

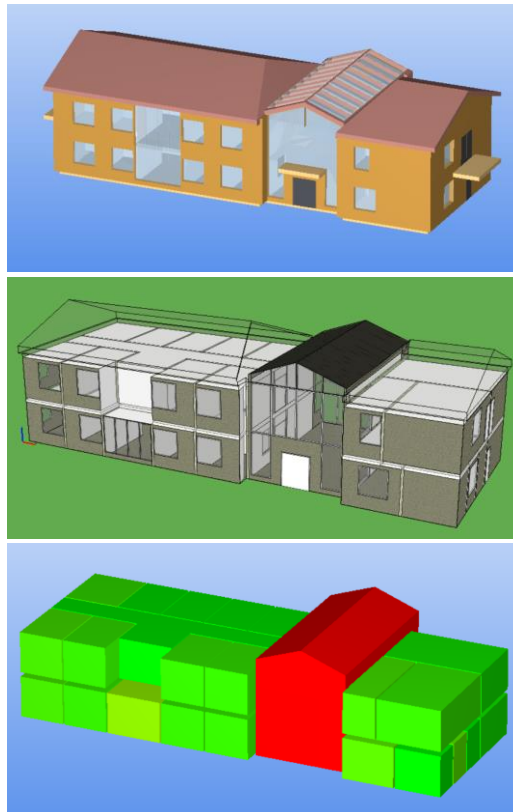
IDA Indoor Climate and Energy

IFC

IFC IMPORT AND EXPORT

using simplebim®

Exercise



Purpose

The purpose of this exercise is to help you succeed with IFC import and export. You learn how to validate, clean and improve an IFC file that you have received from an architect and to export IDA ICE results back to the IFC file.

Instructions

Unless you already have simplebim installed, download and install a free 30 day trial version, <http://www.datacubist.com/try-it/>

Unless you already have the IDA-ICE add-on for simplebim installed, download and install it, <http://www.datacubist.com/downloads/>

Go through the exercises in the given order.

The exercises make use of an IFC file, SmallOffice.ifc. This can be downloaded from www.equaonline.com/iceuser/resources/SmallOffice.zip.

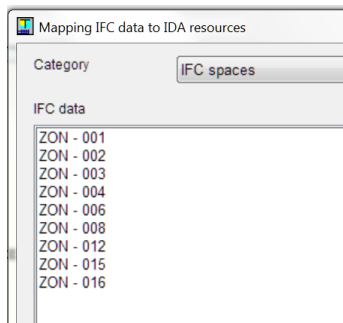
Exercises

Exercise 1

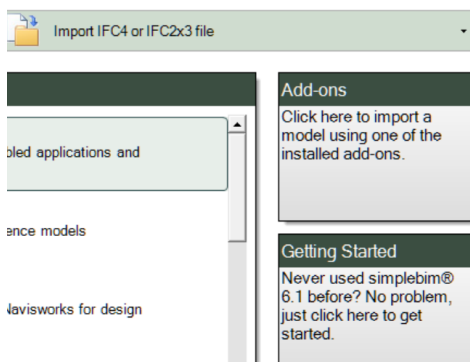
1. Import the file SmallOffice.ifc to IDA ICE.
2. Note that the import takes quite a while and that there are problems with curtain walls and with the building body creation unless you have checked 'Use grossspaces'.



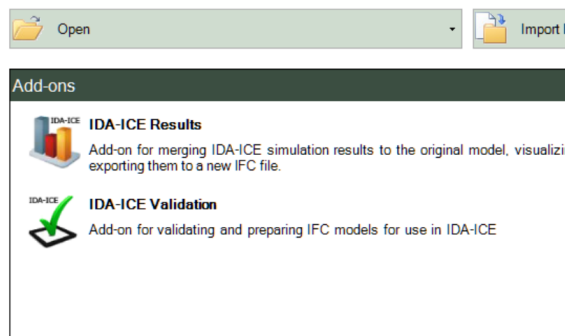
3. The IFC mapping contains garbage.



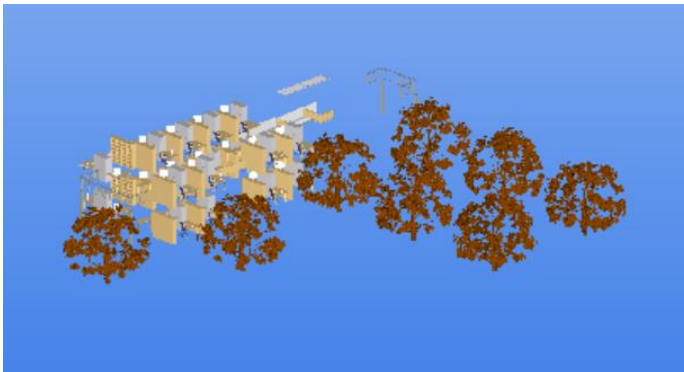
4. Start simplebim. Click on Add-ons to access IDA-ICE Add-on.



- Click IDA-ICE Validation and open SmalOffice.ifc.



- A lot of unnecessary object have been excluded from the model.

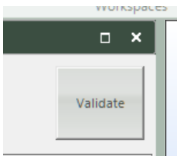



In IDA ICE 4.8 these objects are actually removed in the IFC import as well but these objects slow down the import significantly.

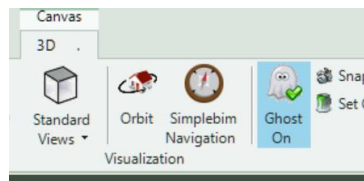
- Select IDA-ICE Validation.



- Click Validate. It is possible that you have to Select Manage Workspaces > Reset Current Workspace for the Validate button to appear.

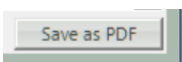


- Go thru issues with  and make snapshots. Use Ghost On setting.



- Reset the 3D view to full building. This view is shown in the report.

- Click Save as PDF.



- A validation report is generated. Save it and take a look at it. This report could be sent to the architect to point out problems that need to be fixed in the model for IDA ICE IFC import to work. However, here we will fix the IFC model instead.

13. Go to Property Editor to edit the properties of the IFC model.

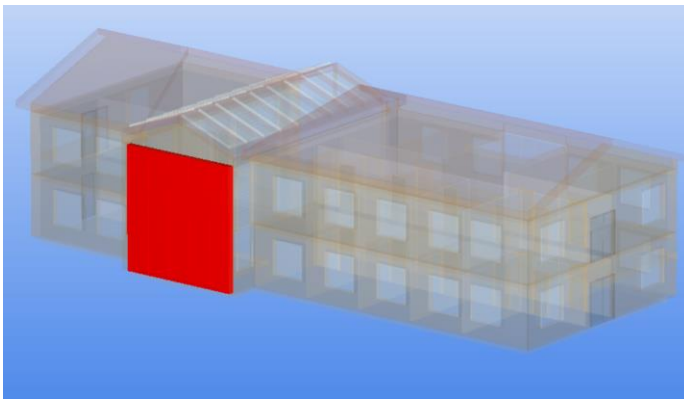


14. Select to edit curtain wall.

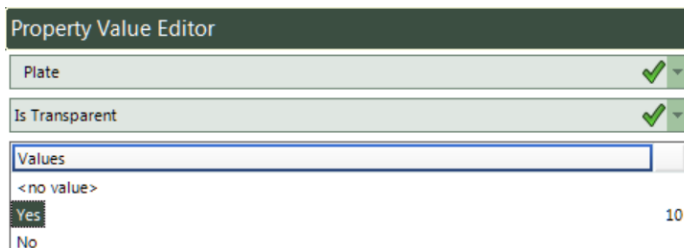


Select <no value> and drag to Yes.

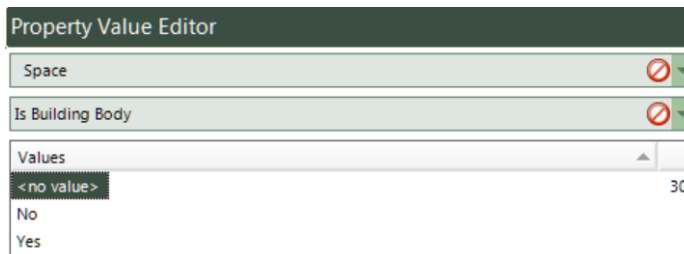
15. If you now select Yes, the curtain wall should highlight in the model. Rotate the model the model or turn on Ghost to see the curtain wall.



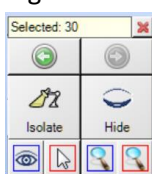
16. Check the plates and see that they are transparent. This is automatically set by the IDA-ICE Add-on.



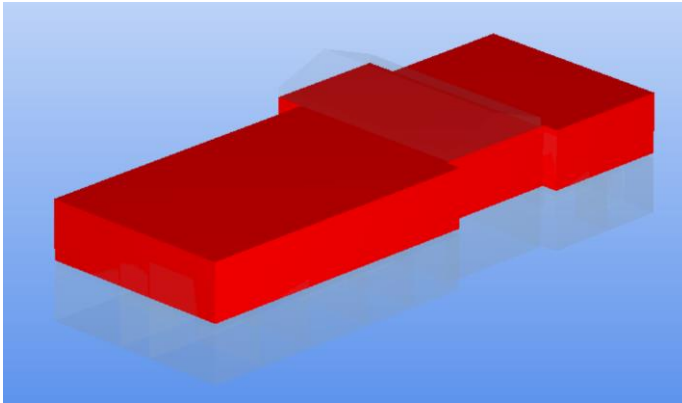
17. Check the spaces. Start with Is Building Body property and select <no value>.



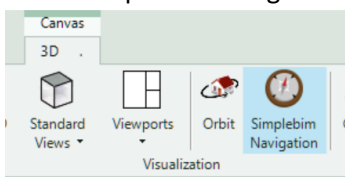
18. Right click in the 3D view and select Isolate.



19. It is now possible to select the spaces covering a whole floor.



20. Drag both of these from the 3D view to Yes. To be able to drag from the 3D view, you have to select Simplebim Navigation mode.



21. Select <no value> and drag to No.

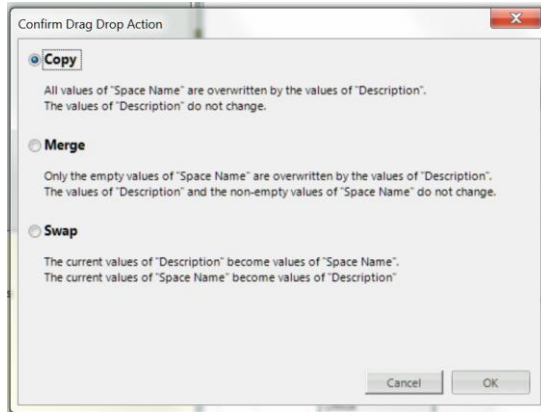
22. Go to the Space Name property. Find the Description column in the Excluded Text Properties for Space table.

Excluded Text Properties for Space					
		Composition type	Description	Details Justification	Fill Background Pen
None	ELEMENT	Break Room	Centered	Transpa	
		Building Gross Area			
		Corridor			
		Lobby			
		Meat.			
		Meeting			
		Office			
		Toilet			
		WC			

23. Drag and drop this column to the Space Name Values.

Space	✓
Space Name	✓
Values	
Building Gross Area	2
ZON - 001	1
ZON - 002	1
ZON - 003	1
ZON - 004	4
ZON - 006	1
ZON - 008	16
ZON - 012	1
ZON - 015	2
ZON - 016	1

24. Confirm that you want to Copy this information.



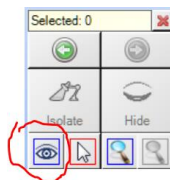
25. You can now drag Toilet to WC and Meat. To Meeting.

Property Value Editor	
Space	✓
Space Name	✓
Values	
Break Room	1
Building Gross Area	2
Corridor	3
Lobby	1
Meat.	2
Meeting	1
Office	18
Toilet	1
WC	1

26. Double click on Meeting and change the name to Meeting room.


Property Value Editor	
Space	✓
Space Name	✓
Values	
Break Room	1
Building Gross Area	2
Corridor	3
Lobby	1
Meeting room	3
Office	18
WC	2


27. Right click in the 3D view and select to show all geometry.



28. Check the walls. Start with Building Element Construction Type property.

Property Value Editor

Wall 

Building Element Construction Type 

Values

Wall 1 0232896968 315	32
Wall 2 0232896968 150	39

29. Find the Name column and drag it to Values and confirm.


Excluded Text Properties for Wall


Editable Properties

Building Element Construction Type	Description	Fire Rating	Layer Assignment Name	Name	Object type	Predefined type
<no value>	<no value>	<no value>	External Walls	Default value	<no value>	<no value>
			Internal Walls	EX 1		
				ex1		
				EXT 3		
				INT 1		
				INT 2		

30. Drag ex1 to EX 1 and Default value to EX 1. Rename EX 1 to EXT 1.

Property Value Editor

Wall 

Building Element Construction Type 



Values

Default value	2
EX 1	25
ex1	1
EXT 3	10
INT 1	4
INT 2	29

31. Go to Building Element is External property.

32. Select Home > Add Palette > Properties to open Properties palette. Drag <no value> to the palette. Expand Building Element Construction and select EXT 1 and EXT 3. Drag these to Yes in Building Element is External property. Drag INT 1 and INT 2 to No. Close the palette.

Properties: Wall (71)



Property	Value = Objects	
Building Element Construction...	<4 different values>	
28	EXT 1	?
10	EXT 3	?
4	INT 1	?
29	INT 2	?
Building Element Is External	<no values>	

Building Element Construction Type


Selected Value 2 of 4 values selected (50%)


Sorted by None

Sort Value n/a

Value Type  Please enter filter 

Property Value Editor

Wall 

Building Element Is External 

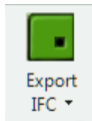
Values

<no value>	
Yes	38
No	33

33. Check the windows and the Building Element Construction Type property. Find the Name column and drag it to Values and confirm.

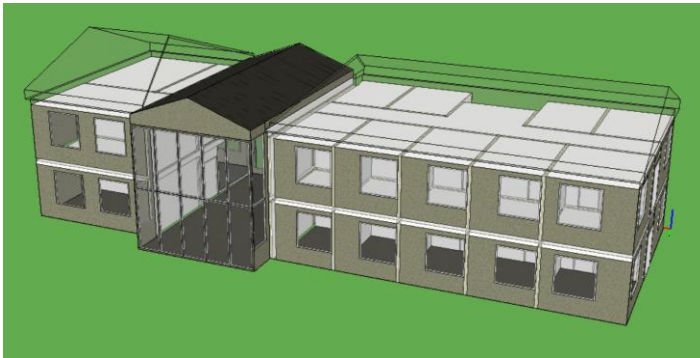
Property Value Editor	
Window	✓
Building Element Construction Type	✓
Values	
Office	30
Lobby	8
Glass Block	2
Atrium	33

34. Export the modified IFC model. Note that the exported IFC file is much smaller than the original.



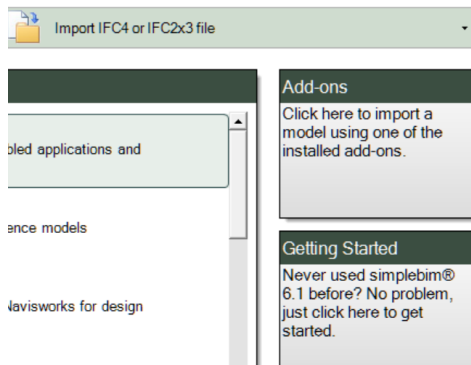
35. Import the IFC model into IDA ICE. The import is much faster. Look at the IFC model in the 3D view and note that the building bodies and curtain walls look good. Also look at the IFC mapping.

36. Create zones from all IFC spaces.

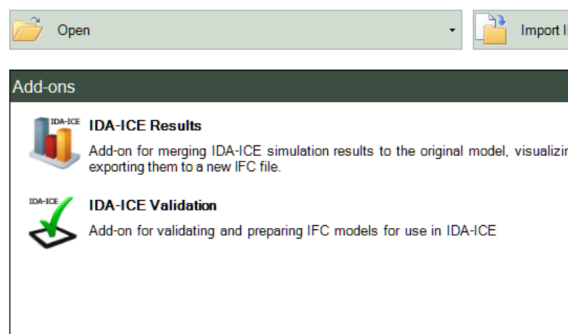


Exercise 2

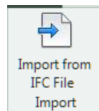
1. Use the IDA ICE model that was the result of Exercise1. Run heating load and cooling load simulations.
2. Select Tools > Export to IFC... and export the heating and cooling load results to IFC.
3. Start simplebim. Click on Add-ons to access IDA-ICE Add-on.



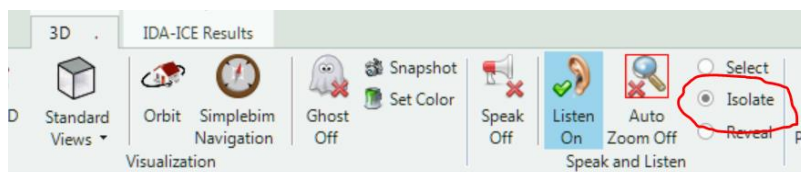
4. Click IDA-ICE Results and open SmalOffice.ifc.



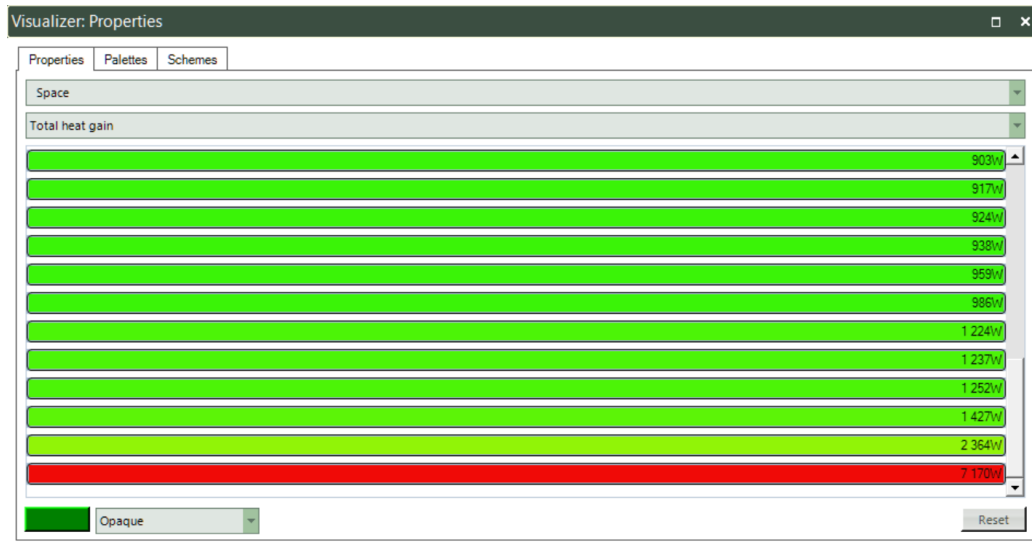
5. Import the IFC file you exported from IDA ICE



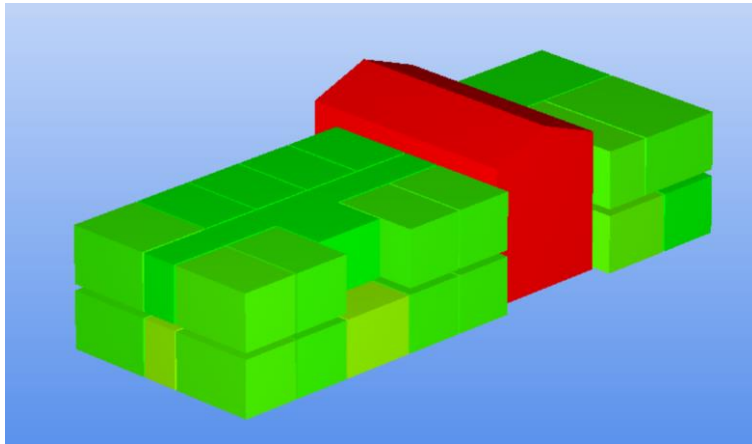
6. Set Isolate in the 3D canvas.



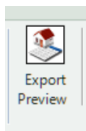
7. Select Space and Total heat gain in Visualizer: Properties. Total heat gain is the Room unit cool from the IDA ICE cooling load calculation.



8. Select all values. The spaces are colored in the 3D view.



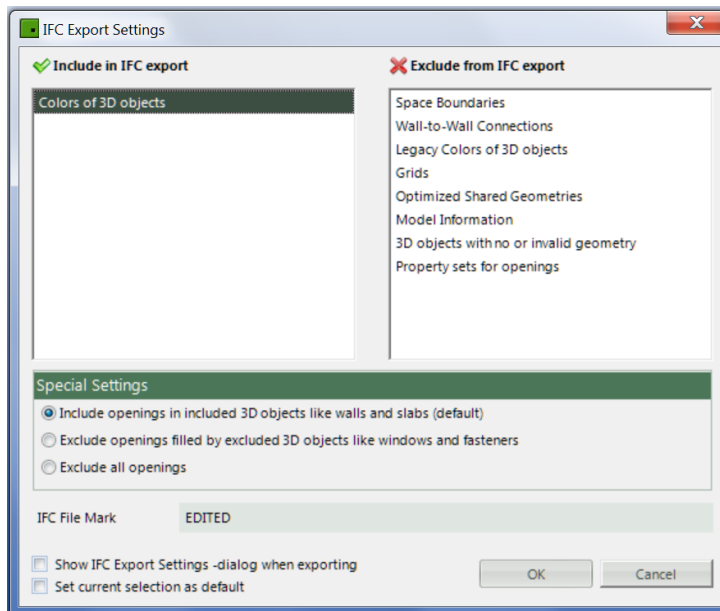
9. Do the same thing for other properties if you like.
Exhaust air flowrate = Cooling load > Ret airflow
Ventilation air flowrate = Cooling load > Sup airflow
Cooling dry bulb = Cooling load > Temp
Heating dry bulb = Heating load > Temp
Total heat gain = Cooling load > Room unit cool
Total heat loss = Heating load > Room unit heat
10. Go to Export Preview to look at what will be exported.



11. Select Space. Hold down the ctrl-key and move the mouse in the 3D view to see the properties of the spaces.

Objects	
Object Classes	
Building	1
Building Storey	3
Curtain Wall	1
Door	33
Member	27
Model Information	1
Plate	10
Project	1
Site	1
Slab	19
Space	30
Wall	71
Window	73

12. Open IFC Export Settings and drag Colors of 3D objects to Include in IFC export if you also would like to export the current colors of the spaces.



13. Export the IFC file.