AUTODESK.
Authorized Developer

Using the Autodesk Forge viewer in TRIRIGA

Doug Wood

TRIRIGA BIM Architect

12/8/2017

https://www.linkedin.com/in/doug-wood-39229110/

Forge Integration Workflow

Register with Forge and create an application

Enter Forge app credentials in TRIRIGA

Configure TRIRIGA for access to Forge Management tool

Define Forge Viewer storage

Export Revit model in NavisWorks format

Define and edit default view

Upload model file(s)

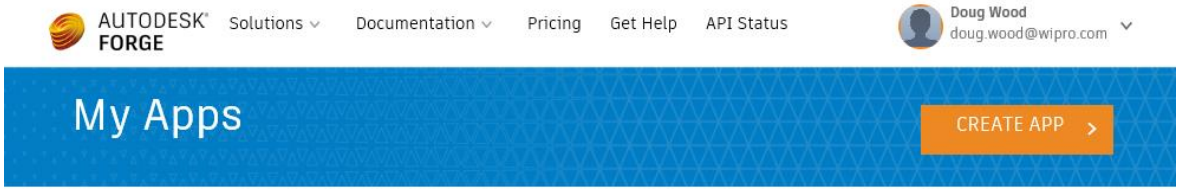
Request model translation

Upload Revit Model to TRIRIGA

Associate translated model with Building

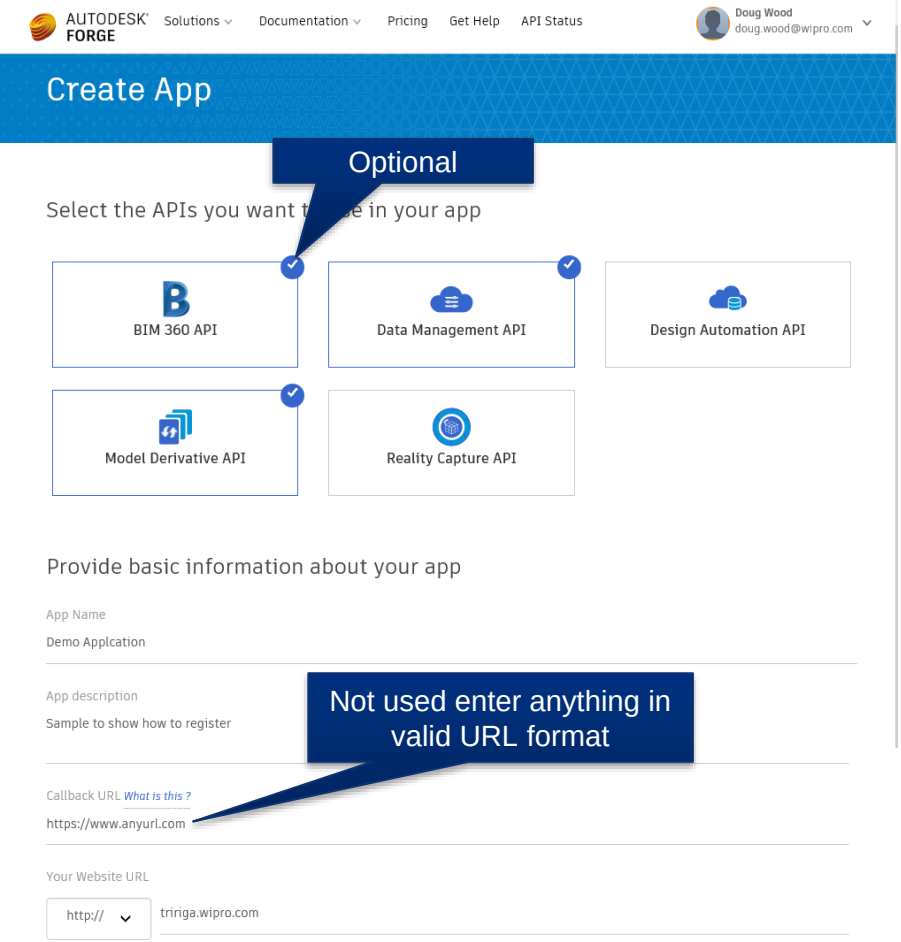
Autodesk Forge Portal

https://developer.autodesk.com/myapps

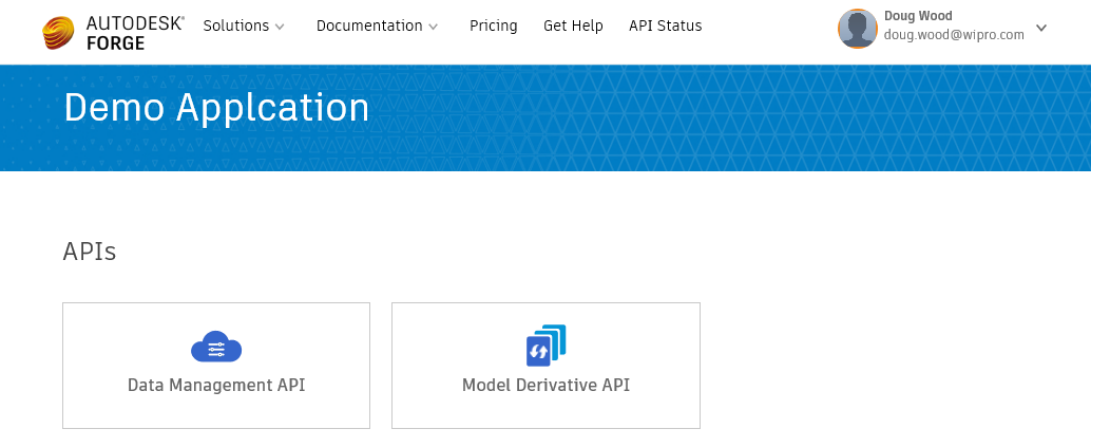


- Use of the Forge viewer require a subscription to the Autodesk Forge Service. (90 day free trial available)
- After registering, select “Create App” to create a Forge application and get a client ID and secret
- TRIRIGA requires its own Forge application, not access to BIM360. It may be shared with other application such as Maximo which accept a Client ID and Secret.

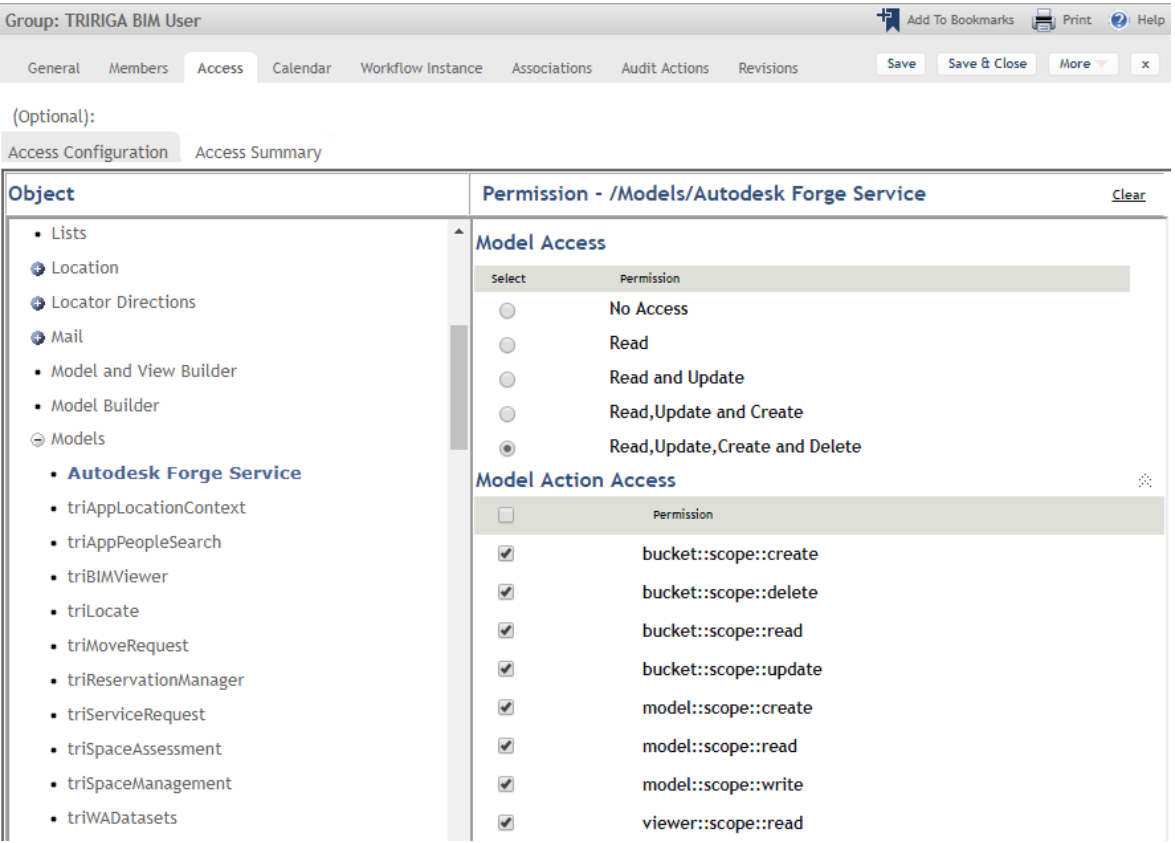
Create an Autodesk Forge Application



Create an Autodesk Forge Application

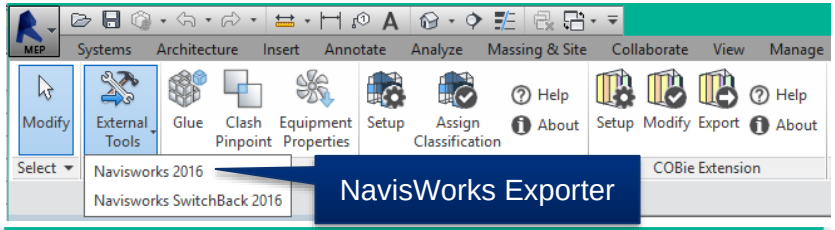


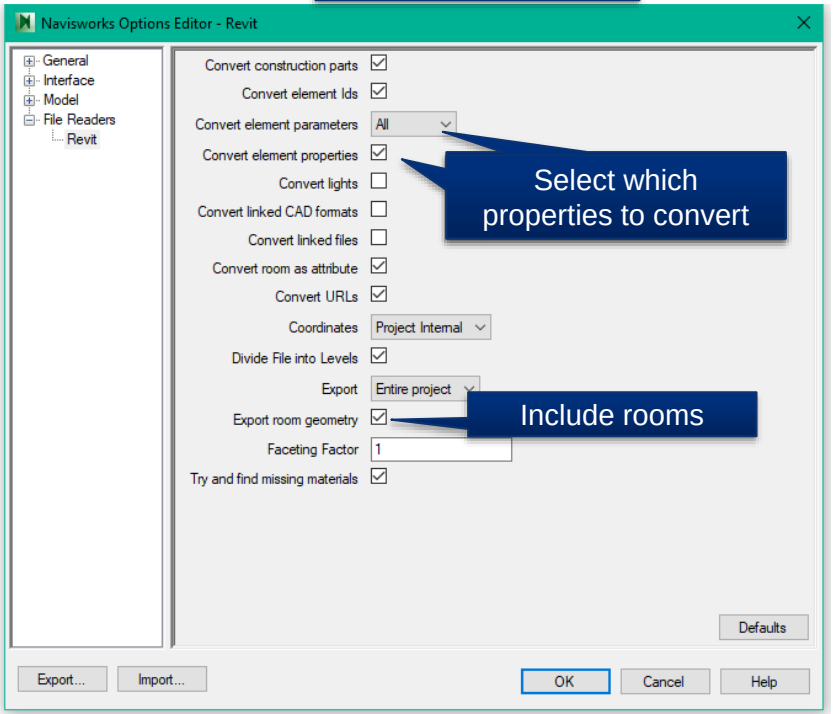
Forge Service Security

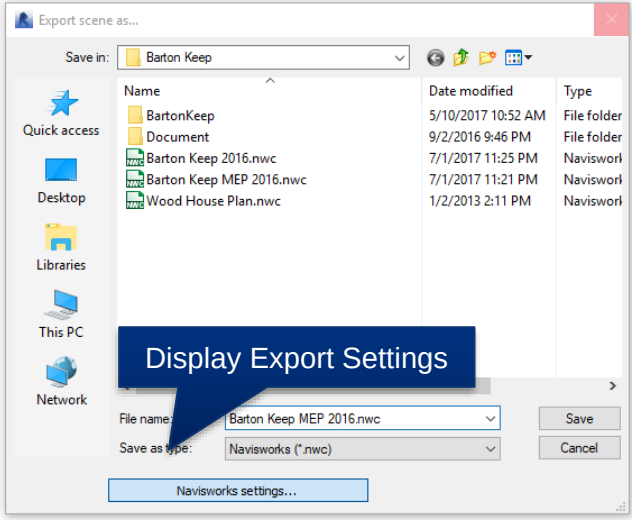


- The security group TRIRIGA BIM User is pre-configured for full access to Forge tool
- Access to individual Forge functions is controlled by the mode; “Autodesk Forge Service”. The permissions map directly to the Forge Oauth scopes defined here: https://developer.autodesk.com/en/docs/oauth/v2/overview/scopes/
- Viewer::scope::read controls access to the viewer and model thumb nail. All user of the viewer must have this access
- Security can be applied to the triBIMModelLink business object to control display of the model thumb nail and launch of the viewer. However, it only restricts display of the links to launch a model, not direct access to the model.

NavisWorks Export from Revit

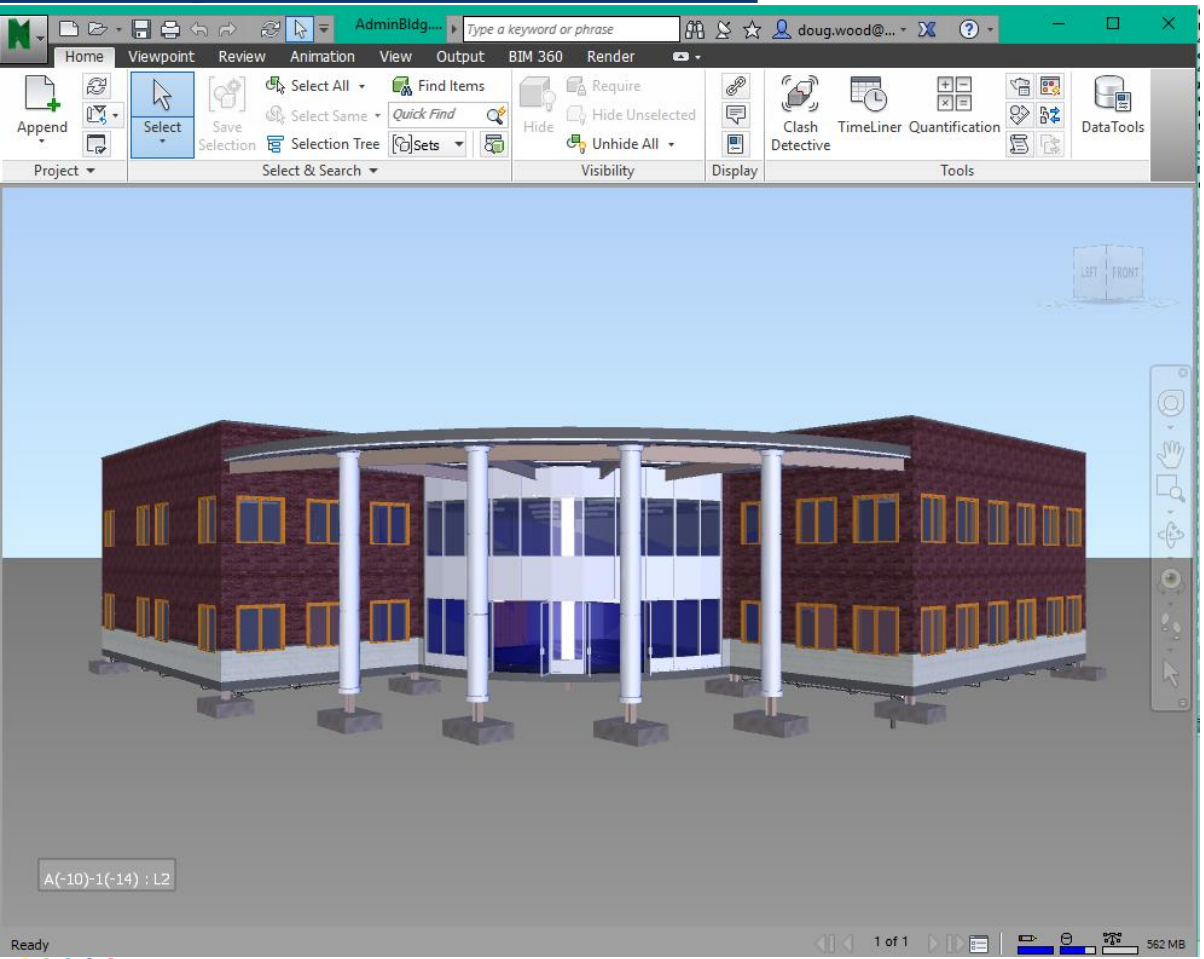






- Navisworks .NWD files can be used with the Forge viewer Using Navisworks files has several possible advantages:
  - Navisworks has a visual representation of Room and Space object which Revit does not
  - It is easy to customize the visual representation of a Navisworks file, such as color coding objects by type
  - It may be possible to import file formats not normally usable by the Forge viewer into Navisworks and display them
- Due to the lack of Rooms in translated Revit models, the TRIRIGA linkage of spaces to the model only works with NavisWorks files.
- The Revit file must be converted to NavisWorks format. A Revit model can be directly opened in NavisWorks, However, the Revit Exporter produces better models
- Download the exporter here: https://www.autodesk.com/products/navisworks/3d-viewers

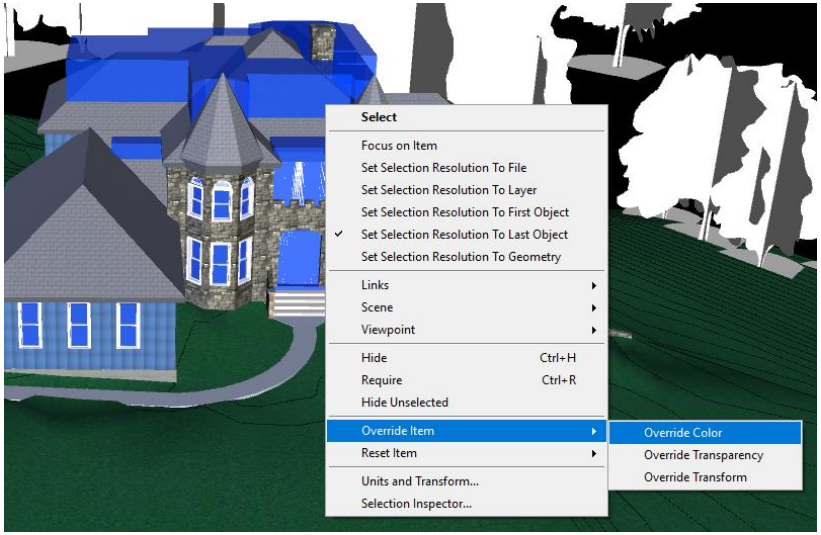
Configure Default View



- The Forge translation process uses the default NavisWorks view – What is displayed when the model is first opened in NavisWorks
- Multiple models can be merged in NavisWorks to provide a single model for the Forge viewer. Ex: Architectural, MEP, Structural.
- The view can be configured however you wish including:
  - Position and orientation
  - Color coding elements
  - Hiding elements
- The finished model should be saved as an .NWD or .NWC file

Make Rooms visible

Use the property browser to find and select all the room all the rooms

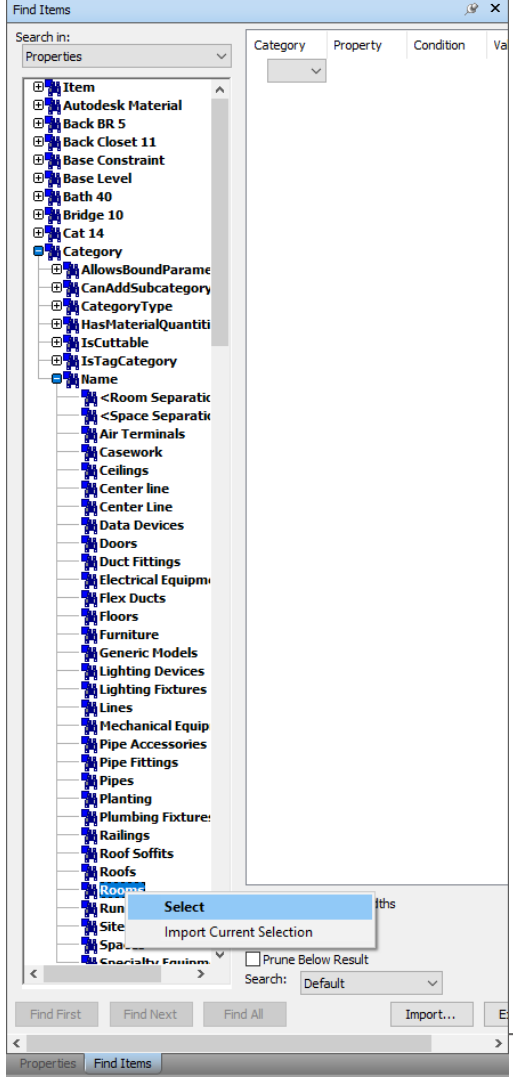


Display the property menu for the selection, Override Color and Transparency to create the desired visual effect. By default rooms are almost invisible

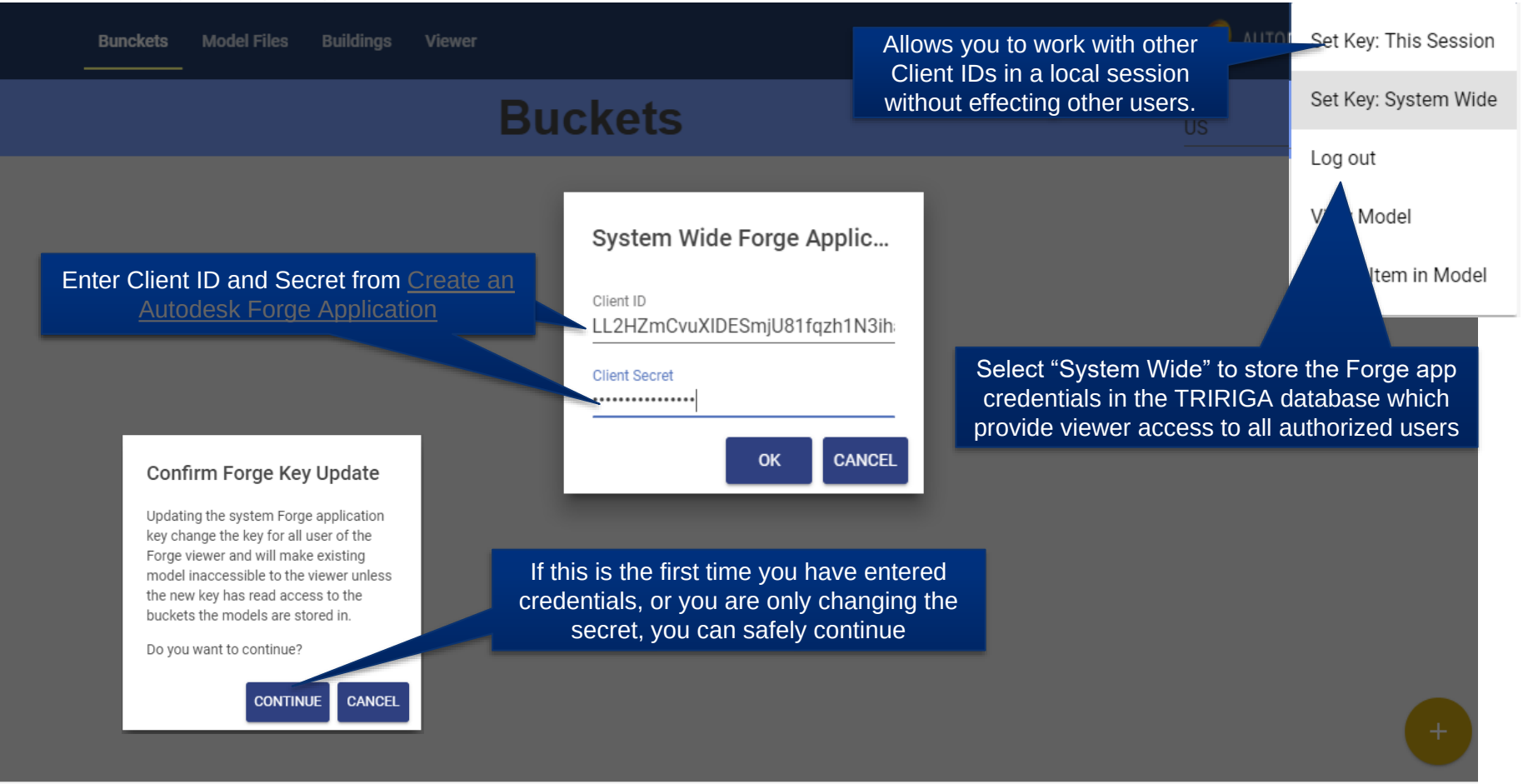
Select all the spaces, and hide the space.

Setup the view desired in the viewer. This may include hiding additional object or overriding color. It is fairly easy to use the category tree to color code elements based on category

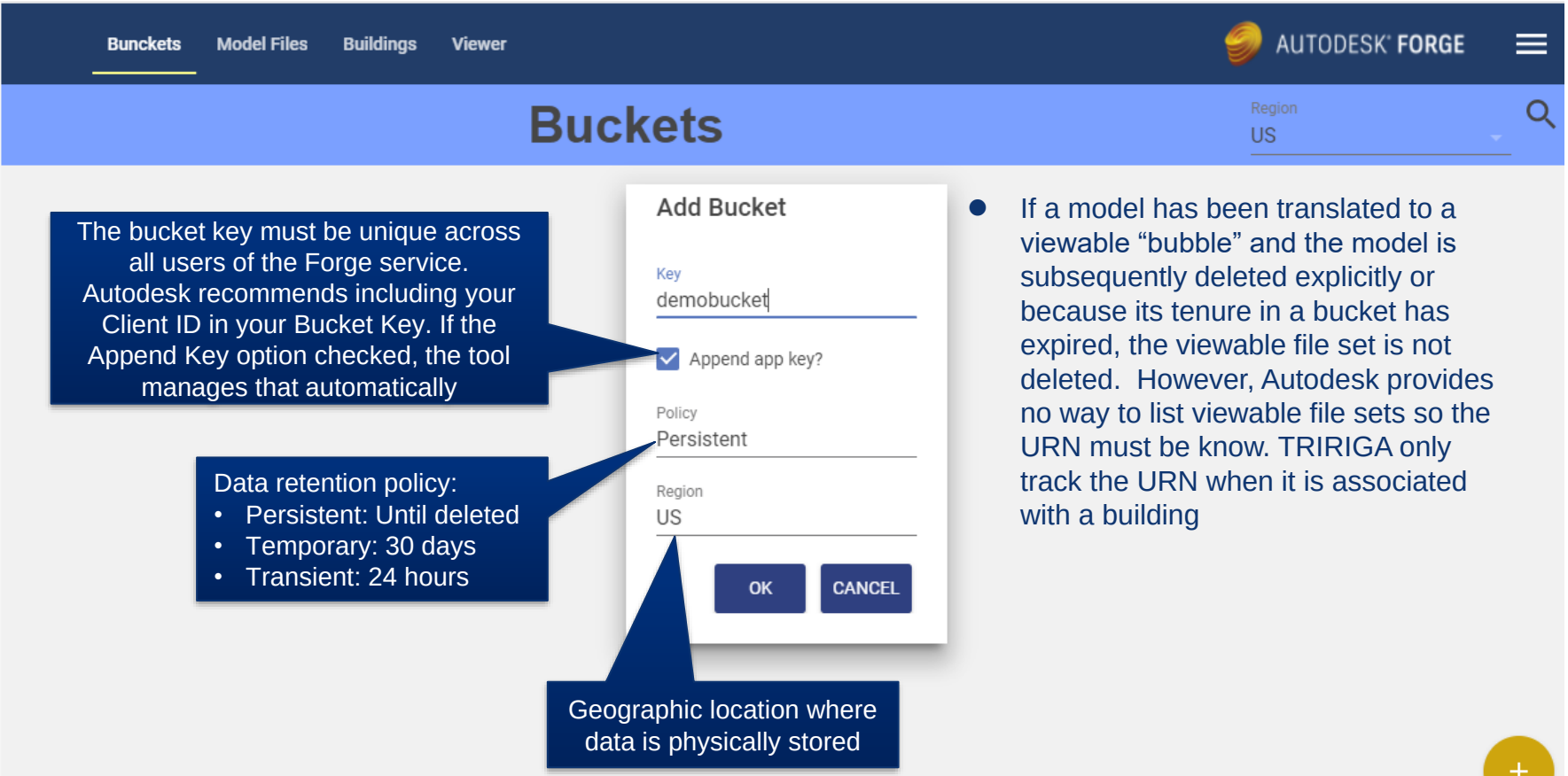
Save the file as a .NWD file. The view visible when the file is save is what is imported in the Forge viewer



Adding Forge Credentials to TRIRIGA

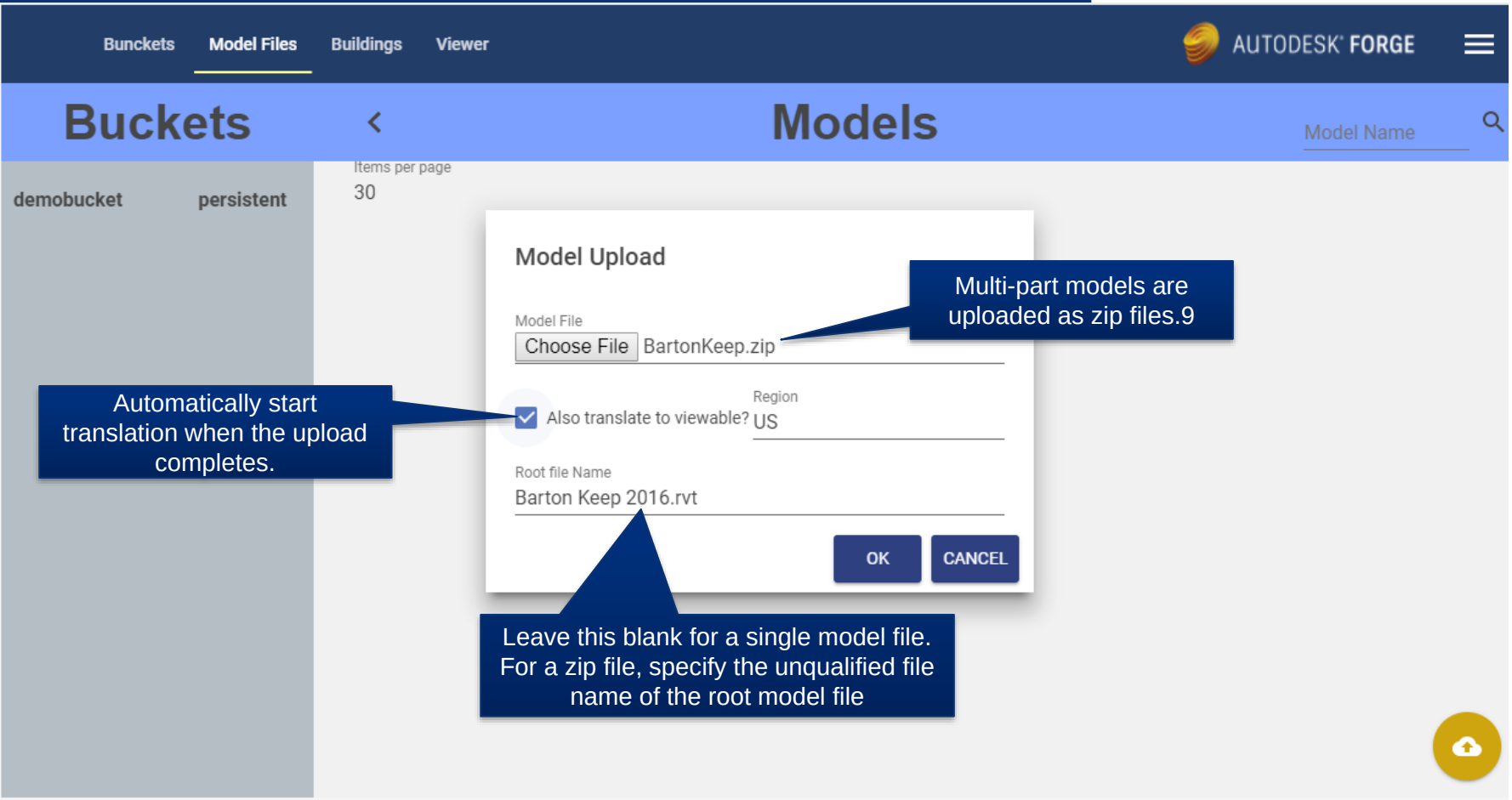


Create Forge “Buckets” to store your models

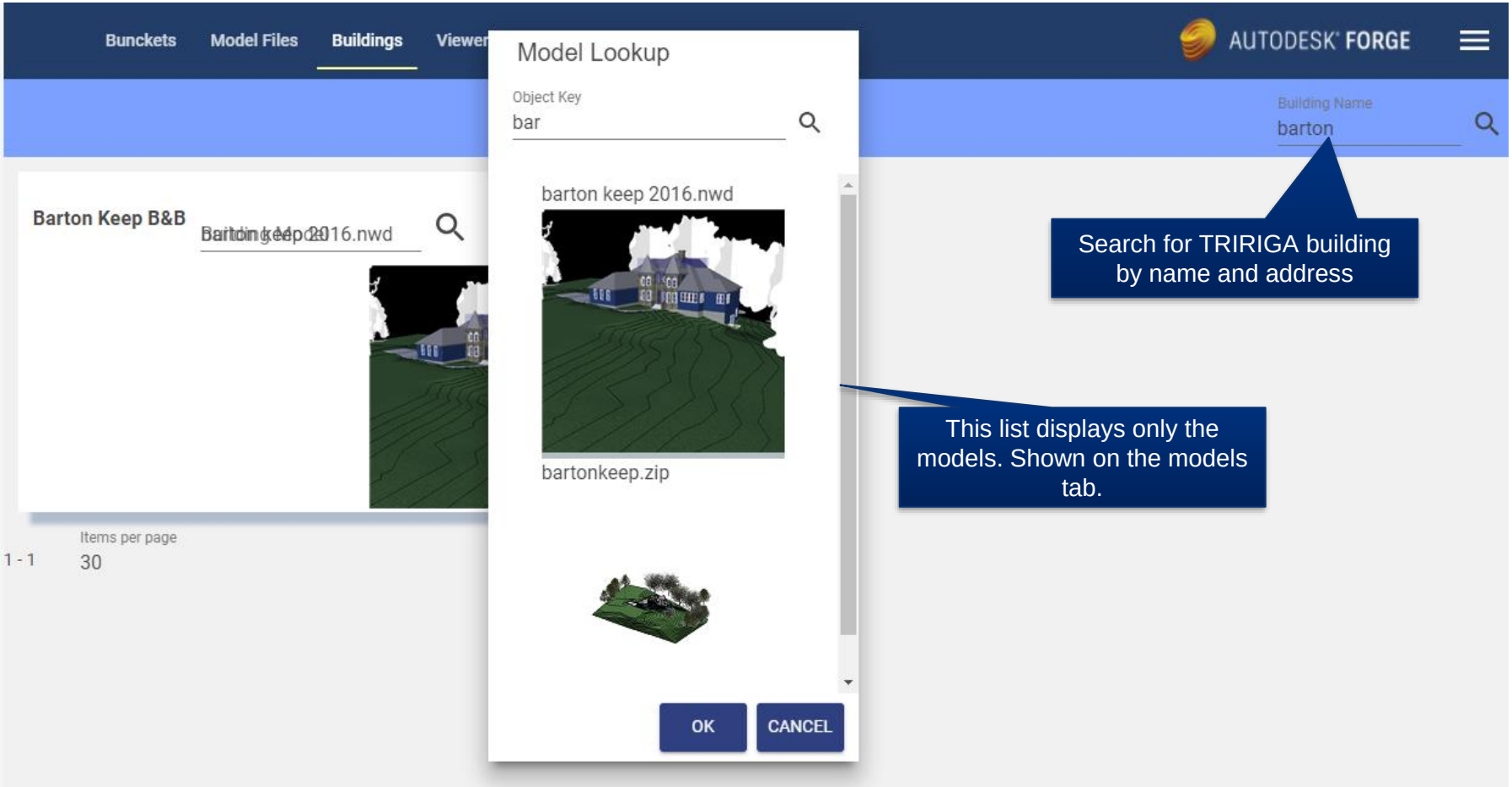


- If a model has been translated to a viewable “bubble” and the model is subsequently deleted explicitly or because its tenure in a bucket has expired, the viewable file set is not deleted. However, Autodesk provides no way to list viewable file sets so the URN must be know. TRIRIGA only track the URN when it is associated with a building

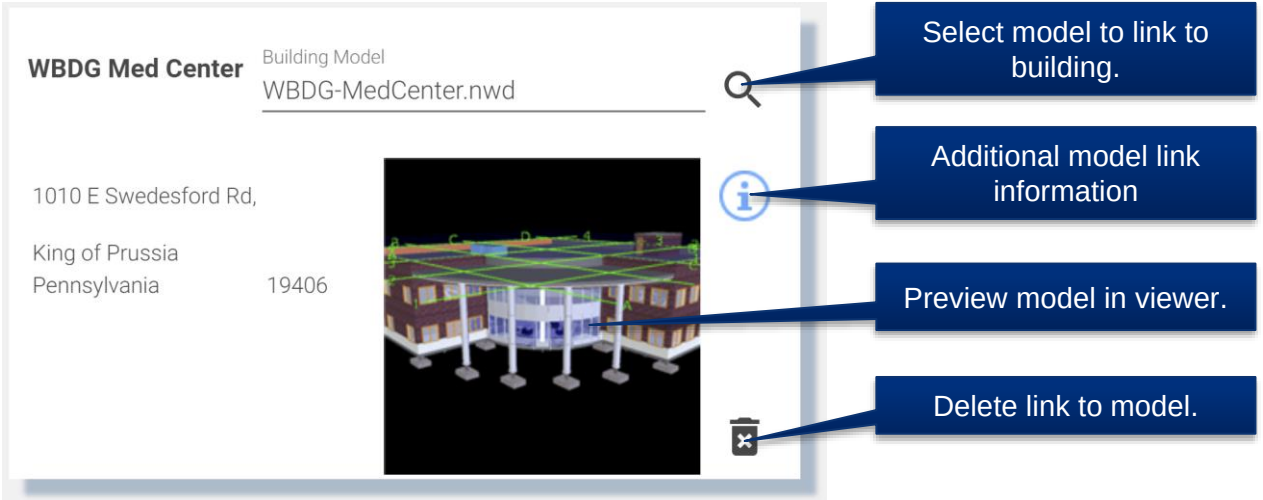
Uploading Models to the Forge Service

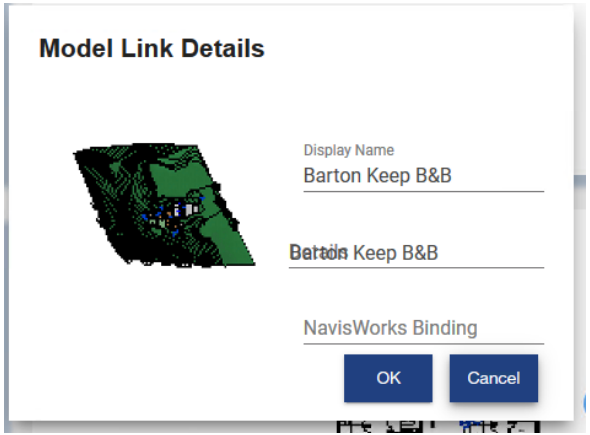


Link Forge Models to TRIRIGA Buildings



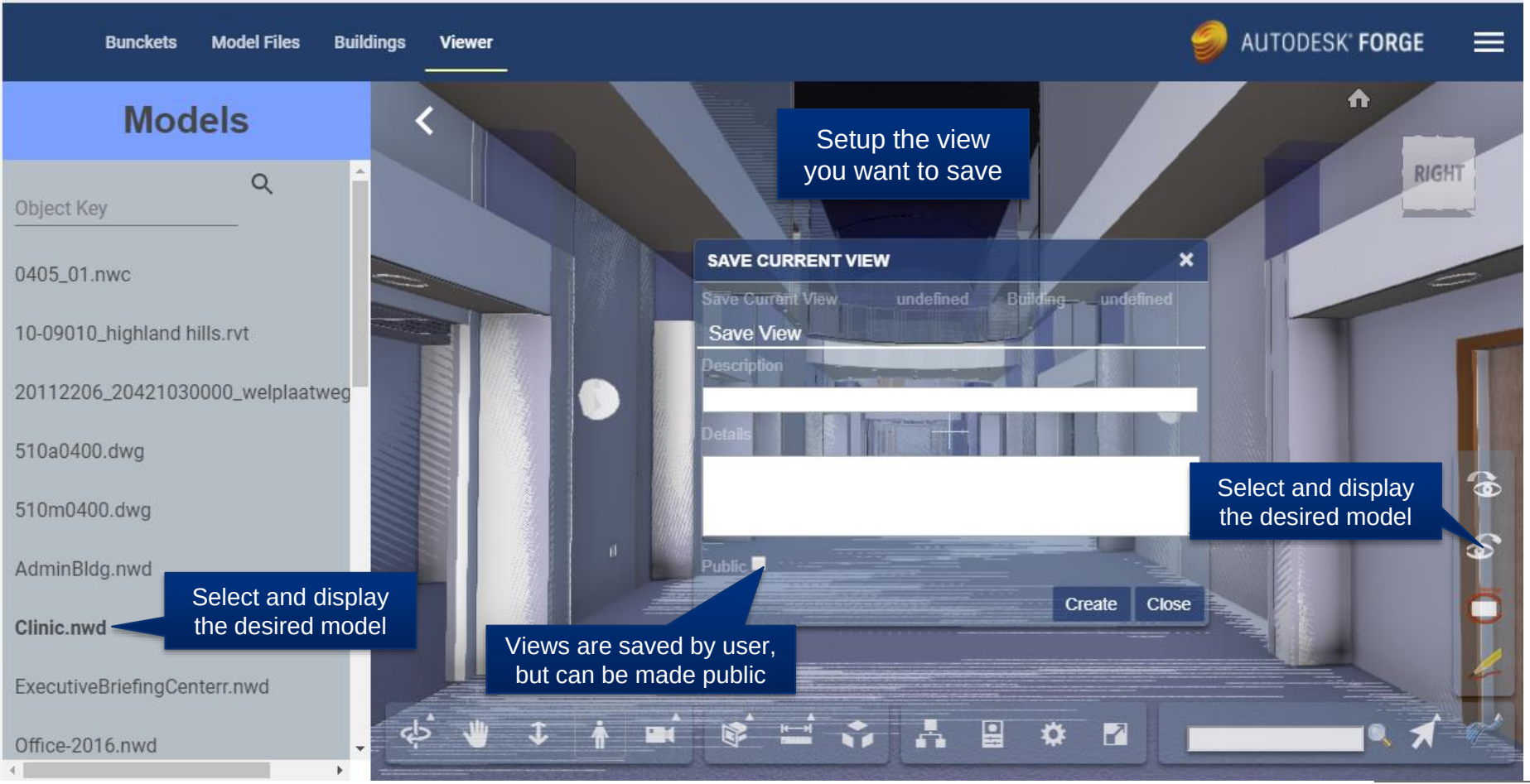
Building Link





- Details: Additional descriptive information not processed by TRIRIGA.
- Navisworks Binding: This is the name of the viewer property which is used to match a viewer element with a TRIRIGA record. If it is not set, it defaults to “GUID”. Some older Navisworks files require “Guid”. It can also be used to create custom binding for other model file types or if the TRIRIGA records were not created by the BIM Connector for Revit.

Defined views



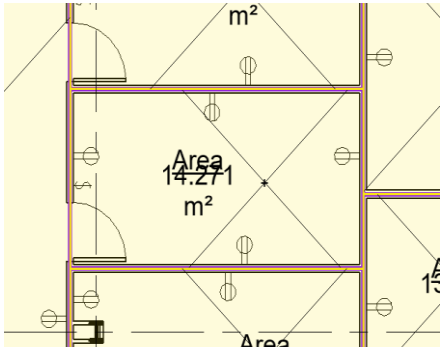
BIM Connector for Revit

wipro

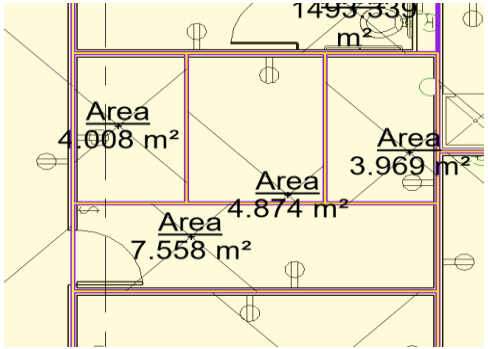
Revit Area and Area Plans

There are 4 cases of how an are can relate to a Room:

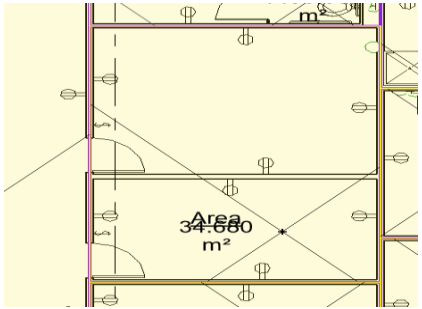
1) The area boundaries match the room boundaries



2) A room is comprised of exactly n areas



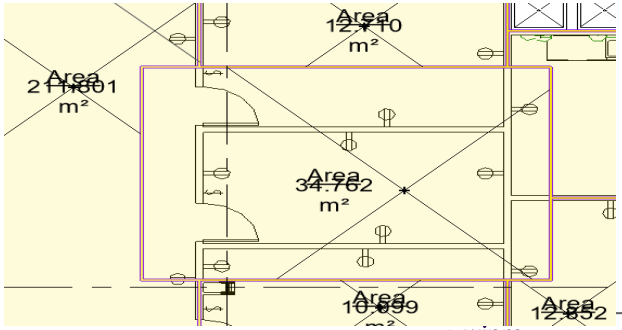
3) An area is encompassing exactly n rooms



The BIM Connector supports case 1. Two areas can be associated with a room: a gross area, and a rentable area. For each area type, the area measurement provided by the area replaces the area measurement from the room.

For Floors, the total area for the gross are plan, if one exists is used for the Floor's gross area, and if a rentable are plan exists and has been selected in the "Map Areas to Rooms" tool, the total area for the rentable area plan is used for the Floor's gross measured area.

4) Areas are arbitrary: area and room boundaries cross area boundaries



Best Practices

- Integrate all Rooms you plan to integrate for all model files before you link spaces to rooms or directly integrate Revit Spaces with TRIRIGA.
- For federated models, the IBM.ModelName value should be unique for each file in the set, and ideally be descriptive of the role the file is playing in the model. For the primary file, IBM.ModelName and IBM.BuildingName can be the same.
- A gross area plan should be created for any level that will be integrated with Revit. Allow Revit to outline the exterior walls. If you subdivide the area plan into additional areas, insure that the entire level is filled with areas.
- If area names are the same as room names, the auto-match can be used to link rooms to areas. If you expect to detach and re-integrate the model with any frequency, this will save work.
- If space names are the same as room names, the auto-match can be used to link rooms to spaces. If you expect to detach and re-integrate the model with any frequency, this will save work.