IDM IN NATIVE SOFTWARE

Tekla Structures | SketchUp | domi BIM van A tot Z | ALLPLAN | Your software here?

This document provides instructions on how to conform to the Basic Information Delivery Manual (IDM) with SketchUp 2018. The sections of the IDM are treated one by one below.

2. HOW ARE WE GOING TO SHARE THIS INFORMATION UNAMBIGUOUSLY?

✓ OpenBIM – Export based on IFC

SketchUp

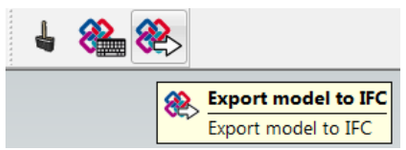
These instructions are based on SketchUp 2018 extended with the 'IFC manager' plugin **DOWNLOADLINK**
There is also a video tutorial available at: https://vimeo.com/256742066

NOTE:
In SketchUp it is not (yet) possible to build a model that fully complies with the basic IDM. Nevertheless, by following this document, one can set up a well-structured model. With the help of an extension, the IFC information quality can be improved.

SketchUp

✓ **Use the SketchUp IFC manager, Download here: *DOWNLOADLINK***

For BIM coordination and as a reference model for other parties, use the IFC export function of the plugin in SketchUp (only available in the Pro version),
The IFC export function can be started using the following button:



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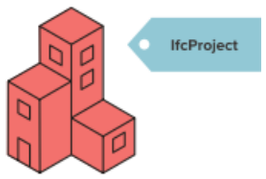
WHAT IN IFC

HOW IN NATIVE SOFTWARE

3.1 FILE NAME

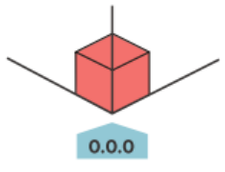
- ✓ Ensure that uniform and consistent naming is used for (discipline) models within the Project.
  example: <Building>_<Discipline>_<Component>



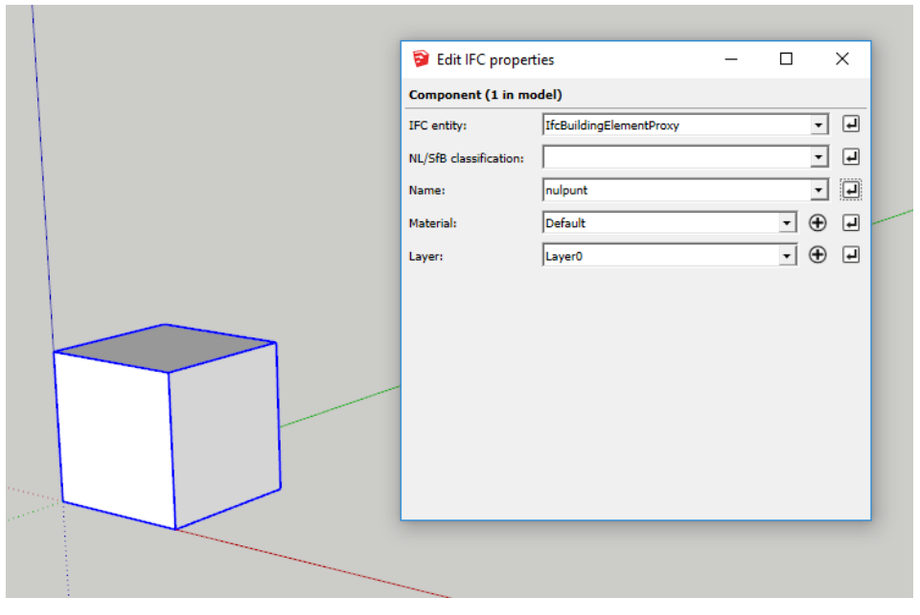
- ✓ Use the naming convention according to the BIM protocol or work plan.
- ✓ When saving the file you can give the .ifc file the correct name.

3.2 LOCAL POSITION AND ORIENTATION - ORIGIN

- ✓ The local position of the building is coordinated and close to the origin.
  tip: use a physical object as point of origin, positioned at 0.0.0., and also export this to IFC.



1. Create an origin-object at the point where the axes intersect. This is the SketchUp origin point.



2. Make this cube a Building Element (right mouse on the selection and click on 'Create Building Element') and give it the name ‘origin'

3. Define the Zero entity type as: IfcBuildingElementProxy

WHAT IN IFC

3.3 BUILDING STOREYS AND NAMING

- ✓ Name Building Storeys only as ifcBuildingStorey-Name.
- ✓ Allocate all objects to the correct level.
- ✓ Within a project, ensure that all involved parties consistently use exactly the same naming, that can be numerically sorted with a textual description.
  example 1: 00 ground floor
  example 2: 01 first floor

CONTINUE

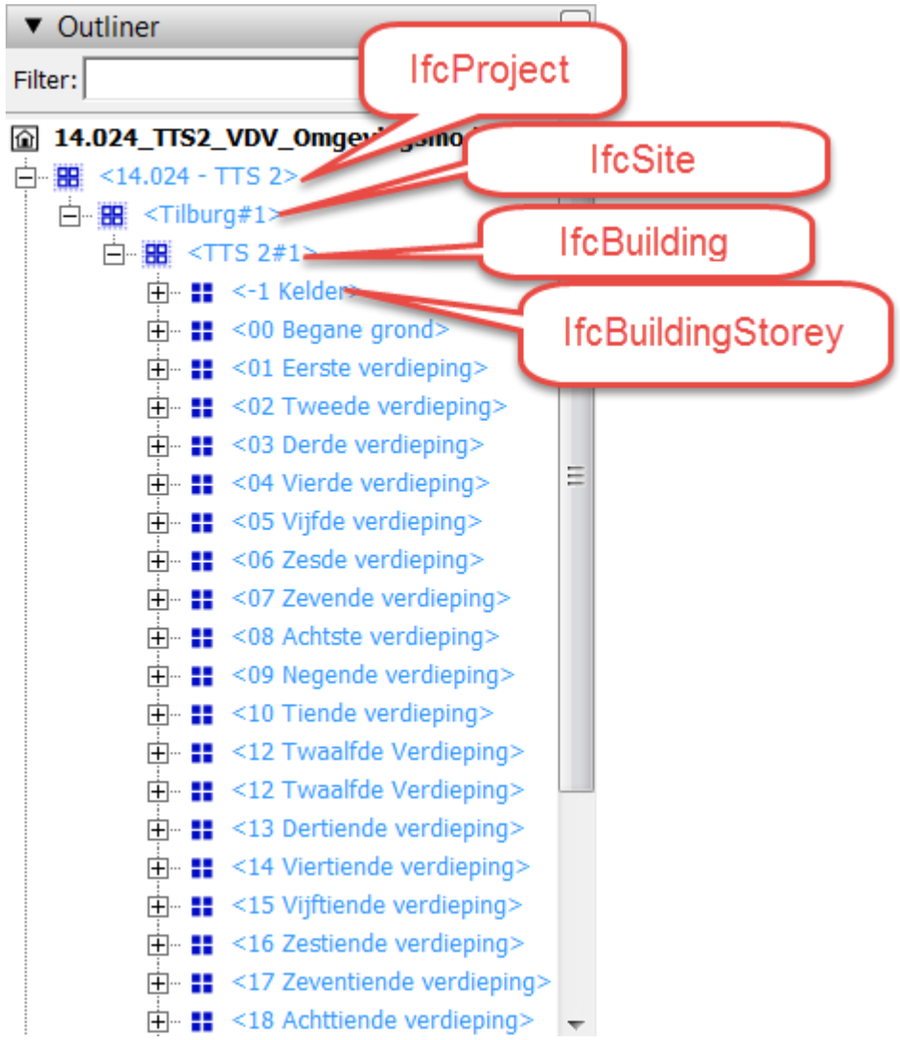
HOW IN NATIVE SOFTWARE

In SketchUp you should create the tree-structure for your project in the following way:

- Name of the project (IfcProject)
  - Name of the location (IfcSite)
    - Name of the building (IfcBuilding)
      - Building layers (IfcBuildingStorey)

You can place objects in the tree-structure by selecting them, making them a component and classify them using the correct Ifc-entity. The following pages describe how to do this for the above items.

Tip: You can check the structure of your model in the 'Outliner'



WHAT IN IFC

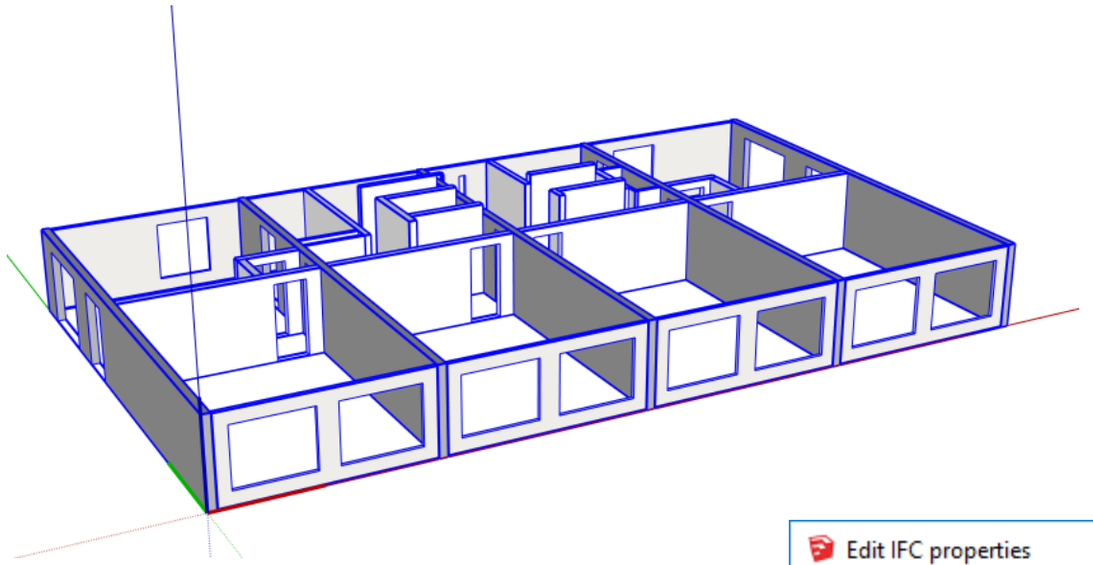
3.3 BUILDING STOREYS AND NAMING

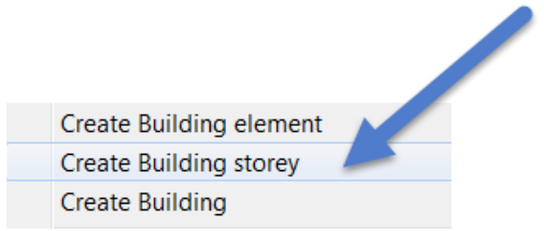
- ✓ Name Building Storeys only as ifcBuildingStorey-Name.
- ✓ Allocate all objects to the correct level.
- ✓ Within a project, ensure that all involved parties consistently use exactly the same naming, that can be numerically sorted with a textual description.
  example 1: 00 ground floor
  example 2: 01 first floor

CONTINUE

HOW IN NATIVE SOFTWARE

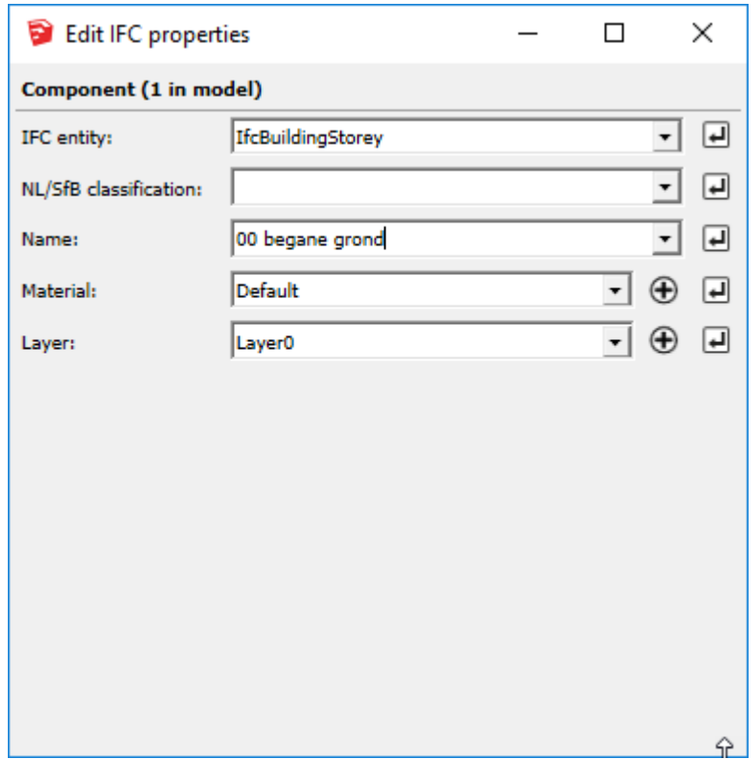
1 Using the SketchUp IFC Manager plugin you can create building storeys by selecting all objects for 1 building layer, right-click on the selection and click on 'Create Building Storey'.





2 Name the Building Storeys as follows

00 ground foor, 01 first floor, etc.



WHAT IN IFC

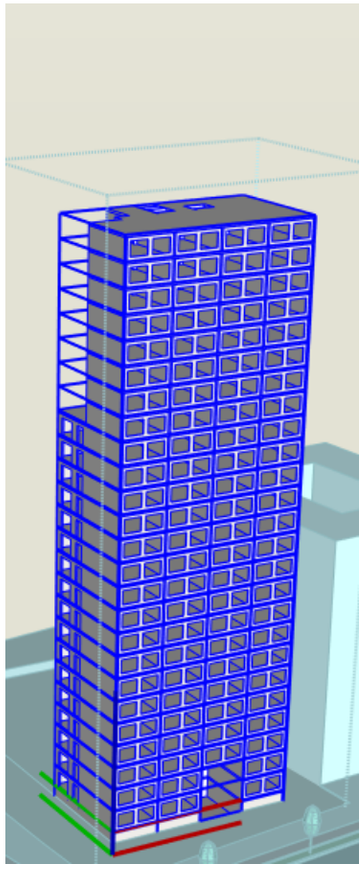
3.3 BUILDING STOREYS AND NAMING

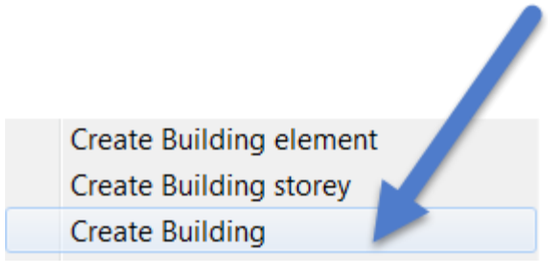
- ✓ Name Building Storeys only as ifcBuildingStorey-Name.
- ✓ Allocate all objects to the correct level.
- ✓ Within a project, ensure that all involved parties consistently use exactly the same naming, that can be numerically sorted with a textual description.
  example 1: 00 begane grond
  example 2: 01 eerste verdieping

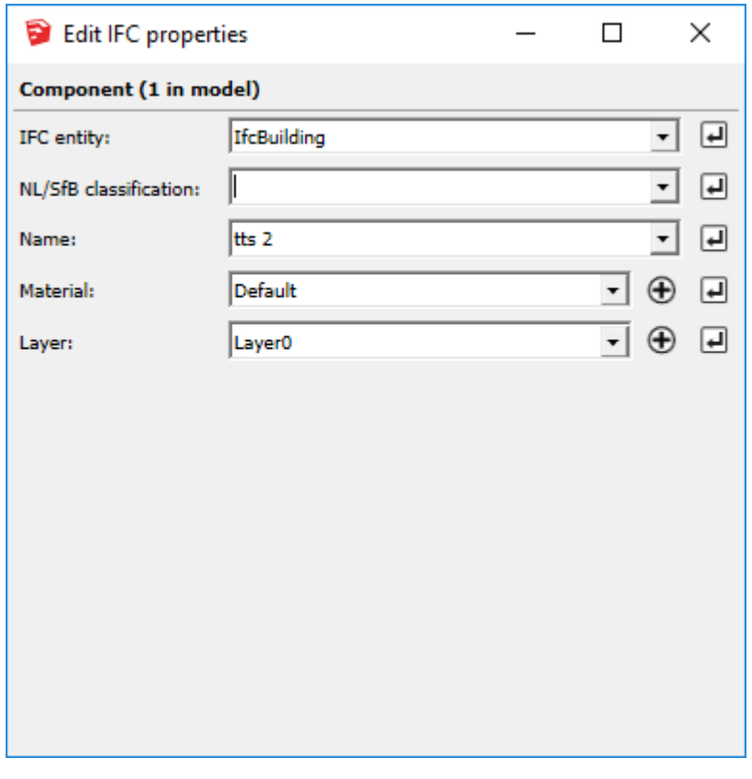
CONTINUE

HOW IN NATIVE SOFTWARE

1 In SketchUp you can define buildings (IfcBuilding) by selecting all building storeys and creating a Building.
(Tip, selecting the building layers is easy via the Outliner)
After selecting the building storeys, click on the selection with the right mouse button and select Create Building.







2 Name the component with the building name

In this way the correct name is passed along in an IFC export.

WHAT IN IFC

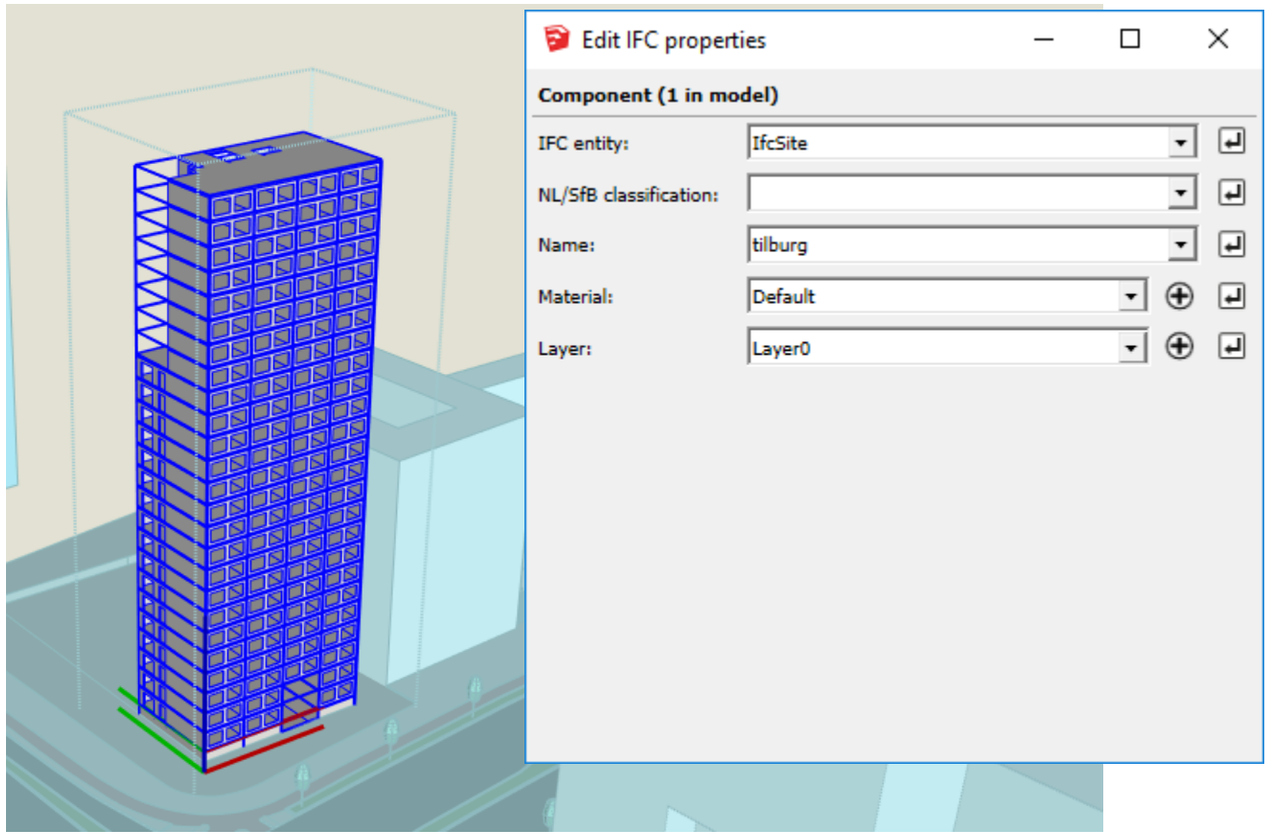
3.3 BUILDING STOREYS AND NAMING

- ✓ Name Building Storeys only as ifcBuildingStorey-Name.
- ✓ Allocate all objects to the correct level.
- ✓ Within a project, ensure that all involved parties consistently use exactly the same naming, that can be numerically sorted with a textual description.
  example 1: 00 ground floor
  example 2: 01 first floor

CONTINUE

HOW IN NATIVE SOFTWARE

1. In SketchUp you can define the project site (IfcSite) by selecting the building (IfcBuilding) and creating a new component. This can be the same selection as the building, but to get a correct IFC structure you will have to make a new component here. (Tip, selecting the objects is easy using the Outliner)



2. Click right mouse button on the building selection. And select 'Create Building Element'.

3. Classify it as an IfcSite entity.

4. Name the component with the name of the location.

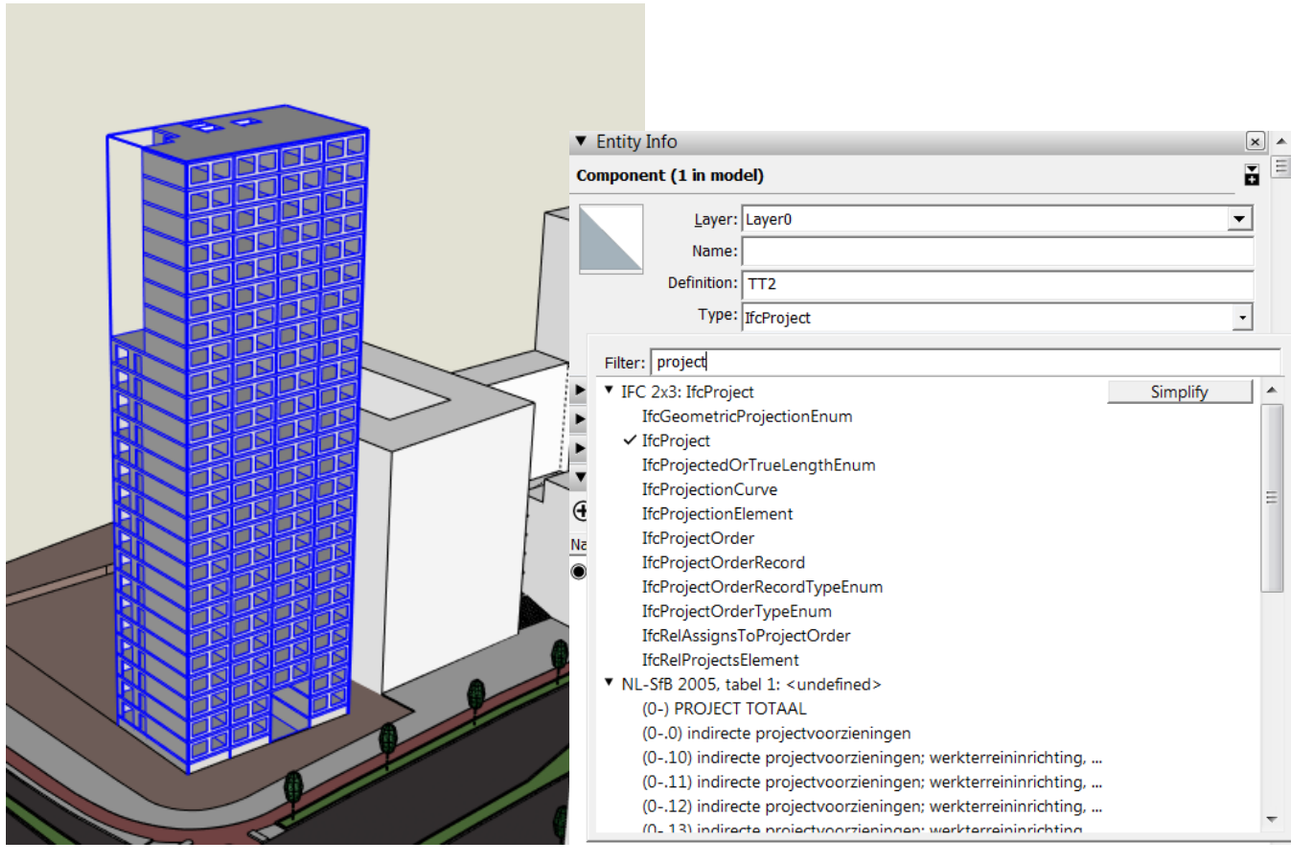
WHAT IN IFC

3.3 BUILDING STOREYS AND NAMING

- ✓ Name Building Storeys only as ifcBuildingStorey-Name.
- ✓ Allocate all objects to the correct level.
- ✓ Within a project, ensure that all involved parties consistently use exactly the same naming, that can be numerically sorted with a textual description.
  example 1: 00 ground floor
  example 2: 01 first floor

HOW IN NATIVE SOFTWARE

1. In SketchUp you can define the project (IfcProject) by selecting the location (IfcSite) and creating a new component. This can be the same selection as the building or location, but to get a correct IFC structure you will have to make a new component here. (Tip, selecting the objects is easy using the Outliner)



2. Click right mouse button on the selection. And select 'Create Building Element'.

3. You give him the entity IfcProject, please note that you can not do this in the 'Edit IFC properties' window. You must do this at 'Entity info'.

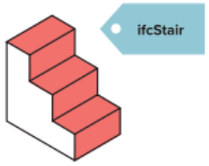
4. The component gives you the name of the project

WHAT IN IFC

HOW IN NATIVE SOFTWARE

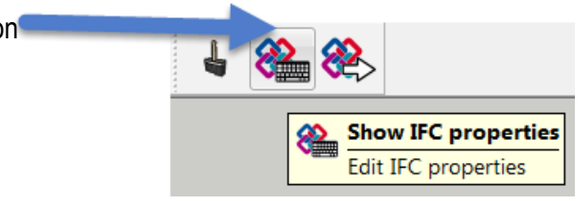
3.4 CORRECT USE OF ENTITIES

- ✓ Use the most appropriate type of BIM entity, both in the source application and the IFC entity.
  example: slab = ifcSlab, wall = ifcWall, beam = ifcBeam, column = ifcColumn, stair = ifcStair, door = ifcDoor etc.

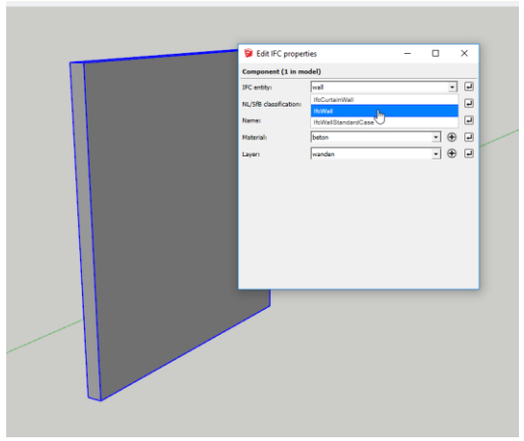


The IFC entity of an object, in SketchUp a component, can be set by:

1. Click on the 'Show IFC properties' button

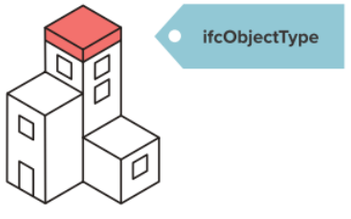


2. Select a component
3. In the IFC entity field you can choose the correct IFC entity.

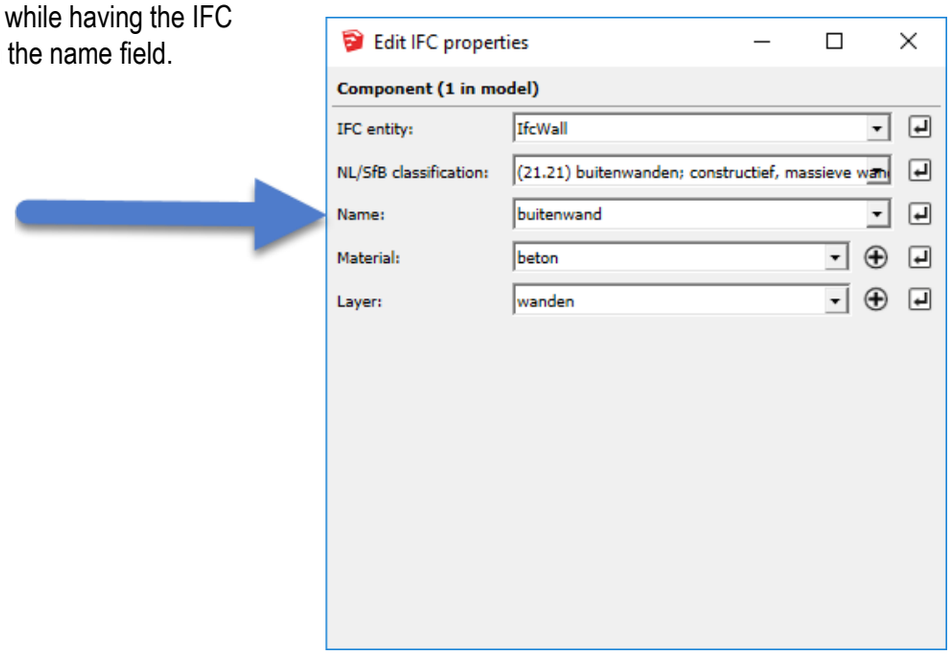


3.5 STRUCTURE AND NAMING

- ✓ Consistently structure and name objects.
- ✓ Correctly enter the object TYPE (ifcType, ifcObjectType or ifcObjectTypeOverride).
- ✓ Where applicable, also correctly enter the Name (ifcName or NameOverride).
  example: roof insulation, type: glass fibre



Object types can be entered by clicking on a component while having the IFC properties window open. Enter the object specification in the name field.



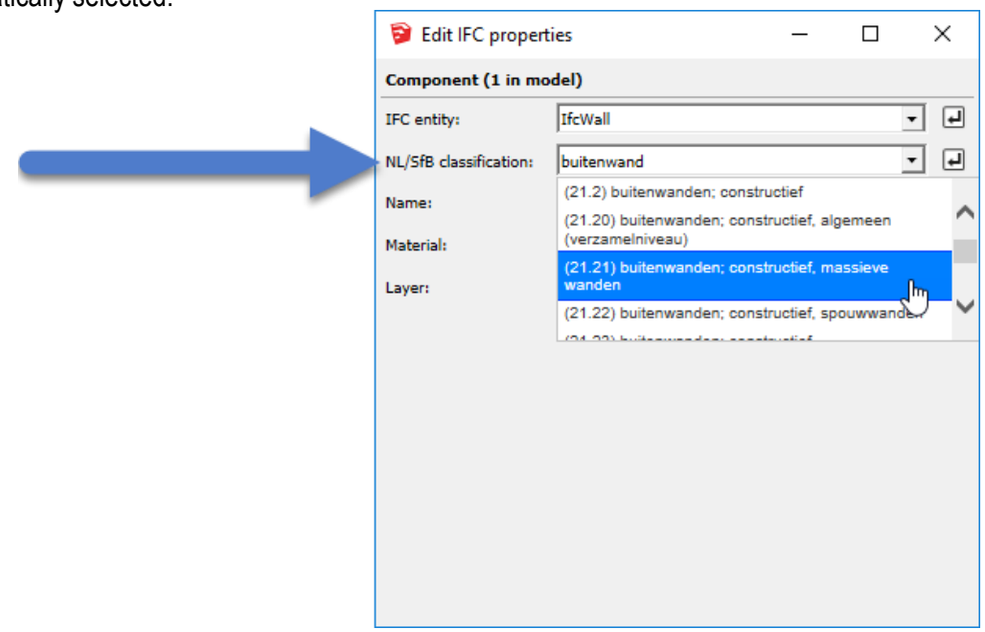
WHAT IN IFC

3.6 CLASSIFICATION SYSTEM

- ✓ Apply the existing classification system used in the relevant country. In the Netherlands this is the NL-SfB.
- ✓ Allocate to each object a four-digit NL-SfB variant element code.
  example: 22.11

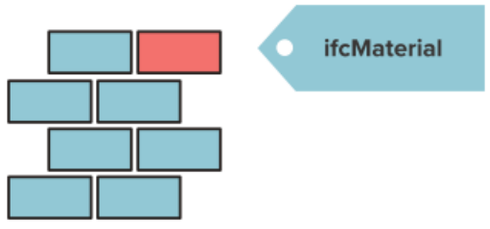
HOW IN NATIVE SOFTWARE

NL-SFB coding can be entered via the IFC properties window. When you start typing in the entry field, the matching NI-Sfb code is automatically selected.



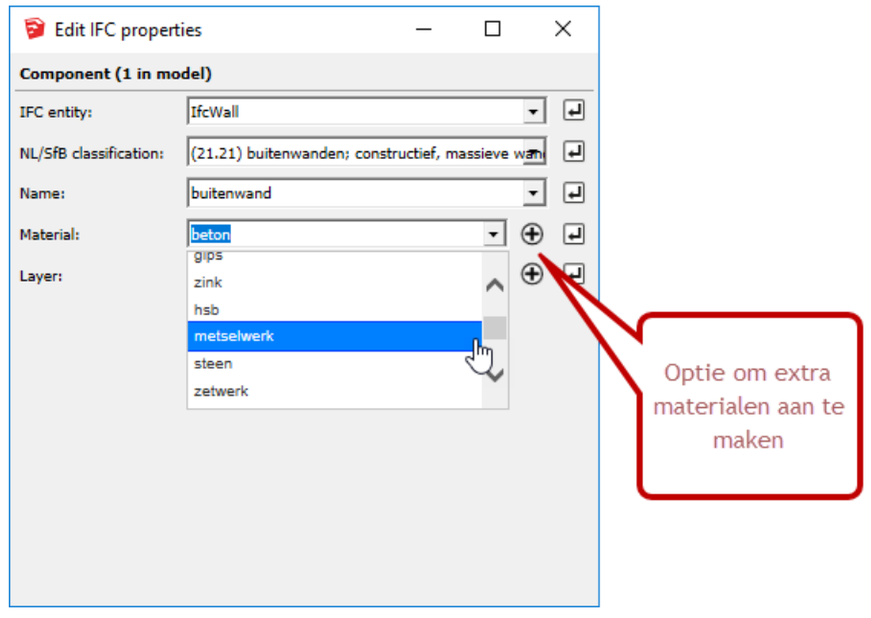
3.7 OBJECTS WITH CORRECT MATERIALIZATION

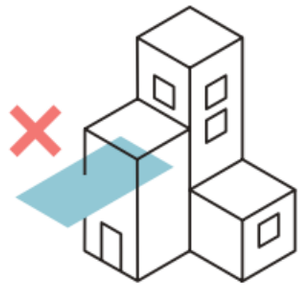
- ✓ Allocate objects with a material description (ifcMaterial)
  example: limestone



You can select a material for a Building Element in the IFC properties window. There are some materials predefined in the IFC Manager, but you can also add materials yourself by clicking on the plus-sign.

You can later customize the color of the materials in the SketchUp material dialog



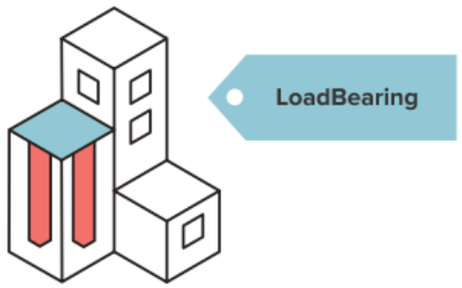
WHAT IN IFC	HOW IN NATIVE SOFTWARE
3.8 DUPLICATES AND INTERSECTIONS ✓ There are no duplicates or intersections permitted. Make sure this is checked in IFC. 	As far as is known, it is not possible to automatically check for duplications and intersections in SketchUp. This has to be done in a model checker for the time being.

example: for beams, the properties FireRating, LoadBearing and IsExternal are part of the Pset_BeamCommon.

WHAT IN IFC

4.1 LOADBEARING

- ✓ Allocate objects, when applicable, with the property LoadBearing [True/False].

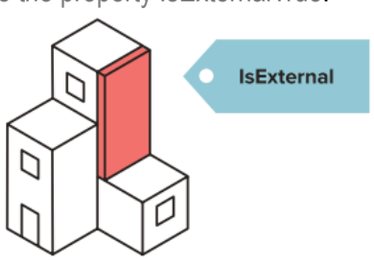


HOW IN NATIVE SOFTWARE

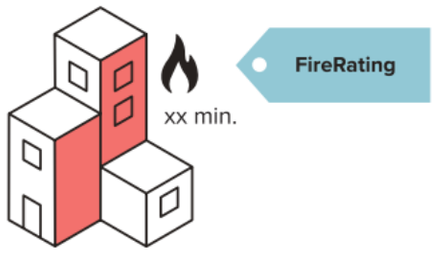
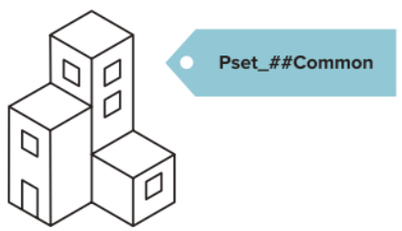
Load bearing / not Load bearing property can be provided in the description of the component if desired. Do this by right mouse click on the component → dynamic components → component options → Description

4.2 IS EXTERNAL

- ✓ Allocate objects, when applicable, with the property IsExternal [True/False]
  tip: both inner and outer faces of the façade have the property IsExternalTrue.



Is external / is not external property can be provided in the description of the component if desired. Do this by right mouse click on the component → dynamic components → component options → Description

WHAT IN IFC	HOW IN NATIVE SOFTWARE
4.3 FIRERATING ✓ Allocate objects, when applicable, with the property FireRating. example: Apply the existing standard used in the relevant country. 	The firerating property can be provided in the description of the component if desired. Do this by right mouse click on the component → dynamic components → component options → Description
4.4 PROJECT SPECIFIC ✓ Define which IFC properties you are using for each specific project. 	Project specific property can be provided in the description of the component if desired. Do this by right mouse click on the component → dynamic components → component options → Description