



## IFC – Making it Work For Your Business



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What Revit Wants

 AUTODESK® EXPERT ELITE

### Setting up your Revit environment in your office

Install Revit 2015

Install latest updates

Install IFC addin

Copy the resource text files and RTE template (provided)

You may want to tweak these to suit your own situation

Prepare the import and export mappings

### What we can do in the Lab session

We can still test and observe the IFC link functionality, peruse cache file

Look at doing some modelling around IFC

And exporting back to contractor

### Step by step

1. Don't panic
2. Revit Options, File Locations – Check top of list for template. Close options.
3. Open - IFC Options. This is for import. Save this mapping. Load the new one from samples.
4. Make a 'new' Project
5. Insert ribbon, Link IFC – sample file provided. Observe IFC: Reading in the status bar. Some of this takes time, make coffee? Note item count in the status bar,.
6. Navigate and observe the IFC link in 3D:  
Use ViewCube  
Modify Graphic Display Options to make it look better (Shaded Mode, Edges off, possibly shadows?)  
Try measuring or making a label? Modify – Measure. Consider workplane
7. and in Plan  
Switch to Level 1 and observe how it appears, linework
8. Attempt to model in context  
Draw a wall around a few of the building façade edges
9. Tab select a slab and observe how it 'ignores' the import mapping when using Link IFC
10. Now, Save and Close this host project
11. Navigate to the 'cache' file, filename will end like this .ifc.rvt
12. Open that file directly in Revit
13. Navigate around and try selecting things, observe their properties. Try to modify or delete things.
14. Close the cache file (do not save)
15. Open the Host Project
16. After modelling some geometry, perhaps a few walls or a roof, then
17. Unload the IFC link
18. IFC Export Options. Save this mapping. Load the new one from samples.
19. Export IFC
20. Observe the settings in the Export dialog.
21. Close the dialog
22. Go to IFC Options to look at mapping
23. Import the sample mapping 'all to Generic Model / proxies'
24. Close the IFC Options
25. Check for an IFCEXportAs parameter
26. Delete it from project
27. Now, Export IFC to 2x3 version
28. Finally, if we have time, use the 'open' method to open that IFC and query its properties. Check category matches mapping.
29. Attempt to modify that opened file



### Sample steps for BEP compliant conversions

Open a Revit 2015 project, then Link IFC
If this fails, Try Open IFC
Close project, open IFC cache
Save as - temporary Revit 2015 rvt file
Delete orange voids in 2015
<i>View Filter: "Reference" is greater than nothing, untick to hide real objects</i>
Unhide all categories, set view to Coordination
Check item count against Bimsight
Link Levels and Grids file, Bind, then Ungroup, and Pin
Make DWG transform if there isn't already one
Link the DWG transform at origin to origin
Select all in 3D, switch to Floor Plan and move... untick constrain, but never tick disjoint
Move point to point in Plan view
Check section view for height...
Move point to perpendicular in Section view
Delete imported Grids
Remove the DWG link
Link coordinate file
Acquire coordinates
Unclip and move project base point in plan
Location: Adelaide (Adelaide, Australia)
Remove coordinate link
Delete the locator elements
Set Starting View details
Delete Schedules
Delete redundant views
Enable Worksets
Selective purge - only once - if you are too greedy it might delete and purge families!
Set up 3D view
Save as - FINAL Revit 2015 rvt file (this is a central)

### Builtin Resources

Revit makes available the following IFC-specific files:

IFC Metric Template.rte. This file allows you to create new projects that are already set to the IFC standard.

IFC Parameter Upgrade.rvt. This file enables you to upgrade an existing project to contain IFC parameters by reading the instructions contained in the IFC Parameter Upgrade.rvt file.

IFC Shared Parameters.txt. This file contains the shared IFC parameters if you want to manually update an existing project to contain all or some of these parameters.

Note: It is recommended that you use the IFC Parameter Upgrade.rvt file. If you use IFC Shared Parameters.txt, you must add parameters one at a time, setting the correct categories for each. If you use IFC Parameter Upgrade.rvt, you can use the Transfer Project Standards tool to add the parameters in one operation.



### IFC Link in Revit 2015 (and 2016)

You must set a default project template before using the Link IFC function. This is the same as Revit 2013 / 2014 etc - you could not import IFC without a default template

In Revit 2015 it is faster to Link an IFC rather than opening one

When you Link IFC, Revit 2015 actually creates a .rvt file from the IFC and then uses that data as the link. The process is quite seamless from the user side, but it is something to keep in mind.

Be very wary of purging. It seems in later updates of Revit 2015 that purging these IFC cache files can be destructive and result in deleted geometry - something that purge should never really do.

Revit 2015 has brilliant IFC Link capability - it is fast and accurate, and it even brings in colours for *most* IFC elements. We can leverage this to quickly create RVT files from IFCs, and then downgrade to other Revit versions if necessary. Here's how:

1. Select or create an appropriate Revit IFC template (RTE file) that is clean and has only two phases
2. Set it at the top of the Template list in Revit 2015 Options - this is the template that will be used when Linking an IFC file. Interestingly, Revit will ignore the IFC Import template dialog setting when Linking.
3. Link an IFC file into an open project.
4. **Locate the cache version RVT file that Revit created** in the same folder as the linked IFC
5. Copy that RVT somewhere else so you can modify it freely
6. Open the RVT that Revit created while linking the IFC
7. **Important: Delete the IFCExportAs Project Parameters (there might be more than one)**. If you don't, it can cause headaches when exporting.
8. Use [sample IFC Export Classes text file for Revit 2015](#) which pushes everything into IFCBuildingElementProxy. The reason for this is that we want 100% geometry fidelity, but we are not concerned with editability.
9. When exporting from Revit 2015, choose **IFC 2x3 Coordination View 2.0**
10. Import back into a previous version of Revit (keep in mind points above about IFC import templates). The resulting elements will all be in-place Generic Models, with an Import Symbol inside. The file size will likely be pretty big, like 6 times the size of the original IFC.

### When and how to neutralize Survey coordinates for IFC Export from Revit

When exporting to IFC, you may find that Revit feeds the Survey Coordinates (or shared coordinates) to the resulting IFC file, when in fact you want it to be based on Project Coordinates.

If your project team is using origin-to-origin linking, it will be almost vital that you neutralize the Revit survey coordinates immediately prior to exporting to IFC.

This is quite easy:

1. Make a new file based on a blank template
2. Insert a origin locator dwg and draw a couple of model lines over the top (this is purely to give you something to "pick")
3. Save and close this blank RVT file (and keep it for future use)
4. Link it into your live Revit project
5. Use Acquire Coordinates and select the new, fresh, blank RVT file
6. Save As this temporary RVT with neutralized survey coordinates to somewhere
7. Now Export your IFC

Your resulting IFC file won't be confused about which coordinate system to use - it should now Append to Navisworks and other software using the same origin-to-origin coordinate system as that in the originating Revit project.

### Parameters

If you want to export parameters from Revit to an IFC file, note that the parameters should not be grouped under the category "IFC parameter", but under a different (eg, .. ID data, text) category.

This is because the 'IFC' parameter group is for inbuilt / standard IFC parameters.

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