

The **SECRET** of copying Inventor Assemblies

*Your guide to the complex world of copying
referenced components in Autodesk Inventor*



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The Secret of copying Autodesk Inventor Assemblies

*A guide to the complex world of Inventor part and assembly
files and their hyperlinks*

Paul Munford
9/1/2014



The CAD Setter Out is a blog dedicated to sharing tips and tricks for creating technical drawings using CAD.

I firmly believe that creating drawings with your CAD software should be intuitive and fun. I don't want your CAD software to negatively affect your creativity or productivity.

The focus is on creating shop drawings for the construction industry (because that's what I do) using AutoCAD and Autodesk Inventor (because that's what I use).

You are all welcome :D

*Paul Munford
@Cadsetterout*

Contents

The Secret of copying Autodesk Inventor Assemblies	2
Preface	5
Introduction	6
Copying Assemblies with the Vault 'Copy Design' Tool	7
Copying Assemblies with Inventor's 'Copy Component' tool	8
Copying an Assembly with the Design Assistant.	11
Copying an Assembly with the iLogic Design Copy Tool	14
Using an Inventor iAssembly to create multiple designs	18
Using iCopy to create copies of Assemblies.....	20
Copying Assemblies with the 'Copy Design' tool from the SDK	22
Copying Assemblies with Pack n Go	24
How to copy an Autodesk Inventor Assembly – Conclusions	32
Resources	34
About the Author.....	35

Preface

This eBook arose out of the many questions I read on the Autodesk Forums regarding the copying of Autodesk Inventor files.

Since I wrote the original post this book is based on back in 2011 it has been viewed nearly 20,000 times!

<http://cadso.co/CopyAssembly>

I've re-packed this post as an eBook so that you can download it and print it off. Please feel free to share this eBook with your colleagues and friends.

Don't miss the additional bonus chapter at the end on using Pack n Go to copy assemblies.

Questions or comments? Please email me:

Paul@Cadsetterout.com

Introduction

If you are new to Inventor, you can get tripped up when it comes to copying an Assembly (IAM) file. *This is because an IAM file only contains a list of links to other Assembly and part files.*

If you want to create a copy of an Assembly, you also need to copy all the Sub Assembly and Part files (Components) that go with it.

And that's not all. If you are copying files within a Project, you will also need to re-name all the components, otherwise Inventor may find the wrong version of the component that you intended to be used in the new Assembly.

And that's not all! *An Assembly file contains a list of Hyperlinks to other Assembly and part files.* If you copy, move and rename all the sub components of an Assembly, you will also need to repair all those Internal Hyperlinks.

Note: *Some of these techniques can also be applied to copying Drawing files (DWG or IDW)*

That sounds like a lot of work!

It can be! So it's worth considering your options before you start.

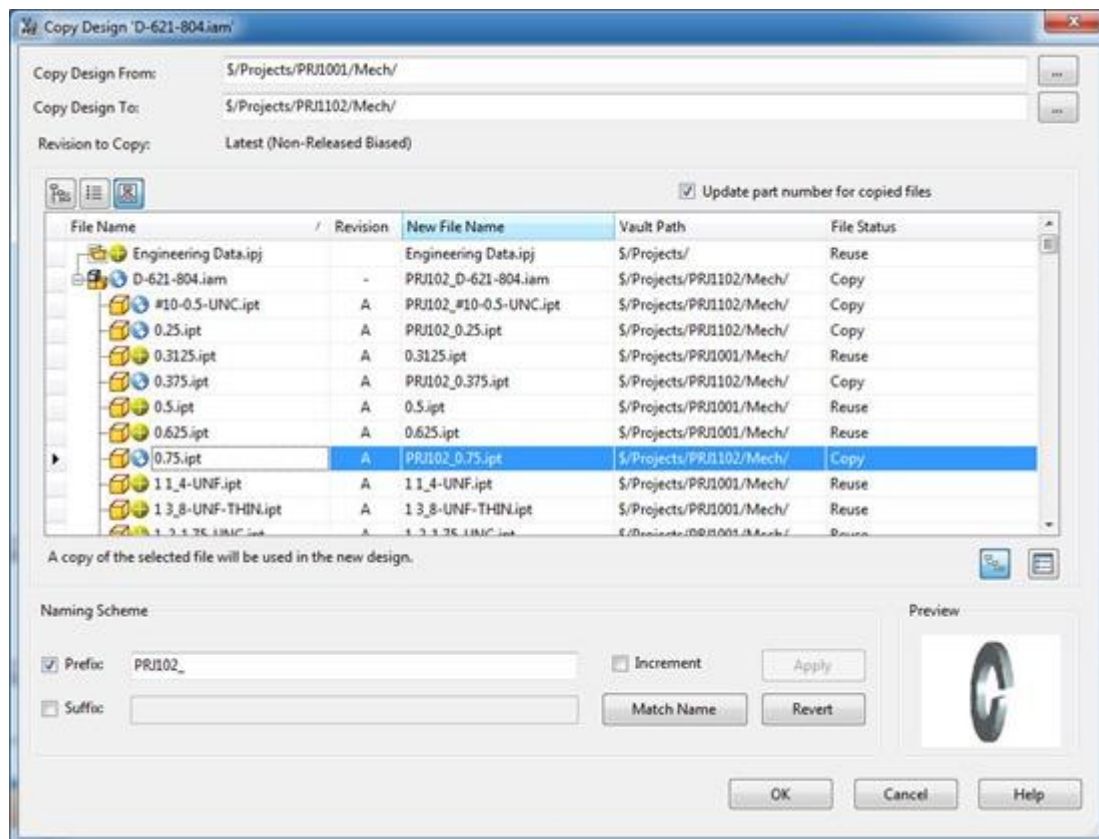
There are Seven methods of copying an Assembly file (that I know of).

- [Use the Vault's 'Copy Design' tool](#)
- [Use Inventor's 'Copy Component' tool](#)
- [Use the Inventor Design Assistant](#)
- [Use the iLogic Design Copy Tool](#)
- [Use an iAssembly instead](#)
- [Use iCopy](#)
- [Use the Copy Design tool from the SDK](#)

Copying Assemblies with the Vault 'Copy Design' Tool

Copying Assembly files with the Vault is very simple, This is the only downside of this technique.

If you are lucky enough to be using the Vault to manage your Data, than I guess you can stop reading now!



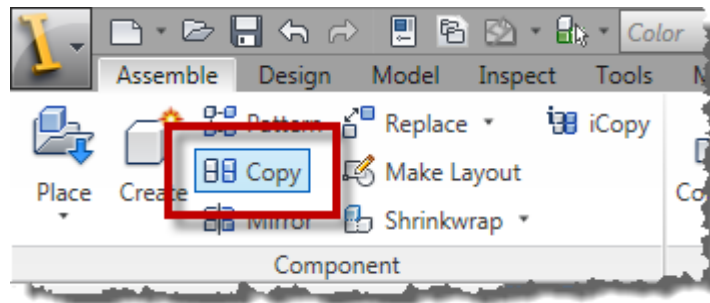
Thanks very much to [Steve Bedder](#) of Autodesk for supplying this Vault Screen shot.

Copying Assemblies with Inventor's 'Copy Component' tool

To copy an Assembly with the 'Copy Component' tool, you first need to open the Assembly you wish to work with.

To copy the entire Assembly navigate to the:

Assemble Tab > Component Panel > Copy



or right click on your selection of Components and choose 'Copy'.

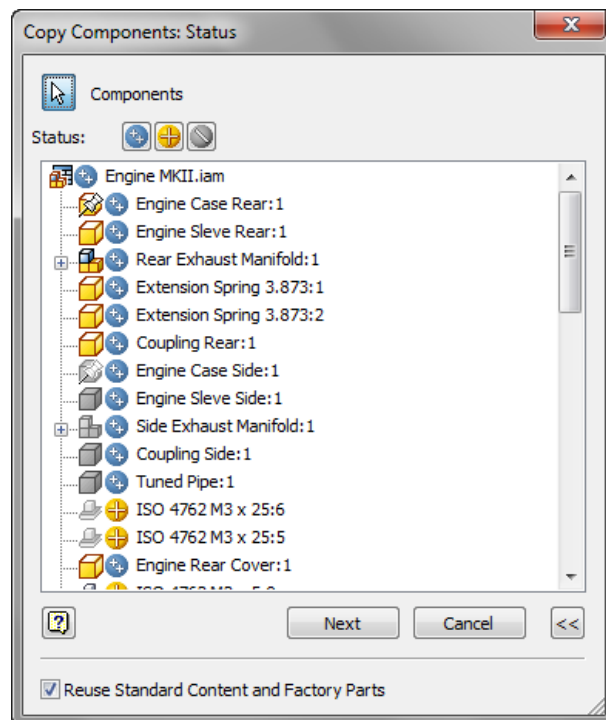
Tip: In Inventor 2015 the Copy tool has been moved to a drop down panel

Copy Components

You will be taken to the 'Copy Components: Status' Dialogue box, which allows you to choose whether to copy or reuse the components that you have selected.

You can select and de-select components from the Assembly browser to add them to the list.

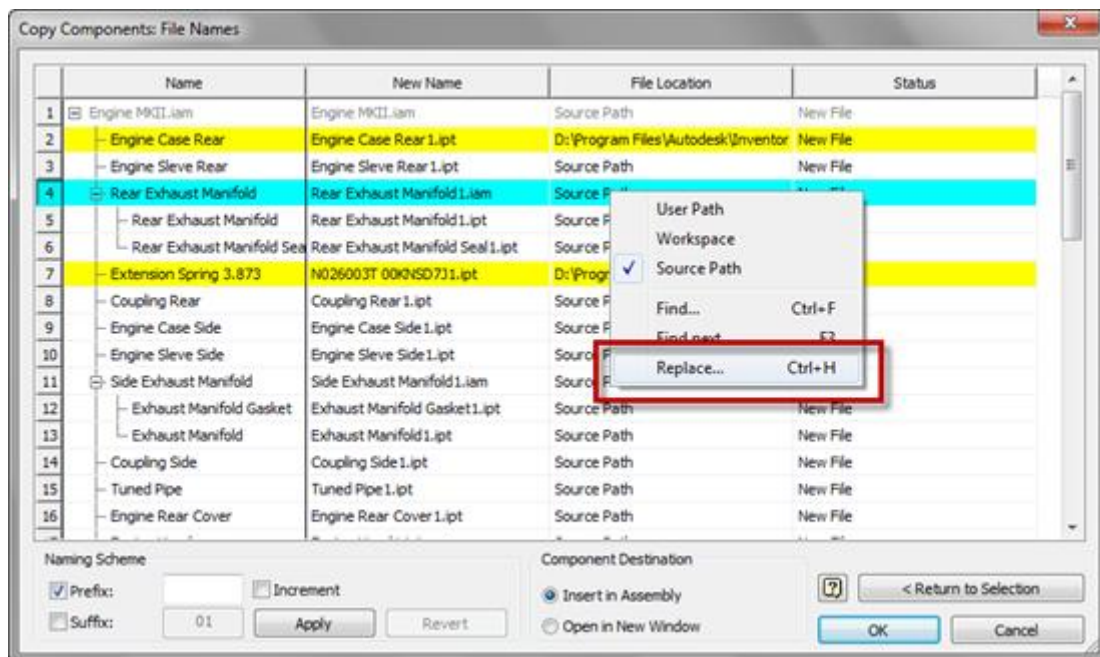
Hit 'Next' when you are happy with your selection.



Edit File names and paths

The next Dialogue is the 'Copy Components: File Names' Box. This dialogue gives you a lot of options to chose where you'd like to save your copied components and what you'd like them to be called.

You can use the 'Prefix' and 'Suffix' boxes to Automatically revise your file names, or you can edit each one by hand.



Right click over a field in the 'File Location' column to set a new path.

- 'Source Path' will save the new file in the same location as the old file (probably not a good idea!).
- 'Workspace' will save the new file in the root folder of your workspace (Again, probably not what you want!).
- 'User Path' allows you to set your own path. Copy and paste is your friend here.

Tip: Right click over the 'New Name' or 'File Location' fields and chose 'Find and replace' to quickly edit repeated text strings.

Finally, you have the choice whether you want to place your copied Assembly into your current assembly – or create a new file (Probably create a new file).

Hit OK, and Inventor will create a new copy of your Assembly, including copies of all the assembly's components, and handle all the Internal paths. Very neat.

Conclusions - Copy Design

Inventor's Copy Assembly tool is pretty easy to use and gives you a lot of useful options to re-name and path your components. Unfortunately the Copy Component tool's major downfall is that *it doesn't recognise derived references in part files*.

So if you are using [Skeletal Modelling](#) or the [Multi-body modelling technique](#), this technique is out. You may want to consider using the Design Assistant instead.

Copying an Assembly with the Design Assistant.

Design Assistant is a standalone program that can be opened from inside Inventor or started up separately.

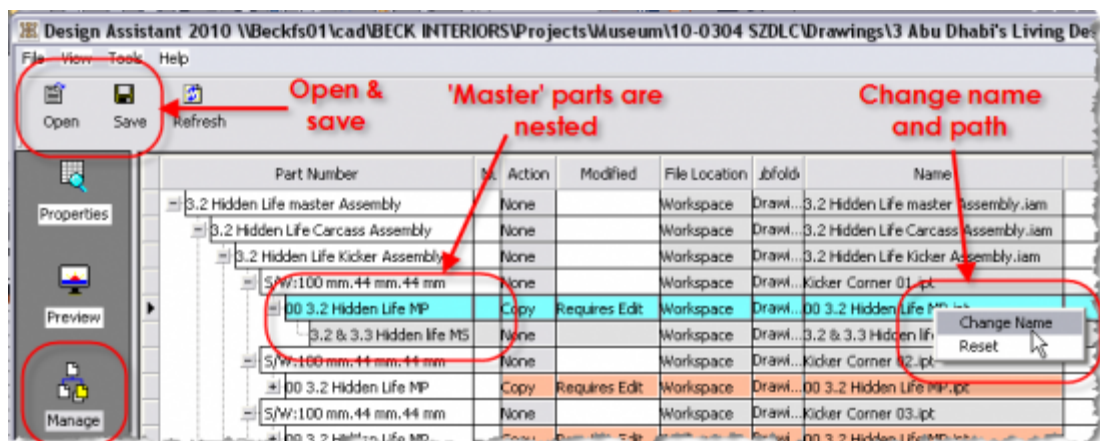
The Design Assistant uses the Inventor Apprentice COM server to edit Inventor files without having to have Inventor running.

While copying Assemblies I recommend that you close Inventor down and open Design Assistant separately.

Look for Design Assistant under:

Windows > Programs > Autodesk > Autodesk Inventor > Design Assistant

Note: When Design Assistant starts up, it will be using the last project that you had open in Inventor. Check that this is correct before you start!



Set your Project file.

Before you start, make sure that you have the correct Project file active.

Go to:

File > Projects...

And make sure that the project is active that contains the Assembly you wish to copy.

Open an Assembly to Copy

Click on the 'Manage' button on the left, and then click on the 'Open' button at the top to open your assembly.

Note: Notice that the 'Tree' layout shows the relationships between the components – including the references of derived parts.

Set an Action

Right click over the 'Action' column and choose 'Copy' to copy a component. You can pick multiple components from the left hand column before you pick an Action.

The note in the 'Modified' column will change to 'Requires Edit' and the Cells will change to an Orange colour to remind you which ones need editing.

Edit the Path and File name

Double click in the 'Name' cell of the component you wish to copy, browse to your new path and rename the part.

You will need to do this for each and every component that is in your Assembly file (Excluding Library parts).

Notice how references of derived parts and components used in more than one Assembly are changed everywhere they are used, all at once.

Save your changes

When you have edited the values of every part that you want to copy, check it! and then check it again! You really don't want to miss out a component at this stage, it could get really confusing....

When you are happy that you've edited all the components that you need to copy, and that the new names and file paths are correct, hit the 'Save' button at the top.

Note: *Until you hit the 'Save' Button, none of the changes will be written out to disk.*

Inventor will create an entirely new Assembly, and will create all the new components on disk while creating all the new file paths (hyperlinks) inside the Assembly file.

If you browse to the folder where you are saving the copy of your Assembly, you will see all the little parts being created.

After the new Assembly has been created, Design Assistant will automatically load the new version of the Assembly.

With a really big Assembly this process can take a little while – Plenty of time for a Cuppa.

Conclusion - Design Assistant

Creating all those new component names and paths for a large Assembly can be really tedious, however If you need to copy an Assembly that has been created using the [Skeletal Modelling technique](#) or [Master part Modelling technique](#), this might be the only way of copying your Assembly (Not counting the Vault).

Tip: *use '[Pack and Go](#)' to copy the entire Assembly out to a 'Work in progress' project location and then use the Design Assistant to rename, rather than copy your components.*

This saves time and effort, because you don't have to browse to a new file location each time. When you are done, you can copy the entire set of files back into your Project location.

Copying an Assembly with the iLogic Design Copy Tool

The iLogic Design Copy tool was introduced in the Inventor 2011 Subscription Bonus pack 1, and from Inventor 2012 is in the box.

The iLogic Design copy tool was introduced to help copy Parts and Assemblies that contain - or reference iLogic's .ILOGICVB 'Rules', but you don't have to be copying an iLogic Part or Assembly to take advantage of the tool.

Starting up iLogic Design Copy

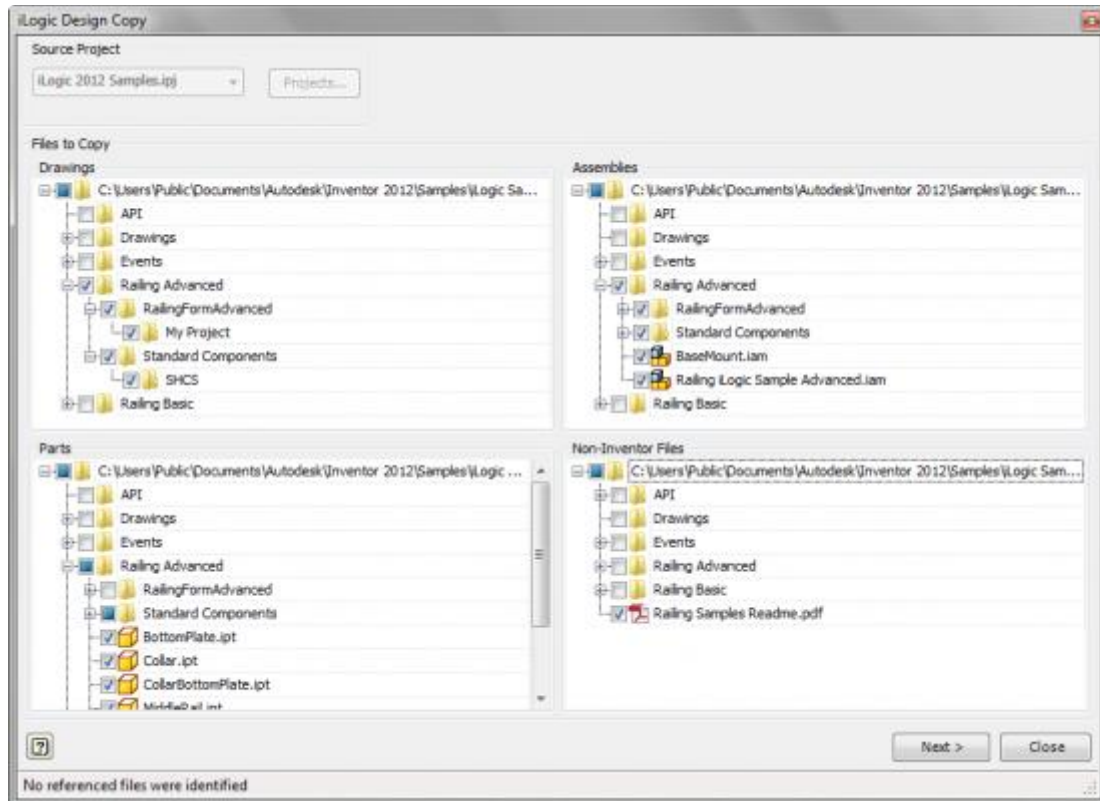
The iLogic Design Copy tool is found under the 'Tools' tab > 'iLogic' panel

Note: The iLogic Design Copy tool is only visible when no other documents are open!



Selecting Files to copy

The iLogic Copy Design tool's dialogue takes a very different approach to the Copy Assembly tool or the Design Assistant.



A series of 'Tree' browsers allow you to pick in ever finer detail which files you wish to copy.

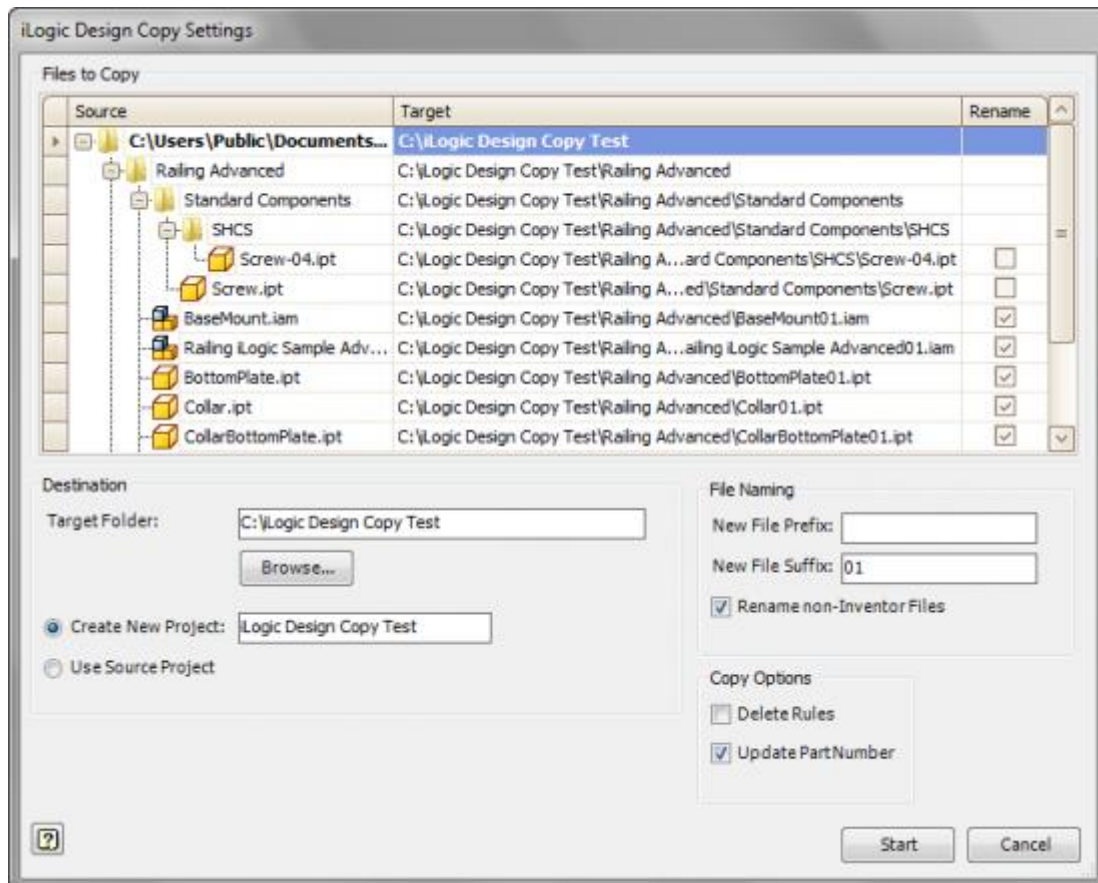
- Use the **Files to copy** tree to pick the folders where the parts are stored (Remember to include Library folders in the search).
- Use the **Assemblies** Tree to pick the Assembly you wish to copy
- The **Parts** Tree will be automatically filled out, but you can add or remove individual files at your whim.
- Use the **Non-Inventor** files tree to add any other relevant files to the selection set.

Hit Next when you're happy with what you've selected.

Re-Naming the Files

The iLogic Design Copy tool allows you to add your own suffix or prefix onto the component names.

You can't change the file names completely, but you can choose not to change a file name by un-checking the box in the 'Rename' column.



Tip: You can see an excellent Video of [the iLogic Design Copy Tool in Action](#) on the Inventor Wiki Site.

Conclusion - iLogic copy

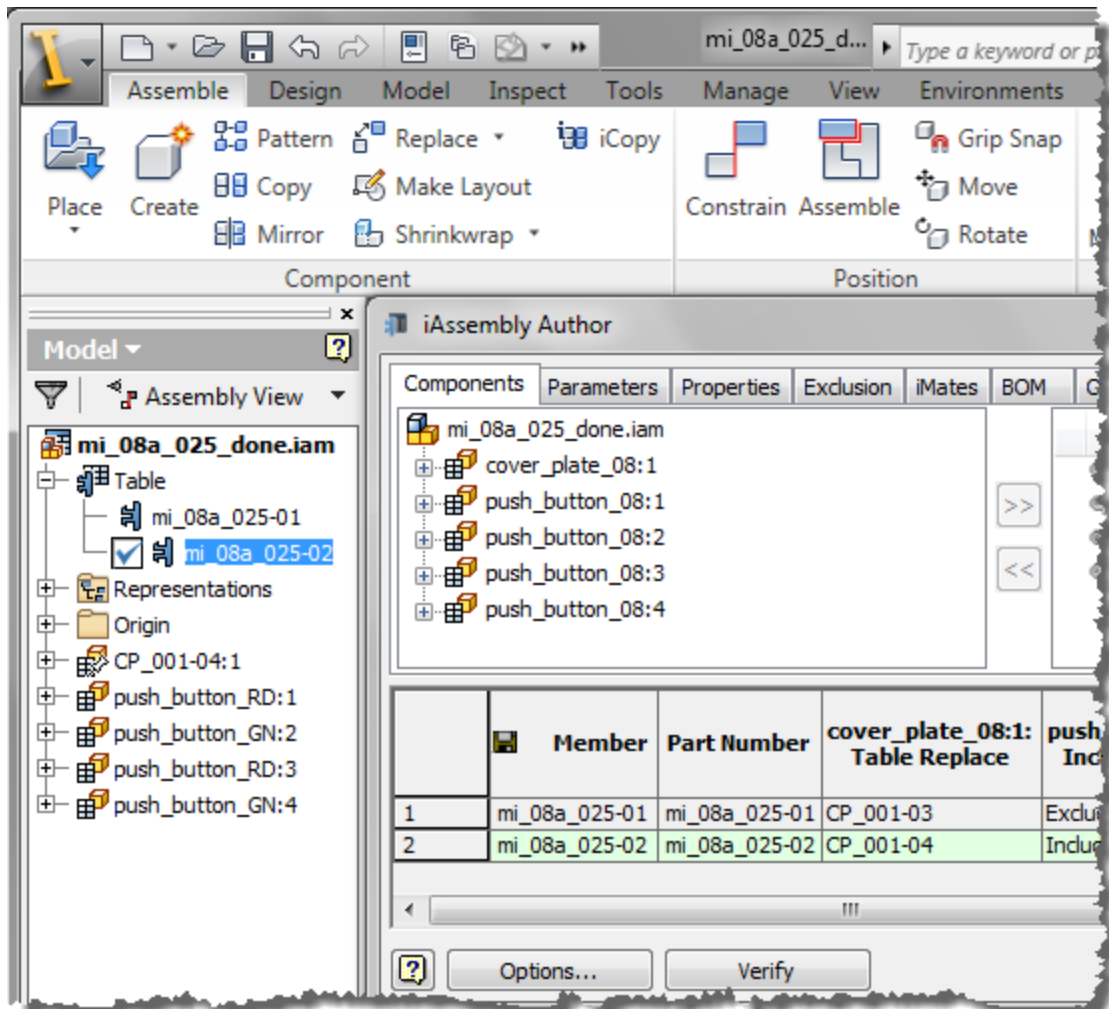
The iLogic Design Copy Tool is a well thought out departure from the previous examples.

The fact that the component names can't be changed in their entirety feels limiting, but I guess that if you know about this and plan for it in advance it shouldn't be a problem.

Thanks very much to [Mark Flayler of IMAGINiT Manufacturing Solutions](#) for bringing this new tool to my attention.

Using an Inventor iAssembly to create multiple designs

Much like iParts, iAssemblies are table driven configurable Assemblies that are great for when you have a limited number of variations to a design and you know what configurations you are going to need in advance.



You can use an iAssembly in one of three ways;

You could use the iAssembly on its own, as a 'Drawing Factory'. When you create a drawing from an iAssembly you can chose which of the iAssembly configurations you want to document in the drawing.

You don't need to create a new copy of the iAssambly (and it's components) each time to document the different versions of the design.

You can also use an iAssembly as a sub assembly within a Master Assembly. The iAssembly will reference the correct configuration of the parts it contains, so you don't need to create new copies of all its components each time.

Tip: *iAssemblies that contain iParts which have Custom columns can have new members added to the iAssembly on the fly as the iAssembly is inserted into a Master assembly. You could use this technique to generate entire assemblies!*

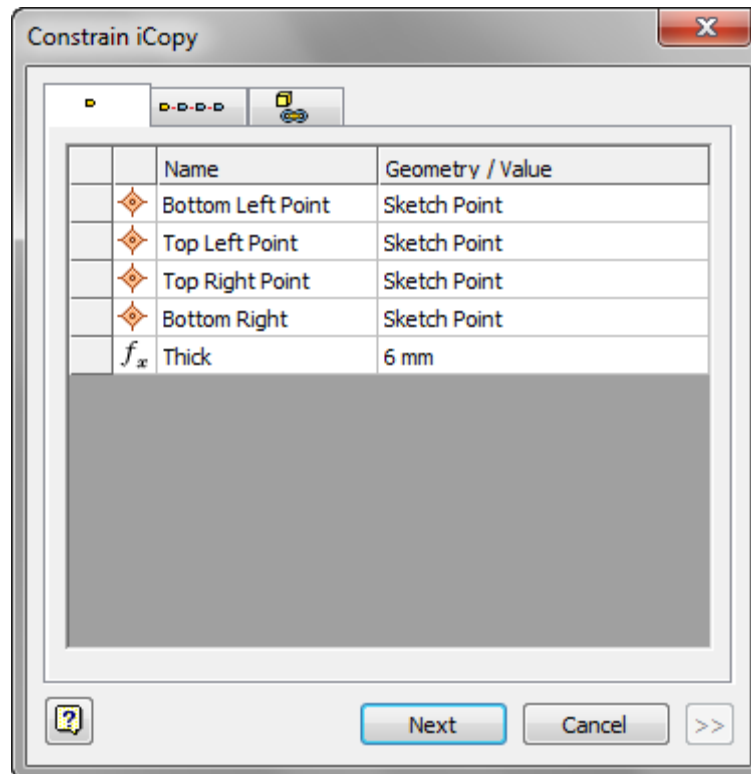
If you do need to copy an iAssembly (Perhaps to create an archive version before you make changes to the iAssembly table, or the components that belong to the iAssembly) you could use Pack and Go. Otherwise you will need to use 'Copy Assembly' or the Design Assistant, as described above.

Conclusion - iAssemblies

If you know in advance that you will need to create a limited number of variations of a design (Think Kitchen units), it is worth investing the time in creating iParts and iAssemblies. This will save you time and effort down the line.

Using iCopy to create copies of Assemblies

[iCopy](#) is a new tool that was added to Inventor as an [Autodesk Labs](#) plug-in for Inventor 2010. From Inventor 2011, iCopy is included in Inventor.



iCopy is slightly different from an iAssembly, in that the iCopy factory assembly uses the [skeletal modelling](#) technique to create infinite sizes of a design.

iCopy assemblies are used in conjunction with a 'Skelton' part (much like the Frame Generator).

iCopy handles the creation and naming of the new assembly file and all its component parts.

iCopy can also be used to automate adding patterns of Assemblies, like rungs on a ladder or curtain walling panels.

Tip: Click [this link](#) for a more in depth tutorial on iCopy

Conclusion - iCopy

Like iAssemblies, iCopy is great if you know in advance that you are going to need a number of variations of a design.

iCopy is much more flexible than iAssemblies and can be used to quickly create infinite sizes of a design (Think Doors and Windows).

Note: *There is no reason why iAssemblies and iCopy couldn't be used in conjunction with each other (although the thought is pretty mind boggling!).*

Copying Assemblies with the 'Copy Design' tool from the SDK

The 'Copy Design' tool is part of the Autodesk Inventor Software Development Kit (SDK).

This tool has actually been developed as an example for people wanting to learn how to use the Inventor Application Programming Interface (API).

Strictly speaking, Copy Design is not intended for the general user, and you will have to load it yourself.

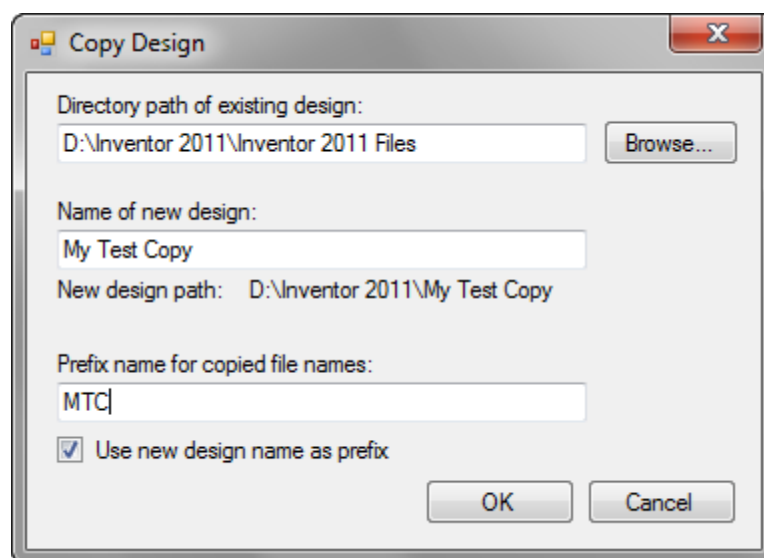
The Copy Design tool uses the Inventor Apprentice COM server (Just like the Design Assistant), so you don't have to have Inventor open to run it (in fact it might be safer if you don't have Inventor running at all).

To load the SDK, close down all your programs and navigate to:

C:\Users\Public\Documents\Autodesk\Inventor 2012\SDK

Note: *This is the location for Autodesk 2012 running under Windows 7. The SDK will always be found in the installation location for the current platform and version of Inventor.*

Double click on the User.MSI file to run the installer. The CopyDesign.EXE will be extracted. Double click on the EXE file to run.



The 'Copy Design' tool could better be described as the 'Copy drawing' tool in that you need to pick a directory file that has a drawing file in it for the Copy Design tool to work.

Note: *The original drawing file must be an IDW. DWG's are not recognized by the Copy Design tool.*

The Copy Design tool will copy any IDW's it finds in the 'existing design' folder into a new folder of your choice, and it will prefix the components names and re-map the hyperlinks if you ask it nicely.

Conclusion - Copy Design tool

Because the Copy Design tool runs outside of the Inventor process it works extremely quickly, however the component renaming abilities are extremely limited.

Having to insert an assembly into an IDW file for the Copy Design tool to recognize is no great hardship, but if you use DWG files this tool is no help at all.

Bonus section

Copying Assemblies with Pack n Go

Autodesk Inventor's 'Pack n Go' tool allows you to create a copy of an design in it's entirety, including all referenced files, in an entirely new location.

You can use Pack n Go to copy a design, but it is also a great tool for Archiving a design - perhaps to keep a copy of your work while you try out a new variation.

In this situation, we are using Pack n Go to speed up the process of copying a design with Design assistant.

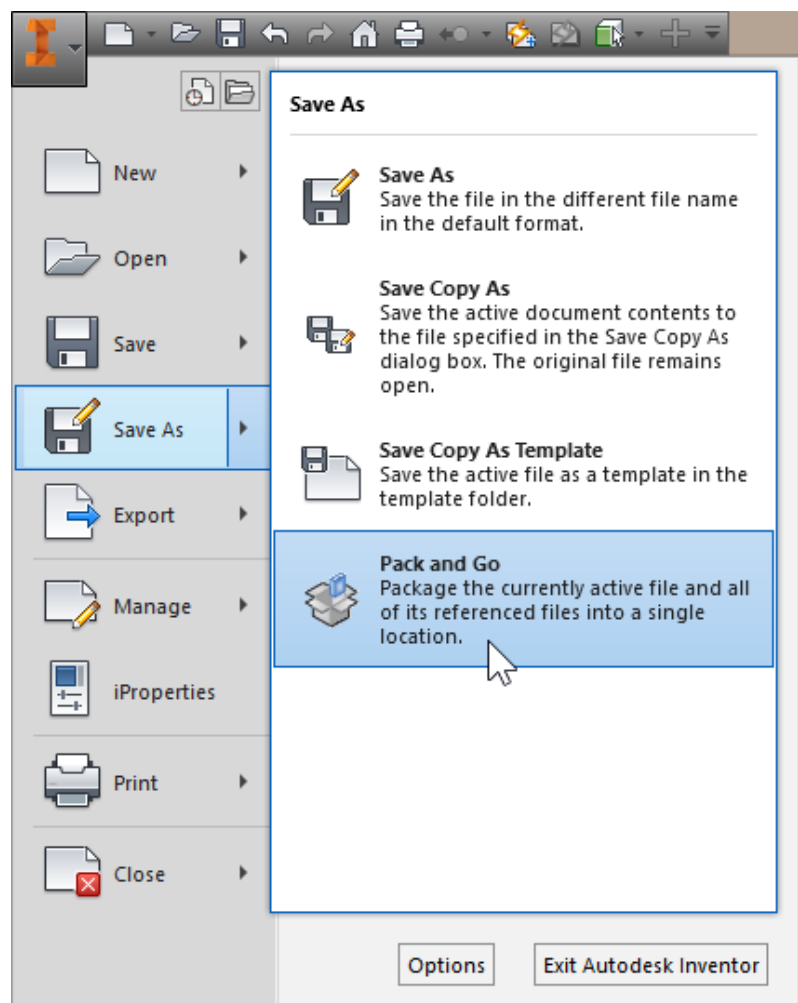
It takes quite a bit of time to re-path all your components in DA. Using PnG you can re-path all your components at once, then use DA's 'find and replace' to quickly re-name your copied components.

To start up Pack and Go

You can run the Pack n Go command from any Parent file. A parent file is a file that references other files such as a DWG, IDW, IPN or IAM.

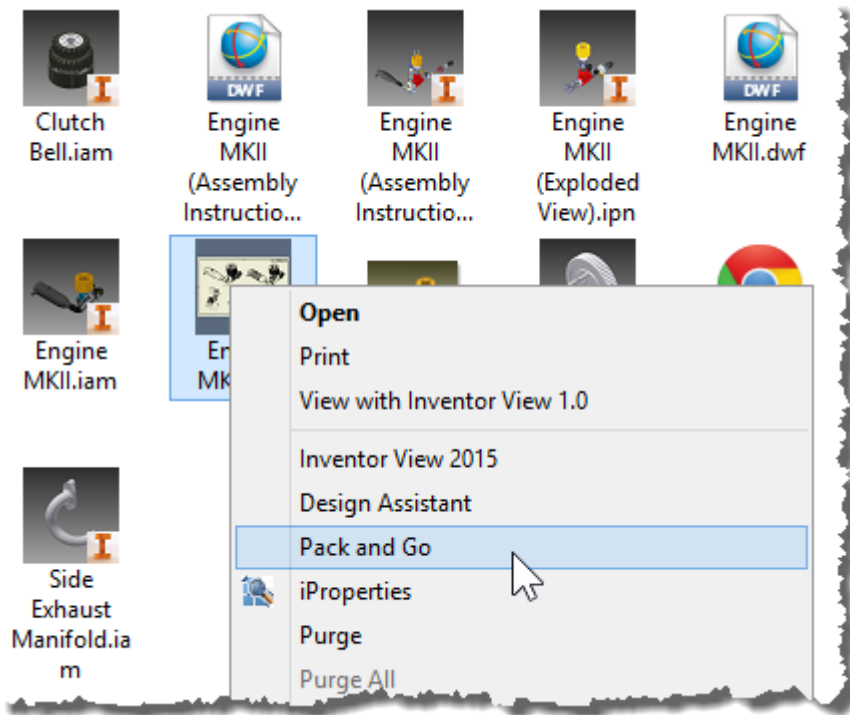
You will find the Pack n Go command under the big Orange 'I', under 'Save As'.

You can also run the Pack



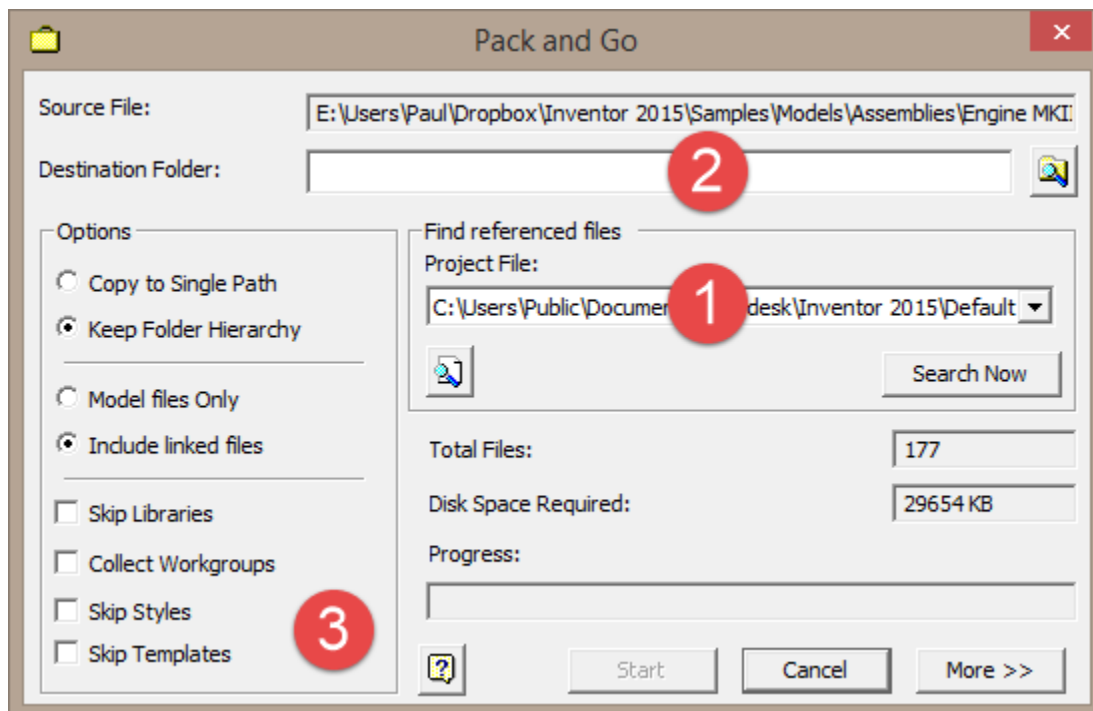
The Secret of copying Autodesk Inventor Assemblies

n Go command by right clicking on any parent file in Windows Explorer.



The Pack n Go Dialogue

The Pack n Go dialogue looks a lot more complicated than it needs to! It's OK we'll step through it together.



1. **Project file.** First double check the reference to your project file. pack n Go will pick the last project file you had open in Inventor.

The project file location tells Inventor where to look for the files related to the parent file you originally picked.

If you use multiple project files, make sure that Inventor picked the right one for the design you want to copy.

2. **Destination folder.** This is where you want Inventor to save the copy of your design. I suggest that you make the location somewhere outside your current project location. You'll see why when we get to the end.

3. **Options.** The first choice to make is to decide weather you want to *keep your folder hierarchy*, or dump all your Inventor components into one folder. I guess this is a choice you'll just have to make for yourself!

Now decide whether you want to include *linked files* - this is data such as linked image files or Excel spread sheets that your design is referencing.

Skip libraries referrers to components that are from the Inventor Content centre.

If you are creating a copy of your design in order to edit it, you will probably want the new copy to reference the same library files.

If you are archiving your design, or sending it out to a third party, you will need to include the library files you used in your design.

Skip styles refers to the styles found in your Design Manager. Once again, you only need to include these if you want to preserve the complete data set.

Finally, *Skip templates* refers to your template files. You probably don't want to include these unless you want to take the files home to work on.

4. You are now ready to hit **SEARCH NOW** to kick Pack n Go into action!

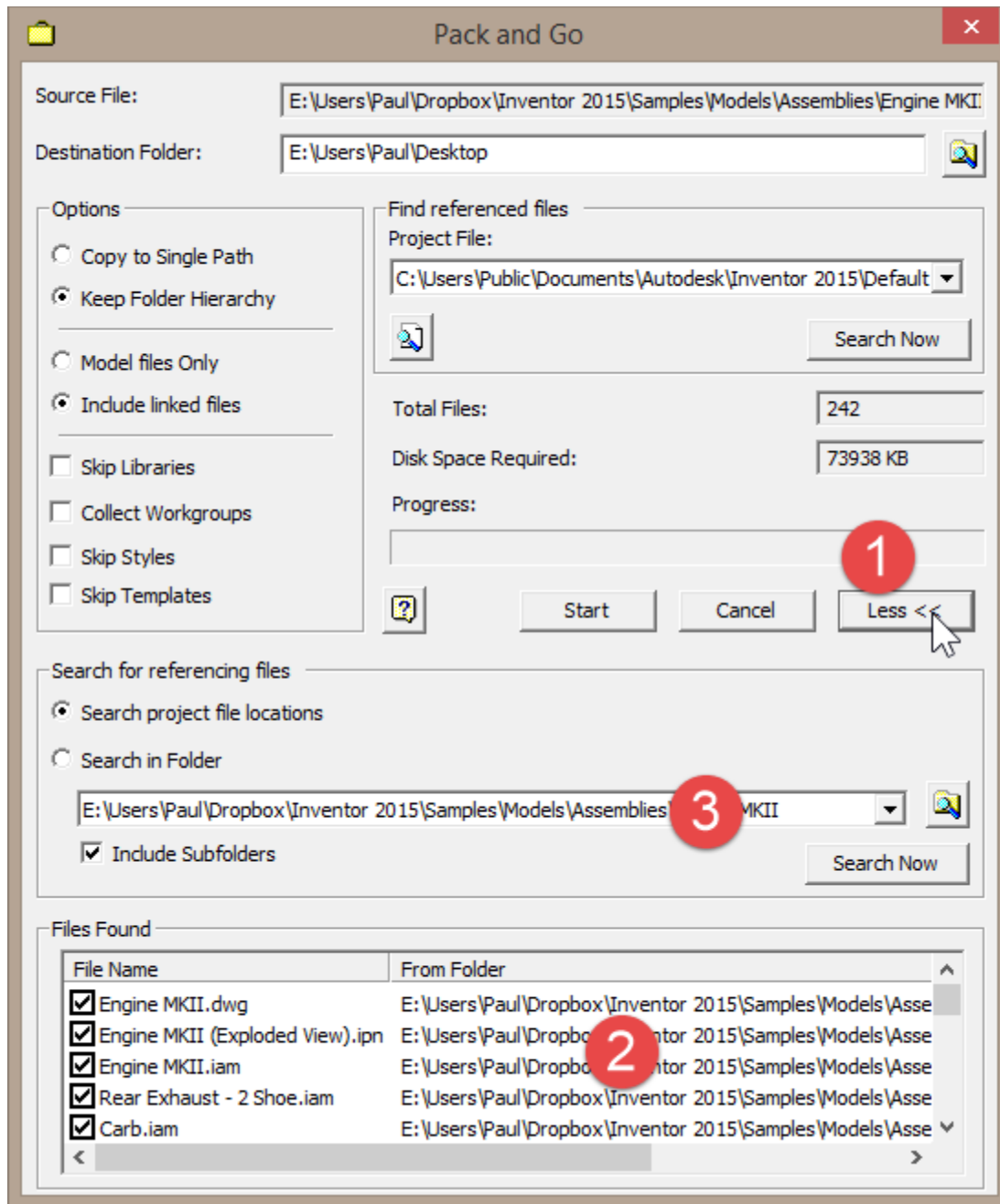
More Pack n Go Dialogue

So - what happened?

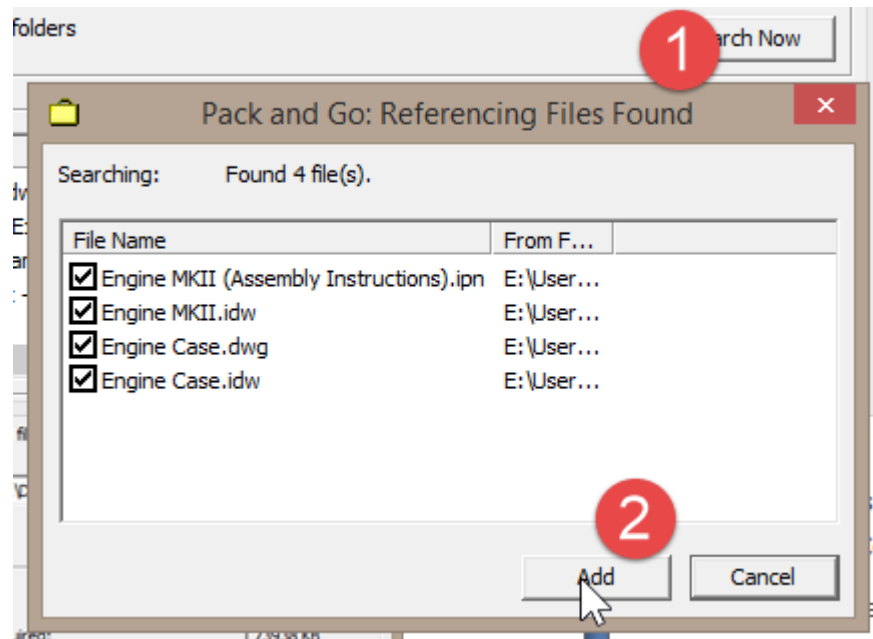
Well - you should have seen the words 'Calculating disk requirements' flash up in the progress bar area.

This is Inventor checking that the location you picked has enough disk space to receive the files you are going to copy.

You won't see anything else unless you click on the 'More' button.



1. **More (or less!).** This button will expand the dialogue.
2. **Files found.** You can now see a list of files that Pack n Go is has found to copy.
You can uncheck files individually if you don't want to include them in your new design.
3. **Search in folder** lets you manually add folders to the search path that are outside the project location.



1. To search, you'll need to use the '**Search now**' button. *This option is also particularly useful to find Parents of your starting file.*

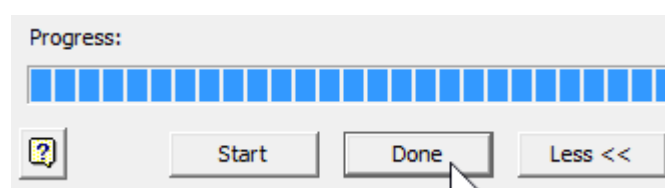
If you chose to start with an Assembly file, and then decide that you want to add presentation files, or drawings to your design copy, you can use this option to discover linked files higher up the hierarchy.

2. Click '**Add**' to add these file to the list of components you wish to copy.

Finally, you've packed - now it's time to GO!

When you are happy that you've located all the files that need to be part of your design, you can click 'Start' to kick things off.

The progress bar will tick along. When pack n Go is finished, the 'Done' button will 'Un-grey' (My word) and you will be able to click it to close the Pack n Go tool.

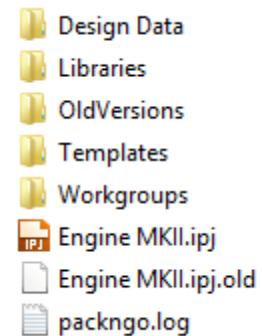


So what happened?

All being well, you should have a new folder in your target destination containing your copied design.

You'll notice that this an entirely self contained copy, with its own project file.

Depending on what options you chose, you will also see a number of folders containing your Styles, Libraries, Design data and Templates.



this package contains all the information you need to forward this design onto a third party.

If you just want to re-use your design as the basis for a new design, you can delete everything but the Component files. Inventor will find the rest of the files it needs on your system.

But don't do that yet!

STOP! - Integrating your new design into your old directory structure

If you want to place this new design into your old directory structure, you have one important step still to go.

Don't forget that both Inventor and Microsoft windows use unique file names to identify the component files that make up your design.

Before you bring your copied design into your CAD directory, you will need to *re-name your components*.

You can do this with the [Design Assistant](#), but before you do *switch to that new project file that Pack n Go just created for you*.

This will ensure that The Design Assistant is referencing your new files - not the old ones that you are trying to copy!

Pack n Go - Conclusions

It's difficult to describe how Pack n Go works without using a lot of words! Actually it's a lot simpler and quicker than I've made it sound.

If you don't have Vault, Pack n Go is an essential tool to use when copying or archiving your design.

Using pack n Go in conjunction with Design Assistant. is the fastest way to copy and re-name your designs, until you can get your hands on Vault!

How to copy an Autodesk Inventor Assembly – Conclusions

Like all things Inventor, it pays to spend some time planning on what you are going to do with your Assembly before you build it.

Design Assistant is OK, but I wish it had the Copy/Paste and Find/Replace tools of 'Copy Assembly'.

Copy Assembly is OK, but I wish it recognized components from my Master Part based Assemblies.

iCopy and iAssemblies are great for what they are intended for – but iCopy is difficult to apply retrospectively, and iAssemblies can be limiting.

I am extremely encouraged by the iLogic Copy Design tool, and I am looking forward to using this new tool in earnest.

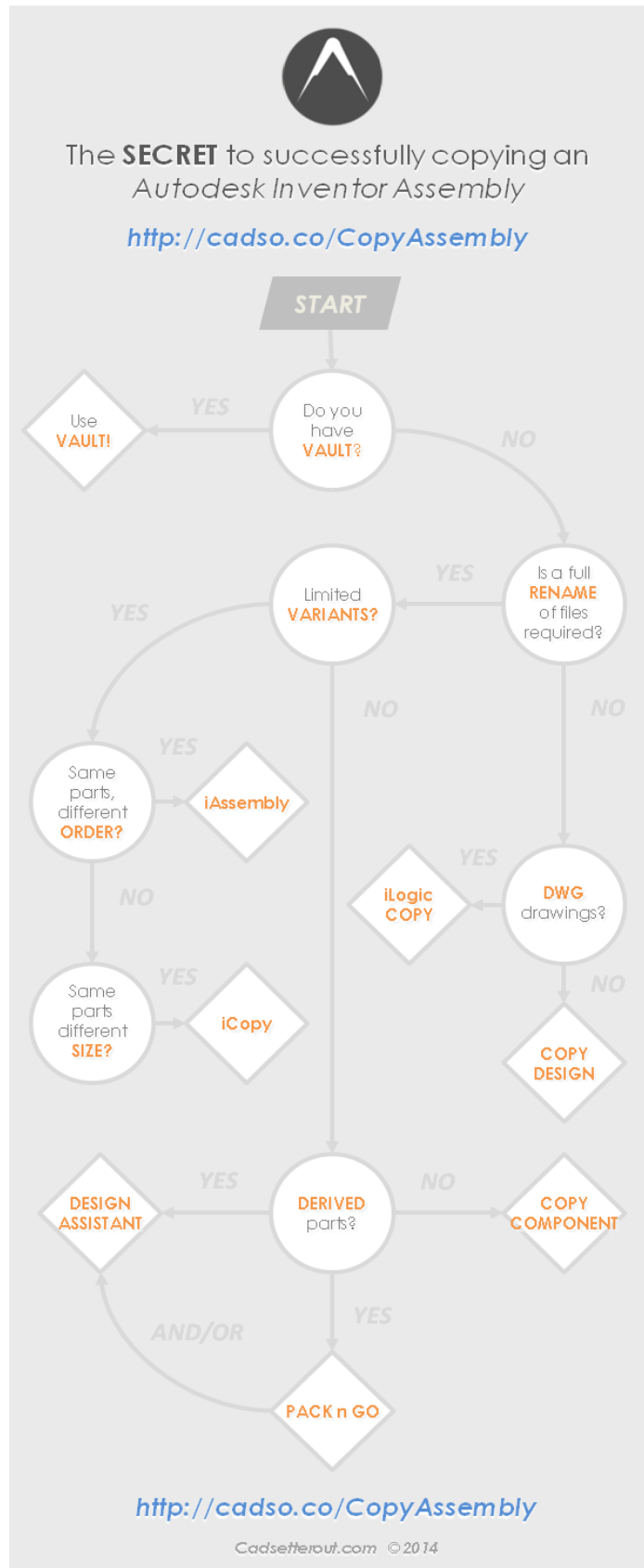
On the whole, there are lots of techniques for Copying Assemblies in Inventor and none of them offer a 'One size fits all' approach.

I hope that I have helped you to understand your options so that you can make an educated decision the next time you go to work on a design!

Did I miss anything? If you know of another way to copy Assemblies, or you would like to share your favoured technique please leave a comment.

The Secret of copying Autodesk Inventor Assemblies

Click on the image to open it full size in your browser.



Resources

What's that? You haven't had enough! If you are hungry for more information about Autodesk Inventor Data Management, I can recommend the following resources.

AUGI Library. Autodesk Inventor basics for new users

<https://www.augi.com/library/basics-for-new-inventor-users>

Copy.. Copy Design.. Design Copy.. Design Assistant! So many choices!

<http://blogs.rand.com/ascent/2013/05/copy-copy-design-design-copy-design-assistant-so-many-choices.html>

It's Exactly Like That, Except.... - Copying Components in Autodesk Inventor

<http://www.inventortales.com/2012/04/its-exactly-like-that-except-copying.html>

Autodesk Inventor: Copy and Update Assemblies using Pack and Go

<http://www.m2t.com/blog/tips-and-tricks/autodesk-inventor-copy-and-update-assemblies-using-pack-and-go.html>

Design and motion.net - Vault

<http://designandmotion.net/vault/>

Autodesk Vault family of products overview

<http://www.autodesk.com/products/vault-family/overview>

Thanks for your support!

About the Author

Paul Munford is the CAD/CAM Manager for Halstock Cabinet Makers in the UK.

After studying Theatre Production Design at College, Paul worked as a freelance Scenery Design and Builder for eight years.



Working as an Art director on Pop Videos, Adverts, Television shows, and Feature films, Paul gained a wide range of experience in scenery design including Presentation work, Graphic design and Drafting (by hand).

In a parallel career, Paul worked on the shop floor in Exhibition and Events, working his way up (literally) from guy-that-unloads-the-van, through Carpenter to Charge hand to Workshop manager to Project Manager.

All of this came to a head in 2004 when (with Mortgage, Marriage and the family life beckoning) Paul gave up the la vida loca and decided that it was time to grow up and get a proper job.

Paul decided to focus on the one skill that brought all his diverse experience together (technical drawing) and went to night school to learn this 'CAD' thing he'd heard so much about.

Little appreciating how few people there are in the job market with the desirable combination of experience in making, technical drawing and computing, Paul walked into his first salaried CAD Drafting position a few months later - and stepped into a whole new life...

You can read more about Paul's experiences at [Cadsetterout.com](http://www.cadsetterout.com)



This eBook arose out of the many questions I read on the Autodesk Forums regarding the copying of Autodesk Inventor files.

*Since I wrote the original post this book is based on back in 2011 it has been viewed nearly **20,000** times!*

An IAM file only contains a list of links to other Assembly and part files.

If you want to create a copy of an Assembly, you also need to copy all the components that go with it. you will also need to update all those Internal Hyperlinks.

This eBook gives you a detailed outline of the many



tools you can use in Autodesk Inventor to accomplish this fiendish task.

- *Vault - Copy Design*
- *iCopy*
- *iAssembly*
- *iLogic copy & more...*