

## Navisworks Model Conditioning

Model conditioning is the process used to clean, group and Q/C the files before being used in the ICT Tracker App.

**Note:** Model conditioning uses native NWC exports (preferred) or NWD files that are broken out by trade, level and zone if required for cost code synchronization. Federated NWD models are NOT recommended as they require the model to manually be broken out by trade using the iConstruct iView command. NWF models cannot be used.

### About iConstruct

ICT Tracker utilizes the iConstruct software add-on for Navisworks to streamline the conditioning of the files in Navisworks for use by the app. iConstruct is included in all purchases of ICT Tracker.

iConstruct has an external to Navisworks application call [BIMflow](#), which automates the workflow for the creation of an NWD models.

We have developed a custom and automated BIMflow workflow on the software using industry standards to automate the clean-up and generation of NWD models for use in the ICT Tracker.

ICT' s BIMflow set-up uses the following files:

- a) iConstruct/BIMflow Profile: !ICT iConstruct Master Profile.icp
- b) BIMflow workflow: ICT\*.xaml
- c) Hide Files: ICT\_Hide\_<defined or wildcard><software>.csv: list elements to be hidden in file.
- d) Group Files: ICT\_Groups<software>.csv: element grouping category criteria.
- e) \NWD: Temporary location that NWD files are generated to by Reconstruct tool

iConstruct BIMflow needs to be the same version as the Navisworks app being used

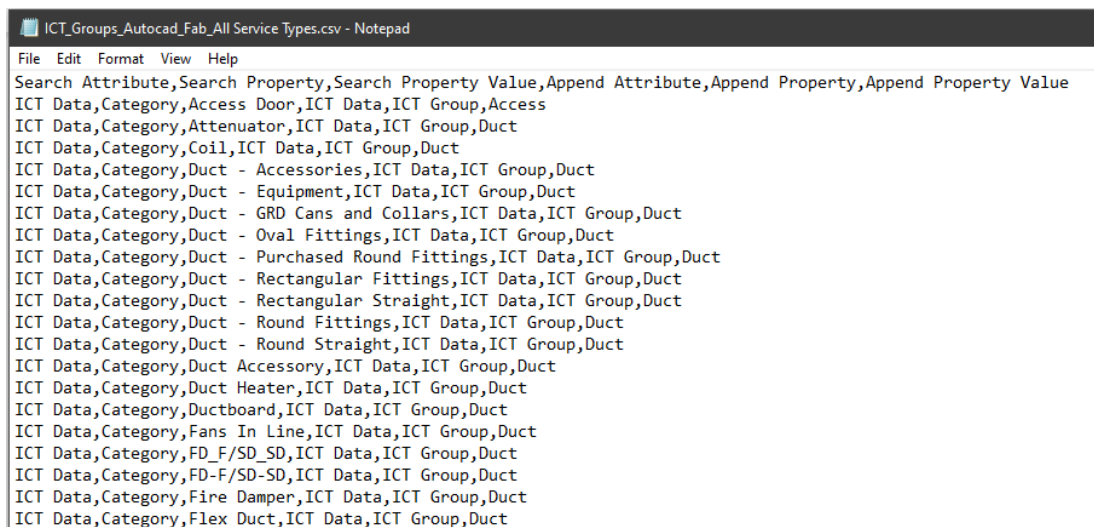
## Automated BIMflow Process

ICT has created an automated BIMflow process that reads multiple software and file types based on unique data.

- a) The support files include a file named localstor.xml that is located in your %users%\documents\iconstruct folder and preloads the Workflow Manager with imperial and metric conversions
- b) The ICT provided profile which contains customized tools utilized by iConstruct that will be loaded into Navisworks.
- c) Other manual workflows can be loaded into the workflow manager and ICT will be glad to review this option with any user that has a specific conversion requirement.

## Grouping and Hiding model elements

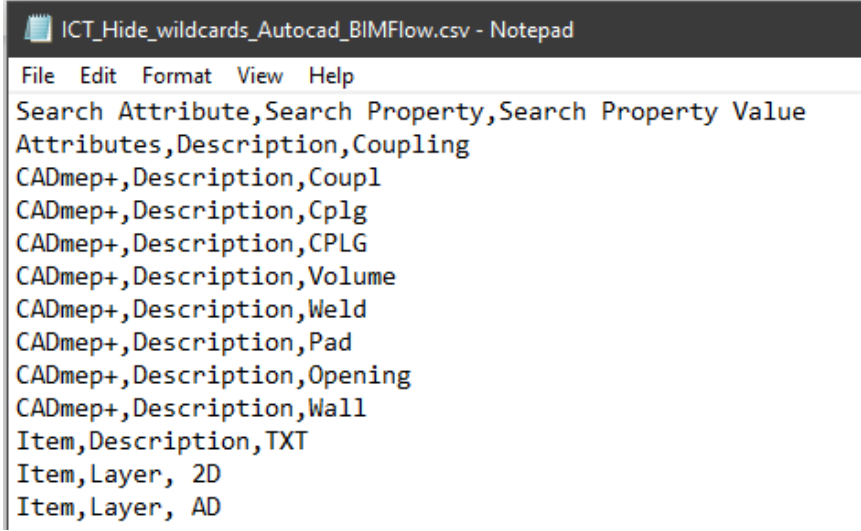
- a) The Grouping should be based on your installation phasing and cost codes to synchronize the data
- b) Elements in models are typically grouped based on the general categories in different software
- c) ICT controls these using CSV file with a list of software categories and corresponding “Group” names that are used by the ICT Tracker software and database for updating status and reporting.



```

ICT_Groups_Autocad_Fab_All Service Types.csv - Notepad
File Edit Format View Help
Search Attribute,Search Property,Search Property Value,Append Attribute,Append Property,Append Property Value
ICT Data,Category,Access Door,ICT Data,ICT Group,Access
ICT Data,Category,Attenuator,ICT Data,ICT Group,Duct
ICT Data,Category,Coil,ICT Data,ICT Group,Duct
ICT Data,Category,Duct - Accessories,ICT Data,ICT Group,Duct
ICT Data,Category,Duct - Equipment,ICT Data,ICT Group,Duct
ICT Data,Category,Duct - GRD Cans and Collars,ICT Data,ICT Group,Duct
ICT Data,Category,Duct - Oval Fittings,ICT Data,ICT Group,Duct
ICT Data,Category,Duct - Purchased Round Fittings,ICT Data,ICT Group,Duct
ICT Data,Category,Duct - Rectangular Fittings,ICT Data,ICT Group,Duct
ICT Data,Category,Duct - Rectangular Straight,ICT Data,ICT Group,Duct
ICT Data,Category,Duct - Round Fittings,ICT Data,ICT Group,Duct
ICT Data,Category,Duct - Round Straight,ICT Data,ICT Group,Duct
ICT Data,Category,Duct Accessory,ICT Data,ICT Group,Duct
ICT Data,Category,Duct Heater,ICT Data,ICT Group,Duct
ICT Data,Category,Ductboard,ICT Data,ICT Group,Duct
ICT Data,Category,Fans In Line,ICT Data,ICT Group,Duct
ICT Data,Category,FD_F/SD_SD,ICT Data,ICT Group,Duct
ICT Data,Category,FD-F/SD-SD,ICT Data,ICT Group,Duct
ICT Data,Category,Fire Damper,ICT Data,ICT Group,Duct
ICT Data,Category,Flex Duct,ICT Data,ICT Group,Duct
  
```

- d) ICT controls hiding using CSV files to hide unwanted element based or wildcard partial test or fully defined element text.



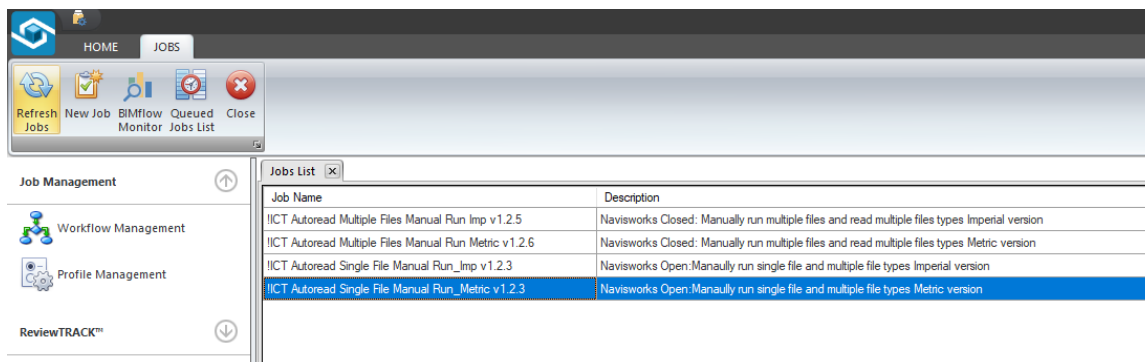
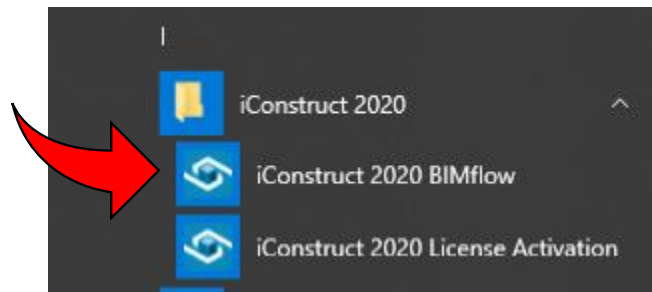
```
ICT_Hide_wildcards_Autocad_BIMFlow.csv - Notepad
File Edit Format View Help
Search Attribute, Search Property, Search Property Value
Attributes, Description, Coupling
CADmep+, Description, Coupl
CADmep+, Description, Cplg
CADmep+, Description, CPLG
CADmep+, Description, Volume
CADmep+, Description, Weld
CADmep+, Description, Pad
CADmep+, Description, Opening
CADmep+, Description, Wall
Item, Description, TXT
Item, Layer, 2D
Item, Layer, AD
```

- e) Both CSV file types are located in the C:\ICT Tracker\iConstruct\_BIMflow\CSV directory
1. Groups are based on CAD software and secondary add on software
  2. Hide files are defined as “wildcards” or “defined” depending on the CAD software.
  3. The CSV files are set-up based on lessons learned from previous conversions and industry standards
  4. The CSV files can be updated to change the processing outcome
  5. It is recommended that the CSV files are edited in Notepad.
    - i. If you use Excel, you will need to go to the bottom of the list in Notepad to delete the extra return character that is added by Excel when it saves a CSV file

Using BIMflow:

➔ Start BIMflow.

We recommend you add it to your taskbar for ease of access



The primary workflows provided are as follows:

- !ICT Autoread Multiple Files Manual Run\_Imp v1.2.5
- !ICT Autoread Multiple Files Manual Run\_Metric v1.2.6
- !ICT Autoread Single File Manual Run\_Imp v1.2.3
- !ICT Autoread Single File Manual Run\_Metric v1.2.3

All the workflows will autoread the file to identify the software and trade type.

Note: The electrical and fire protection conversions require some manual intervention with the use of Excel for data export, auto conversion and import

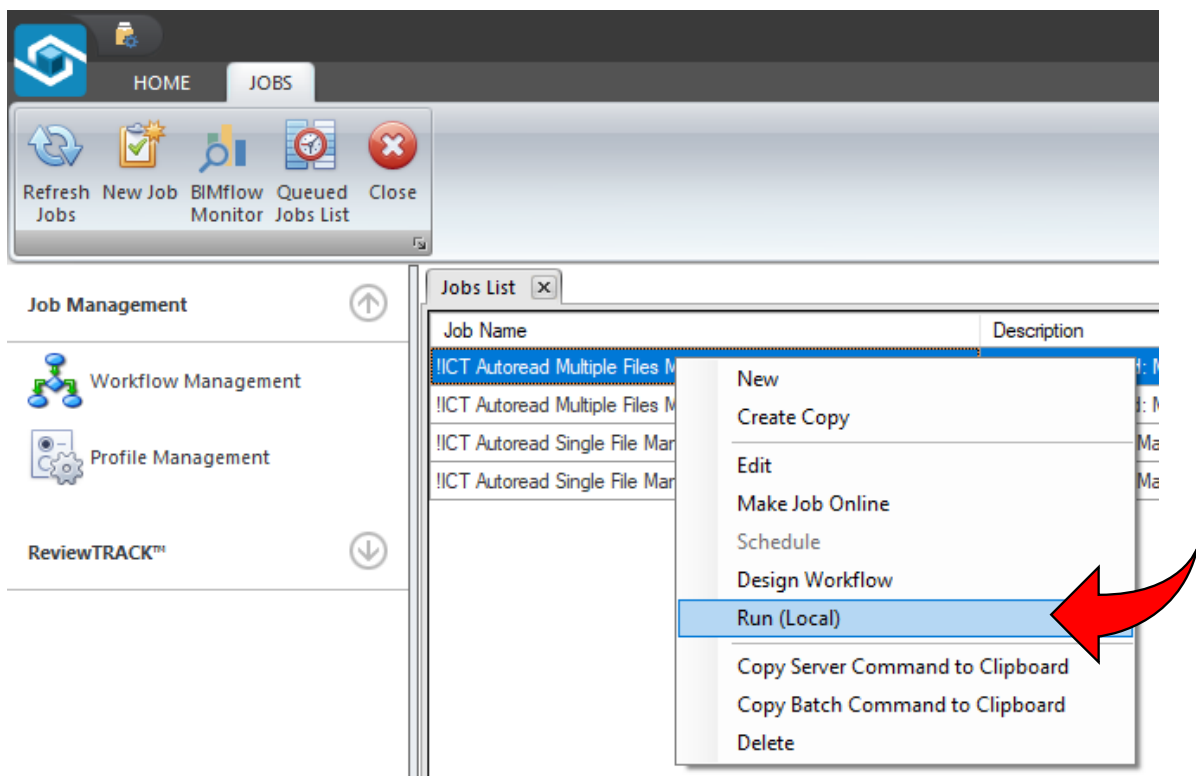
## ICT Autoread Multiple Files Manual workflows

### Multiple File workflows

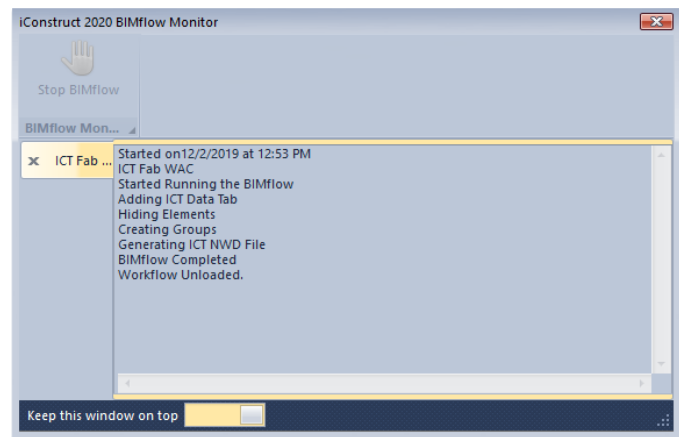
- Do not require Navisworks to be open
- Allows you to process multiple files at a time and let BIMflow do the conversion in the background

The original NWC or NWD to be converted are loaded in the C:\ICT Tracker\NWx\_orig directory.

➔ In BIMflow, right click on the multiple file workflow you want to run and select “Run(local)” to start the BIMflow process



The “iConstruct 20XX BIMflow Monitor” dialogue box will appear and list the sequence activities as they are running.



When the files are processed two things will happen:

1. The original NWC/NWD files will be moved to C:\ICT Tracker\NWx\_processed.
2. The new processed NWD file will be written to C:\ICT Tracker\NWD.

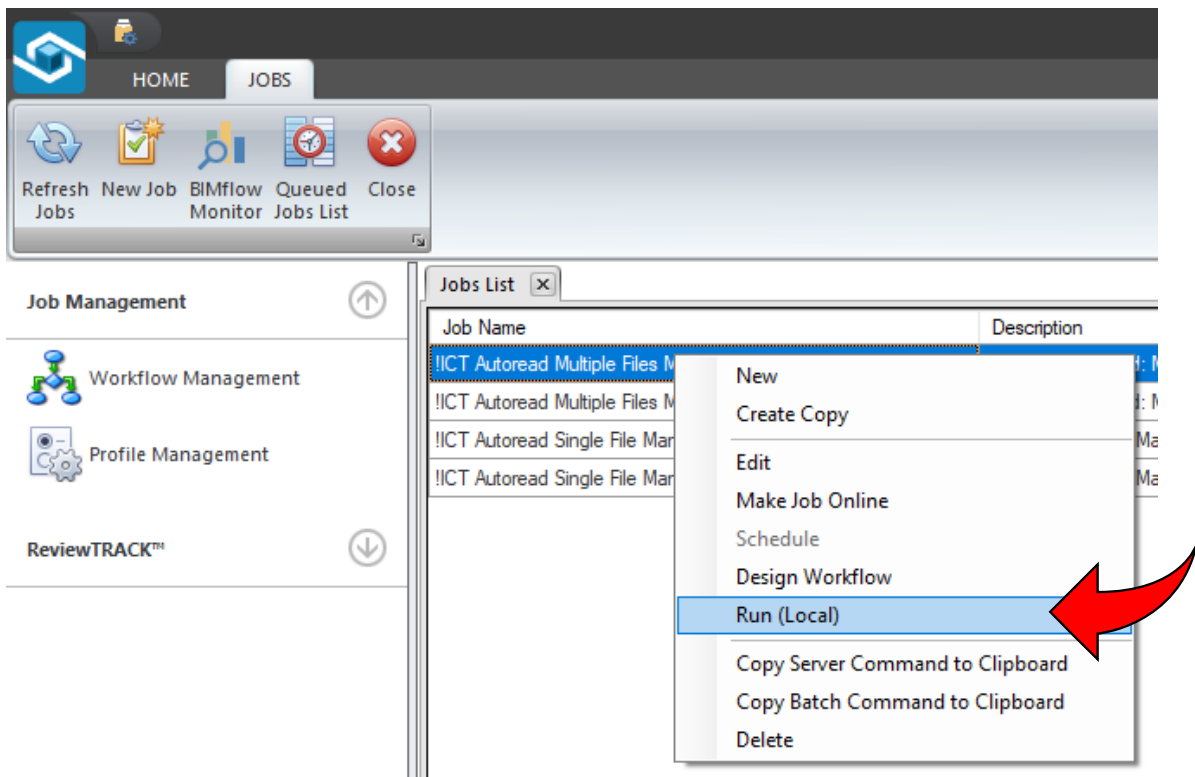
## **ICT Autoread Single File Manual Run**

### **The Single File workflows**

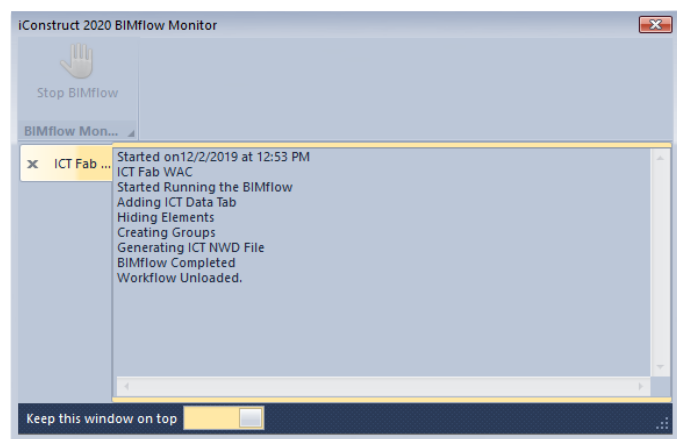
- Do require Navisworks to be open and the file to be converted loaded.
- Meant to process one file at a time.

**Note:** The original NWC or NWD that is loaded will need to be converted.

➔ In BIMflow, right click on the single file workflow you want to run and select “Run(local)” to start the BIMflow process



The “iConstruct 20XX BIMflow Monitor” dialogue box will appear and list the sequence activities as they are running.



When the file is processed it will be written to C:\ICT Tracker\NWD.

Note: Depending on the file size and number of elements, the run time can vary.

- BIMflow file conditioning tends to run faster on files saved locally vs on remote server or drive.
- BIMflow works on NWC or NWD files.
- NWF files cannot be processed.
- Use the “Stop BIMflow” button on the dialogue box to stop the routine if required. The BIMflow will stop when the current sequence is completed.
- Upon completion the BIMflow dialogue box will display “Workflow Unloaded”

### **Review**

Processed files need to be reviewed in Navisworks to make sure the grouping is as expected in the Selection Tree

If there is a “No Group” grouping, then there is an issue with a model element group definition and needs to be reviewed to verify why they were not grouped and then reprocessed to resolve the issue.

### **Possible reason for No Grouping**

1. The Category or Service type or etc. was not defined in the grouping CSV files
2. If all the items go into a “No Group” grouping, it is probably an AutoCAD Fabrication file that does not have a “Service Type” defined as the file was processed with 2018 or older Navisworks.
3. If elements in the model are unintelligent 3D blocks or solids that have no data to configure
4. If Items in the “No Group” grouping can be hidden and will not show up in BIM 360 DOCs or ICT Tracker

The conditioned file is now ready to do any of the following:

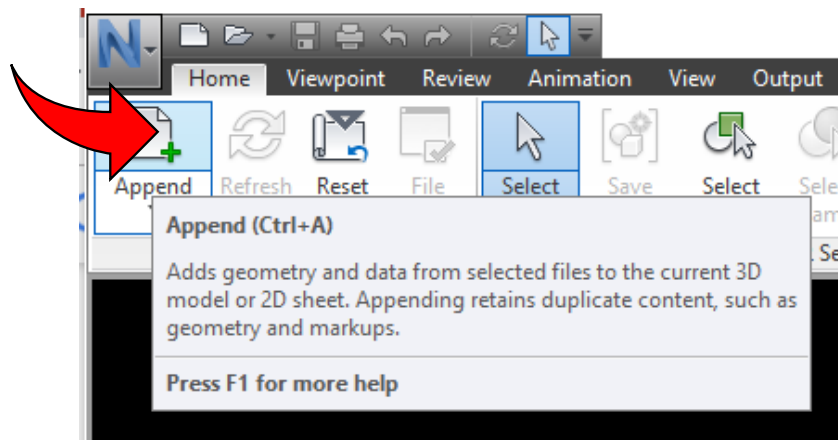
- Append the AR Markers NWC file
- Append the 3D Grid NWC file.
- Break the model into zone using the iConstruct iView tool.



## Final NWD File Generation for Augmented Reality use

Upon completion of the BIM Flow, if using Augmented Reality for tracking, you will need to append the Augmented Reality marker NWC file that was created to the BIMflow generated NWD file.

- ➔ Open Navisworks and open the BIMflow generated file NWD.
- ➔ Select CTRL + A or the “Append” command at the top left of the Home tab.



The “Append” dialogue box will appear.

- ➔ Browse to the folder with the AR Marker NWC file.
- ➔ Select the filename to highlight the file
- ➔ Select the “Open” button to load the file into the Navisworks file.

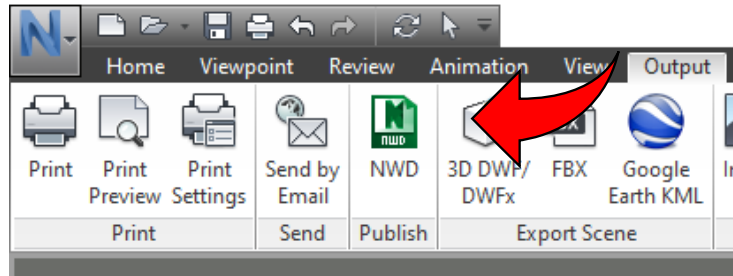
Upon appending the file, verify the appended file is in the correct location in the model related to the existing model

- ➔ To create the final file for use in the app, select the Output tab and the Publish option on the ribbon.

The “Publish” dialogue box will open add additional information and options:

- ➔ Select the “Ok” button at the bottom to open the “Saveas” dialogue box.

→ Navigate to the location for the final ICT NWD files and select “Save” at the bottom of the dialogue box.



**Note:** The files posted to BIM 360 DOCS for use with ICT Tracker, need to be in an NWD file and not an NWC or NWF file.