



# Using the Autodesk Forge viewer in TRIRIGA

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# 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>



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## My Apps


CREATE APP >

You don't have any apps yet


Apps that you have created will appear here

- Use of the Forge viewer requires 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 applications such as Maximo which accept a Client ID and Secret.

# Create an Autodesk Forge Application


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## Create App


Select the APIs you want to use in your app

  
BIM 360 API

  
Data Management API

  
Design Automation API

  
Model Derivative API

  
Reality Capture API

Provide basic information about your app

App Name  
Demo Application

App description  
Sample to show how to register

Callback URL [What is this ?](#)  
https://www.anyurl.com

Your Website URL  
http:// ▾ tririga.wipro.com

Optional

Not used enter anything in valid URL format

# Create an Autodesk Forge Application



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## Demo Application

### APIs



Data Management API



Model Derivative API

### About this app (Created 08 Dec 2017)

Client ID LL2HZmCvuXIDESmjU81fqzh1N3ihaYo0

Client Secret

DZzHgTEaiGgF7EuG



REGENERATE

These values are provide  
to TRIRIGA

App Name Demo Application

Description Sample to show how to register

CallBack URL https://www.anyurl.com

Your Website URL http://tririga.wipro.com

# Forge Service Security

Group: TRIRIGA BIM User

General Members Access Calendar Workflow Instance Associations Audit Actions Revisions Save Save & Close More x

(Optional):

Access Configuration Access Summary

**Object**

- Lists
  - Location
  - Locator Directions
  - Mail
  - Model and View Builder
  - Model Builder
- Models
  - Autodesk Forge Service**
  - triAppLocationContext
  - triAppPeopleSearch
  - triBIMViewer
  - triLocate
  - triMoveRequest
  - triReservationManager
  - triServiceRequest
  - triSpaceAssessment
  - triSpaceManagement
  - triWADatasets

**Permission - /Models/Autodesk Forge Service** [Clear](#)

**Model Access**

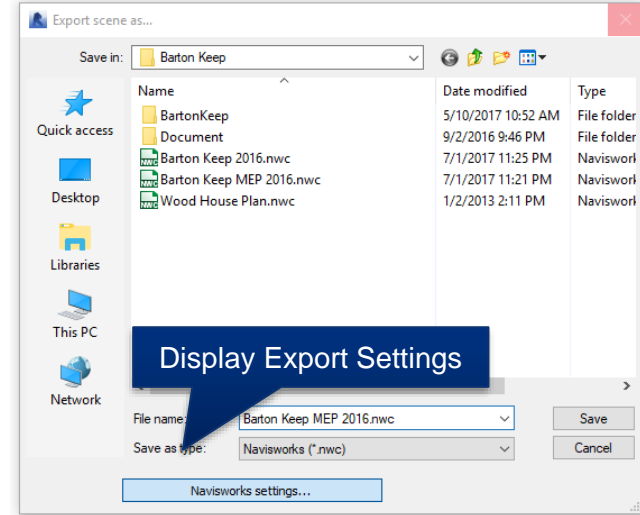
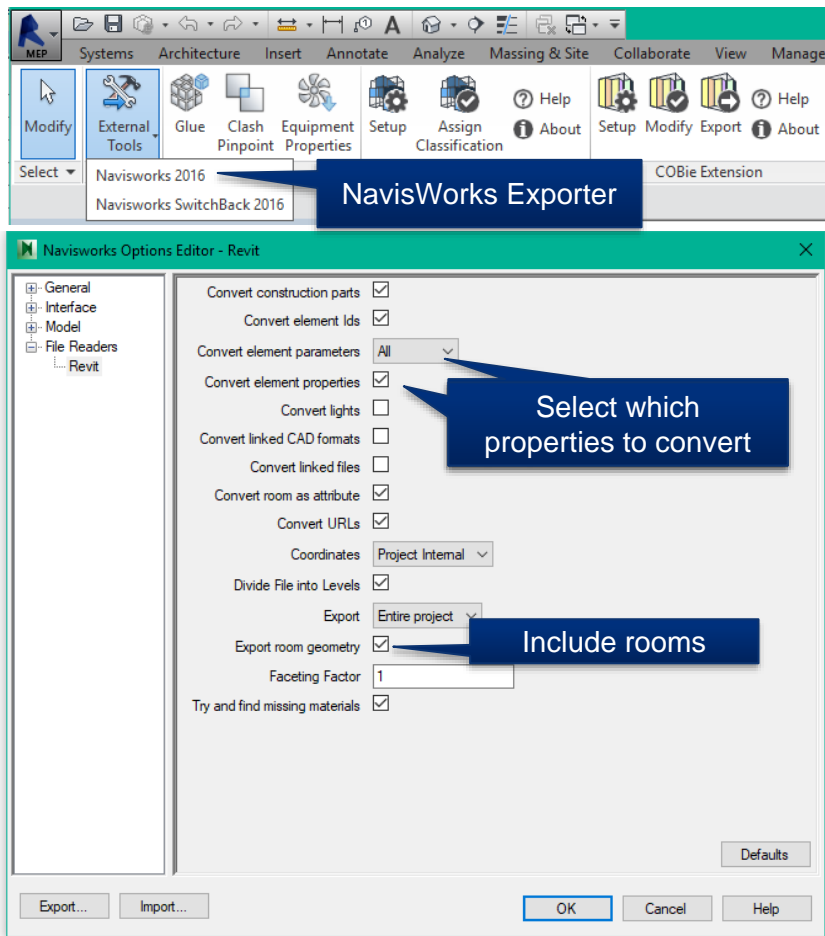
| Select                           | Permission                      |
|----------------------------------|---------------------------------|
| <input type="radio"/>            | No Access                       |
| <input type="radio"/>            | Read                            |
| <input type="radio"/>            | Read and Update                 |
| <input type="radio"/>            | Read, Update and Create         |
| <input checked="" type="radio"/> | Read, Update, Create and Delete |

**Model Action Access**

| <input type="checkbox"/>            | Permission            |
|-------------------------------------|-----------------------|
| <input checked="" type="checkbox"/> | bucket::scope::create |
| <input checked="" type="checkbox"/> | bucket::scope::delete |
| <input checked="" type="checkbox"/> | bucket::scope::read   |
| <input checked="" type="checkbox"/> | bucket::scope::update |
| <input checked="" type="checkbox"/> | model::scope::create  |
| <input checked="" type="checkbox"/> | model::scope::read    |
| <input checked="" type="checkbox"/> | model::scope::write   |
| <input checked="" type="checkbox"/> | viewer::scope::read   |

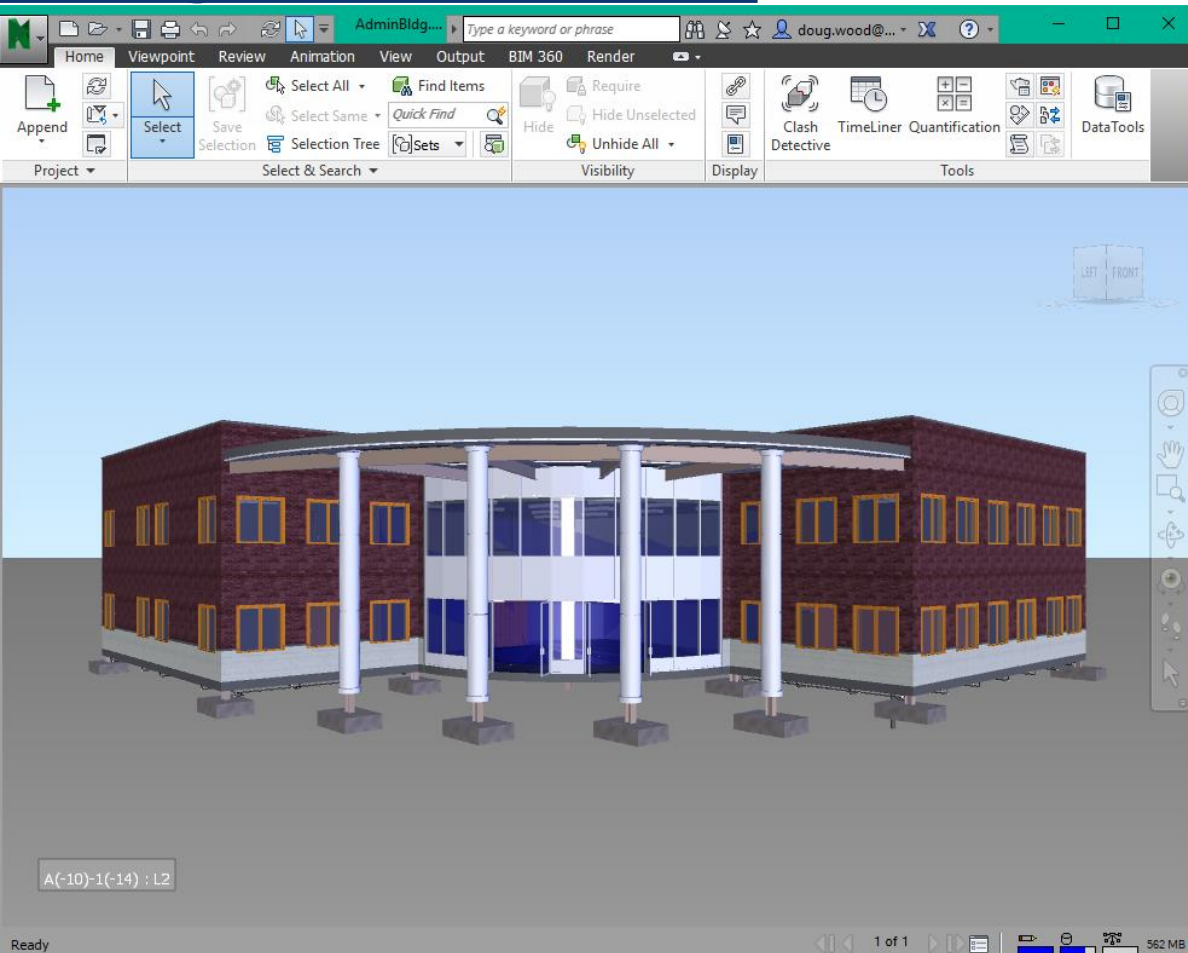
- The security group TRIRIGA BIM User is pre-configured for full access to Forge tool
- Access to individual Forge functions is controlled by the mode; “Autodesk Forge Service”. The permissions map directly to the Forge OAuth scopes defined here: <https://developer.autodesk.com/en/docs/oauth/v2/overview/scopes/>
- 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

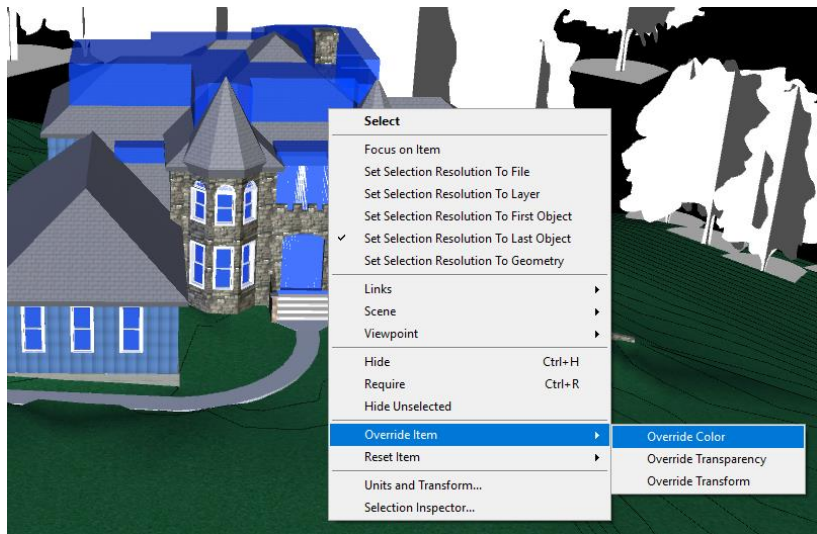


- The Forge translation process uses the default NavisWorks view – What is displayed when the model is first opened in NavisWorks
- Multiple models can be merged in NavisWorks to provide a single model for the Forge viewer. Ex: Architectural, MEP, Structural.
- The view can be configured however you 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

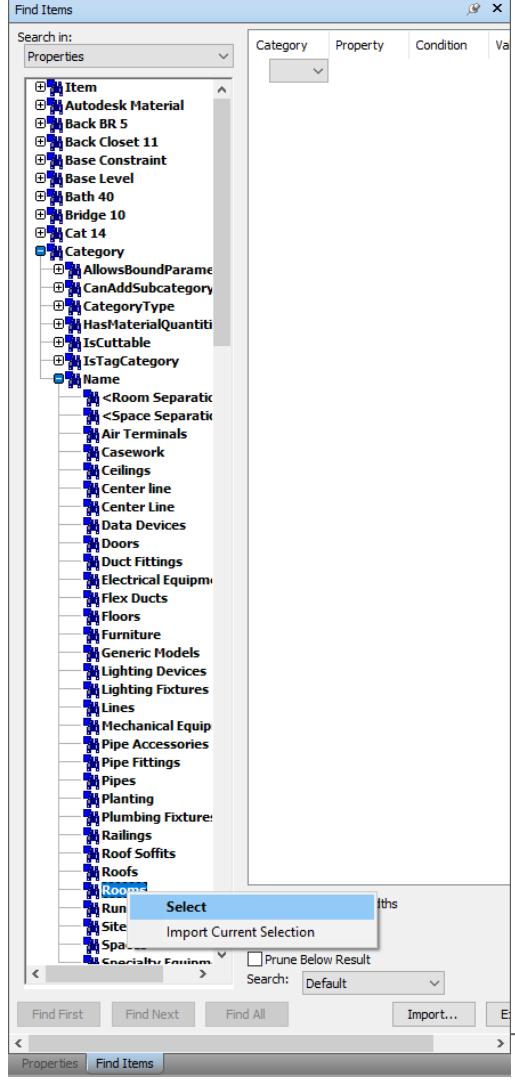


Display the property menu for the selection, Override Color and Transparency to create the desired visual effect. By default rooms are almost invisible

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

**Buckets**

Enter Client ID and Secret from [Create an Autodesk Forge Application](#)

System Wide Forge Applic...

Client ID  
LL2HZmCvuXIDESmjU81fqzh1N3ih:

Client Secret  
.....

OK CANCEL

Confirm Forge Key Update

Updating the system Forge application key change the key for all user of the Forge viewer and will make existing model inaccessible to the viewer unless the new key has read access to the buckets the models are stored in.

Do you want to continue?

CONTINUE CANCEL

Allows you to work with other Client IDs in a local session without effecting other users.

Set Key: This Session

Set Key: System Wide

Log out

View Model

Item in Model

Select "System Wide" to store the Forge app credentials in the TRIRIGA database which provide viewer access to all authorized users

If this is the first time you have entered credentials, or you are only changing the secret, you can safely continue

# Create Forge “Buckets” to store your models



The bucket key must be unique across all users of the Forge service. Autodesk recommends including your Client ID in your Bucket Key. If the Append Key option checked, the tool manages that automatically

Data retention policy:

- Persistent: Until deleted
- Temporary: 30 days
- Transient: 24 hours

Geographic location where data is physically stored

A white dialog box titled 'Add Bucket' is centered on the screen. It contains three input fields: 'Key' with the text 'demobucket', 'Policy' with the text 'Persistent', and 'Region' with the text 'US'. Below the 'Key' field is a checked checkbox labeled 'Append app key?'. At the bottom of the dialog are two buttons: 'OK' and 'CANCEL'. Three blue callout boxes point to the 'Append app key?' checkbox, the 'Policy' field, and the 'Region' field, providing additional context for each.

- 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

The screenshot shows the Autodesk Forge web interface. The top navigation bar includes 'Buckets', 'Model Files' (highlighted), 'Buildings', and 'Viewer'. The Autodesk Forge logo is on the right. Below the navigation bar, there's a header with 'Buckets' and 'Models'. The 'Buckets' section on the left lists 'demobucket' and 'persistent'. The 'Models' section on the right shows 'Items per page 30'. A 'Model Upload' dialog is open in the center. It has fields for 'Model File' (with a 'Choose File' button and the text 'BartonKeep.zip'), 'Region' (set to 'US'), 'Also translate to viewable?' (checked), and 'Root file Name' (set to 'Barton Keep 2016.rvt'). There are 'OK' and 'CANCEL' buttons at the bottom right of the dialog. Three callout boxes provide additional information: one points to the 'Also translate to viewable?' checkbox, another points to the 'Model File' field, and a third points to the 'Root file Name' field.

**Model Upload**

Model File  
Choose File BartonKeep.zip

Region  
US

☒ Also translate to viewable?

Root file Name  
Barton Keep 2016.rvt

OK CANCEL

Multi-part models are uploaded as zip files.9

Automatically start translation when the upload completes.

Leave this blank for a single model file. For a zip file, specify the unqualified file name of the root model file



# Link Forge Models to TRIRIGA Buildings

**Model Lookup**

Object Key  
bar

barton keep 2016.nwd

bartonkeep.zip

OK CANCEL

**Model Lookups**

Building Name  
barton

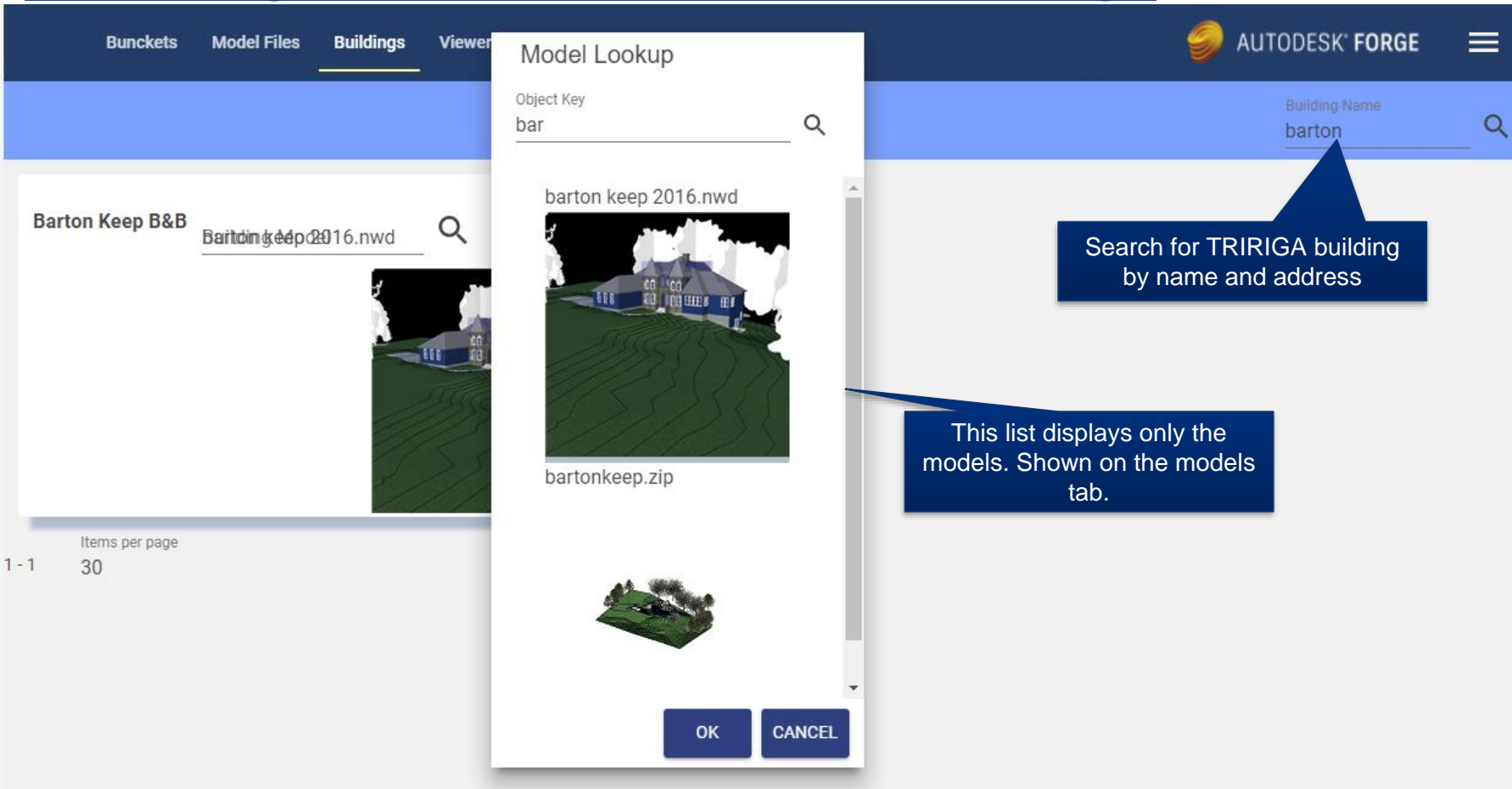
Barton Keep B&B

Barton Keep 2016.nwd

Items per page  
1 - 1 30

Search for TRIRIGA building by name and address

This list displays only the models. Shown on the models tab.

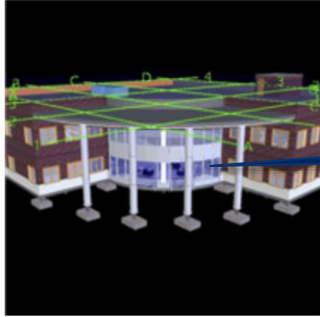


# Building Link

**WBDG Med Center**

Building Model  
WBDG-MedCenter.nwd

1010 E Swedesford Rd,  
King of Prussia  
Pennsylvania 19406




Select model to link to building.

Additional model link information

Preview model in viewer.

Delete link to model.

**Model Link Details**



Display Name  
Barton Keep B&B

Binding  
Barton Keep B&B

NavisWorks Binding

OK Cancel

- 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

**Models**

Object Key

- 0405\_01.nwc
- 10-09010\_highland hills.rvt
- 20112206\_20421030000\_welplaatweg
- 510a0400.dwg
- 510m0400.dwg
- AdminBldg.nwd
- Clinic.nwd**
- ExecutiveBriefingCenterr.nwd
- Office-2016.nwd

Setup the view you want to save

**SAVE CURRENT VIEW**

Save Current View undefined Building undefined

Save View

Description

Details

Public

Create Close

Select and display the desired model

Views are saved by user, but can be made public

RIGHT

# BIM Connector for Revit

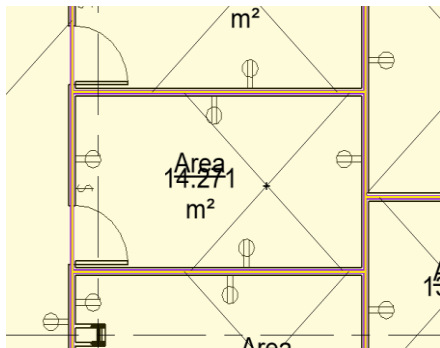




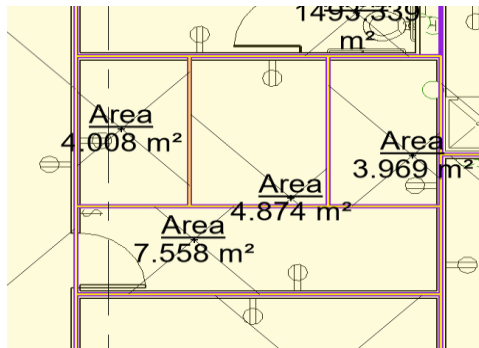
# Revit Area and Area Plans

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

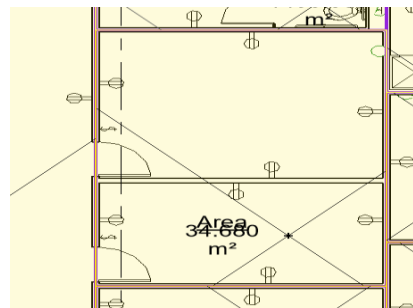
1) The area boundaries match the room boundaries



2) A room is comprised of exactly n areas



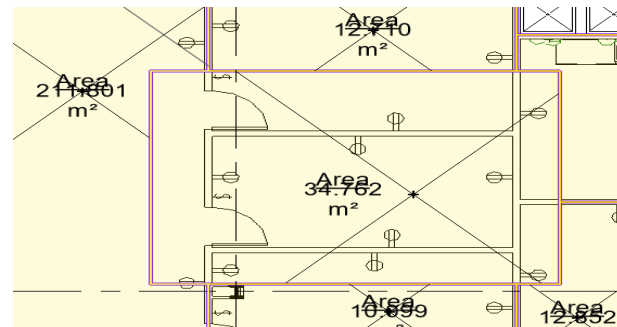
3) An area is encompassing exactly n rooms



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 area plan, if one exists is used for the Floor's gross area, and if a rentable area 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.