OpenBuildings Designer How-to Guides

2022

Table of Contents

| 1 | I Preface | 3 |
|--------|---|----|
| Introd | duction | 4 |
| 2 | 2 Understanding IFC-SG | 4 |
| 3 | 3 IFC4 Reference View | |
| 4 | 4 IFC-SG as an MVD | 4 |
| Openl | Buildings Bentley Designer 9 | 5 |
| Ger | neral BIM Guide | 5 |
| 1 | I Creating New Worksets | 5 |
| | Configuring the New Workset | 6 |
| 2 | 2 How to Apply Predefined and Userdefined-Predefined Type | 8 |
| | Class Mapping | |
| | IFC4 Override | |
| 3 | B Editing Objects in Catalog Editor vs Property Panel | |
| 4 | 1 IfcMapConversion | |
| 5 | 5 IFC Export Setup | |
| IFC | C-SG Specific | |
| 1 | Userdefined Psets | |
| | Adding Userdefined Psets | |
| | Assigning Userdefined Psets to Catalog Types | |
| | A. Adding Userdefined Psets through Definition Usage | |
| | B. Adding Userdefined Psets through Catalog Items | |
| | Modifying UserDefined Properties | 22 |
| 2 | 2 IfcDoorLining, IfcDoorPanel, And IfcWindowLining Properties | 24 |
| Wo | orkarounds | 26 |
| 1 | I IfcOpening – Predefined Type: Recess | |
| 2 | 2 IfcDoor - Door Operation Type | |
| 3 | 3 Exporting IfcBuildingSystem and IfcDistributionSystem as IfcGroup | |
| Chang | ge log | 37 |
| | | |

Page 2 | 37

1 PREFACE

It is recommended that users have gone through the documents in the resource kit, which provides an overview on the requirements and the importance of preparing an IFC model for submission to Corenet X;

Step 0) How to Learn IFC-SG,Step 1) IFC 101,Step 2) Industry Mappings,Step 3) Configurations (respective BIM Authoring Tool)

Users may refer to Step 4) Exercise on IFC Key Data Structure to verify their understanding when they have completed all the steps listed above.

INTRODUCTION

IFC-SG aims to adopt the international Industry Foundation Classes (IFC) standard as the base for the common representation for BIM submission. IFC is a standardized, digital description of the built asset industry. It is an open, international standard (<u>ISO 16739-1:2018</u>) and promotes vendor-neutral, or agnostic, and usable capabilities across a wide range of hardware devices, software platforms, and interfaces for many different use cases.

This document is intended as a reference for the users in preparing BIM files for submission in IFC-SG. It contains software configuration setup, export settings, and IFC-SG-specific concepts used to map the native information for the applicable IFC-SG export.

2 UNDERSTANDING IFC-SG

With IFC being a semantically rich data structure, IFC Concepts are captured and used to map objects for IFC-SG. The building elements listed in the IFC-SG BIM Objects Dictionary are derived from various regulatory handbooks that are mapped in the early stage of IFC-SG. These objects are any physical elements referred to as BIM concepts such as walls, doors, and windows, and non-physical elements such as building containers, space, properties, and material information. IFC Concepts provide another level of identifying what an object is. IFC concepts are

- Standard IFC entities and types,
- Predefined type enumeration, and
- IFC standard property set(s).

When no directly appropriate entity, predefined type, or property set is found, standard extension using USERDEFINED ObjectTypes and USERDEFINED PropertySets "SGPset_" is used.

3 IFC4 REFERENCE VIEW

IFC-SG is mapped using IFC4 Reference View, which is currently the broadest proliferation of IFC BIM data across many software application types supporting different communication and collaboration workflows.

IFC4 Reference View is particularly suitable for all BIM workflows that are based on reference models, where the exchange is mainly one-directional, similar to the workflow defined for the exchange in requirements in IFC-SG.

4 IFC-SG AS AN MVD

IFC-SG is much like what an MVD does. It is only a subset of requirement definition from the overall IFC schema to describe data exchange for a specific use or workflow. Mainly, it narrows down the scope of the IFC schema to one that will be used as an exchange requirement for the local building plans submission using a neutral format.

OPENBUILDINGS BENTLEY DESIGNER 9

GENERAL BIM GUIDE

Note: It is preferable that users refer to the wiki from the authoring tool <u>https://communities.bentley.com/products/building/building analysis</u> <u>design/w/building analysis</u> and <u>design</u> <u>wiki/41119/openbuildings-designer</u>

1 CREATING NEW WORKSETS

It is advisable to create a new workset since some of the files will be configured and userdefined psets will be added.

- 1. After opening OpenBuildings Designer, go to Workset and open the dropdown menu
- 2. Select Create Workset...

| [·] kSpace | WorkSet |
|---------------------|--|
| Building_Examp | oles 🔹 BuildingTemplate_SG 🔹 🖛 🛶 |
| Recent Files | Search P |
| | BuildingTemplate_SG |
| You haven't opened | any files BuildingTemplate_US pn Browse. |
| | COBieTemplate_US |
| | IFC-SG |
| Browse | N Multi-Use_Retail_Building_US |
| | TrainingTemplate_US |
| | |
| | |
| | |
| | |
| | Create WorkSet |
| | |

Creating New Workset

- 3. Type the name for the new Workset.
- 4. For the Template, open the dropdown menu and select **BuildingTemplate_SG**.
- 5. Click **Ok.**

| Name: | New Workset | | |
|-------------------------|------------------------------|----------------------|--------|
| Description: | | | |
| Template: | None | Create Folders 0 | |
| - | IFC-SG | A | |
| Add a Custom Property * | BuildingTemplate_SG | | |
| older locations | BuildingTemplate_US | | |
| | COBieTemplate_US | | |
| Root Folder: | Multi-Use_Retail_Building_US | NECT Edition\Configu | Browse |
| Design Files: | RCM | NECT Edition\Configu | Browse |
| Standard Files: | TrainingTemplate_US | NECT Edition\Configu | Browse |
| Standards Subfolders: | | aGroupLayouts;Data(| |
| ProjectWise Projects | | | |
| rojectivise rrojects | | | |
| | | Bro | owse |

BuildingTemplate_SG as Template

CONFIGURING THE NEW WORKSET

The template's default setting excludes psets from the IFC configuration. The cfg file must be configured to expand the template's IFC Dataset. The worksets folder contains the CFG file. An example of a folder link is shown below.

 $\label{eq:c:ProgramData} entley \\ OpenBuildings \\ CONNECTE \\ dition \\ Configuration \\ Work \\ Spaces \\ Building \\ Example \\ s \\ worksets \\ \end{array}$

1. Open the CFG file of the new workset with Notepad or any text editor app.

| ← → • ↑ <mark> </mark> | « WorkSpaces > Building_Examples > wor | ksets → √ Ū | |
|--|--|---------------------|--------------------|
| 📌 Quick access | Name | Date modified | Туре |
| A Galek access | BuildingTemplate_SG | 12/04/2021 2:27 PM | File folder |
| lesson on e Drive en la construcción en la construc | BuildingTemplate_US | 12/04/2021 2:36 PM | File folder |
| This DC | COBieTemplate_US | 12/04/2021 2:36 PM | File folder |
| | IFC-SG | 13/04/2021 7:12 PM | File folder |
| 💣 Network | | 12/04/2021 2:36 PM | File folder |
| | 📙 TrainingTemplate_US | 12/04/2021 2:36 PM | File folder |
| | BuildingTemplate_SG.cfg | 26/02/2021 11:40 PM | Bentley MicroStati |
| | BuildingTemplate_SG.dgnws | 26/02/2021 11:40 PM | DGNWS File |
| | BuildingTemplate_US.cfg | 23/02/2021 12:04 AM | Bentley MicroStati |
| | BuildingTemplate_US.dgnws | 23/02/2021 12:04 AM | DGNWS File |
| | COBieTemplate_US.cfg | 23/02/2021 12:04 AM | Bentley MicroStati |
| | COBieTemplate_US.dgnws | 23/02/2021 12:04 AM | DGNWS File |
| | IFC-SG.cfg | 14/04/2021 9:11 AM | Bentley MicroStati |
| | IFC-SG.dgnws | 13/04/2021 7:12 PM | DGNWS File |
| | Multi-Use_Retail_Building_US.cfg | 23/02/2021 12:04 AM | Bentley MicroStati |
| | Multi-Use_Retail_Building_US.dgnws | 23/02/2021 12:04 AM | DGNWS File |
| | TrainingTemplate_US.cfg | 23/02/2021 12:04 AM | Bentley MicroStati |
| | TrainingTemplate_US.dgnws | 23/02/2021 12:04 AM | DGNWS File |
| | | | |
| | | | |

Editing IFC-SG.cfg File

- 2. Scroll down and look for IFC Dataset Extension.
- 3. Change the value of IFC_WORKSET to 1 to enable the psets in the template.



Enabling the Property Sets

4. Save the cfg file.

2 HOW TO APPLY PREDEFINED AND USERDEFINED-PREDEFINED TYPE

The corresponding IFC Class and Type are already mapped to the default objects in OpenBuildings. However, the user can modify the value of the Predefined and the Userdefined Type using the IFC4 Override Property if necessary.

CLASS MAPPING

1. To edit the Predefined type, go to File and Select Export. Select Exchange File Types and choose IFC.

| Æ | Project 1.dgn [3 | D - V8 DGN] - OpenBuildings Designer | Search Ribbon (F4) 👂 🔹 🏠 🕐 🔹 🔲 🐑 🗕 🗆 🗙 |
|--------------------------------|---------------------------------|--------------------------------------|---|
| New | Export File Data | Exchange File Types | |
| Open | Common File Types | FC (*.IFC) | Industry Foundation Classes format |
| Save Save As | 3D Modeling File Types | PDF (*,pdf) | Adobe PDF. |
| Save Settings Send Mail | Analysis File Types Structural | CGM (*.cgm) | Computer Graphics Metafile. |
| Close Tools | Fabrication File Types | Collada (*.dae) | Collaborative Design Activity. An interchange file format for interactive 3D applic |
| Utilities Dataset Tools | | DXF (*.dxf) | Drawing Exchange Format. A drawing exchange file format supported by most C |
| Parametric Content Settings | | FBX (*.fbx) | Filmbox format. A proprietary format owned by Autodesk (r). |
| Properties Print | | IGES (*.igs) | Initial Graphics Exchange Specification. |
| Import Export | | JT Format (*.jt) | A 3D data format developed by Siemens PLM Software (formerly UGS Corp.). |
| Publish iModel | | STEP (*.stp) | Standard for the Exchange of Product model data (AP203/AP214). |
| Help Feedback | | 4 | • |

Export Settings for Class Mapping

2. On the Model View Definition, open the dropdown list and select IFC4 Reference View.

3. Select **Map** (Map DataGroup Types and Properties) to open the list of all objects.

| IFC Export | | _ | |
|---------------------|-------------------------|----------------|--------------|
| | IFC2x3 CV2.0 + QTO | & Space Boun | daries |
| Output Author | IFC2x3 CV2.0 | | |
| Model View Defi | IFC2x3 Facilities Ma | nagement Han | dover |
| | IFC4 Reference View | | |
| Output Options | IFC4 Design Transfer | View (technolo | ogy preview) |
| Create CO | IFC4 DTV with NURB | s (technology | preview) |
| Open C | OBie Spreadsheet | | |
| Optimize IF | C File | | |
| Zip IFC File | | | |
| Facet Tolerance | (file size): | | |
| ٢ | | | > |
| Coarse (s | maller) | Fine | (larger) |
| Mapping Option | 15 | | |
| | Map DataGroup Types | And Properties | |
| Мар | (primary mapping) | | |
| | Map Far | nily/Parts | |
| | (second | ary mapping) | |
| - Spatial Structure | | | |
| Assian | Assign Building and Ele | ors | |
| Assign | rosign banang ana ne | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | Export | Cancel |

Map DataGroup Types and Properties from Mapping Options

4. To modify the Predefined Type of an object, select it and then click on the IFC Class and Type.

| Map DataGroup Types and Properties to IFC4 | - D X |
|--|---------------------------------|
| Class Mapping Property Mapping | Save To: Workset |
| DataGroup Type | IFC Class and Type |
| AHU Rectangular-1 | IfcUnitaryEquipment AIRHANDI FR |
| AHU Rectangular-1 Round-1 | IfcUnitaryEquipment AIRHANDLER |
| AHU Rectangular-1 Round-2 | IfcUnitaryEquipment AIRHANDLER |
| AHU Rectangular-1 Round-3 | IfcUnitaryEquipment AIRHANDLER |
| -AHU Rectangular-1 Round-4 -AHU Rectangular-1 Round-5 -AHU Rectangular-1 Round-6 | Clear Mapping |
| -AHU Rectangular-1 Round-7 AHU Rectangular-2 -AHU Rectangular-2 Round-1 -AHU Rectangular-2 Round-2 -AHU Rectangular-2 Round-3 -AHU Rectangular-2 Round-4 -AHU Rectangular-2 Round-5 -AHU Rectangular-2 Round-6 AHU Rectangular-3 -AHU Rectangular-3 -AHU Rectangular-3 Round-1 -AHU Rectangular-3 Round-2 -AHU Rectangular-3 Round-3 -AHU Rectangular-3 Round-4 -AHU Rectangular-3 Round-4 -A | |
| Messages Mapping Tables loaded IFC4 Application Ready | |



IFC4 OVERRIDE

The IFC4 Override is a property that can be assigned to any catalog type. Its function is to override the value of the IFC Class and Type of the object and modify the Predefined and Userdefined Type.

1. To assign the IFC4 Override property to any Catalog Type, Go to *File* and and under *Dataset Tools*, Select *Catalog Editor*.



2. Right click on the Catalog Type and select Properties.

3. On the available definitions on the left column, find and select *IFC_Override* and click the single forward button to assign the selected definition to the catalog type and click *Ok*.

| ettings | | | | | |
|---------------------|--------------------|---|--------------------------------|------------------------------|--------|
| Type Name: | Specialty_Roof | | | | |
| Display Name: | Roof Specialty | | | | |
| Destination: | Organization | ` | File Name: | _Dataset_catalogtypeexts | ~ 🆆 |
| Discipline Group: | Architectural | | Sub-Group: | Specialty | ~ |
| Filters: | | , | Add Catalog Type | to Filters | |
| Definition | | | | | |
| Tool Template: | Place User Defined | | | | \sim |
| Available Definitio | ns | ^ | Sele | cted Definitions | |
| Building | | | Orga | anization | |
| CivilDefenceShelte | erElements | | Obje | ectClassification | |
| Door | | | Obje | ectIdentity | |
| Door_PAZ | | | Obje | ectManufacturer | |
| ElevatorDoor | | | | ectivaterial | |
| Escalators | | | Para Doje | Def | |
| Floor | | | Spec | rialty Roof | |
| Furniture | | | Data | set Extensions: IFC | |
| IFC_Override | | | A Pset | _ManufacturerOccurrence | |
| Kitchen | | | Pset | _ManufacturerTypeInformation | |
| Ladders | | | | | |
| Landscape | | | | | |
| Louver | | | | | |
| Misc | | | | | |
| | | ~ | | | |
| ObjectDimension | | > | | | |
| ObjectDimension | | | | | |

Adding IFC_Override as Selected Definitions for Roof Specialty

- 4. Save the changes made and restart OpenBuildings for the changes to apply.
- 5. Before placing an object, on the Modify Panel, look the IFC Override property and open the dropdown list of **IFC4 Class/Type Override** to select the appropriate Class and type the object type under the **User-Defined Object Type property**.

| Place | User Defined Type - Roof Specialty | • | • 4 × |
|-------|---------------------------------------|------------------------------|----------|
| Roo | f Specialty | | Ŧ |
| | Downspout Rectangular | - | P |
| Show | w Preview | | |
| ;≡ | A-Z 🔮 Search | | 2 |
| | Preferences | | • |
| | Depth Offset | 0.00 | • |
| | Dynamics | 3D | * |
| | Rel./Active ACS | Enabled | * |
| | Sense Distance | 500.00 | • |
| | IFC Override | | |
| | IFC 2x3 Class/Type Override | | • |
| | IFC 2x3 Class/Type Override Descript | | |
| > | IFC 4 Class/Type Override | lfcStackTerminal.USERDEFINED | Ŧ |
| | IFC 4 Class/Type Override Description | IfcStackTerminal USERDEFINED | |
| | User-Defined Object Type | | • |
| | Parametric Definition | | |
| | Bent_Angle | 75.0000035° | * |
| | Eaves_Offset | 600.00 | * |

Classifying Userdefined Object

3 EDITING OBJECTS IN CATALOG EDITOR VS PROPERTY PANEL

In OpenBuildings Design, there are two ways to edit an object's entity and properties. It can be done either in the **Catalog Editor** or **Property Panel**. Both can be used when the user wants to modify the values but where you edit affects the data type when it's exported to an IFC file.

| Show Catalog Items V 🐼 New V | Validate Save | ▼ Filter ▼ | | - | ^ |
|-------------------------------|------------------------|--------------------------|---------|---|----|
| Shelves Freestanding-Dot 🔨 | Definition | Property | Value | | |
| Shelves Freestanding-Tow | ObjectIdentity | ID Notes | | | |
| Shelves Wall-Bookworm | ObjectManufacturer | Manufacturer Name | | | |
| Shelves Wall-Bookworm S | ObjectManufacturer | Manufacturer Model No. | | | |
| - Shelves Wall-Curve-6211 | ObjectManufacturer | Manufacturer URL | | | |
| Shelves Wall-Curve-6212 | ObjectMaterial | Part Definition | | | |
| Soap Dispenser | Pset EurnitureTypeCon | Reference | | | |
| Discrete Charles Charles 1100 | Pset EurnitureTypeCor | Status | [None] | | |
| Stool Bar Chrome-1199 | Pset FurnitureTypeCon | Description | [rione] | | |
| Stool Kocket-1580 | Pset FurnitureTypeCon | Stule | | | |
| Stool Upnoistered Drum- | Poet FurnitureTypeCon | NominalHeight | 900 | | ٦. |
| | Pret EurnitureTypeCon | Nominal ength | 1500 | | |
| Table Par Table with Steel | Pset_FurnitureTypeCon | NominalDenth | 200 | | - |
| Table Coffee 1624 | Pset_FurnitureTypeCon | MainColor | Bad | | |
| Table Coffee-2 level oval- | Pset_FurnitureTypeCor | In Ducible | Red | | ÷ |
| Table Coffee-Bent Wood- | Pset_rumiture iypeCor | isbuiltin | | | |
| Table Coffee-Brever's Lac | Pset_IvianufacturerOcc | AcquisitionDate | | | |
| Table Coffee-Breuer's Lac | Pset_ManufacturerOcc | BarCode | | | |
| Table Coffee-Large Squar | Pset_ManufacturerOcc | SerialNumber | | | |
| Table Coffee-Metal-1612 | Pset_ManufacturerOcc | BatchReference | | | |
| Table Coffee-Rocket | Pset_ManufacturerOcc | AssemblyPlace | [None] | | |
| Table Coffee-Swing-1605 | Pset_ManufacturerType | GlobalTradeltemNumber | | | |
| Table Coffee-Swing-1606 | Pset_ManufacturerType | ArticleNumber | | | |
| Table Coffee-Wood Recta | Pset_ManufacturerType | ModelReference | | | |
| Table Coffee-Wood Recta | Pset_ManufacturerType | ModelLabel | | | |
| Table Coffee-Wood Roun | Pset_ManufacturerType | Manufacturer | | | |
| | Pset ManufacturerTvn | ProductionYear | | | |

| urniture | | |
|---|------------------------------|----------------------------|
| Sofa Upholstered-1524 | | - |
| how Preview | | |
| = A-Z 🔓 Search | | |
| OmniClass Description | Furnishings | |
| NATSPEC | 05 720 | , |
| NATSPEC Description | Miscellaneous furniture | |
| CBI 2011 | 5721 | , |
| CBI 2011 Description | Furniture and fittings | |
| IFC-SG | | , |
| IFC-SG Description | | |
| Materials | | |
| Part Definition | | |
| A Pset_FurnitureTypeCommon | | |
| Reference | | |
| Status | | |
| Description | | , |
| Style | | , |
| NominalHeight | 1000.00 | |
| NominalLength | 1200.00 | , |
| NominalDepth | 900.00 | |
| MainColor | Blue | , |
| IsBuiltIn | ~ | |
| Pset_ManufacturerOccurrence | | |
| AcquisitionDate | Enter date | Ċ. |
| BarCode | | , |
| SerialNumber | | |
| BatchReference | | , |
| AssemblyPlace | IFC value is defined by Pset | ManufacturerTypeInformatic |
| Pset_ManufacturerTypeInform | nation | |
| GlobalTradeltemNumber | | |

Catalog Editor

Property Panel

If the value is inputted under the **Catalog Editor** will be exported as type. Meanwhile, values inputted under the **Property Panel** will be exported as instance.



Difference Between Instance and Type Values when Exported

4 IFCMAPCONVERSION

1. To add the value of Eastings and Northings of the IfcMapConversion, go to the **Drawing Aids** tab and select the **Coordinate System**.

| 🜒 🛛 Building Design 🔹 🔞 🕇 🧰 | 🖌 🔶 🗟 🖧 ד 🔶 | • 🔒 = | | | How to Guide.dgn [3 | D - V8 DGN] - OpenBuildings Designer | |
|---|--------------------------------------|--|--------------------------------|---------------------------|---------------------|--|-----------------------|
| File Architectural Structural | Forms Data/Reporting | Attach Drawing | Drawing Production Vie | w Analysis Collaborate | Drawing Aids Help | | |
| Hand Constraints of the second secon | * Set Origin & Default Snaps * | ✓ ⊙ ┌┐ ӣ ҂ ☆ ⊥ 쿋 ҂ Ҳ ┇ 🗙 Structural Snaps | Define an ACS * ACS ACS ACS | kt ts System ♥ ♥ ♥ ♥ | Lock | limeters Iimeters Iimet | Keyboard Shortcuts |
| AccuDraw | Fai | Snaps 🖙 | ACS | 🖼 Geographic | Icon Locks 🕞 | Drawing Scale | Settings |
| 🔏 🛵 🐅 其 🗡 Specialty_Rc 🔻 | Downspout | - Compour | d 🗖 Part Level 🔻 Pa | nt Color 🔹 Part Style 💌 P | art Weight 👻 | | |

Location of Coordinate System Tool

2. After selecting the appropriate geographic coordinate system, select the **Details** button to view all the available details of the project.



Location of Details Button

3. Under the **Coordinate System Modifiers**, change the **Local Transform Type** to **Helmert Transform** to enable the option to change the value for Offset X and Offset Y. These two properties will be exported as Northing and Easting under IfcMapConversion. Offset X is Easting and Offset Y is Northing.

| Geographic Coordinate System | Properties – LL > |
|------------------------------|--|
| Coordinate System | |
| Name | EPSG:3414 |
| Description | SVY21 / Singapore TM |
| Projection | Transverse Mercator |
| EPSG Code | 3414 |
| Source | EPSG version 7.6 |
| Units | Meter |
| Central Meridian | 103°50'00.0000"E |
| Origin Latitude | 01°22'00.0000"N |
| Scale Reduction | 1.0000000 |
| False Easting | 28001.6420 |
| False Northing | 38744.5720 |
| Quadrant | Positive X and Y |
| Minimum Longitude | 103°37'00.0000"E |
| Maximum Longitude | 104°09'00.0000"E |
| Minimum Latitude | 01°07'00.0000"N |
| Maximum Latitude | 01°27'00.0000"N |
| Datum | |
| Name | SVY21 |
| Description | Singapore SVY21 |
| Source | Various including Singapore Land Authority |
| Conversion Method | WGS84 |
| Ellipsoid | |
| Name | WGS84 |
| Description | World Geodetic System of 1984, GEM 10C |
| Equatorial Radius | 6378137.0000 |
| Polar Radius | 6356752.3142 |
| Eccentricity | 0.0818 |
| Source | US Defense Mapping Agency, TR-8350.2-B, De |
| Coordinate System Modifie | rs |
| Vertical Datum | Elipsoid |
| Local Transform Type | Helmert Transform |
| Helmert A | 1.00000000 |
| Helmert B | 0.0000000 |
| Offset X | 1.000000 - Easting |
| Offset Y | 2.000000 - Northing |
| Offset Z | 0.000000 |
| | |
| 04 | |
| Cancel | |

Adding Values for Eastings and Northings

4. After clicking **Ok**, a pop-up window will ask if whether to reproject the data and change the Storage Units of the project. Choose the one that applies to the project and click **Ok** again to apply the changes.

| | V- | u hann an Iarthad a d'ffeanach Canadanach is Canadiante Cuntara (DDCC 2010 fao U an ta |
|---|----------|--|
| į | Gu da | u nave selected a different Geographic Coordinate System, EFS0:3414, for How to .ide.dgn. Are you correcting the Geographic Coordinate System, or reprojecting the ta to a new Geographic Coordinate System? |
| ۲ | Corr | ecting the Geographic Coordinate System - do not reproject the data |
| | | The units of Geographic Coordinate System IPSG:3414 are Meters, but the Storage Units in the model are Millimeters. Please review the units used in the source data for this design. |
| | ۲ | The graphic elements are correctly drawn in Millimeters. The storage units should not be changed. |
| | 0 | Change the storage units in the model from Millimeters to Meters to match the Geographic Coordinate System. The physical size of graphic elements will be changed. |
| 0 | Repr | oject the data to the new Geographic Coordinate System |
| | | OK Cancel |

Reprojection Data and Storage Units Options

5 IFC EXPORT SETUP

- 1. To export the building model to an IFC file, go to File.
- 2. Under Export, click Exchange File Types and select IFC.

| A | Project 1.dgn [| 3D - V8 DGN] - OpenBuildings Designer | Search Ribbon (F4) 👂 👻 🏠 💌 🖉 🖛 🗖 🗙 |
|--------------------|--------------------------|---------------------------------------|---|
| \bigcirc | Fundant File Date | Fuch an ex File Trace | |
| New | Export File Data | Exchange File Types | |
| Open | Common File Types | IFC (*,IFC) | Industry Foundation Classes format |
| | Exchange File Types | Sall S | |
| Save | 3D Modeling File Types | 000 000 | Adult DDF |
| Save As | Visualization File Types | PDF (^.pdt) | Adobe PDF. |
| Save Settings | Analysis File Types | | |
| Send Mail | Structural | CGM (*.cgm) | Computer Graphics Metafile. |
| Close | Fabrication File Types | | |
| Tools | | Collada (*.dae) | Collaborative Design Activity. An interchange file format for interactive 3D applic |
| Utilities | | | |
| Detect Tests | | DXF (*.dxf) | Drawing Exchange Format. A drawing exchange file format supported by most C |
| | | | |
| Parametric Content | | FBX (*.fbx) | Filmbox format. A proprietary format owned by Autodesk (r). |
| Settings | | | |
| Properties | | IGES (*.igs) | Initial Graphics Exchange Specification. |
| Print | | | ······································ |
| Import | | IT Forward (frid) | A 2D data formation data based by Common DIM Cofference (Common UCC Commo |
| Export | | Ji Pormat (^.jt) | A 3D data format developed by siemens PLM Software (formerly UGS Corp.). |
| Dublish Medal | | | |
| | | STEP (*.stp) | Standard for the Exchange of Product model data (AP203/AP214). |
| Help | | • | • |
| Feedback | | | |

IFC File for Export Exchange File Types

3. The IFC Export Dialog is shown and under Model View Definition, open the dropdown menu and select IFC4 Reference View.

4. Under the **Spatial Structure**, select the **Assign** to open the **Assign Models to Spatial Containment** dialog box.

| IFC Exp | ort | | | | | × |
|---------------|-------------------|-----------------------------|---------------------|---------------------------|----------|-----|
| Output | Author | | | | | |
| Model Vi | iew Defir | ition: IFC4 Reference | View | | | - |
| Output | Options | | | | | |
| Cr | eate COB | Bie Spreadsheet | | | | |
| | Open (| COBie Spreadsł | eet | | | |
| | otimize lf | C File | | | | |
| Eacet 7 | Folgrap | (file cize) | | | | |
| racet | < | (file size): | | | > | |
| | Coarse (s | maller) | | Fine | (larger) | |
| Mappin | na Optio | 15 | | | | |
| M | lap | Map DataGro (primary map | up Types A ping) | nd Properties | | |
| | | Map | Map Fan (seconda | iily/Parts ry mapping) | | |
| Spatial As | Structure sign | Assign Buildir | ng and Flo | ors | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | Export | Can | cel |
| | | | | | | |

Model View Definition and Spatial Structure

5. Assign the project and the attached files to the appropriate floor and **Save** afterwards.

| Assign Models | to Spatial Containment | | - 🗆 X |
|-------------------|----------------------------------|---------------|--|
| Project Informat | ion | | |
| Project: Site: | Industrial Site | | Open Floor Manager |
| Inherit Floor | Assignment from Reference Parent | | Restore Defaults |
| Model, Design Fil | e | Site/Building | Floor |
| - How to Guide. | dgnDesign Model | Industrial 1 | First Storey 🗸 🗸 |
| | | | By element elevation Best fit: Roof |
| | | | Road |
| | | | First Storey |
| | | | Second Storey |
| | | | Third Storey |
| | | | Fourth Storey |
| | | | Roof |
| | | | |
| | | | Save Close |

Assigning Attached Files to Floor

6. Close the dialog box and click **Export** to export the model.

1 USERDEFINED PSETS

ADDING USERDEFINED PSETS

To add userdefined properties to catalog types, first copy the XSD files and paste them into the workset's DataGroupSystem folder. Here's a link to an example folder.

C:\ProgramData\Bentley\OpenBuildingsCONNECTEdition\Configuration\WorkSpaces\Building_Examples\worksets\IFC-SG\Standards\DataGroupSystem

Please not that above folder link might be different because of the different WorkSets.

1. Under worksets, select the folder of the new workset.

| Size | Туре | Date modified | Name | 1011 |
|-------------|--------------------|---------------------|------------------------------------|----------------|
| r | File folder | 12/04/2021 2:27 PM | BuildingTemplate_SG | W Quick access |
| r | File folder | 12/04/2021 2:36 PM | BuildingTemplate_US | less oneDrive |
| r | File folder | 12/04/2021 2:36 PM | COBieTemplate_US | This DC |
| r | File folder | 13/04/2021 7:12 PM | IFC-SG | - misec |
| r | File folder | 12/04/2021 2:36 PM | Multi-Use_Retail_Building_US | 💣 Network |
| r | File folder | 12/04/2021 2:36 PM | TrainingTemplate_US | |
| /licroStati | Bentley MicroStati | 26/02/2021 11:40 PM | BuildingTemplate_SG.cfg | |
| File | DGNWS File | 26/02/2021 11:40 PM | BuildingTemplate_SG.dgnws | |
| /icroStati | Bentley MicroStati | 23/02/2021 12:04 AM | BuildingTemplate_US.cfg | |
| File | DGNWS File | 23/02/2021 12:04 AM | BuildingTemplate_US.dgnws | |
| /licroStati | Bentley MicroStati | 23/02/2021 12:04 AM | COBieTemplate_US.cfg | |
| File | DGNWS File | 23/02/2021 12:04 AM | COBieTemplate_US.dgnws | |
| /licroStati | Bentley MicroStati | 14/04/2021 9:11 AM | IFC-SG.cfg | |
| File | DGNWS File | 13/04/2021 7:12 PM | IFC-SG.dgnws | |
| /licroStati | Bentley MicroStati | 23/02/2021 12:04 AM | Multi-Use_Retail_Building_US.cfg | |
| File | DGNWS File | 23/02/2021 12:04 AM | Multi-Use_Retail_Building_US.dgnws | |
| /licroStati | Bentley MicroStati | 23/02/2021 12:04 AM | TrainingTemplate_US.cfg | |
| File | DGNWS File | 23/02/2021 12:04 AM | TrainingTemplate_US.dgnws | |
| | | | | |
| | | | ٢ | |
| | | | ¢ | 18 items |

IFC-SG Workset Folder

2. Select the Standards folder.



Standards Folder of IFC-SG

3. Open DataGroupSystem folder.

| ← → • ↑ <mark> </mark> | << worksets > IFC-SG > Standards > | ٽ ~ | 🔎 Search Sta | ndards |
|------------------------|------------------------------------|---------------------|--------------|--------|
| | Name | Date modified | Туре | Size |
| 🖈 Quick access | Cell | 18/05/2021 3:34 PM | File folder | |
| less oneDrive | Comp | 13/04/2021 7:12 PM | File folder | |
| This DC | Cpart | 13/04/2021 7:12 PM | File folder | |
| - misec | Data | 13/04/2021 7:12 PM | File folder | |
| 💣 Network | DataGroupCatalogs | 07/06/2021 11:34 AM | File folder | |
| | DataGroupLayouts | 13/04/2021 7:12 PM | File folder | |
| | 📕 DataGroupSystem 🛛 🔫 🛶 🛶 🛶 | 07/06/2021 3:20 PM | File folder | |
| | DgnLib | 19/04/2021 4:37 PM | File folder | |
| | EnergyData | 13/04/2021 7:12 PM | File folder | |
| | | 13/04/2021 7:12 PM | File folder | |
| | Macros | 13/04/2021 7:12 PM | File folder | |

DataGroupSystem Folder of IFC-SG Workset

4. Paste the XSD files of the userdefined psets in the DataGroupSystem folder.

| 📕 🔄 🚽 🗍 🖛 🕴 Ope | nBuilding Userdefined psets | | _ | | 📙 🛃 📕 🖛 DataG | roupSystem | | - 0 | × |
|--|--|--|---|--------------|--|---|-------------------------------------|---|--------|
| File Home | Share View | | | ~ 😮 | File Home Sh | are View | | | ~ 🕜 |
| Pin to Quick Copy P access Clipboard | Move to - X Delete - Memory to - Copy to - Copy to - Memory folder Organize | r • • • • • • • • • • • • • | Select all Select non Invert select Select | e ction | Pin to Quick Copy Past access Clipboard | Move to ▼ ★ Delete ▼ Image: Copy to ▼ Image: Copy to ▼ Organize | New Open | Select all Select none Invert selection Select | |
| $\leftarrow \rightarrow \vee \wedge$ | COP | Y 75 | Q Search | OpenBuilding | $\leftarrow \rightarrow \vee \wedge \square \ll$ | IEC-SG → Standards → DataGroupSv | stem v či | Q Search DataGroup | Svs |
| 🖈 Quick access | Name | Date modified 29/04/2021 1:24 PM | Type XSD File | Size | A Quick access | Name Pset_ConcreteElementGeneral.xsd | Date modified 03/06/2021 3:43 PM | Type S XSD File | Size ^ |
| OneDrive | GPset_AirTerminal.xsd | 08/03/2021 4:02 PM | XSD File | | len OneDrive | SGPset_Actuator.xsd | 29/04/2021 1:24 PM | XSD File | |
| This PC | SGPset_Alarm.xsd | 24/04/2021 5:50 PM | XSD File | | This PC | SGPset_AirTerminal.xsd | 08/03/2021 4:02 PM | XSD File | |
| | SGPset_AudioVisualAppliance.xsd | 26/04/2021 4:05 PM | XSD File | | | SGPset_Alarm.xsd | 24/04/2021 5:50 PM | XSD File | _ |
| 💣 Network | SGPset_Beam.xsd | 27/04/2021 7:52 PM | XSD File | | 💣 Network | SGPset_AudiovisualAppliance.xsd | 20/04/2021 4:05 PIVI | XSD File | - 1 |
| | SGPset_BeamReinforcement.xsd | 28/04/2021 1:03 PM | XSD File | | | SGPset_BeamReinforcement vod | 21/04/2021 7:32 PW | VSD File | |
| | SGPset_Building.xsd | 07/06/2021 3:20 PM | XSD File | | | SGPset_Beamkenhorcement.xsd | 07/06/2021 1:05 PW | VSD File | _ |
| | SGPset_BuildingElementPart.xsd | 22/03/2021 2:17 PM | XSD File | | | SGPset_BuildingElementPart vsd | 22/03/2021 2:17 PM | XSD File | |
| | SGPset_BuildingElementProxy.xsd | 29/04/2021 1:27 PM | XSD File | | | SGPset BuildingElementProxy.xsd | 29/04/2021 1:27 PM | XSD File | _ |
| | GPset_BuildingStorey.xsd | 14/05/2021 11:34 AM | XSD File | | | SGPset BuildingStorev.xsd | 14/05/2021 11:34 AM | XSD File | |
| | SGPset_Buildingsystem.xsd | 20/04/2021 11:20 AM | XSD File | | DASTE | SGPset BuildingSystem.xsd | 26/04/2021 11:20 AM | XSD File | |
| | SGPset_Column vsd | 22/02/2021 2:10 PM | XSD File | | TASIL | SGPset_CivilElement.xsd | 18/05/2021 2:10 PM | XSD File | |
| | SGPset ColumnReinforcement vsd | 27/04/2021 2:17 PM | XSD File | | | SGPset_Column.xsd | 22/03/2021 2:17 PM | XSD File | |
| | SGPset CommunicationsAppliance.xsd | 26/04/2021 4:06 PM | XSD File | | | SGPset_ColumnReinforcement.xsd | 27/04/2021 8:18 PM | XSD File | |
| | SGPset ConcreteElementGeneral.xsd | 20/05/2021 10:50 AM | XSD File | | | SGPset_CommunicationsAppliance | .xsd 26/04/2021 4:06 PM | XSD File | |
| | SGPset Covering.xsd | 27/04/2021 9:33 AM | XSD File | | | SGPset_ConcreteElementGeneral.xs | d 20/05/2021 10:50 AM | XSD File | |
| | | | | | | SGPset_Covering.xsd | 27/04/2021 9:33 AM | XSD File | |
| | | | | | | SGPset_Deflection.xsd | 27/04/2021 8:15 PM | XSD File | |
| | | | | | | SGPset_DiscreteAccessory.xsd | 27/04/2021 1:16 PM | XSD File | |
| | | | | | | SGPset_Door.xsd | 27/04/2021 1:13 PM | XSD File | ~ |
| 17 items | < | | |) | 93 items 17 items sel | ected 17.8 KB | | | |



ASSIGNING USERDEFINED PSETS TO CATALOG TYPES

After adding the userdefined psets in the DataGroupSystem folder, it needs to be assigned to the Catalog Types in the Catalog Editor before it can be used in the model. In the Catalog Editor, there are two ways to add the userdefined. It can be added either using **Catalog Items** or **Definition Usage**.

- A. **Definition Usage** This can be used when adding one userdefined pset to multiple catalog types
- B. Catalog Items This can be used when adding multiple userdefined psets to one catalog type

1. Go to File, and under Dataset Tools, select Catalog Editor.

| \bigcirc | Porject 1. | dgn [3D - V8 DGN] - OpenBuildings Designer | Search Ribbon (F4) | × = • @ • • • × |
|--------------------|--------------------|---|--------------------|-----------------|
| New | Dataset Tools | | | |
| Open | Catalog Editor | Allows you to add/remove/modify items listed in yo | our catalogs | |
| Save | | 1 | | |
| Save As | Definition Editor | Modify the list of properties contained in catalog de | efinitions | |
| Save Settings | | 1 | | |
| Send Mail | Family/Part Editor | Launch dialog to manage Part and Family system | | |
| Close | | 1 | | |
| Tools | Refresh | Reload Catalogs System | | |
| Utilities | | - | | |
| Dataset Tools | Validate | Check Dataset for errors | | _ |
| Parametric Content | | | | |
| Settings | | | | |

Location of Catalog Editor

A. ADDING USERDEFINED PSETS THROUGH DEFINITION USAGE

1. Open the dropdown menu of Show Catalog Items and select Show Definition Usage



Changing the Dialog Box to Show Definition Usage

2. Select the userdefined pset and right click. Select Add to Catalog Types.

| Catalog Editor for IFC-SG (| (Definitions) | | - | | × |
|-----------------------------|--|--|----------|---------|-----|
| Show Definition Usage 🕶 🕅 | 🕷 New 🔻 🔣 Validate | 🖬 Save 🔻 🛛 🍸 Filter 💌 | | | |
| | Appliance procement mentPart mentProxy rey tem t Add to Catalog Types | Definition Path: C\ProgramData\\WorkSets\IFC-SG\Standards\DataGroupSystem Usage: Column Concrete Column Steel Properties: SGPset_Column/@Combustible Combustible | \SGPset_ | Column. | csd |
| SGPset_Commu | Definition Editor | | | | |
| Greet_Covering | | \Box | | | |

Adding A Userdefined Property Set to Catalog Type

- 3. Find and select the appropriate catalog type for the userdefined pset to be assigned to.
- 4. After selecting the catalog type, click the single forward button to add the catalog types to the userdefined pset. After the catalog has been added, click **Ok** and **Save.**

| News | SCReet Column | | | | 7 |
|-----------------------|---------------------|---|----------|------------------------|-------|
| Name: | SGPSet_Column | | | | 4 |
| Display Name: | SGPset_Column | | | | |
| Destination: | Workset | | | | |
| Available Catalog T | ypes | ^ | | Selected Catalog Types | 1 |
| Boiler | | | | | |
| Boiler-Electric | | | | | |
| Brace Steel Horizo | ntal | | • | | |
| Brace Steel Vertica | al | | <u> </u> | | |
| Building | | | • | | |
| Cable Carrier Fitting | 1 | | inte- | | T |
| Cable Carrier Segme | , ent | | | | |
| Cable Segment | | | | | |
| Casework | | | | | |
| Catch Basin Recta | ngular | | | | |
| Catch Basin Round | ł | | | | |
| Column Aluminium | | | | | |
| Column Concrete | | | | | |
| Column I Steel | | | | | |
| Column Timber Pos | st | | | | |
| Column Timber Stu | ıd | | | | |
| Condenser | | | | | |
| Curtain Wall System | 1 | | | | |
| Curtain Wall Frame | 2 | | | | |
| Curtain Wall Panel | | | | | |
| Damper Flat Oval | Curtain Fire Damper | ~ | | | |
| < | | > | | | |

Adding Catalog Types to Userdefined Property Set

5. Restart OpenBuildings for the changes to be applied.

B. ADDING USERDEFINED PSETS THROUGH CATALOG ITEMS

- 1. Select the catalog of the object which the userdefined pset will be assigned to.
- 2. Right click on the catalog type and select **Properties**.

| 🕼 Catalog Editor for IFC-SG (Catalog Items) | | — C |) X |
|--|-----------------------------|--------------|---------|
| 🎯 Show Catalog Items 🔻 🖼 New 🔻 💹 Validate 🛛 | Save 🔻 🍸 Filter 💌 | | |
| i⊞@a Ramp ∧ | Name 🗷 | Destination | Label ^ |
| Roof and roof Space | _Exterior Space | Organization | EXTERI |
| Sensor Sensor Sensor | _Plenum | Organization | PLENU |
| | _Void | Organization | VOID |
| a. Site | Administration | Organization | Admin |
| 🕀 🕅 Site Equipment | Air conditioner ledge | Organization | Air cor |
| | Area | Organization | Area |
| 🖅 🎧 Solar Device | Articulated Vehicle Parking | Organization | Car Pa |
| ⊕ 🔞 Spa | ATM Kiosk | Organization | ATM K |
| Spa New Catalog Item | | Organization | Atrium |
| 🕀 👘 Stai New Catalog Item from Componen | ts Center | Organization | Atrium |
| 🕀 🙀 Stai New Catalog Type | | Organization | Audito |
| E Swi | | Organization | Balanc |
| Toil Properties | | Organization | Balcon |
| 🗄 🚾 Toil Catalog Item Manager | | Organization | Bar |
| | | Organization | Bay wi |
| ⊡ matter in the second s | | Organization | Bedroc |
| Windows | Bicycle Parks | Organization | Bicycle |
| Curtain Walls | Bicycle Repair Station | Organization | Bicycle |
| Curtain Wall Panel | Bin Centre | Organization | Bin Ce |
| | Rin Point | Organization | Rin Po |

Properties of Catalog Type

- 3. Find and select the appropriate userdefined psets which will be assigned to the catalog type
- 4. After selecting the userdefined psets, click the single forward button to add the psets to the catalog type.

| Type Name: | Space | | | | |
|--|--|-------|---|--|--------|
| Display Name: | Space | | | | |
| Destination: | System | | File Name: | BuildingCatalogTypes | ~ 省 |
| Discipline Group: | Architectural | | Sub-Group: | [None] | \sim |
| Filters: | | Add (| Catalog Type to | Filters | |
| efinition | | | | | |
| Tool Template: | [None] | | | | \sim |
| SGPset_SlabDime SGPset_SlabReint SGPset_SpaceAre SGPset_SpaceAre SGPset_SpaceAre SGPset_SpaceAre SGPset_SpaceAre | nsion corcement aDimension aa_Connectivity aa_Candscape eension SafetyRequirements | | System ArchSpai ObjectMi SpaceEn Organiza IFC_Ove ObjectCl Space | re aterial ergyAnalysis tion sride assification | Å |

Adding Userdefined Property Sets to the Catalog Type

5. Restart OpenBuildings for the changes to be applied.

MODIFYING USERDEFINED PROPERTIES

After adding userdefined property sets to catalog types, userdefined properties will be available to objects and the project. Adding values for properties can either be done through the **Catalog Editor** or the **Modify Properties** tool.

For the Modify Properties tool:

1. Select the object that need to be modified and select **Modify Properties.**

| 5 1 | | | | | à | | | | | | | | | | VADGUD | | | | | | Conrei |
|----------------|------------------------------------|-----------------|--------------------------|--|-------------------------|------------|-------------------|--------------|-----------|----------|-------------|-----------|---|--------------------|-----------|--------------------------------------|-----------|------------------|--|--|--------|
| Buildi | ng Design | • <u>Ma</u> • E | | N T 🛷 🎘 🖻 | ⊒ ₹ | | | | | | | | How to Gu | iide.dgn [3D - | V8 DGNJ · | OpenBuildings De | signer | | | | Searci |
| File | Architectural | Structural | Forms Data | a/Reporting | Attach | Drawing | Drawin | g Production | View | Analysis | Collabora | ite Drav | ving Aids | Help | | | | | | | |
| Selection | ☐ Move ▼ ☐ Copy ▼ X Delete ▼ | | * Modify * Properties | Ì References ☑ Models ▼ ≶ Levels ▼ | • 🏹 • () • • • | Space Wall | Curtain Wall + | Door Windo | w Object | Casework | Slab Roof | Profile | Ceiling Grid Single Fixtu Opening | d * ure * Stair | Railing | Place Assembly | Connect M | Aodify Vall + | ∑ Insert Vertex 39 Break 39 Join | ・ 記録 Modify Hand ・ 前。Insert Landing ・ が Flip Railing ・ | |
| 1. 1. 1. | 19 Ig | Walls_Ext | Block Wall | | - 6 | Compour | nd 🚍 | Part Level | • Part Co | lor 👻 P | art Style 🔻 | Part Weig | nt 💌 | | | Assembly Builder | | | Wodity | | |

Location of Modify Properties Tool

2. Go to the Unified Property Panel and modify the values of the userdefined properties.



Adding Value for Userdefined Properties in the Unified Property Panel

3. Left click on the workspace to apply the changes.

The values for the properties IfcProject, IfcSite, IfcBuilding, and IfcBuildingStorey must be entered under *Floor Manager*.

1. At the bottom left of the workspace, select this icon to open the *Floor Manager*. This will open up the *Floor Manager* dialog box where the values of the properties can be modified.

2. Click **Apply** and close the dialog box.

| - <u></u> | - <u>-</u> | Property Panel () Properties |
|--|------------------------|------------------------------|
| X 31387.18 X 31387.18 X 31387.18 X 31230.39 X 1.49 X 1.49 X 1.49 X 1.49 X 1.49 X 1.49 X 1.49 X 1.49 | (i) Lenacy mode is Off | |

Location of Floor Manager

| Floor Manager | | | | | | — |
|--------------------------|---------------|-------------|----------------|----------|--|--|
| Add Building 💮 Add Floor | Add Refe | rence Plane | Remove | Settings | | |
| oject Composition | | | | | Site | |
| Name | Rel Elevation | Elevation | Floor-to-Floor | Rotation | ✓ Pset_SiteCommon | |
| | | | | | Reference Ruidable Area | Needs Value |
| FC-5G | | | | | SiteCoveragePatio | IFC value is defined by Site Buildable Area |
| ⊿ 400 Site | | | | | EloorAreaBatio | 1 |
| ⊿ | 0.00 | | | 0° | BuildingHeightLimit | IFC value is defined by Site Building Height I |
| E Basement | -3000.00 | -3000.00 | 3000.00 | 0° | TotalArea | 10.000000 |
| | -3000.00 | -3000.00 | 3000.00 | • | ✓ SGPset_Site | |
| First Storey | 0.00 | 0.00 | 3000.00 | 0° | ApprovedGFA | 10.000000 |
| E Second Storey | 3000.00 | 3000.00 | 3000.00 | 0° | Condition | Firm Ground |
| E Non-residential | 6000.00 | 6000.00 | 3000.00 | 0° | ConstructionPhase | Existing |
| | 0000.00 | 0000.00 | 5000.00 | • | DoubleSession | true |
| []] Residential | 9000.00 | 9000.00 | 3000.00 | 0° | Extg_GrossPlotRatio | Needs Value |
| 📅 Mezzanine | 12000.00 | 12000.00 | 3000.00 | 0° | GIS_LandUse | Needs Value |
| E Attic | 15000.00 | 15000.00 | 9000.00 | 0° | GIS_MasterPlanUse GIS_MaxAllowableWhiteLlee | Needs Value |
| | 0,000,00 | | 0000.00 | • | InternationalSchool | true |
| IE Root | 24000.00 | 24000.00 | 24000.00 | 0* | NumberOfStudents | 100 |
| | | | | | NumberOfWorkers | 10 |
| | | | | | Phase | Needs Value |
| | | | | | ProjectDevelopmentType | 01 04 01 01 |
| | | | | | ProjectDevelopmentType Description | Commercial 1 |
| | | | | | RainfallIntensity | 10 |
| | | | | | RunoffCoefficient | 10 |
| | | | | | WithNightLighting | true |
| | | | | | | |
| | | | | | Land Litle Number | |

Predefined and Userdefined Properties Under Floor Manager

2 IFCDOORLINING, IFCDOORPANEL, AND IFCWINDOWLINING PROPERTIES

In OpenBuildings' default setting, the available IfcDoorLiningProperties are LiningDepth and LiningThickness. To add the other Door Lining and Door Panel Properties, some configurations are required.

1. Copy and paste the given XSD file of IfcDoorLiningProperties and IfcDoorPanelProperties to the DataGroupSystem folder of the workset.



Adding XSD Files of Door Lining, Door Panel and Window Lining Properties

2. Assign the Definition File to Door and Window object using the Catalog Editor.

| 😰 Catalog Type Definition | | | × | 🕼 Catalog Type De | finition | | | | × |
|--|---|---|--|--|---|---|--|-----------------------|---|
| Settings Type Name: Door Display Name: Door Destination: System Discipline Group: Architectural Filters: | File Name: Sub-Group: Add Catalog Type to f | ArchCatalogTypes Openings iters | | Settings Type Name: Display Name: Destination: Discipline Group: Filters: | Window Window System Architectural | File Name: Sub-Group: Add Catalog Type to | ArchCatalogTypes Openings Filters | > > | |
| Definition Tool Template: Place Door Available Definitions CustomParamSubmersiblePump CustomParamVaterMeterfmc50mm26a IfcDoorIningProperties IfcDoorParelProperties IfCDoorParelPropert | bovy | Definitions nufacturer ssing ion 2 ride ssification terial ioor xtensions: IFC rCommon ufacturerOccurrence ufacturerTypeInformation | | Definition Tool Template: Available Definition CustomParamMani CustomParamSum CustomParamWat IfcDoorLiningProp IfcMagConversion IfcWindowLringP Per for asoncustor Pset_ConcreteElei Pset_Environment Pset_Accessor) | Place Window | Selected ObjectP Organizz Fenestri IFC_OV ObjectO Window Window Workset SGPset_ Dataset Pset_Ma Pset_Ma | I Definitions hasing abion abion assification lassification lassification lassification lassification lassification performation Mindow Window Window Window Window Window Window Kok K | A V V Cancel | |

Adding the Door Lining, Door Panel and Window Lining Properties in the Catalog Editor

3. Go to Dataset_SG and open the Setting folder.

4. Replace the IFC_PropertyMapping.ifc4.set file with the given file.

| 📙 🛃 🤿 🗸 Setting | | | | | - 0 | × |
|---|---------------------------------------|------------|--------------|--|----------------|-------|
| File Home Share View | | | | | | ^ ? |
| Image: Pin to Quick access Image: Pin to Quick Copy p Paste Image: Pin to Quick Copy p Paste Image: Pin to Quick Copy p | ath hortcut Move Copy to ~ to ~ | New folder | Properties | pen - Select all lit Select none istory Invert selection | | |
| Clipboard | Organize | New | Open | | Select | |
| ← → · ↑ 📙 « Configuration | n > Datasets > Dataset_SG > Setting > | | ~ č | , , | Search Setting | |
| | Name | Date mo | dified | Туре | Size | ^ |
| > 🖈 Quick access | IFC_PartMapping.set | 07/05/20 | 013 10:27 PM | SET File | | 6 K |
| > 🜰 OneDrive | IFC_PropertyMapping.ifc2x3.set | 28/05/20 | 20 11:54 AM | SET File | | 86 K |
| | IFC_PropertyMapping.ifc4.set | 19/09/20 | 21 4-42 PM | SET Eile | | 94 K |
| > 🛄 This PC | IFC_PropertyMapping_COBie.set | 2 10 12 | 01 4:32 PM | SET tile | | 43 K |
| > 🤿 Network | IFC_PropertyMapping_local.ifc2x3.set | 29/01/20 |)19 4:32 PM | SET File | | 1 K |
| | IFC_PropertyMapping_local.ifc4.set | 29/01/20 |)19 4:32 PM | SET File | | 2 K |
| | IFC_PsetsByClass.ifc2x3.xml | 04/05/20 | 017 4:31 AM | XML File | 2 | 803 K |
| | Replacing the IFC4 Pro | perty Mo | appina. | | | |

5. After restarting OpenBuildings, the IfcDoorLiningProperties, IfcDoorPanelProperties and IfcWindowLiningProperties should be available on the door object.

1 IFCOPENING – PREDEFINED TYPE: RECESS

The predefined type RECESS of IfcOpening will be exported as NOTDEFINED when using IFCOverride or Mapping Options. To properly export the predefined type, the wall/floor needs to have a niche.

1. After creating a wall, create a shape for the outline of the recess. The draw shape tool can be found under **Common Tools.**



Draw Shape Tool



Placing the Shape on the Surface of the Wall

2. After placing the shape on the wall, go to the **Forms Tab > Modify Forms**. Open the dropdown list for **Draw On Solid** and select **Cut Solids by Curve**.

| File Architectural Structural Forms Data/Reporting Attach | Drawing Drawing Productio | n View Analysis Collaborate | Drawing Aids | Help | |
|--|---|----------------------------------|-----------------------|------------------------------------|-----------|
| Selection Select | Linear Between Slab Free | Connect Modify Break Join Extend | | dit Form Base 🔹 🥳 Show Orientation | |
| ▼ X Delete ▼ 100 × C × A × Properties 🥯 Levels × 😳 ▼ | * * * Form * | Elements Wall + Form | Vertex Vertex 🧇 | Draw On Solid Vatch Properties | |
| Common Tools | Forms | _ | Medify 5 orn 🗐 | Cut Solids by Curve | |
| 🗡 Finishes 🔻 Concrete 👻 🛅 🗌 Compound 🚍 | Part Level 🔻 Part Color 🔻 | Part Style 🔻 Part Weight 👻 🔏 🕽 | a 🐅 🗖 🥏 | Construct Opening | |
| | · · · | | I | Modify Solid Entity Proper | ty Panel |
| View I, Design Model | | | | Fillet Edges | |
| | 💁 An an Statement and a statement at a statement | | | Chamfer Edges | |
| | | | 3 | Protrusion | |
| | | | 6 | Sweep Edge Feature | |
| | | | ×~~ 🐧 | Taper Face | |
| | | | 👌 🖄 🛃 | Delete Solid Entity | / Preview |
| | | | | | |
| | | | | | A 7 M |

Location of Cut Solids by Curve Tool

- 3. The Cut Solids by Curve dialog box will open. To create the recess, the settings should be modified first.
 - a. **Cut Direction**: there will be three options, **Both**, **Forward** and **Back**. Choose the appropriate option. (Note: The direction depends on the orientation of the shape. For the example, **Forward** was selected as the shape was placed on the surface of the wall).
 - b. **Cut Mode**: Select **Define Depth.** Check the box for **Cut Depth** and specify the depth of the recess.

| Cut Solids by Curves | | × |] |
|----------------------|----------------|---|---|
| Cut Direction: | Forward 🔻 | | |
| Cut <u>M</u> ode: | Define Depth 🔻 | | |
| Cut <u>D</u> epth: | 50.00 | | |
| | Split Solid | | |
| | Keep Profile | | |



c. After configuring the settings, first select the wall and followed by the shape. After selecting the two, an arrow will appear, indicating the direction of the cut. The direction can also be changed by clicking it.



d. Left click on the model space twice for the changes to appear. OpenBuilding will automatically export the cut as IfcOpening with the predefined type RECESS.



Exported Wall with Recess

2 IFCDOOR - DOOR OPERATION TYPE

Some operation types are not available in OpenBuildings. Operation types for doors are limited to DOUBLE_SWING_RIGHT, DOUBLE_SWING_LEFT, SINGLE_SWING_RIGHT, SINGLE_SWING, LEFT, DOUBLE_DOOR_SINGLE_SWING, DOUBLE_DOOR_DOUBLE_SWING, and SWING_FIXED_LEFT.

The Door Operation type can be changed through Door Modify Properties under Door Parameters. Change the value of the LeafAngle to 180 for the Double Swing operation types



Changing Door Operation Types

3 EXPORTING IFCBUILDINGSYSTEM AND IFCDISTRIBUTIONSYSTEM AS IFCGROUP

As of Update 9 of OpenBuildings, the entities IfcBuildingSystem and IfcDistributionSystem can be exported but there are some limitations when exporting the predefined and userdefined object type. However, there is a workaround for both entities.

1. Go to the Settings folder of Dataset_SG and replace IFC_ItemMapping.ifc4.set with the provided file. The item mapping is similar to IFCOverride where it overrides the assigned entity, predefined and userdefined object type. The difference is that it directly calls the item in the catalog editor and overrides its values. Any value that was added through the catalog editor or unified property panel will be override by IFC_ItemMapping.ifc4.set.

| 📕 🛃 🗖 🖛 Setting | | | | | - 0 | \times |
|--------------------------------------|--------------------------------------|---------------|-------------|---------------------------|----------------|------------|
| File Home Share View | | | | | | ^ ? |
| Pin to Quick Copy Paste Clipboard | shortcut | New New | Properties | Open 🔻 Edit History | Select all | |
| ← → × ↑ G « Configuration | n > Datasets > Dataset_SG > Setting | | ~ | ۍ ر ق | Search Setting | |
| | Name | Date mo | dified | Туре | Size | ^ |
| Ar Quick access | IFC_ElectricalMapping.ifc4.set | 29/01/20 | 19 4:32 PM | SET File | 2 | 5 K |
| OneDrive - Personal | IFC_ExportOverrides.set | 08/12/20 | 11 6:52 PM | SET File | 2 | 2 K |
| TI: DC | IFC_ImportOverrides.set | 23/03/20 | 12 8:39 PM | SET File | 2 | 2 K |
| Inis PC | IFC ItemMapping.ifc2x3.set | 29/01/20 | 19 4:32 PM | SET File | 2 | 2 K |
| 3D Objects | IFC_ItemMapping.ifc4.set | LACE 29/03/20 | 22 11:02 AM | SET File | 2 | 9 K |
| E Desktop | IFC_Mapping.ifc2x3.set | 29/01/20 | 19 4:32 PM | SET File | 2 | 2 K |
| Documents | IFC_Mapping.ifc4.set | 29/01/20 | 19 4:32 PM | SET File | 2 | 1 K |
| Downloads | IFC_Mapping.ifcImport.set | 29/01/20 | 19 4:32 PM | SET File | 2 | 1 K |
| Music | IFC_MappingScript.ifc2x3.set | 12/05/20 | 20 9:24 AM | SET File | 2 | 20 K |
| | IFC_MappingScript.ifc4.set | 12/05/20 | 20 9:24 AM | SET File | 2 | 21 K |
| Fictures | IFC_PartMapping.set | 07/05/20 | 13 10:27 PM | SET File | 2 | 6 K |
| Videos | IFC_PropertyMapping.ifc2x3.set | 03/02/20 | 22 6:20 PM | SET File | 2 | 87 K |
| Local Disk (C:) | IFC_PropertyMapping.ifc4.set | 18/03/20 | 22 3:15 PM | SET File | 2 | 95 K |
| 🚃 Data (D:) | IFC_PropertyMapping_COBie.set | 29/01/20 | 19 4:32 PM | SET File | 2 | 43 K |
| - | IFC PropertyMapping local.ifc2x3.set | 29/01/20 | 19 4:32 PM | SET File | • | 1 K |
| | Location of IFC_ItemMo | apping.ifc | 4.set | | | |

An example of the location of the SET file is shown below:

$\label{eq:c:ProgramData} entley \\ OpenBuildings \\ CONNECTE \\ diffion \\ Configuration \\ Datasets \\ Dataset_S \\ G \\ Setting \\ \end{array}$

2. Go to **Catalog Editor** and create a new catalog type for *IfcDistributionSystem*. Add the property set *IfcDistributionSystem* and *SGPset_SystemDimension*.

| | 🖗 Catalog Type Definition | | × |
|---|---|---|--------------------------------------|
| | Settings Type Name: IfcDistribution Display Name: IfcDistribution Destination: Workset Discipline Group: Architectural | onSystem Shie Name: MechanicalRfaCatalogTypes Sub-Group: [None] | |
| | Filters: | Add Catalog Type to Filters | |
| | Definition Tool Template: [None] | | ~ |
| Catalog Editor for IFC-SG (Catalog terms) Catalog Editor for IFC-SG (Catalog terms) Catalog Item Catalog Ite | Available Definitions System AirDistribution AirHandling ArchBulding ArchBoor ArchFloor BBES_DATA BBES_Equipment_Schedule BBES_Panels BBES_Raceway < | Selected Definitions Workset IfCDistributionSystem ObjectClassification ObjectMentity SGPset_SystemDimension | × |
| ⊕-96 ISC New Sub-Group ⊕-96 ISC New Sub-Group ⊕-96 IFAer ⊕-96 IFAer ⊕-96 IFAer ⊕-96 IFAer | | OK | Cancel |

Adding New Catalog Type

3. For IfcBuildingSystem, right click on the catalog name and select **Properties** to open Catalog Type Definition window. Add SGPset_BuildingSystem and click Ok.

| Type Name: | IfcBuildingSystem | | | | |
|---|-------------------------|--------|---|--|--------|
| Display Name: | IfcBuildingSystem | | | | |
| Destination: | Dataset Extensions: IF(| c ~ | File Name: | IFC_Pset_catalogtypeexts | ~ 1 |
| Discipline Group: | Architectural | ~ | Sub-Group: | [None] | \sim |
| Filters: | | Add Ca | talog Type to F | Filters | |
| efinition | | | | | |
| Tool Template: | [None] | | | | \sim |
| System AirDistribution AirHandling ArchBuilding ArchBoor ArchFloor ArchFloor ArchSpace ArchWindow BBES | ^ | * | Organizat IFC_Over ObjectMa Workset SGPset_E Dataset E IfcBuildin ObjectIdk Pset_Buil | ion terial uidingSystem System entry dingSystemCommon | × |

Adding SGPset_BuildingSystem to IfcBuildingSystem Catalog

4. Create a new Catalog Item. The name of the item should correspond to the item in IFC_ItemMapping.ifc4.set. Add the appropriate values for the predefined and/or userdefined object type.

| | | | – 🗆 X | IFC_ItemMapping.ifc4.set - Notepad | - | |
|---|----------------------------|--------------------------------------|--------------------|------------------------------------|---|-------|
| 🗘 Show Catalog Items 🔻 🙀 New 🔻 🗱 Validate 🛛 🖶 Save 💌 | Ƴ Filter ▼ | | | <u>File Edit Format View H</u> elp | | |
| 🖶 🍘 FlowInstrument | ^ Definition Pr | roperty | Value | ITEM IndustrialWaste* | EXPORT_AS IfcDistributionSystem.USERDEFINED | 1 |
| | IEC Override | C 2x3 Class/Type Over | | INDUSTRIALWASTE | | |
| ⊕-@ FPS | IFC Override | C 4 Class/Type Overrid | | ITEM SmokePurging* | EXPORT_AS IfcDistributionSystem.USERDEFINED | |
| 🖶 🎕 Furniture 🛛 Same Spe | | er-Defined Object Tun | | SMOKEPURGING | | |
| in 🙀 GeographicElement | If Ruilding System Dr | edefinedTime | USERDEEINED | 1 | | |
| HeatExchanger And Form | If cBuilding System | er-DefinedObjectTune | AIRSPEEDMEASURING | TYPE IfcBuildingSystem | | |
| □- | Object/deptite ID | er-bennedobject type | AINSPEEDMEASONINGE | LIEM AirSpeedMeasuringD | levice* EXPORI_AS I+cBuildingSystem.USERDEFINED | |
| AirSpeedMeasuringDevice | ObjectIdentity ID | Number | | AIRSPEEDMEASURINGDEVICE | EXPORT AC IC-R-1144-Custom UCERDEETNED | |
| BeamFacadewall | Objectidentity | Name (Alternate) | | DEAMEACADEWALL | EXPORI_AS ITCDUILDINGSYSTEM.USERDEFINED | |
| | Objectidentity ID | Description | | TTEM ConsuleDed* | EXPORT AS TERRIdidingSustem USERDEFINED | |
| Default | Objectidentity ID | Keynote | | | EXPORT_AS ITCBUILDINGSYSTEM. USERDEFINED | |
| Diaphragmwalisystem | Objectidentity ID | Accet Tag | | TTEM DiaphragmWallSyste | m* EXPORT AS If CBuildingSystem USERDEETNED | |
| | Objectidentity ID | Noter | | DTAPHRAGMWALLSYSTEM | | |
| | ObjectMaterial Ra | Thores | | ITEM EnergyStorage* | EXPORT AS IfcBuildingSystem.USERDEFINED | |
| E Framing | Deat BuildingSustamCo Pa | ference | | ENERGYSTORAGE | | |
| Gondola | SGDset PuildingSystemed As | resolitation MAS | | ITEM FireAlarm* EXPORT | AS IfcBuildingSystem.USERDEFINED | |
| - D Maintenance | SGReet BuildingSystem Ac | creditation_MAS | | FIREALARM | | |
| MasterAntennaTelevisionSystem | SGDeet BuildingSystem Re | tOrChainCount | | ITEM Framing* EXPORT_ | AS IfcBuildingSystem.USERDEFINED | |
| MechanizedCarParking | SGPset_BuildingSystem De | amburtible | | FRAMING | | |
| OxygenReduction | SGPcet BuildingSystem Co | anstructionMethod | | ITEM Maintenance* | EXPORT_AS IfcBuildingSystem.USERDEFINED | |
| - DeumaticRecyclablesChuteConveyanceSystem | SGDset BuildingSystem Co | astromashanisalEristis | | MAINTENANCE | | |
| PneumaticWasteConveyanceSystem | SGReet BuildingSystem En | ectromechanicalPrictic | | ITEM MasterAntennaTelev | isionSystem* EXPORT_AS IfcBuildingSystem.USERDEFINED | |
| PPVCModule | SGReet BuildingSystem Lo | adSidePrake | | MASTERANTENNATELEVISION | ISYSTEM | |
| PrecastHouseholdShelter | SGPset_BuildingSystem_Ed | addituebrake achanicalConnectionT | | ITEM MechanizedCarParki | ng* EXPORT_AS IfcBuildingSystem.USERDEFINED | |
| | SGPret BuildingSystem M | echanicalConflection (| | MECHANIZEDCARPARKING | | |
| PrefabricatedAndPrefinishedCeiling | SGPret BuildingSystem Se | echanized carranking_ | | ITEM OxygenKeduction* | EXPORI_AS IfCBuildingSystem.USERDEFINED | |
| PrefabricatedAndPrefinishedFloor | SGPcet BuildingSystem Te | nsileStress | | TTEM DroumaticRecuclabl | asChutaConvoyanceSustant EVDOPT AS If PuildingSustan USEPDE | THED |
| PrefabricatedAndPrefinishedWall PrefabricatedAndPrefinishedWall | Sor sec_buildingsystem re | naneau caa | | | TECONVEYANCESYSTEM | TINED |
| PretabricatedBathroomUnit PostabricatedBathroomUnit | | | | TTEM PreumaticWasteConv | reconversions EXPORT AS If cBuildingSystem USERDEEINED | |
| PrefabricatedH0020ntalWodule PrefabricatedH0020ntalWodule | | | | PNFLIMATTCWASTECONVEYANC | FSYSTEM | |
| PrefabricatedMEPVerticalModule | | | | ITEM PPVCModule* | EXPORT AS IfcBuildingSystem.USERDEFINED | |
| PrefabricatedPumpSkid | | | | PPVCMODULE | | |
| PublicAddressSystem | v < | | > | ITEM PrecastHouseholdSh | elter* EXPORT_AS IfcBuildingSystem.USERDEFINED | |
| | , | | mm/mm | PRECASTHOUSEHOLDSHELTER | | |

Adding New Catalog Items

5. In the model space, create a text and use the predefined/userdefined type of the building system/distribution system as the value of the text. Go to the **Drawing Tab** and select **Place Text**. Type the predefined/userdefined type and place in the model.

| | Building Design | × 10 | • 😑 🖬 🐻 🛛 | là 🛧 🔹 🥕 📌 🗮 |) - | D : | | | 10 | | | | l.dgn [3D - V |
|----------|---------------------|---------------|--------------|----------------------|----------------|------------|------------|------------|----------------|-------------|------------|--------------|-------------------------------|
| ru | Architectura | ai structurai | Forms | Data/Reporting | Attach | Drawing | Drawing | Production | view | Analysis C | | Drawing Alds | пер |
| A | DOORFRAM_E- (D | oor Fran * | 7 T Selec | tion Copy * | Modify | Models | - () | Place | Place | | Element | Title Te | Note * <t *<="" th=""></t> |
| | | | | A Delete | Properties | S Levels | | SmartLin | e Line 🖵 | lext | Annotation | | sy Points - 1 |
| | Att | ributes | | Co | nmon Too | ols | | D | rawing | lext 5 | | Place Ann | otation |
| 1 | Doors-Wind 🔻 | Wood Type 2 | • | 🔲 🗖 🖸 <u>C</u> ompou | nd | Part Level | ▼ Part C | lolor 🔻 F | Part Style 🛛 👻 | Part Weight | · 🖓 🗛 | ▓₽▖፲ੑੑੑ | |
| . | View 1 - Top. Desig | an Model | | | | | | | | | | | |
| | - 🕢 🌣 - 📘 | ΘΘΩ | 👌 🕅 👣 < | | 7 🔍 🖗 | 1 | | | | | | | |
| | | | • • • | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | PRF | FARE | | FDRAT | HROO | MENT | • |
| | | | | | | | | יוטה ו | | LUDAI | | | |
| | | | | | | | | | | <u></u> | | | |
| | | | | | | | | | | | | / · · · | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | · - | LUDIN. | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | UNUS | | | | 1 A A | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | <u> </u> | | | | |
| | | | | | | | | | | | | 1 | |
| | | | | | | | . Lĭ | | | | | | |
| | | | | | | | · 1 | / | | | | | |
| | | | | | | | - P | ~ // | | | | | |
| | | | | | | | | • // • | | | | | |
| | | | | | | | | 11 | | | | | |
| | | | | | | | · 6 | 6 | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

Adding Text to the Model

6. Set the Active Workflow to **Drawing** and expand the **Group** tab to open **Named Groups** or use the search bar at the top right corner.



Changing the Active Workflow to Drawing

OR

| Building Design Borner Bergen Bergen | 🏦 🕜 • 🕅 • 🗕 | |
|---|-----------------------|------------|
| Architectural Structural Structural Forms Data/Reporting Attach Drawing Drawing Drawing Production View Analysis Robon (2) Selection Image: Architectural < | 00 M + E3 + M + | |
| Malls_Ext Block Wall Gompound For Part Level Part Color Part Style Modeling-Home Modeling-Home | | |
| View 1 - Top, Design Model | - | ч × |
| Image: Control of the control of th | | |

Using the Search Bar to look for Named Groups

7. Click the icon on the upper left of the **Named Groups** dialog box to create a new Group. For the name of the group, use the predefined type or userdefined object type of the building system or distribution system.



Creating A New Group

8. To add the objects to the building/distribution system, first, select the appropriate group. Select the objects and the text, click the **add elements** icon and click on the working space to apply the changes.



Adding the Objects to the Group

9. Select all the objects and text again and go to **Data/Reporting** tab. Select **Add Data** to add the IfcEntity and its properties. Under the property panel, find and select the appropriate entity. (Note: For this example, IfcBuildingSystem will be selected.)

| A | dd li | nstance Data | • | Ψ× | | | | | | | |
|---|--------------------|---------------------------------------|----------|----|--|--|--|--|--|--|--|
| | AH | HU Rectangular-2 | | | | | | | | | |
| | Hos | seUnionDrainCockWithPlug | | • | | | | | | | |
| | Hur | umidifier Flat Oval | | | | | | | | | |
| | Hur | umidifier Rectangular | | | | | | | | | |
| L | Hur | midifier Round | | _ | | | | | | | |
| L | lfcB | uildingSystem | | | | | | | | | |
| Ľ | lfcElementAssembly | | | | | | | | | | |
| | lfcG | GeographicElement | | | | | | | | | |
| | lfcZ | Zone | | | | | | | | | |
| | Inte | erior Specialty | | | | | | | | | |
| | | AirFlowRate | • | | | | | | | | |
| | * | IFC Override | | | | | | | | | |
| | | IFC 2x3 Class/Type Override | * | | | | | | | | |
| | | IFC 2x3 Class/Type Override Descripti | | | | | | | | | |
| | | IFC 4 Class/Type Override | • | | | | | | | | |
| | | IFC 4 Class/Type Override Description | | | | | | | | | |
| | | | | | | | | | | | |

Adding the IfcBuildingSystem as Instance Data

10. Select the appropriate catalog item. Add the necessary values for the properties and left click on the model space to apply the changes.

| ItcB | uildingSystem | |
|------|--------------------------------|-----------------------|
| | Default | - |
| ⊧≡ | A-Z 🖌 Search | |
| * | SGPset_BuildingSystem | |
| | BeltOrChainCount | 0 |
| | ConstructionMethod | |
| | ElectromechanicalFrictionBrake | |
| | EmergencyControlDevice | |
| | LoadSideBrake | |
| | MechanicalConnectionType | |
| | MechanizedCarParking_Type | |
| | OneWayCommunication | |
| | SelfSustaining | |
| | TwoWayCommunication | |
| ٨ | Materials | le |
| | Part Definition | |
| Ŧ | IFC Override | |
| * | IfcBuildingSystem | |
| | PredefinedType | USERDEFINED |
| > | User-DefinedObjectType | PREFABRICATEDBATHROOM |
| - | Identification | |
| | ID Type ID | |
| | ID Number | |
| | ID Name (Alternate) | |
| | ID Description | |
| | ID Keynote | |
| | ID Asset Tag | |
| | ID Notes | |
| | | |
| • | Pset_BuildingSystemCommon | |

Adding the Predefined/Userdefined Type and Properties

Note: Before exporting, make sure that in the predefined and object type are properly mapped in the SET file for IFC4 files. An example of the location of the SET file is shown below:

$\label{eq:c:ProgramData} entley \\ OpenBuildings \\ CONNECTE \\ diffion \\ Configuration \\ Datasets \\ Dataset_S \\ G \\ Setting \\ \end{array}$

| | view | | | | - |
|---------------------|--|---------------------|----------|--------|---|
| ← → × ↑ 📙 « Configu | ration \rightarrow Datasets \rightarrow Dataset_SG \rightarrow Setting | | ~ ē | | |
| | Name | Date modified | Туре | Size | |
| 📌 Quick access | IFC_MappingScript.ifc2x3.set | 12/05/2020 9:24 AM | SET File | 20 KB | |
| lange - Personal | IFC_MappingScript.ifc4.set | 12/05/2020 9:24 AM | SET File | 21 KB | |
| | IFC_PartMapping.set | 07/05/2013 10:27 PM | SET File | 6 KB | |
| This PC | IFC_PropertyMapping.ifc2x3.set | 28/05/2020 11:54 AM | SET File | 86 KB | |
| A Network | IFC_PropertyMapping.ifc4.set | 14/03/2022 10:04 AM | SET File | 94 KB | |
| | IFC_PropertyMapping_COBie.set | 29/01/2019 4:32 PM | SET File | 43 KB | |
| | IFC_PropertyMapping_local.ifc2x3.set | 29/01/2019 4:32 PM | SET File | 1 KB | |
| | IFC_PropertyMapping_local.ifc4.set | 29/01/2019 4:32 PM | SET File | 2 KB | |
| | IFC_PsetsByClass.ifc2x3.xml | 04/05/2017 4:31 AM | XML File | 803 KB | |
| | IFC_PsetsByClass.ifc4.xml | 04/05/2017 4:31 AM | XML File | 660 KB | |
| | IFC_QtoMapping.ifc4.set | 25/01/2021 8:09 AM | SET File | 9 KB | |
| | IFC_RV4Filter.set | 19/01/2021 8:06 AM | SET File | 2 KB | |
| | IFC_TypeMapping.ifc2x3.set | 22/05/2020 8:40 AM | SET File | 38 KB | |
| | IFC TypeMapping.ifc4.set | 27/05/2020 9:48 AM | SET File | 28 KB | |

Location of Property Mapping SET File

Open the SET File and search for IfcBuildingSystem. For the object type to export correctly, make sure the property User-DefinedObjectType is linked to ObjectType

| IFC PropertyMapping.ifc4.set | - Notepad | | | | | | | | _ | | × |
|---|---------------|--------------------|--|----------------------|-------------------|---------------------|--------------------------|--------------|-----------|--------|------|
| File Edit Fermat View Hale | | | | | | | | | | | |
| File Edit Format View Help |) | | | | | | | | | | |
| <pre># == Minor renaming in BMP_VibrationPad # ====================================</pre> | IFC4 Add * | lendum 2 Pset_V | . Mapping 2x3 nam ibrationIsolatorT | e to IFC ypeCommo | 4 Add2 n n | ame belo Nominal | w === Height ===== | IfcPosit | iveLength | Measur | re |
| BMP_WaterCooledChiller | * | Pset_M | anufacturerTypeIn | formatio | n | Manufac | turer | IfcLabel | Р | ropert | ties |
| BMP_WaterHeater * | Pset_Ma | nufactu | rerTypeInformatio | n | Manufac | turer | IfcLab | el f | Propertie | s/@Mar | nufa |
| BMP_Wye * Pset_Ma | nufactur | erTypeI | nformation | Manufac | turer | IfcLabe | 1 | Propertie | es/@Manuf | acture | an |
| BMP_YardHydrantCabinet | * | Pset_M | anufacturerTypeIn | formatio | n | Manufact | turer | IfcLabel | P | ropert | ties |
| BMP_ZoneControlValve | * | Pset_M | anufacturerTypeIn | formatio | n | Manufact | turer | IfcLabel | Р | ropert | ties |
| BMPCoolingTower * | Pset Ma | nufactu | rerTypeInformatio | n | Manufac | turer | IfcLab | el f | Propertie | s∕@Mar | nufa |
| _ | _ | | | | | | | | | | |
| # | | | | | | | | | | _ | |
| IfcBuildingSystem | * | * | PredefinedType | * | IfcBuil | dingSyst | em/@Pre | definedType | 2 | | |
| IfcBuildingSystem | * | * | ObjectType | * | IfcBuil | dingSyst | em/@Use | r-DefinedO | ojectType | | |
| IfcElementAssembly | * | * | Predetined type | * | IfcElem | entAssem | bly/@Pr | edefinedTy | be | _ | |
| IfcGeographicElement | * | * | PredefinedType | * | IfcGeog | raphicEl | ement/@ | Predefined | Гуре | | |
| IfcGeographicElement | * | * | ObjectType | * | IfcGeog | raphicEl | ement/@ | ObjectType | | | |
| IfcSpatialZone * | * | Predef | inedType 🔻 | IfcSpat | ialZone/ | @Predefi | nedType | + | | | |
| IfcSpatialZone * | * | Object | Ту | IfcSpat | ialZone/ | @ObjectT | | | | | |
| IfcDistributionSystem | * | * | Attributes | * | IfcDist | ribution | Prc | perties i | า | | |
| IfcDistributionSystem | * | * | Cojecciype | * | IfcDist | ribution | | the | | | |
| IfcSystem * | * | Predef | inedType * | IfcSyst | em/@Pred | efinedTy | | | | | |
| IfcSystem * | * | Object | Type * | IfcSyst | em/@Obje | ctType | det | inition til | е | | |
| - | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | ~ |
| < | | | | | | | | | | | > |
| | | | | | Ln 984, Col | 69 | 100% | Windows (CRI | .F) UTF- | 8 | |

Property Mapping of IfcBuildingSyste

CHANGE LOG

DateDescriptionFeb 2023Added preface section and updated screenshots