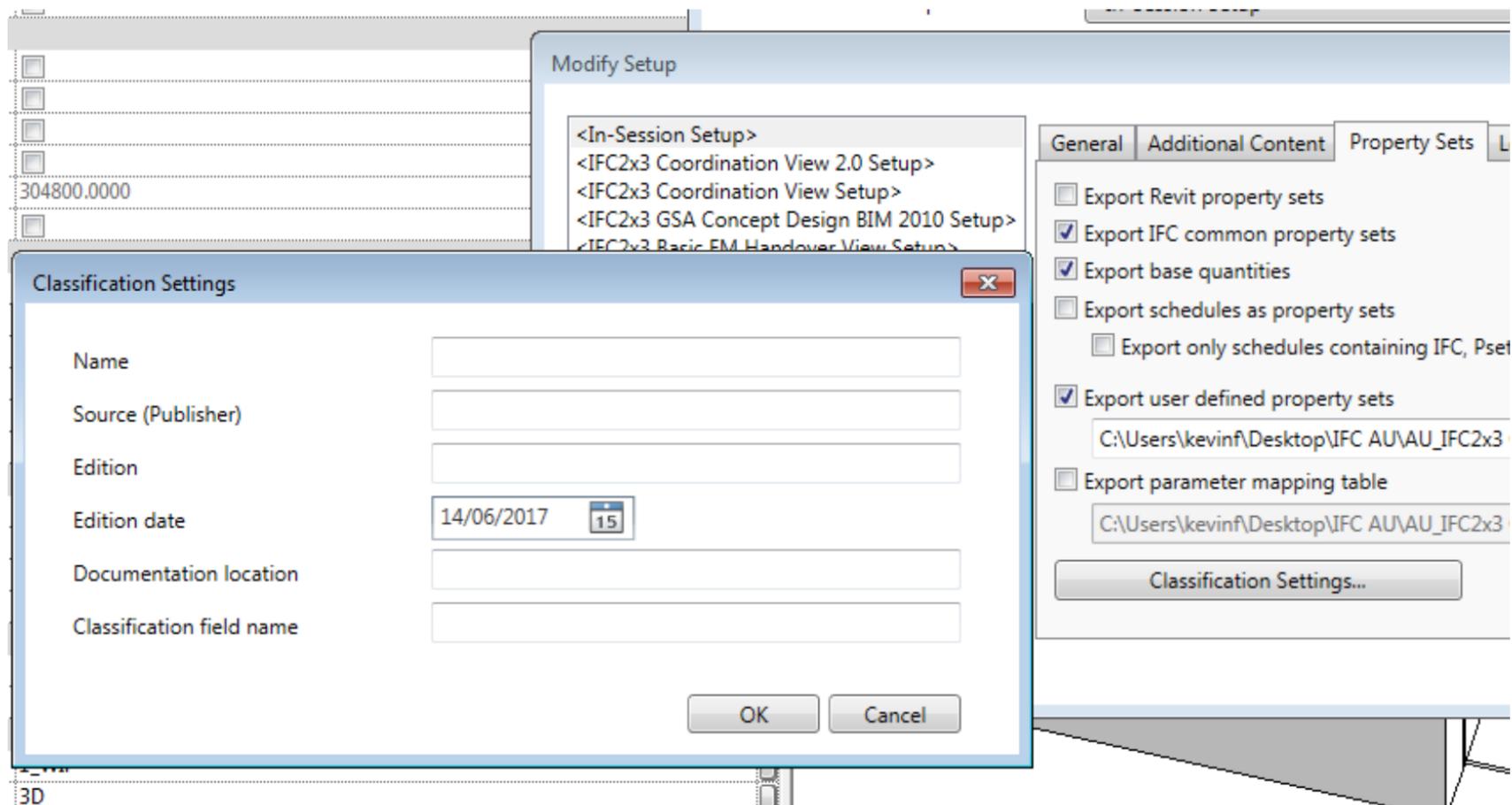
# Defining Classifications

- In Solibri Model Checker this is represented as

COBie_Component		COBie_ServiceLife		COBie_Specification		COBie_Warranty		Ifc Dimensions	
Identification	Location	Quantities	Material	Relations	Classification	Hyperlinks	BaseQuantities	COBie_Asset	
Classification	Source	Reference	Name						
NRM1 Classification	From IFC	2.6.2	External Door						
Uniclass 2015 - Product Cl...	From IFC	Pr_30_59_24_52	Metal Doorsets						
Uniclass 2015 - System Cla...	From IFC	Ss_25_30_20	Door, shutter and hatch systems						

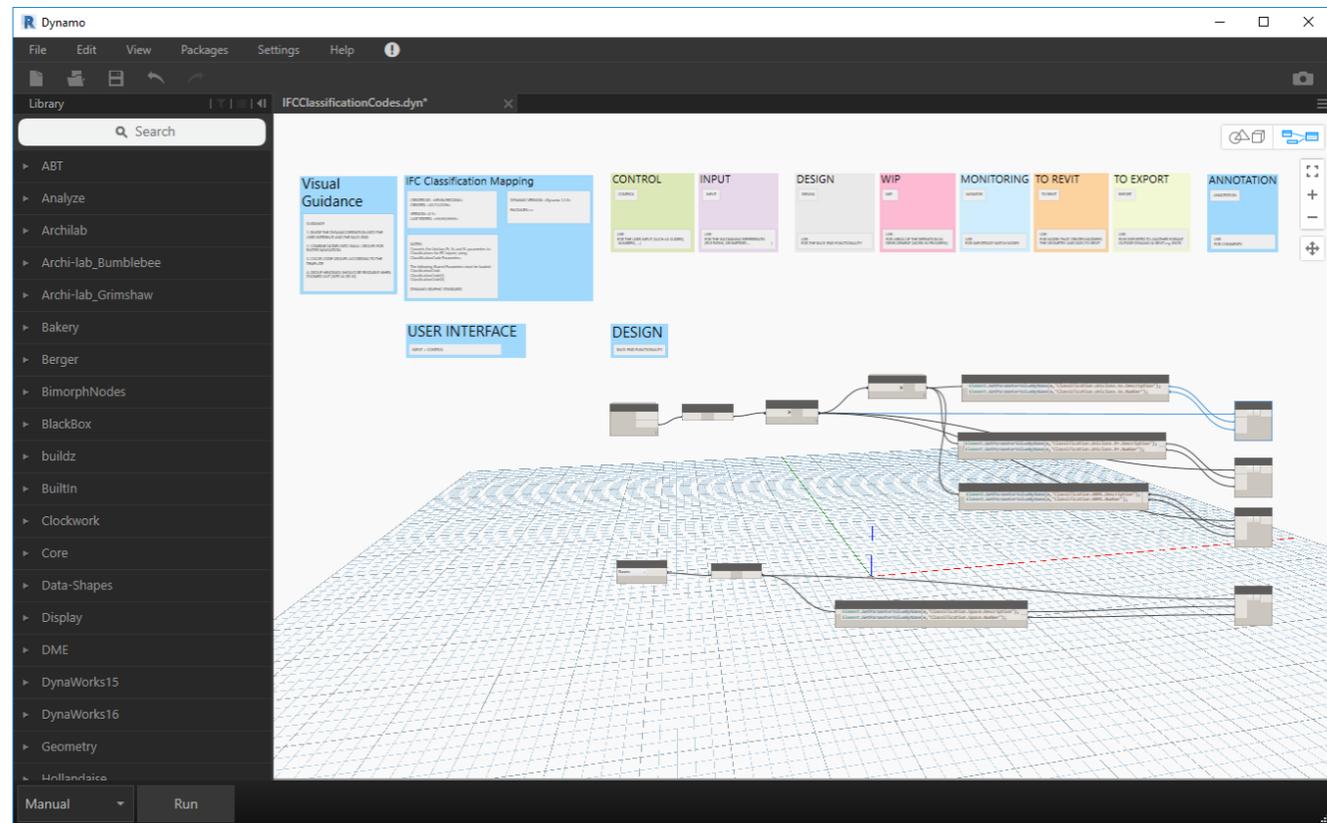
# Defining Classifications

- The classification references, belong to a IfcClassification which contains information regarding its source.
- Using the IFC Exporter you can currently only define one IfcClassification.



# Defining Classifications

- The Interoperability Tool, the Classification Manager can be used to add classification values into the model,
- No integration with the IFC Exporter.
- Parameters need to me mapped using tools such as Ideate BIM Link or Dynamo.



# Identifying zoning

- IfcZones are the ability to group spaces depending on function.
- A space can belong to multiple Zones.
- Zones may exist for Circulation, Lettable zones, Habitable rooms, or Fire Compartmentation.



# Identifying zoning

- The concept of Zones don't exist within Revit
- You can define for export to IFC using the IFC Exporter.
- Using a similar concept to Classifications you need to add a series of parameters to your model

ZoneName

ZoneDescription

ZoneObjectType

# Identifying zoning

- Multiple zones per element require extra parameters within your model

ZoneName 2

ZoneDescription 2

ZoneObjectType 2

ZoneName 3

ZoneDescription 3

ZoneObjectType 3

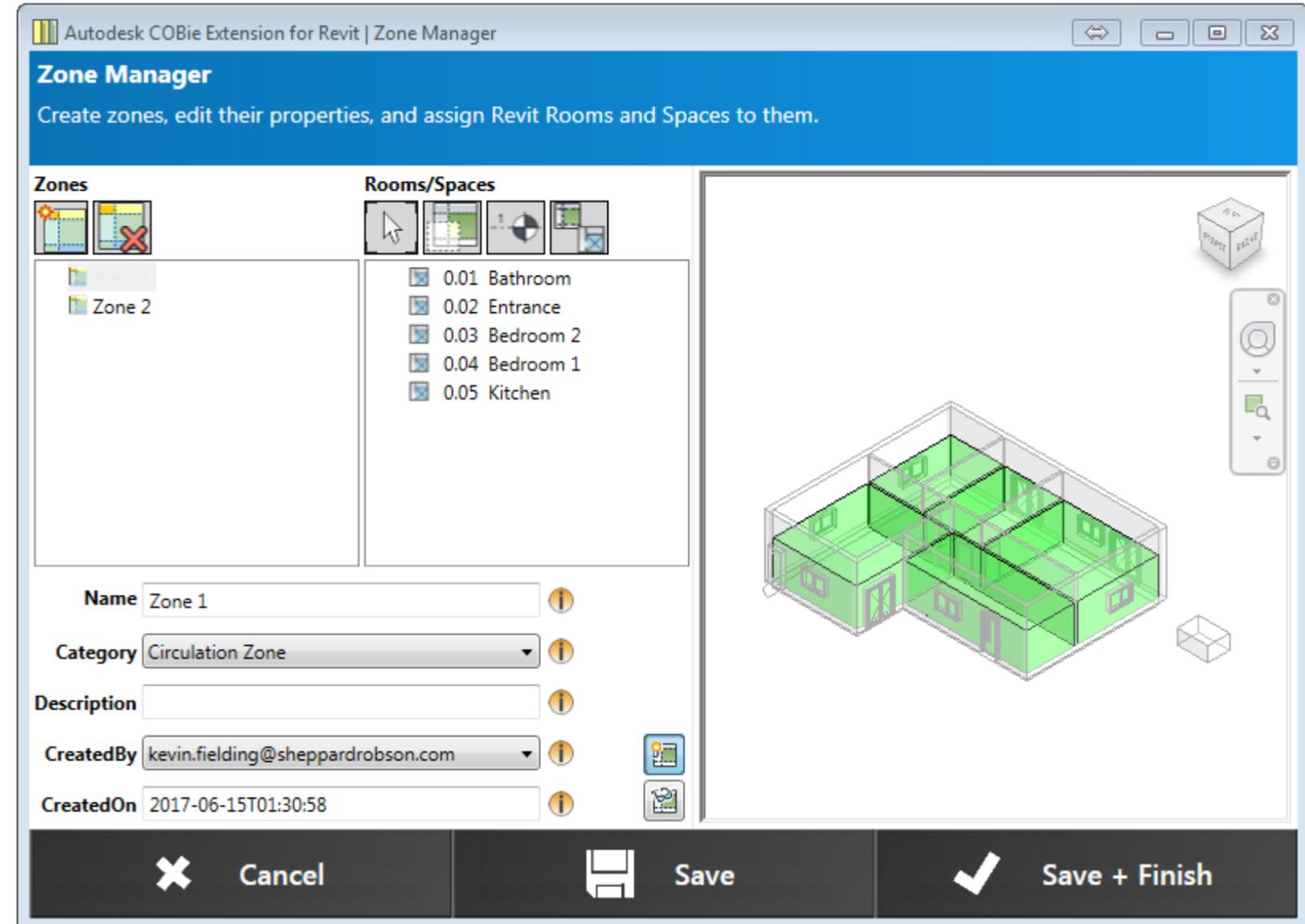
ifczone	
IfcName	0.04
ZoneDescription	Habitable Rooms
ZoneName	Z_01
ZoneObjectType	
ZoneName 2	FC_01
ZoneDescription 2	Fire Compartmentation 1
ZoneObjectType 2	FireCompartment
FloorCovering	Carpet
WallCovering	Paint

# IfcZone Limitations

- The concept of zones doesn't exist within Revit. There is no object to attach data.
- It is not possible using the IFC Exporter to attached additional zone information or attributes to the zones such as Pset\_ZoneCommon attributes

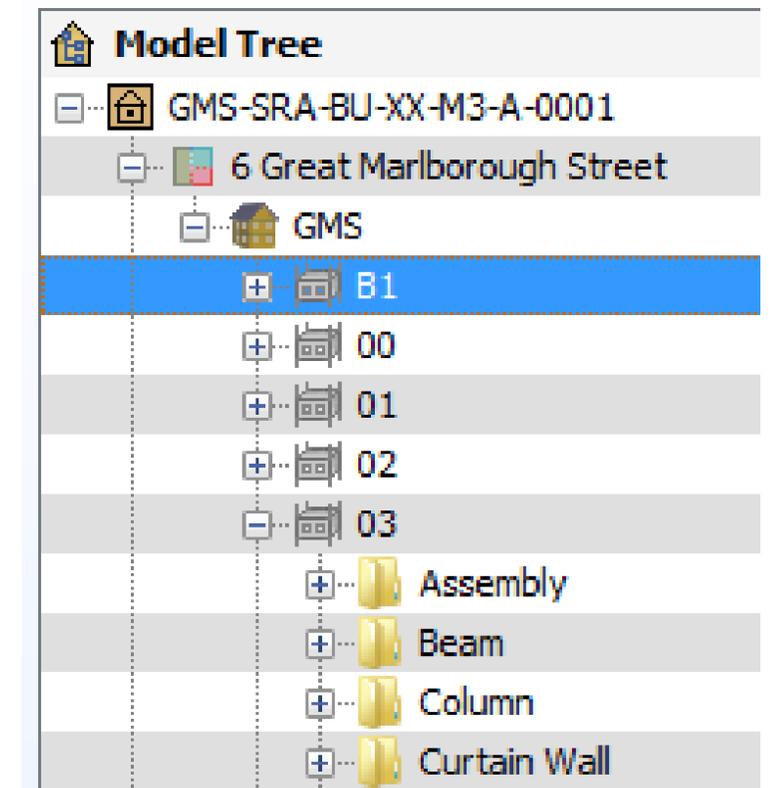
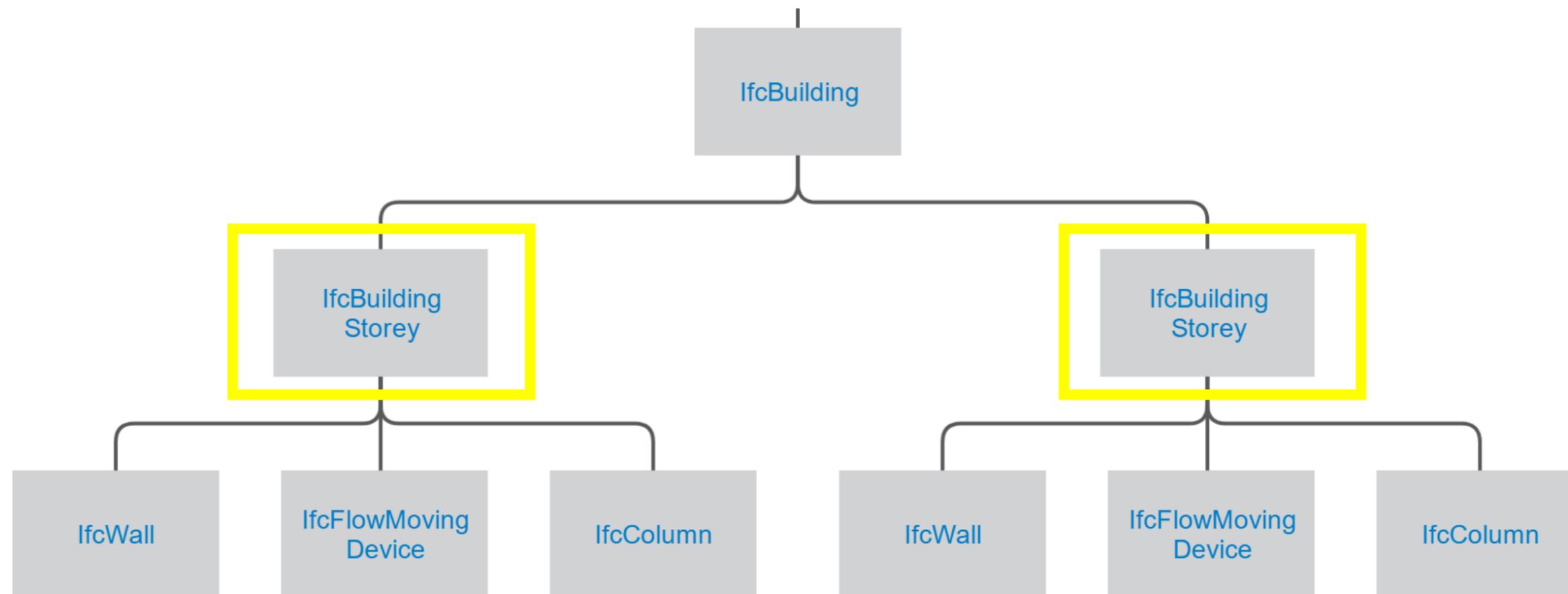
# IfcZone Limitations

- For better results, the COBie Toolkit Zone Manager should be integrated into IFC Exporter in future IFC development.



# Revit Levels and IfcBuildingStorey

- Levels are fundamental to the structure of the IFC file, they are known as IfcBuildingStoreys
- All elements, including spaces are assigned a building storey.



# Revit Levels and IfcBuildingStorey

- Like other processes additional parameters are required for effective export.

Constraints		^
Elevation	0.0000	
Story Above	Default	
Dimensions		^
Computation Height	0.0000	
Extents		^
Scope Box	None	
Identity Data		^
Name	00 Ground Floor	
Structural	<input type="checkbox"/>	
Building Story	<input checked="" type="checkbox"/>	
Design Option	Main Model	
IFC Parameters		^
IfcGUID	3NEDpVTRfBo9iNeGEe5AnB	
ClassificationCode	[Level Type] Floor : Floor	
IfcDescription	Ground Floor	
IfcName	00	
AboveGround	<input checked="" type="checkbox"/>	
EntranceLevel	<input checked="" type="checkbox"/>	

00	
Pset_BuildingStoreyCommon	
Hyperlinks	
Identification Location Quantities Relations Classification	
Property Value	
Model	AU_DemoModel
Discipline	Architectural
Name	00
Description	Ground Floor
Number	0
Application	Autodesk Revit 2017 (ENU)
GUID	3NEDpVTRfBo9iNeGEe5AnB

# IfcSite & IfcBuilding

- Populated through Project Information within the Revit Model.

IfcBuilding Name

Site and Building  
IFC Parameters

Parameter	Value
<b>Identity Data</b>	
Organization Name	Sheppard Robson
Organization Description	Architects
Building Name	123 Baker St
Author	Kevin Fielding
NBSSpecificationPath	
Design Option	Main Model
<b>Energy Analysis</b>	
Energy Settings	Edit...
<b>IFC Parameters</b>	
IfcSite GUID	3NEDpVTRfBo9iNeGDNwrAE
IfcBuilding GUID	3NEDpVTRfBo9iNeGDNwrAD
IfcProject GUID	3NEDpVTRfBo9iNeGDNwrAC
SiteName	AU2017_Site
ClassificationCode	[Uniclass 2015 - Entities] En_45_10_39 : Houses
OccupancyType	Residential
BuildingID	AU1234
IsPermanentID	<input checked="" type="checkbox"/>
SprinklerProtection	<input type="checkbox"/>
YearOfConstruction	1928
IsLandmarked	<input checked="" type="checkbox"/>
<b>Title Text</b>	

# IfcSite & IfcBuilding

- Additional attributes can be assigned within the IFC Exporter, these are saved into the Revit File.

File Header

File description: ...value is set according to export option

Source file name: ...value will be set on export

Author's name: Kevin Fielding

Author's email: kevin.fielding@sheppardrobson.com

Organization: Sheppard Robson

Authorization: BIM Lead

Application name: Autodesk Revit 2017

Version number: 20170419\_0315(x64)

File schema: ...value is set according to export option

OK Cancel

Additional Content

IFC version: IFC 2x3 Coordination View 2.0

File type: IFC

Phase to export: Default phase to export

Space boundaries: None

Split Walls, Columns, Ducts by Level

File Header Information...

Project Address...

OK Cancel

The background features a complex, light gray wireframe mesh that forms a series of interconnected, flowing, and somewhat chaotic shapes. This mesh is set against a plain white background. A solid blue horizontal bar spans the bottom portion of the image, containing the text.

# Watch Points and Good Practice

# Watch points

- Shared nested elements
- Upgrading between versions of the IFC Exporter.
- Complex geometry or facades may not export correctly
- Large models may need to be exported in sections.
- Structural Connections don't export

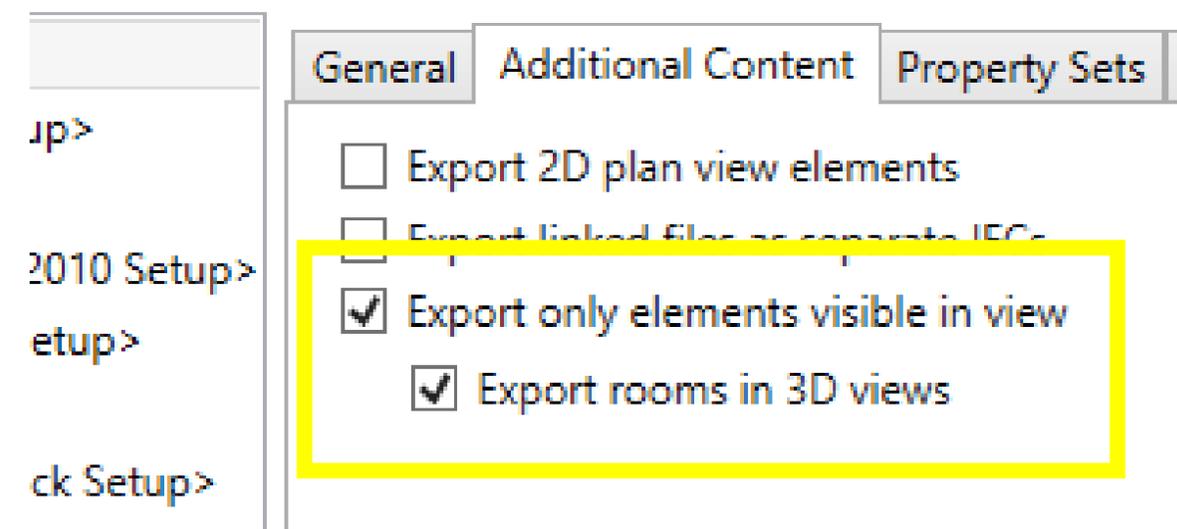
# Watch points

- Shared parameters are not standardised across the industry.
- Revit doesn't fully support IfcSystems or IfcZones
- Revit System Family Mapping is limited

# Good Practice

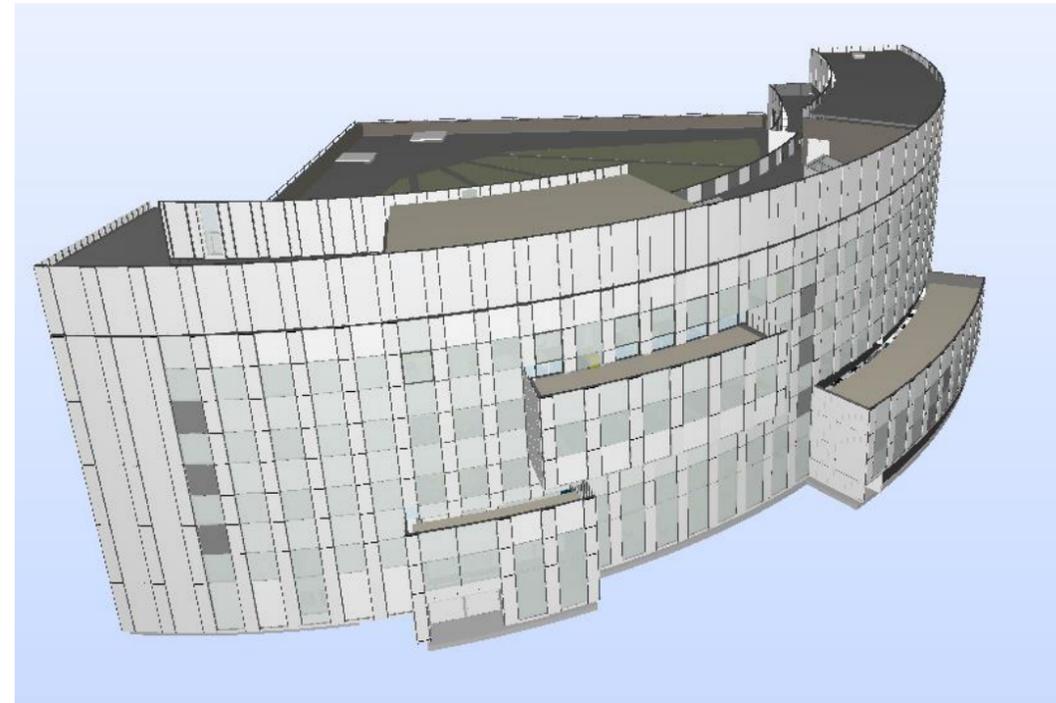
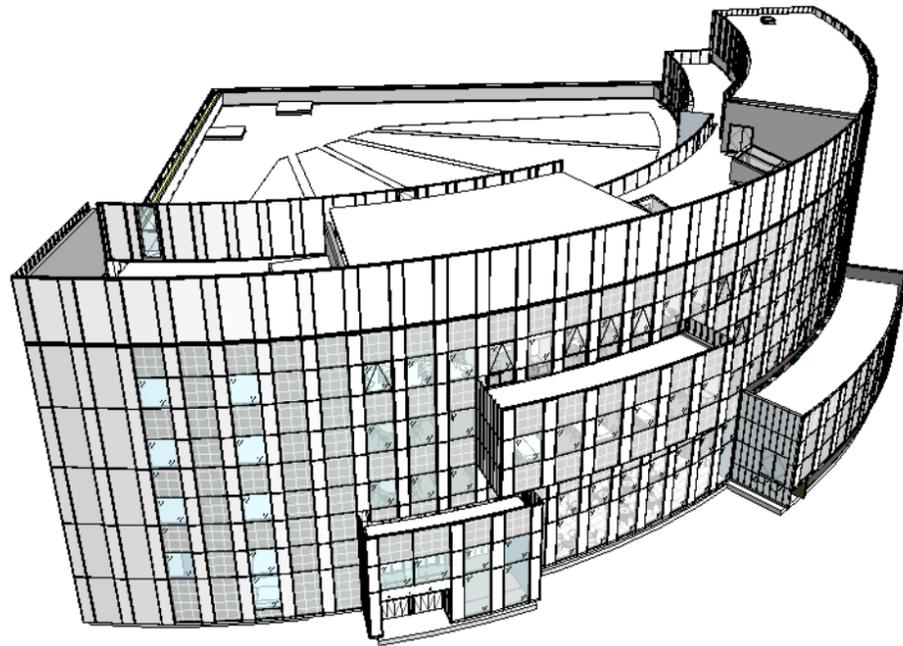
- Only export what you need – Data and Geometry
- Use Worksets to control visibilities and ‘Export only elements visible in view’.

Worksets	Visib
..... Link_DWG_Author_Name	Hide
..... Link_IFC_Author_Name	Hide
..... Link_RVT_Author_Name	Hide
..... Shared Levels and Grids	Use Global Setting (Visible)
..... SRA_ArchitecturalStructure	Hide
..... SRA_Envelope	Use Global Setting (Visible)
..... SRA_FF&E_Fixed	Hide
..... SRA_FF&E_Loose	Hide
..... SRA_Interior	Use Global Setting (Visible)



# Good Practice

- Open the export in an IFC Viewer – Check for completeness



# Good Practice

- Ensure your machine has enough RAM
- Use IFC Parameters as you Company default for scheduling
- Standardise your mapping tables for layers
- Collaboratively generate Pset mapping files on Projects
- Document and agree process, and settings within BEP
- Report issues to Autodesk

The image features a complex, abstract wireframe structure composed of numerous interconnected lines forming a mesh of irregular polygons. This structure is rendered in a light gray color against a white background. A solid blue horizontal bar spans the bottom portion of the image, containing the word "Conclusions" in white text.

# Conclusions

# Conclusion

- With a well developed Revit Template, it is possible to embed all the necessary parameters for a data rich IFC file with very little additional parameter mapping.
- The IFC standard is robust enough to support the majority of building data requirements, and interoperability purposes.
- Revit can export IFC Properly, if you are patient.



Questions?



Make anything.