

AS197529

BIM 360 Design: Opening the Doors for Real Collaborative Project Execution

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Learning Objectives

- Learn how to set up a BIM 360 Design project and create Teams spaces for various disciplines
- Learn how to upload Revit models on BIM 360 Design Cloud server for collaborative workflows
- Learn how to create and issue packages to be used by other teams
- Learn how to use Document Management to review the cloud-based model and compare the differences between different versions of models

Description

BIM 360 Design software for Revit cloud collaboration has fundamentally changed the way the architecture, engineering, and construction industry works on complex projects that require collaborative workflows. This class will focus on explaining the concept of BIM 360 Design, the new avatar of Collaboration for Revit. We'll demonstrate the fundamentals of using collaborative workflows using BIM 360 Design, and illustrate how multiple stakeholders can collaboratively work on a project using Revit cloud work sharing. The co-speaker—the national BIM (Building Information Modeling) manager of a large architectural firm—will explain how their company used BIM 360 Design to deliver complex projects on time and on budget using real collaboration on the firm's Revit models.

Deepak's Bio

Deepak is a qualified Mechanical Engineer with more than 19 years of experience of working in the design industry. He is currently working as the National Technical Manager - Named Accounts, with Cadgroup Australia. Deepak is also a guest lecturer at the University of Technology Sydney (UTS) and University of New South Wales (UNSW), two of the biggest universities in Australia.

Deepak is a regular speaker at Autodesk University in Las Vegas and was awarded the [Best Speaker at AU2017 in the Industrial Demo category](#). He has also been among the [Top-Rated AU Speakers](#) for last five years in a row and among the [Top-Rated Speakers](#) at various BILT conferences in ANZ and Asia.

He is the author of the [Up and Running with Autodesk Advance Steel](#) and [Up and Running with Autodesk Navisworks](#) series of textbooks. Visit the Authored Textbook page of his website www.deepakmaini.com to know about these books.

About this Handout

This handout is written with the intentions of being used as a comprehensive document to set up a BIM 360 Docs project from scratch. It will be handy if you review the special Notes and Tips as they provide additional information about the topic being covered. The following are the topics that are covered in this handout:

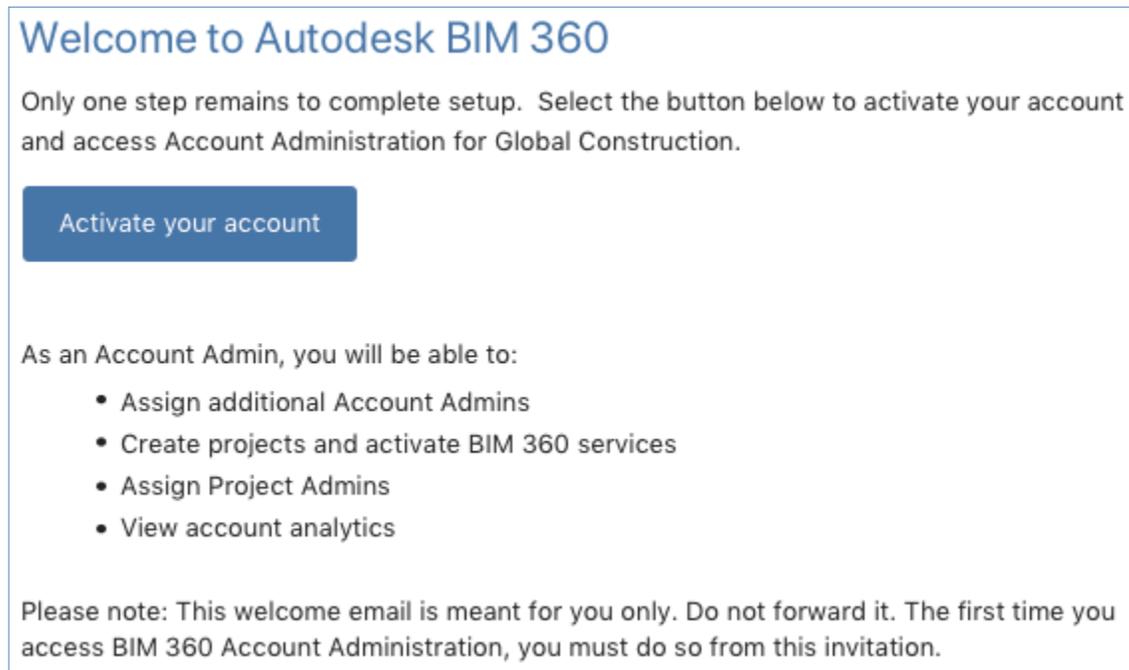
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Activating BIM 360 Account

When you subscribe to BIM 360 Design, an Account Admin is nominated. This nominated Account Admin then receives an email from Autodesk that they can use to activate the BIM 360 Account. The following is the procedure for doing this:

1. Click on the Autodesk welcome email, which looks similar to the one shown below:

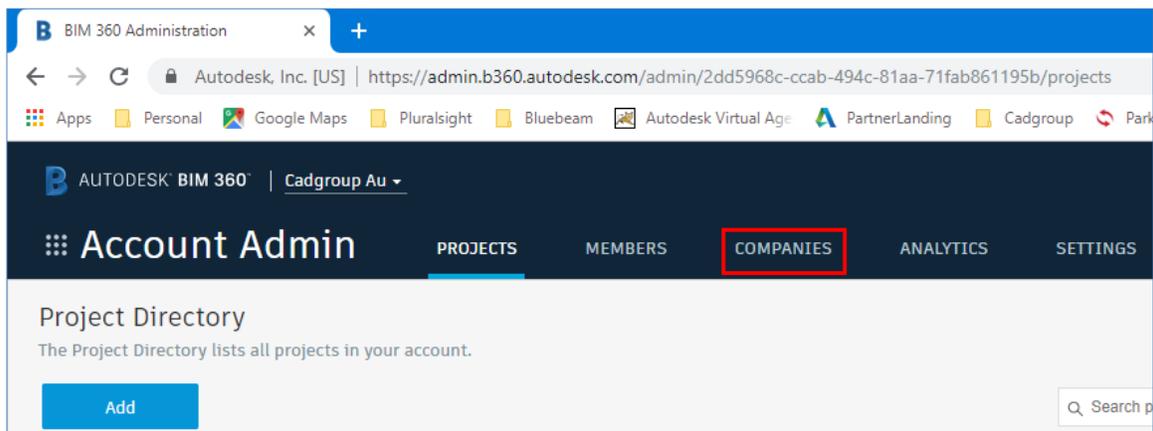


2. Click on **Activate your account** link in the email; you are taken to the <https://admin.b360.autodesk.com/login> page.
3. Login using your Autodesk credentials and the BIM 360 Account is activated. You are now ready to add other users and create projects.

Adding Companies

Before you start adding any users to your account or add any projects, you need to create at least one default company that the initial users need to be assigned to. The following is the procedure for adding companies to your account.

1. On the BIM 360 Account Admin page, click **COMPANIES**, as shown below:



2. On the **Company Directory** page, click **Add**; the **Create Company** window is displayed.
3. Enter all the details of the company you are creating, as shown in the image below.

*Tip: All the fields with * are required. Any other field is optional.*

Create Company ✕

*** Company Name**

*** Trade or Company Type**

Company Address

Company Telephone

Company Website

Company Logo

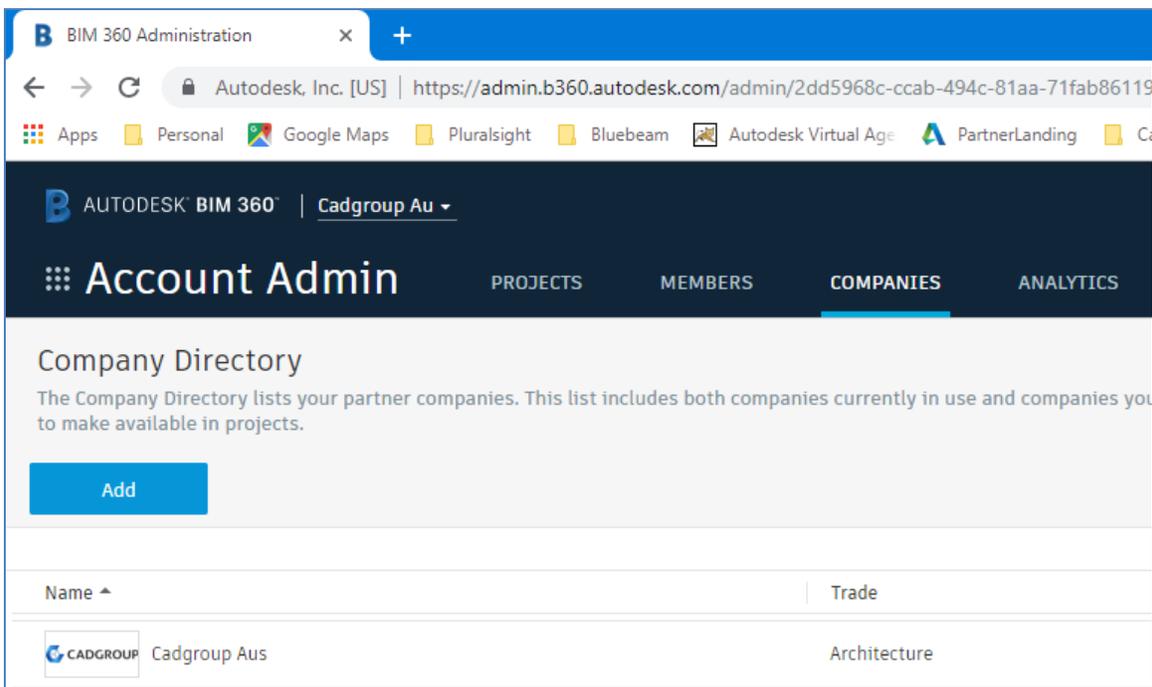
Select image to upload
 JPEG, GIF, PNG, or BMP file
 (4MB max)

Description

ERP Partner Company ID

Tax ID

4. Click **Save**; the company is created and is listed in the **Company Directory** page, as shown below:



The screenshot shows a web browser window with the URL `https://admin.b360.autodesk.com/admin/2dd5968c-ccab-494c-81aa-71fab86119`. The page title is "AUTODESK BIM 360 | Cadgroup Au". The navigation menu includes "Account Admin", "PROJECTS", "MEMBERS", "COMPANIES", and "ANALYTICS". The "COMPANIES" tab is active, displaying the "Company Directory" section. Below the header, there is an "Add" button and a table listing the company.

Name	Trade
 Cadgroup Aus	Architecture

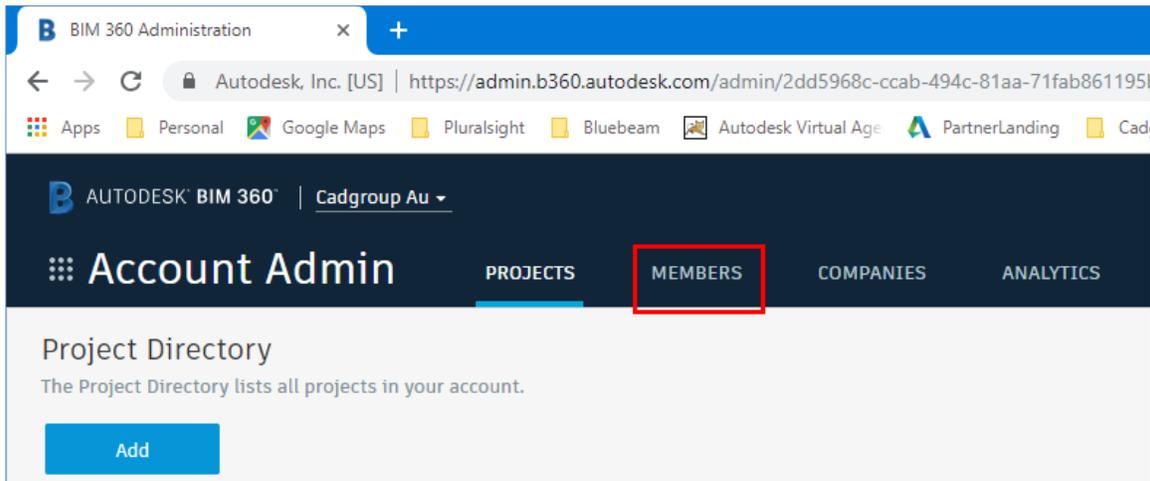
5. Similarly, add more companies, if required.

Tip: Later on in this handout, you will be shown how you can add members using spreadsheets and add their default companies also during that process.

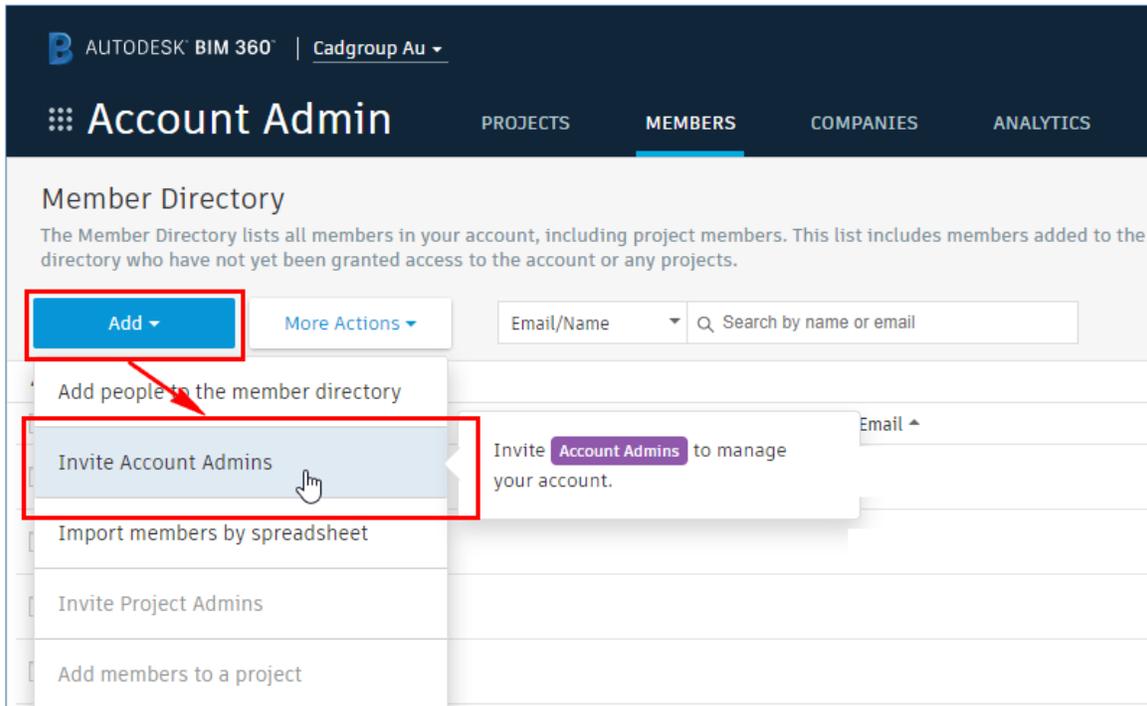
Adding Additional Account Admins (BIM Leads)

Generally, it is an IT Manager or an IT coordinator who is nominated as the Autodesk Software Account Admin. Therefore, they are the ones who get all the admin rights to the BIM 360 account. However, they may not necessarily be the one who would create BIM 360 Design projects. Therefore, it is important that they add the BIM Team Leads of their company as the Account Admins so the BIM Team Leads can create and manage BIM 360 projects. The following is the procedure for adding additional account admins.

1. The original account admin needs to log on to the <https://admin.b360.autodesk.com/login> page using their Autodesk credentials.
2. On the Account Admin page, click on **Members**, as shown below:



3. Click **Add > Invite Account Admins**, as shown below:



4. In the **Invite Account Admin** window, enter the email address of all the account admin that you want to invite and then click **Add**.
5. Assign a default company and a default role to the new account admin.

Tip: The company and role of the users can be modified at any point of time, after adding them to the account.

6. Repeat steps 4 and 5 to add other users that need to be invite as the account admin.
7. Once all the users are added, click **Invite**, as shown below; the email invite is sent to the account admin users.

Invite **Account Admin** ×

To invite new Account Admins to manage your account, enter their email addresses, and select Account Admin in the Access Level dropdown. The Account Admins will receive invitation emails with links to BIM 360 administration.

Invite Account Admins to manage your account. Add

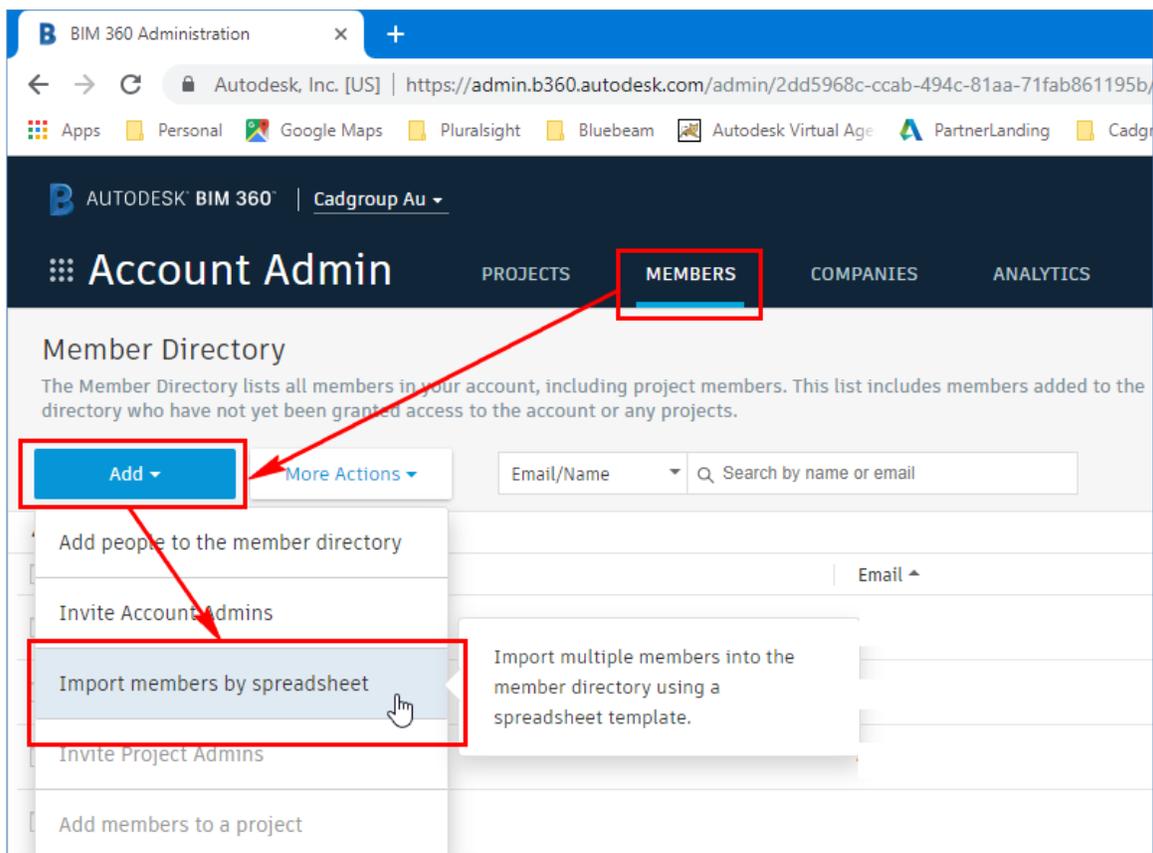
Email	*Default Company	Default Role	Access Level
dmaini@cadgroup.com.au	Cadgroup Aus	BIM Manager	Account Admin

Cancel Invite

Adding Members to the Account Using Spreadsheet

To add members to a BIM 360 Design project, you first need to add the members to your BIM 360 Account. This can be done by manually or using a spreadsheet. Note that this can only be done by the BIM 360 Account Administrator. The following is the procedure for adding members using a spreadsheet.

1. On the **Account Admin** page, click **MEMBERS > Add > Import members by spreadsheet**, as shown below; the **Import Members** window is displayed.



2. In the **Import Members** window, click **Download the member list template**, as shown below; an Excel file is downloaded in the default **Downloads** folder of your machine.

Import Members

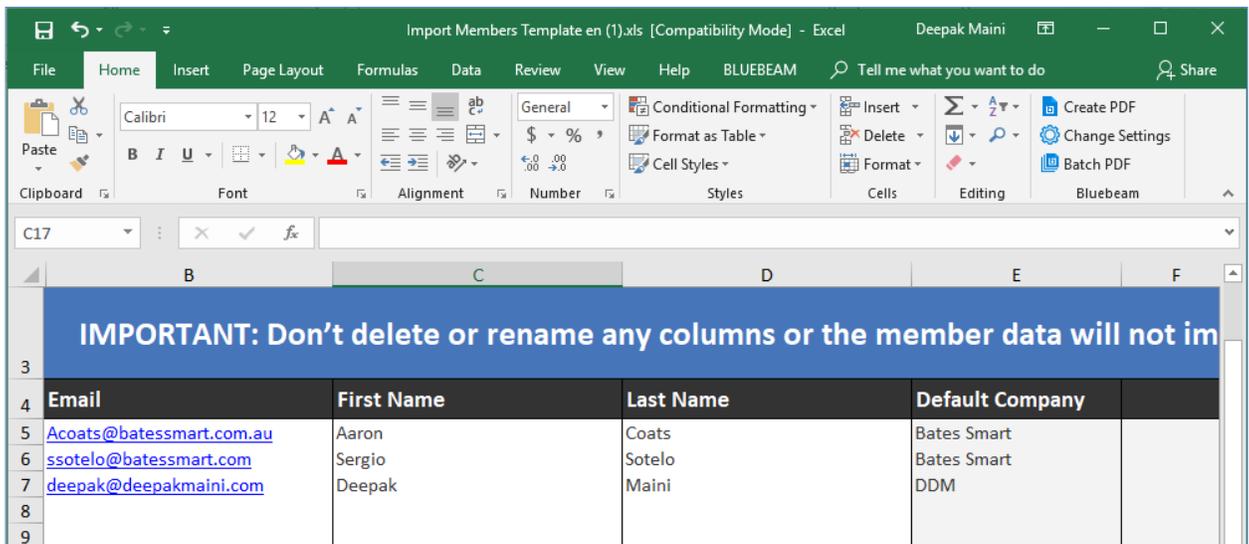
- 1 Create a member list in XLS format
Download the member list template and open it with Microsoft Excel.
 In the template, enter your member details, one member per row. Replace the example entries with your actual member details.
 Save the file as a XLS file.

- 2 Select a file to upload

3. Open the downloaded Excel spreadsheet.

It is important to note that you should not make any changes to any column in the spreadsheet. You only need to enter the email address, first name, last name, and the default company of the users.

4. Enter the details of the users to be added. The following figure shows the users and their details entered in the Excel spreadsheet.



IMPORTANT: Don't delete or rename any columns or the member data will not im				
Email	First Name	Last Name	Default Company	
Acoats@batesmart.com.au	Aaron	Coats	Bates Smart	
ssotelo@batesmart.com	Sergio	Sotelo	Bates Smart	
deepak@deepakmaini.com	Deepak	Maini	DDM	

5. Save the spreadsheet.

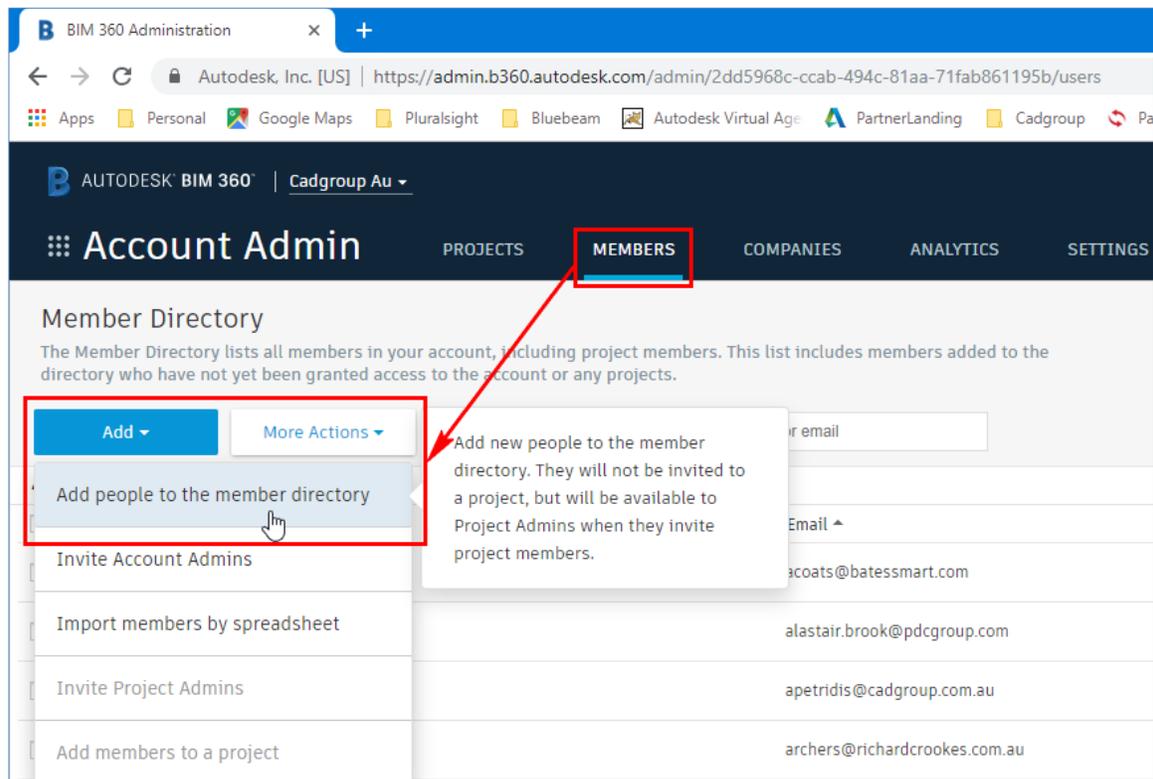
6. Return back to the **Import Members** window.
7. In this window, click on **Choose File** and then select the Excel spreadsheet in which you entered the user details.
8. Click **Start Import**; the process of importing the users will start. Once the users are imported, a message will be displayed in the **Import Members** window informing you about the number of members imported.
9. Click **Finish** in the window; all the added members are listed in the **Members Directory** page.

*Tip: You can click on any added member to go to that member profile page and then click **Edit** to edit the role, company, or access level of that user. Using the **Access level** area, you can also promote the user to the account admin role.*

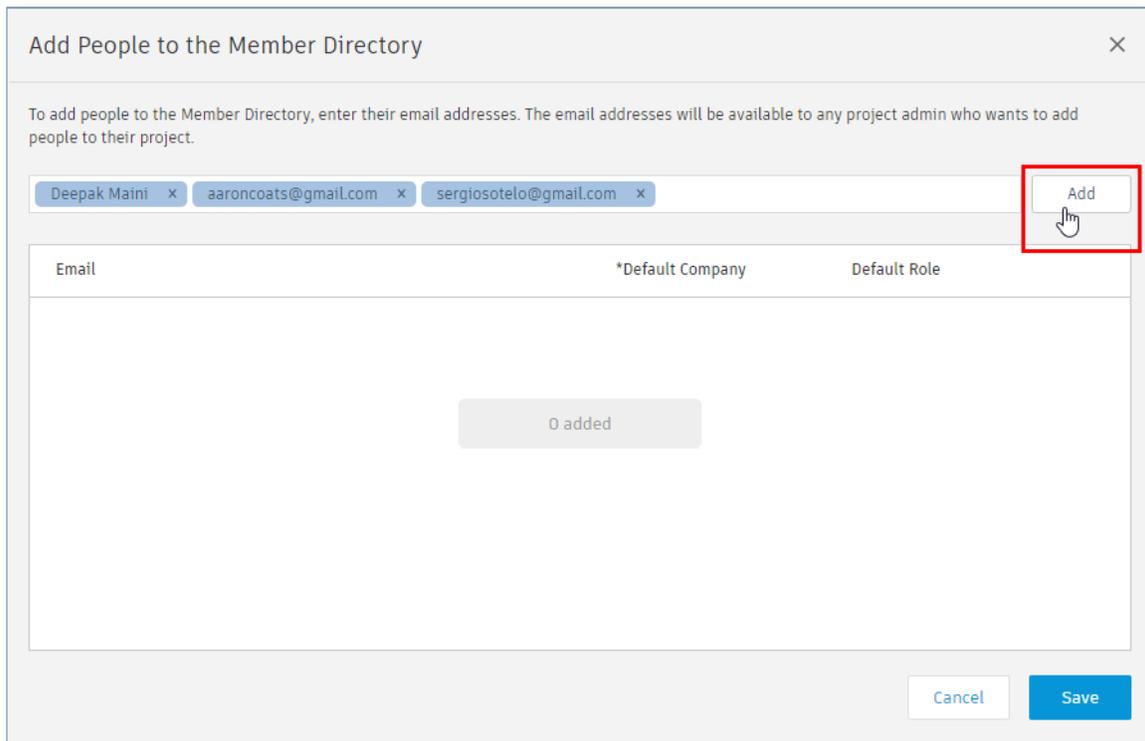
Manually Adding Members to the Account

The following is the procedure for manually adding members to the account.

1. On the **Account Admin** page, click **MEMBERS > Add > Add people to the member directory**, as shown below; the **Add People to the Member Directory** window is displayed.



2. Enter the email address of the member you want to add. You can add multiple email address separated by commas.
3. Once all the email addresses are entered, click **Add**, as shown below:



Add People to the Member Directory

To add people to the Member Directory, enter their email addresses. The email addresses will be available to any project admin who wants to add people to their project.

Deepak Maini x aaroncoats@gmail.com x sergiosotelo@gmail.com x

Add

Email	*Default Company	Default Role
0 added		

Cancel Save

4. Assign the default company to all users. It is important to note that you will not be able to add users without a company assigned to them.

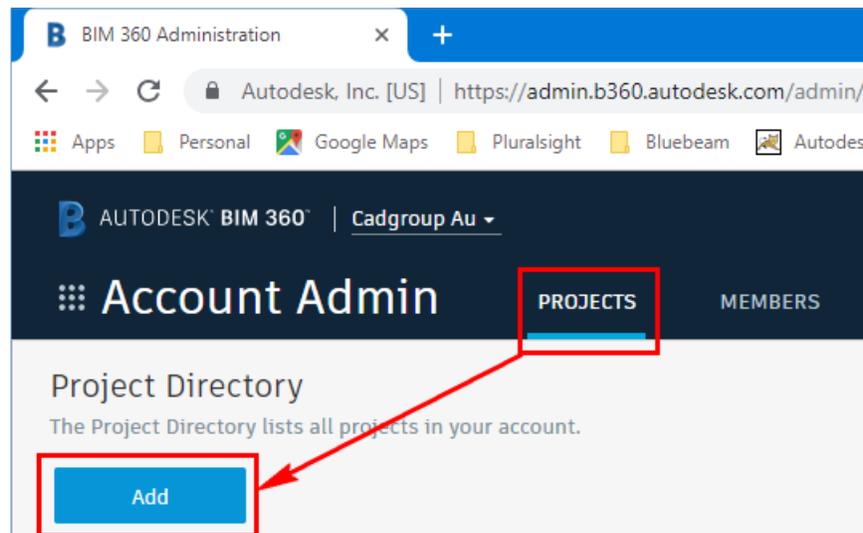
Tip: If the actual company of the user is not created yet, assign any existing company to the user. Once the user is added, add their company and then edit the user to change the company.

5. Define the default role for the users.
6. Click **Save** in the **Add People to the Member Directory** window; the new members are added and listed in the **Members Directory** page.

Adding a New BIM 360 Design Project and Activating Services

As mentioned in the lecture, all admin activities for BIM 360 Design projects are done through the unified account admin page. Once the project is added, you can activate the services to be used on that project. The following is the procedure for doing this:

1. From the **Account Admin > PROJECTS** page, click **Add**, as shown below; the **Create Project Profile** window is displayed.



2. Enter all the project related information in this window, as shown below. Note that the fields with * are mandatory.

*Tip: If you enter the project address, the **Project Home** page will show the weather on the day at the project location.*

Create Project Profile

Step 1 of 2

* Project Name

Project name is valid.

* Project Type

Construction Type

Project Value

Project value is valid.

Contract Type

* Project Start Date * Project End Date

Project Job Number

Project Image


Select image to upload
 JPEG, GIF, PNG, or BMP file
 (4MB max)

Project Address

Project Time Zone

* BIM 360 Field Project Language

3. Scroll down in the **Create Project Profile** window and click **Save and Continue**; the **Activate Services** window is displayed. The services displayed on this page will vary, depending on your subscription.

It is extremely important to note that the first service that needs to be activated is the **Document Management** service.

4. Click on **Activate** on the right of **Document Management**, as shown in the figure below; the **Document Management** area expands and shows you the fields to copy project settings and assign a project administrator.

Note that only the members that are already added to the account can be added as project admin. Also, a default company needs to exist to be entered for the project admin.

Activate Services

Step 2 of 2

To activate a service, click Activate and assign at least one project admin to the service. [More](#) ▾

● Inactive	Document Management	<input type="button" value="Activate"/>
● Inactive	Project Management	<input type="button" value="Activate"/>
● Inactive	Design Collaboration	<input type="button" value="Activate"/>
● Inactive	BIM 360 Glue	<input type="button" value="Activate"/>
● Inactive	BIM 360 Field	<input type="button" value="Activate"/>
● Inactive	BIM 360 Plan	<input type="button" value="Activate"/>

5. Enter the name and company of the project admin, as shown in the figure below.

It is important to note that the project admins get access to all the teams and their live work in progress models. So you need to be careful about who you add as project admins.

Activate Services
Step 2 of 2

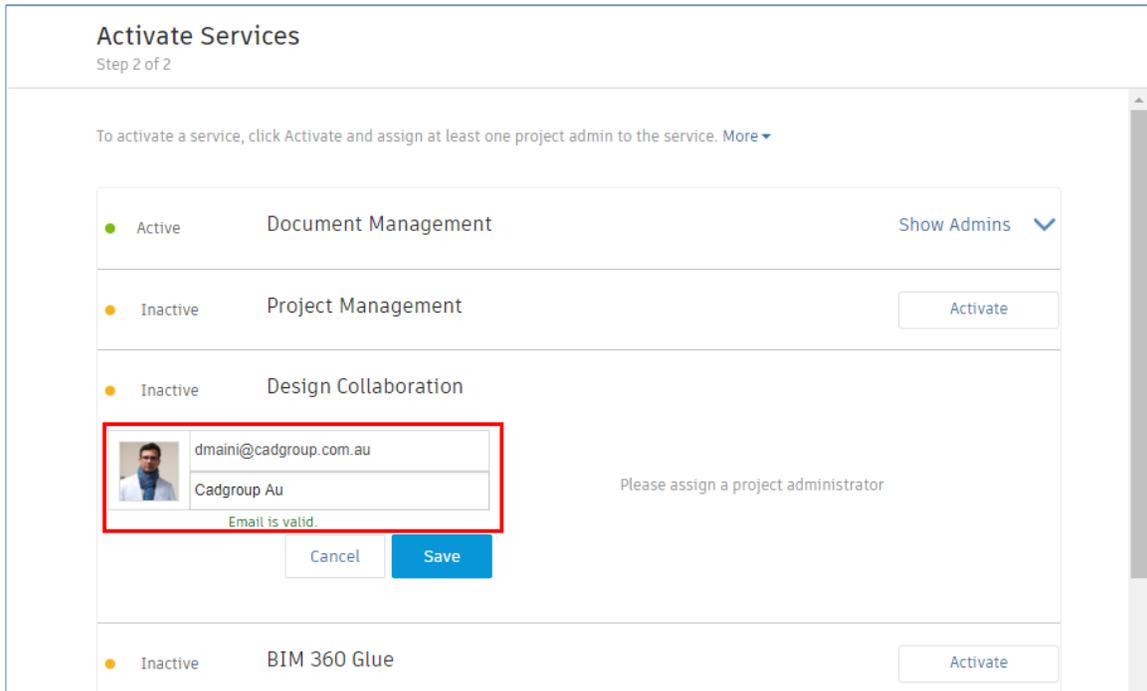
To activate a service, click Activate and assign at least one project admin to the service. [More](#) ▾

● Inactive	Document Management	
Copy project settings (Learn more)		Please assign a project administrator
Select Project ▾		<div style="border: 2px solid red; padding: 2px;">  dmaini@cadgroup.com.au Cadgroup Au <small>Email is valid.</small> </div>
		<input type="button" value="Cancel"/> <input type="button" value="Save"/>
● Inactive	Project Management	<input type="button" value="Activate"/>
● Inactive	Design Collaboration	<input type="button" value="Activate"/>
● Inactive	BIM 360 Glue	<input type="button" value="Activate"/>
● Inactive	BIM 360 Field	<input type="button" value="Activate"/>
● Inactive	BIM 360 Plan	<input type="button" value="Activate"/>

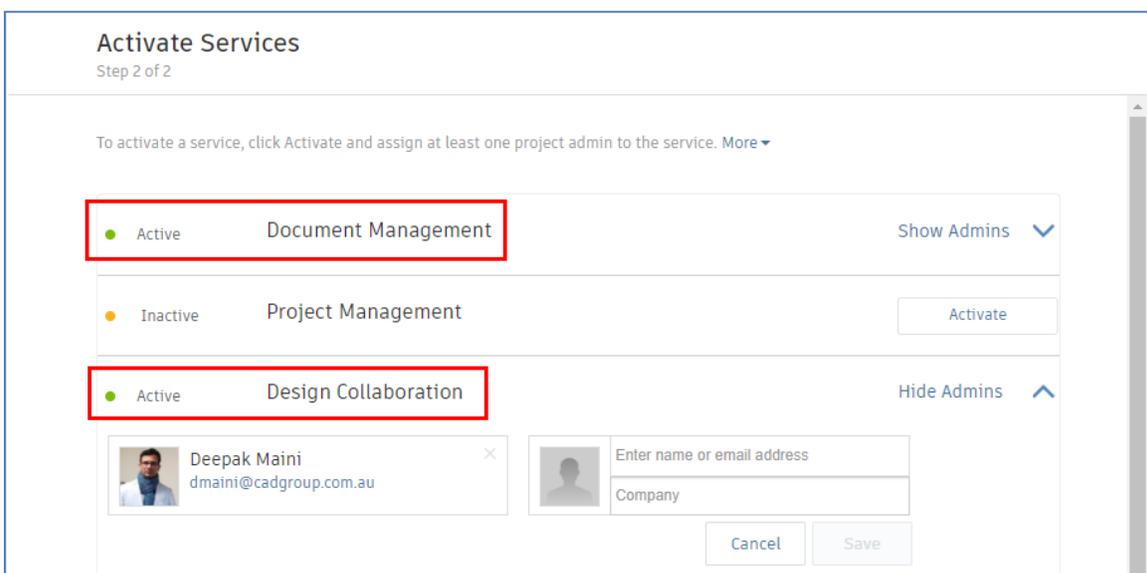
6. Click **Save**; the process of activating the service will start.

Once the service is active, it will show a Green dot and will say Active on the left of its name. Also, the member who is added as the Project Admin will get an email notification about it.

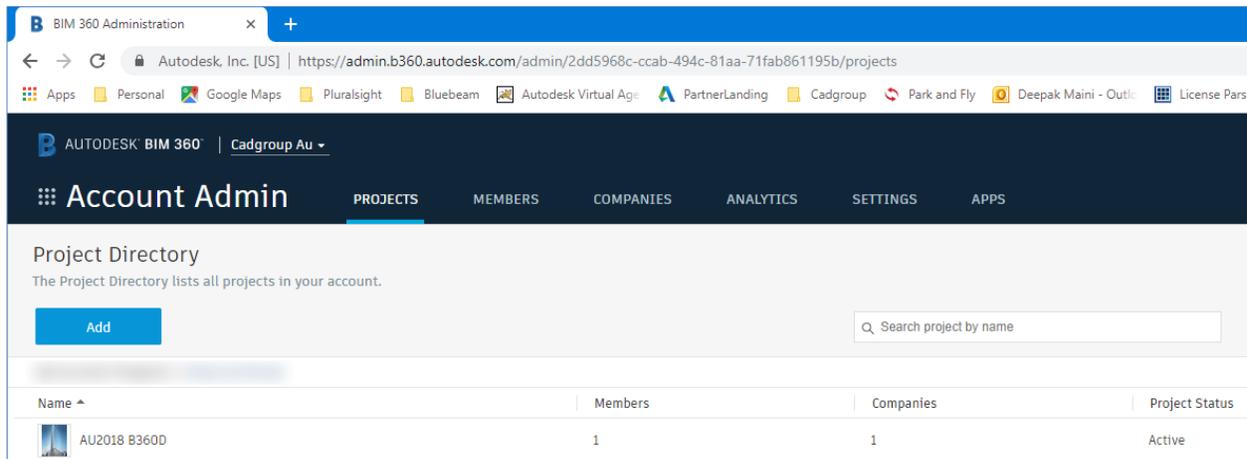
7. Similarly, click on **Activate** on the right of **Design Collaboration** and enter the project admin details, as shown below.



- Click **Save** to add the project admin and activate the service. Once the service is active, it will show a Green dot and will say Active on the left of its name. Also, the member who is added as the Project Admin will get an email notification about it. The figure below shows the **Document Management** and **Design Collaboration** services active.



- After activating the two services, scroll down in the **Activate Services** and click **Finish**; the services are activated and the project is created. Also, the new project is listed in the **Account Admin > PROJECTS > Project Directory** page, as shown below.



The screenshot shows the Autodesk BIM 360 Account Admin interface. The navigation menu includes Account Admin, PROJECTS, MEMBERS, COMPANIES, ANALYTICS, SETTINGS, and APPS. The main content area is titled "Project Directory" and contains a search bar and an "Add" button. Below the search bar is a table listing projects.

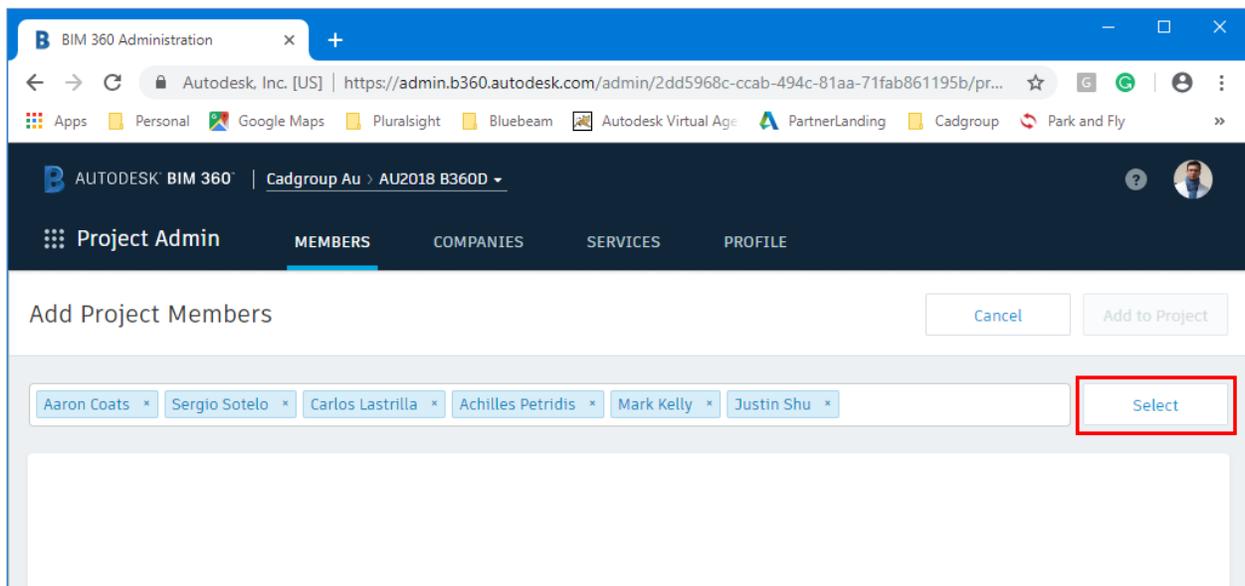
Name	Members	Companies	Project Status
 AU2018 B360D	1	1	Active

*Tip: If for some reason you were not able to activate services while creating the project, you can then click on the project from the **Project Directory** and then click on **Services** to activate various services on the project.*

Adding Members to the Project

In the previous section, you added project admins to activate the services. The following is the procedure for adding non-admin members to the project.

1. From the **Account Admin > PROJECTS** page, click the name of the project to which you want to add members; the **Project Admin > MEMBERS** page is displayed.
2. Click **Add**; the **Add Project Members** page is displayed.
3. Add the email of the member you want to add to the project; the member is displayed in the list.
4. Click on the name of the member to add to the list.
5. Repeat steps 3 and 4 to add the remaining members.
6. Once all the members are listed, click **Select**, as shown below;

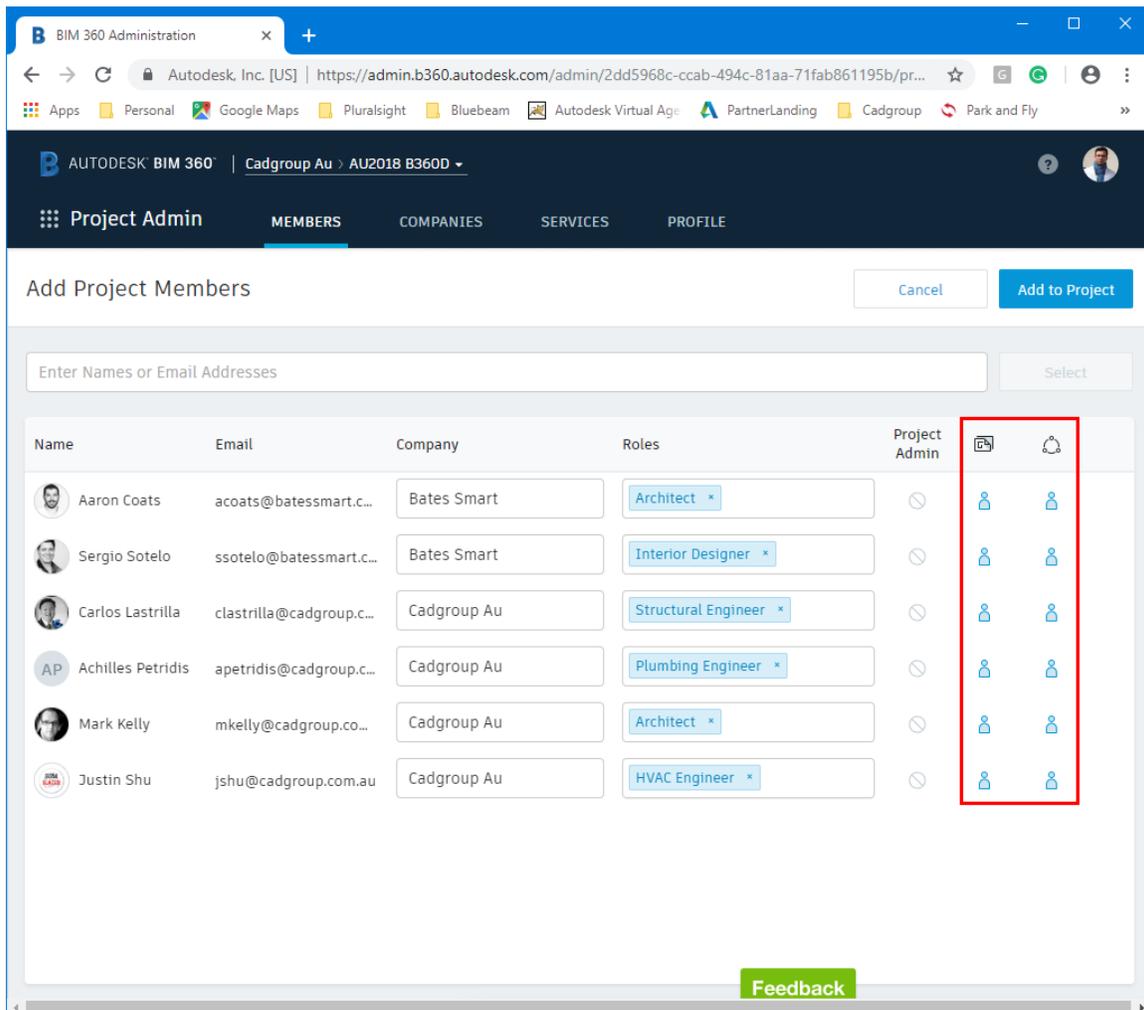


Once the members are added to the project, they will have their default companies assigned.

7. If required, change the companies of the user and then assign their role.

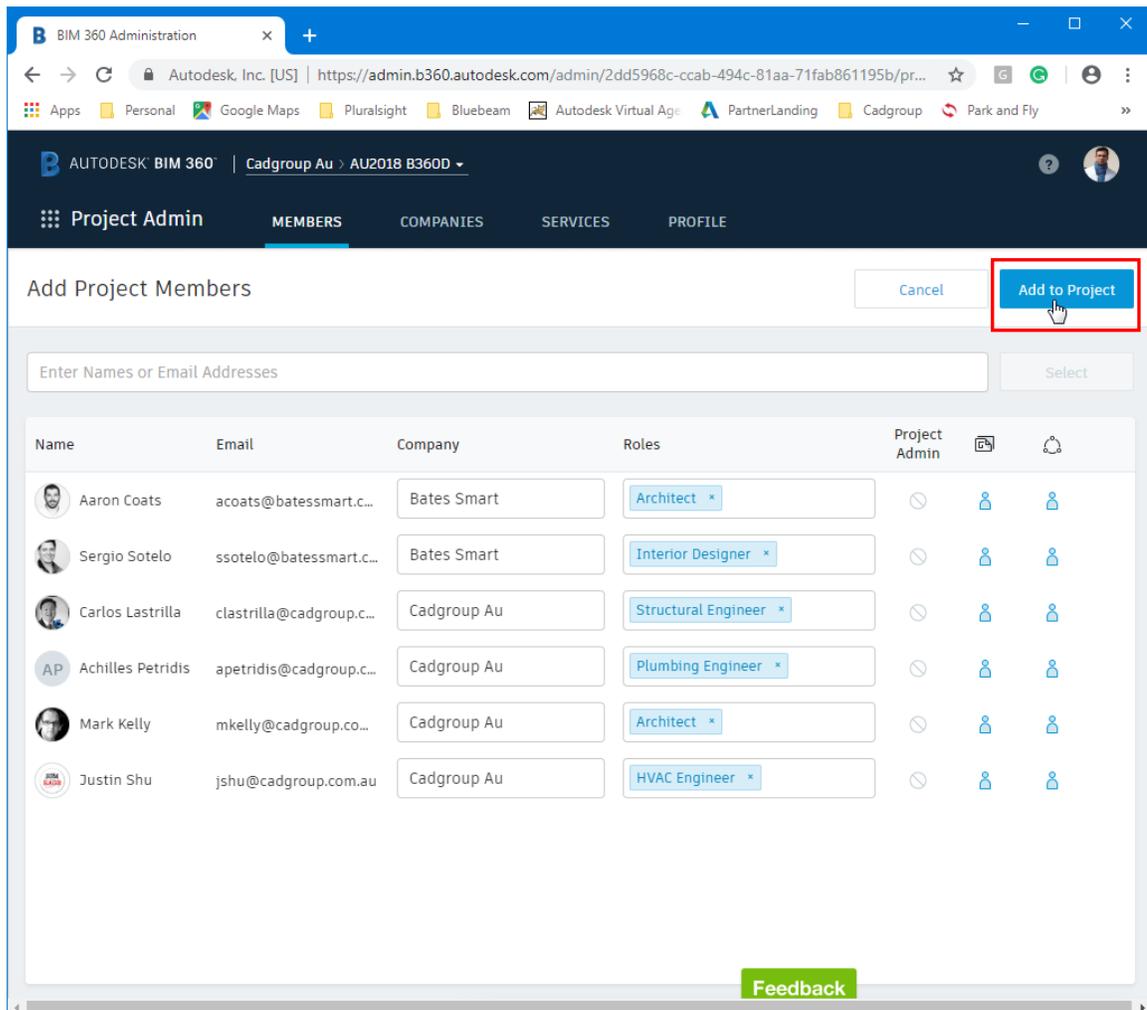
Note that most of the roles that have Manager in their name will automatically make the user project admin. You need to make sure you click on the Orange color Project Admin cogwheel to remove the project admin rights from the user.

- Make sure you have given member rights to **Document Management** and **Design Collaboration** to all users that need to use the BIM 360 Design workflows and Revit Cloud worksharing. The following figure shows all the users with these rights.



Note that the non-Revit users, such as Project Managers or Construction Managers, who only need to access the issued file aren't required to be added here. Those users can be added to the **Shared** folder in Document Management. This will be discussed later in this handout.

- Once you have added the members and given them the right permissions, click **Add to Project** from the top right of the **Add Project Members** page, as shown below.



Project Admin | **MEMBERS** | COMPANIES | SERVICES | PROFILE

Add Project Members Cancel **Add to Project**

Enter Names or Email Addresses Select

Name	Email	Company	Roles	Project Admin		
 Aaron Coats	acoats@batesmart.c...	Bates Smart	Architect	<input type="checkbox"/>		
 Sergio Sotelo	ssotelo@batesmart.c...	Bates Smart	Interior Designer	<input type="checkbox"/>		
 Carlos Lastrilla	clastrilla@cadgroup.c...	Cadgroup Au	Structural Engineer	<input type="checkbox"/>		
 Achilles Petridis	apetridis@cadgroup.c...	Cadgroup Au	Plumbing Engineer	<input type="checkbox"/>		
 Mark Kelly	mkelly@cadgroup.co...	Cadgroup Au	Architect	<input type="checkbox"/>		
 Justin Shu	jshu@cadgroup.com.au	Cadgroup Au	HVAC Engineer	<input type="checkbox"/>		

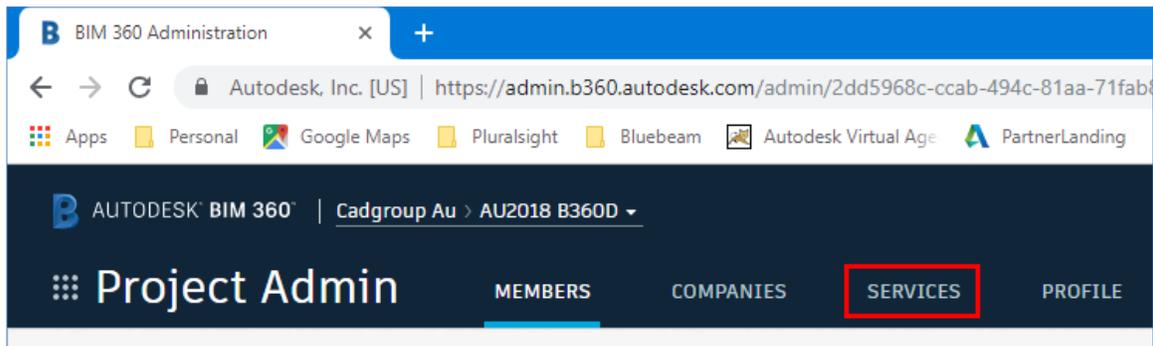
[Feedback](#)

On doing so, the selected members are added to the project and you are returned to the **Project Admin > MEMBERS** page. Notice that the selected members are listed on this page.

Creating Design Collaboration Teams and Adding Members to the Teams

For the successful use of the Design Collaboration workflows, such as creating, sharing, and consuming packages, you need to create Design Collaboration Teams. These teams are automatically added as folders in **Project Files** are of Document Management. You then need to add members from your project to those teams. The following is the procedure for doing this.

1. From the **Project Admin** page, click **SERVICES**, as shown below; the **Project Services and Admins** page is displayed.

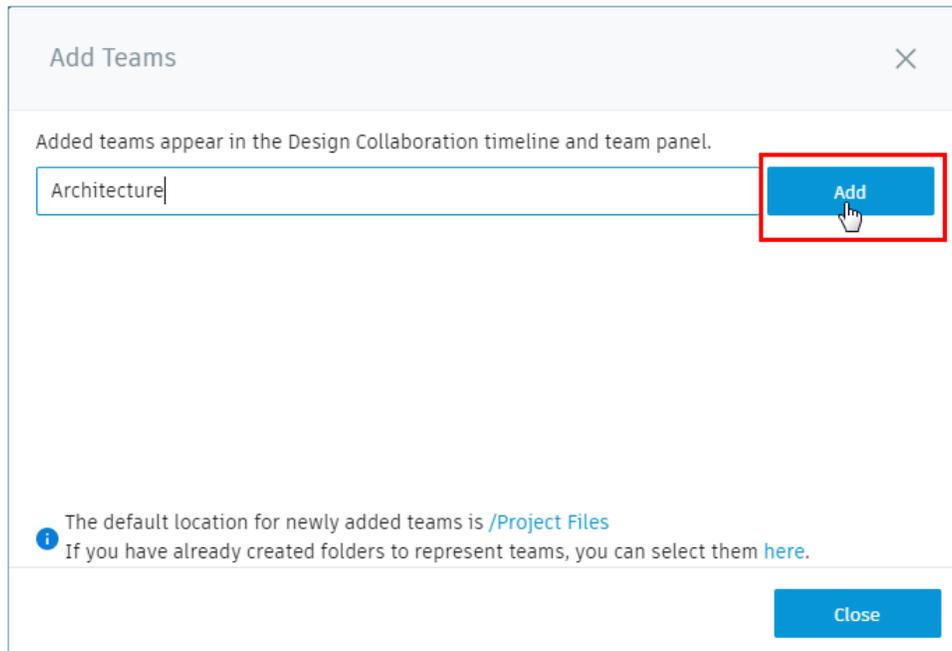


*Tip: The **Project Services and Admins** page can also be used to activate services that were not activated while creating the project.*

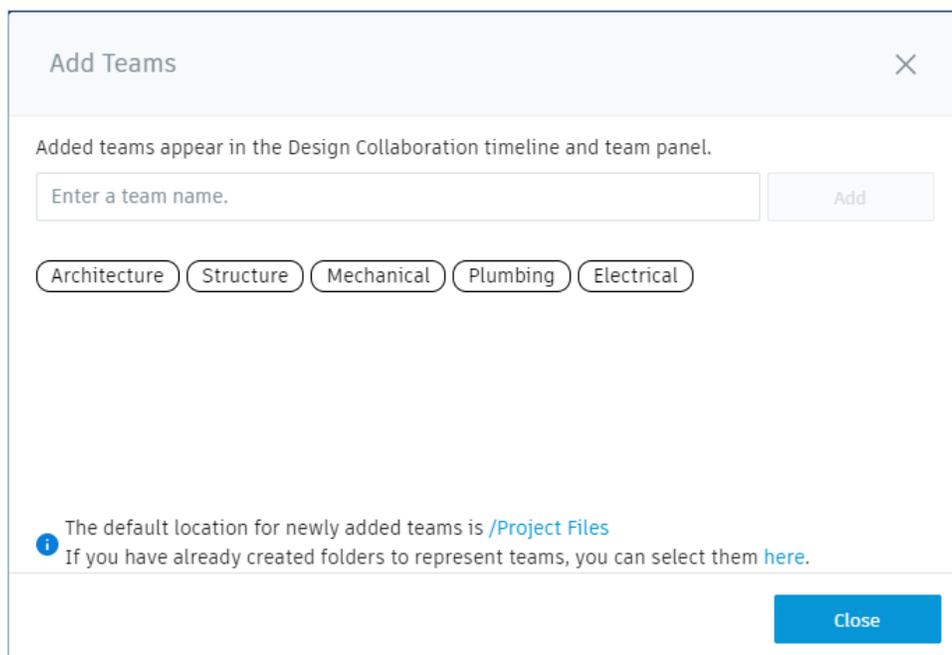
2. From the **Overview** area on the left, click **Design Collaboration**; the **Teams** page is displayed.
3. Click **Add Team**; the **Add Teams** window is displayed.

Note that the teams you add could be based on the discipline, such as Architecture, Structure, Mechanical, and so on, or they could be based on company names.

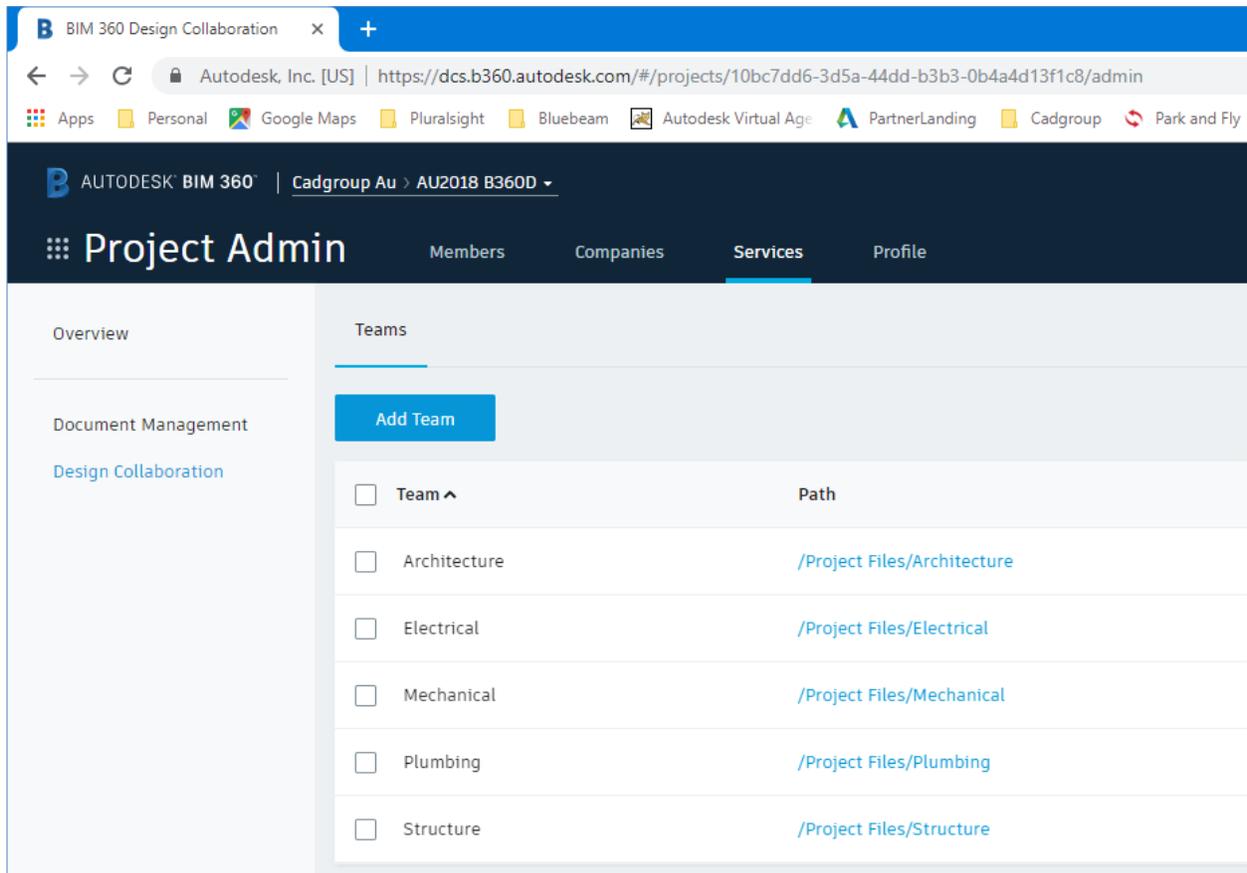
4. In the **Add Teams** window, enter the name of the first team and then click **Add**, as shown below.



5. Similarly, add the remaining teams. The following figure shows five teams added to the **Add Teams** window.



6. Click **Close** in the **Add Teams** window; the teams are displayed in the **Design Collaboration > Teams** area, as shown below.



Notice that on the right of the team names, the path of the team folders are also displayed. These are the paths on **Document Management** page.

Next, you need to add members to these teams. Note that only the members that are added to the project can be added to these teams.

- To add members to the team, select the tick box on the left of the team name and then click **Manage team members**; the **Manage team members of [Team name]** window is displayed, as shown in the figure below.

Notice that the Project Admin is automatically added to this team and inherits the top-level rights to this team.

Manage members of Architecture ×

Add existing team members or invite new team members into this team.

Enter roles, companies, or individual names Add

Permission level View + edit

Name ^	Permission level	Type
Deepak Maini	View + edit + share	User
		Inherited

Close

Before you add the team members, it is important for you to understand the permission levels. These are the three permission levels that can be assigned to the users:

View: This permission level allows the user to view the work in progress model in a team space. Note that this permission also allows the users to download the model from Document Management. By adding this permission level, the user is given the view permission to the current team space as well as the **Shared** folder in the Document Management interface. *This type of permission is mainly for the members of the team that do not use Revit, but do need access to the work in progress files to review and markup, such as Project Architects.*

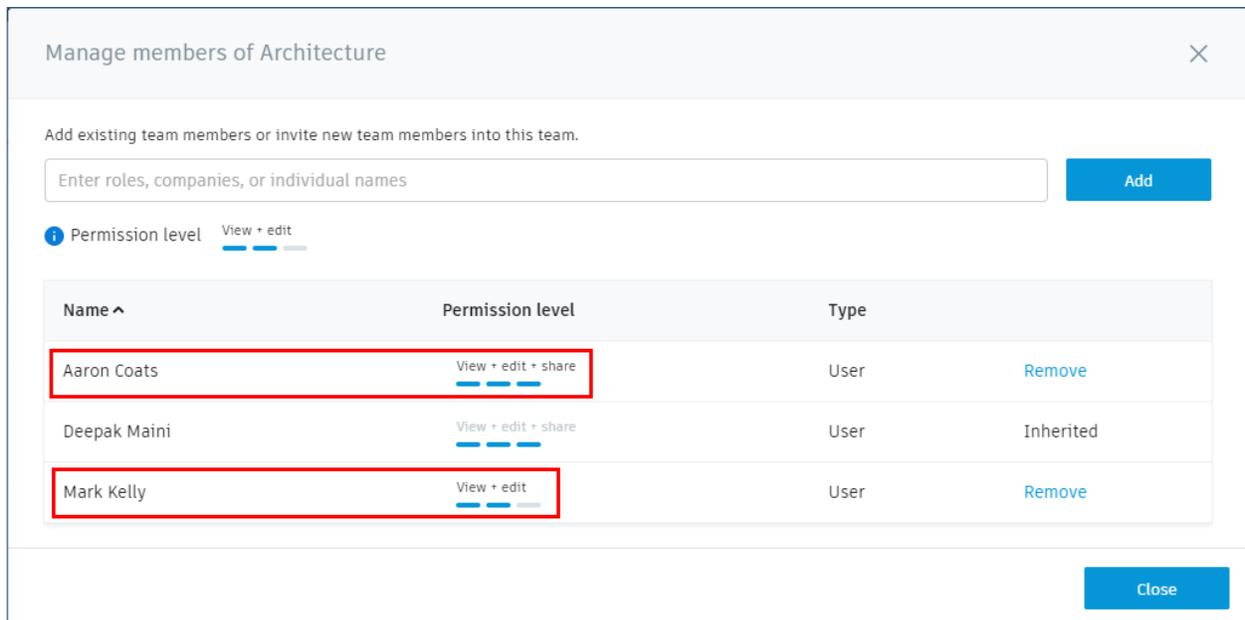
***Note:** As discussed in the lecture, the **Shared** folder in the Document Management interface provides access to all the models shared as packages by various teams. This folder is mainly used to give access to the shared (released) files to project managers or construction managers who do not need to see the work in progress files of the teams.*

View + edit: This permission level allows the users to work on the Revit Cloud Workshared model in the current team space. Additionally, this permission allows the users to create a package to be shared with other teams and also consume packages from other teams. However, this permission level **DOES NOT ALLOW** users to share packages they create with other teams. *This type of permission is mainly for team members who should be allowed to work on Revit Cloud worksharing. Also, they should be allowed to publish the files and create packages. However, they should not be allowed to share those packaged with other teams.*

View + edit + share: This permission level provides the users with all the permissions of **View + edit**, along with the permission of sharing the packages with other teams. *This type of permission is meant for Team Leads who should be the ones responsible for sharing packages with other teams.*

Tip: The members can be added to the teams by their names, roles, or companies. The best way to assign a large number of users is by their company or roles. However, remember that as of 14th October 2018, you cannot modify the permissions of individual users when added as a part of a company. In that case, you will have to add those individual users with the type of permissions they require. The individual permissions override the company permissions.

- To add the user, type their role, company, or names in the **Manage members of [Team name]** window. The following figure shows Aaron Coats added to the **Architecture** with **View + edit + share** permission as he is the team lead. However, Mark Kelly is added with **View + edit** permission as he is a team member and should not be allowed to share packages with other teams.



Manage members of Architecture

Add existing team members or invite new team members into this team.

Enter roles, companies, or individual names Add

Permission level **View + edit**

Name ^	Permission level	Type	
Aaron Coats	View + edit + share	User	Remove
Deepak Maini	View + edit + share	User	Inherited
Mark Kelly	View + edit	User	Remove

Close

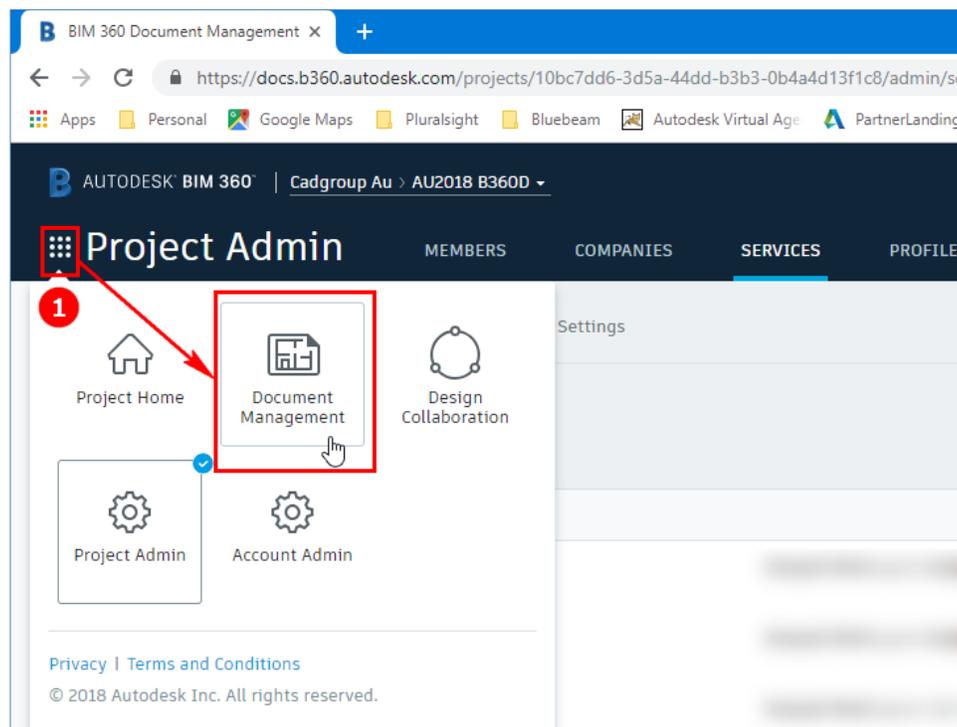
- Click **Close** in the window to return to the **Design Collaboration > Teams** window.

- Repeat steps 7 and 8 to add members to the remaining teams.

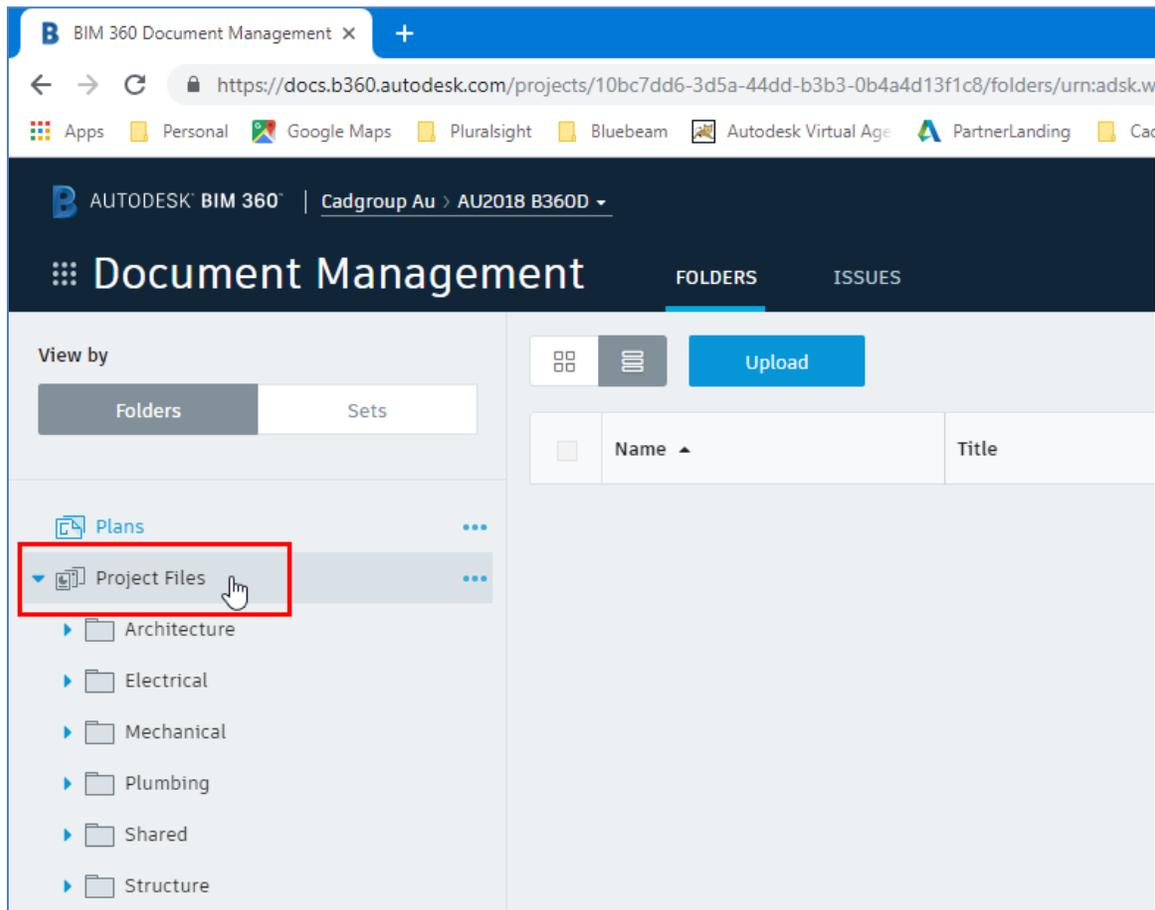
Reviewing Document Management Interface (As the Project Admin)

Once you have created the Design Collaboration teams, it is a good idea to review the Document Management interface before you start working with Revit Cloud Worksharing. Note that this interface will look different for the Project Admin user and the rest of the users. This is because the Project Admin user gets access to all Design Collaboration team spaces.

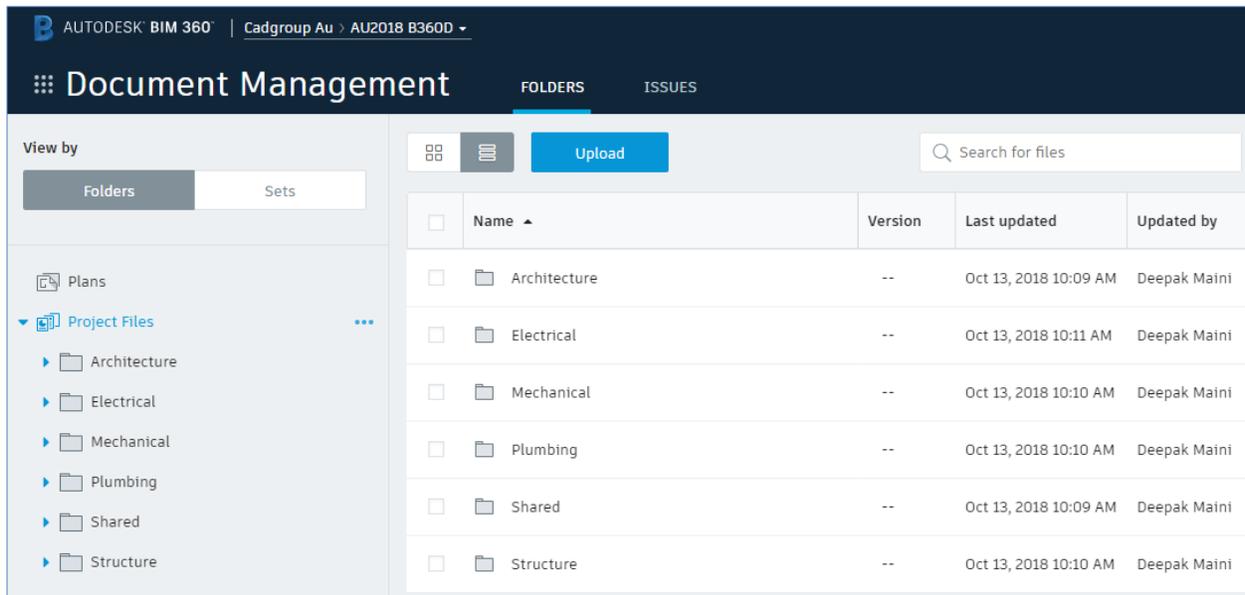
1. From the **Project Admin** page, click the **Module Selector**, labelled as 1 in the figure below, and then select **Document Management**; the Document Management interface opens with the **Plans** area active.



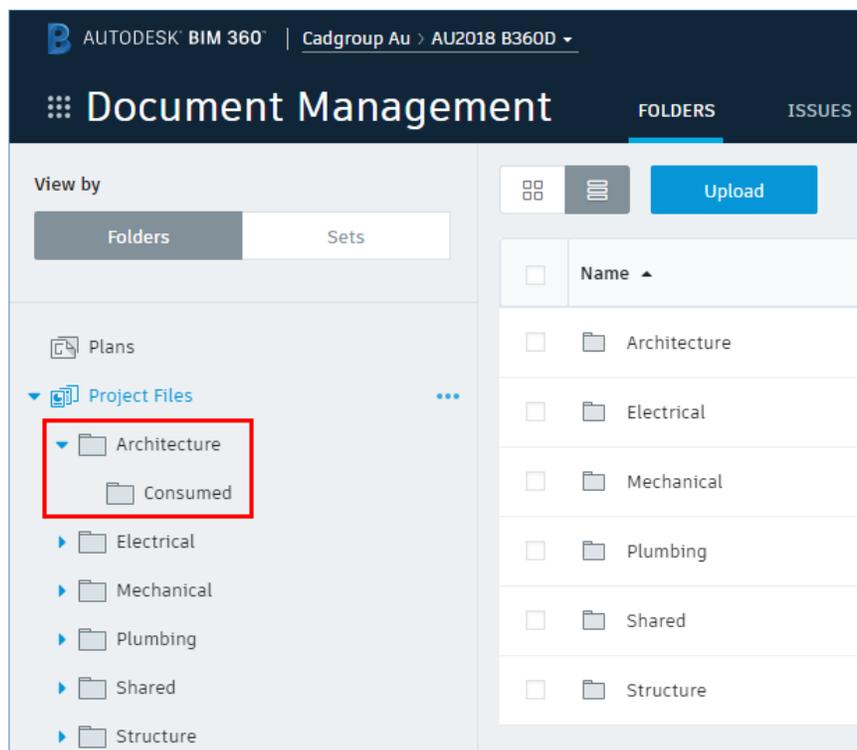
2. In the Document Management interface, click on **Project Files**, as shown below.



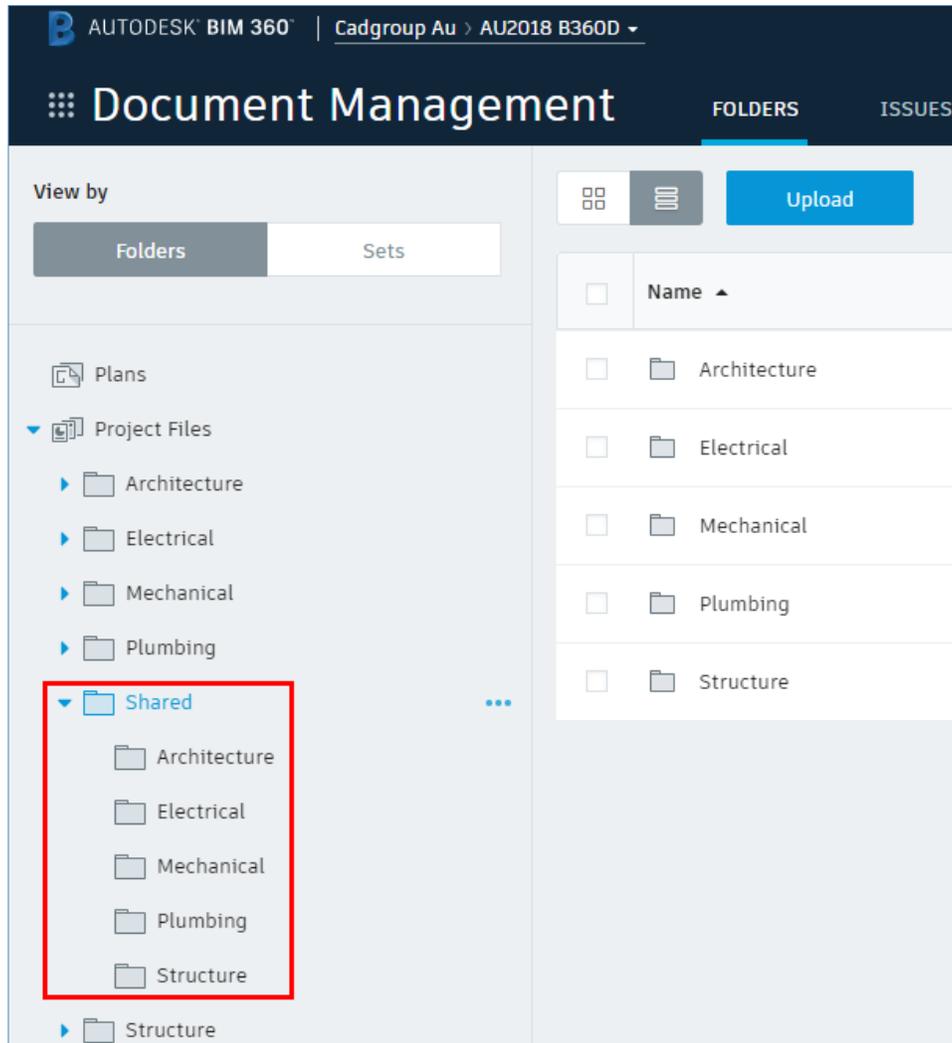
On doing so, the folders of each team are displayed in the interface, as shown below. Also, notice that the **Shared** folder is automatically created.



- From the **Project Files** area, expand the **Architecture** team folder and notice the **Consumed** folder is also automatically created. However, at this stage, there is nothing inside this folder as the Architecture team has not consumed any package from any other team.



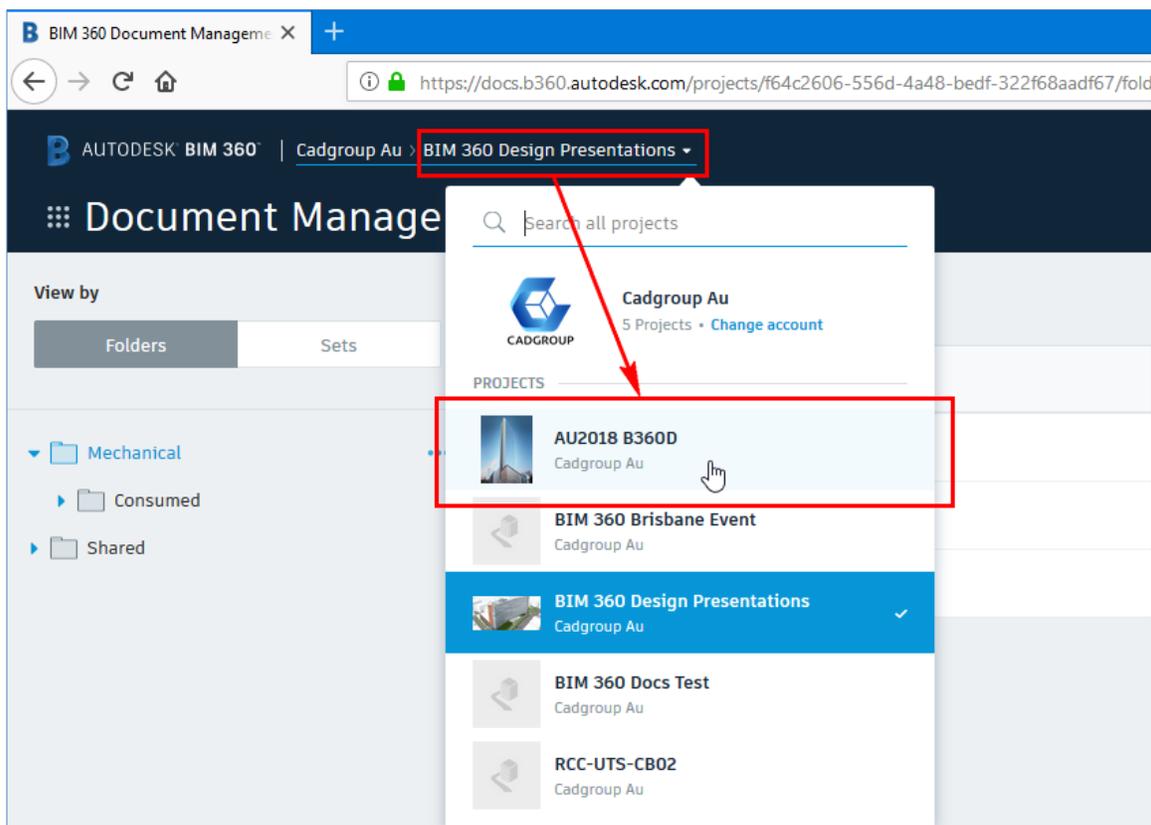
4. From the **Project Files** area, expand the **Shared** folder. Notice that a folder for each team is created inside this folder, as shown in the figure below. **As discussed in the AU lecture, this folder provides access to the shared packages (models and sheets) to non-Revit users who are not a part of any team, such as Project Managers and Construction Managers.**



Reviewing Document Management Interface (As a Team Member)

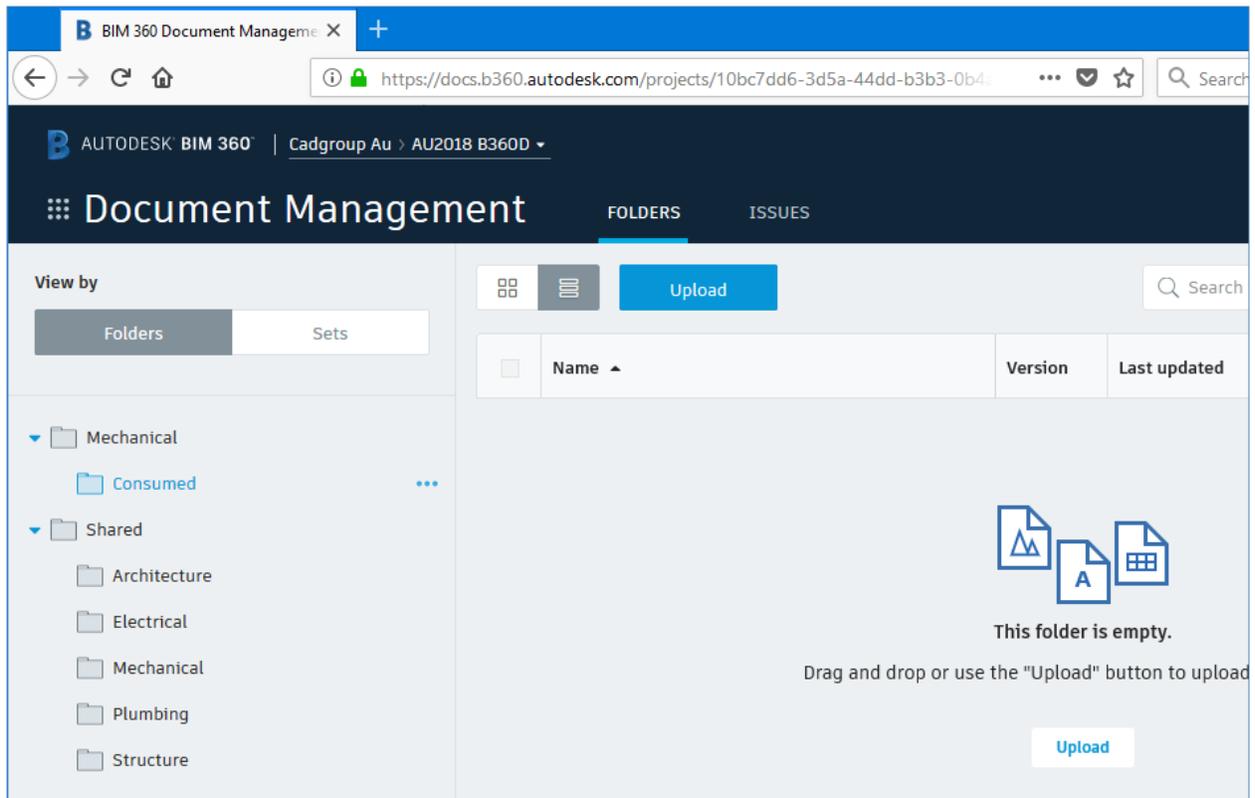
As mentioned earlier, the Document Management interface looks different if you are logged in as a team member. The following steps show how this interface will look like to the HVAC User, who is the member of the **Mechanical** team.

1. Log on to <https://docs.b360.autodesk.com> using your Autodesk credentials.
2. If you are added to multiple projects, make sure from the **Project Selector** flyout, you select the right project, as shown below.



*Tip: If you are a part of multiple accounts, you need to click on the **Account Selector** (shown as **Cadgroup Au** on the left of the **Project Selector** flyout in the above image) and then click on **Change Account** to select the right account.*

On selecting the project, only the folder of the team that you are a member of will be listed on the left side of the window. If you expand your team folder, you can see the **Consumed** folder, as shown in the figure below. Once you start consuming packages from other teams, there will be subfolders for each team's consumed package automatically created in this folder.



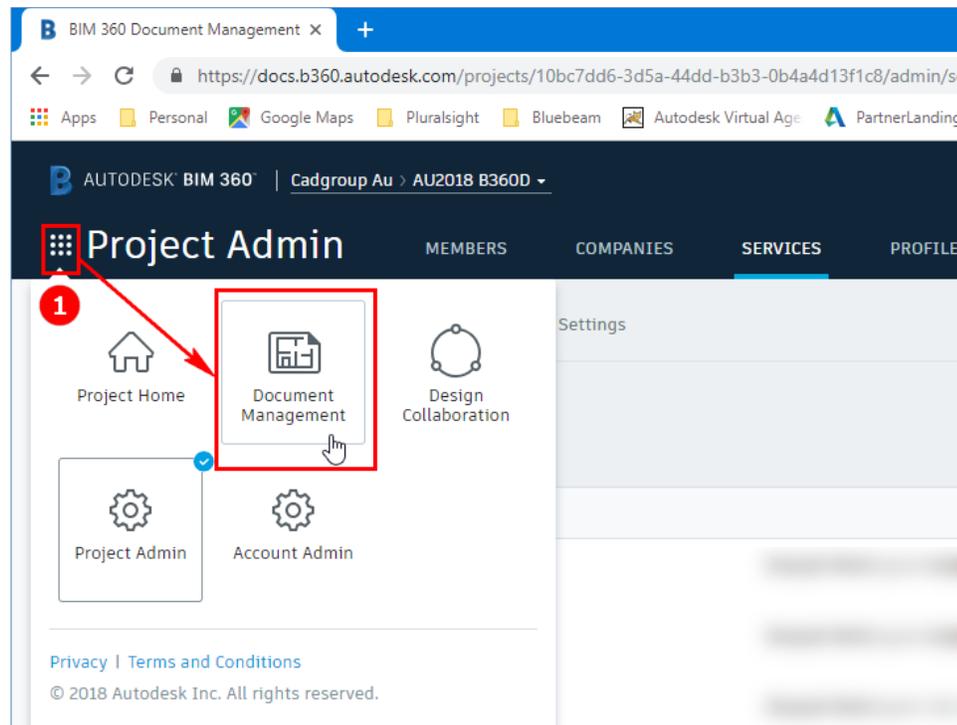
Also, on expanding the **Shared** folder, you will see the folder for all other teams, as shown in the figure above. As mentioned earlier, these folders will have the packages that other teams share.

IMPORTANT NOTE: While working with Revit, you SHOULD NOT link the model from the **Shared** folder. You should link it from your team > **Consumed** folder. The reason is that the **Consumed** folder contains the packages you consumed from the other team. However, the **Shared** folder contains the package that you may not have consumed for the reason that you may not agree with some of the changes that the other teams have made to their models.

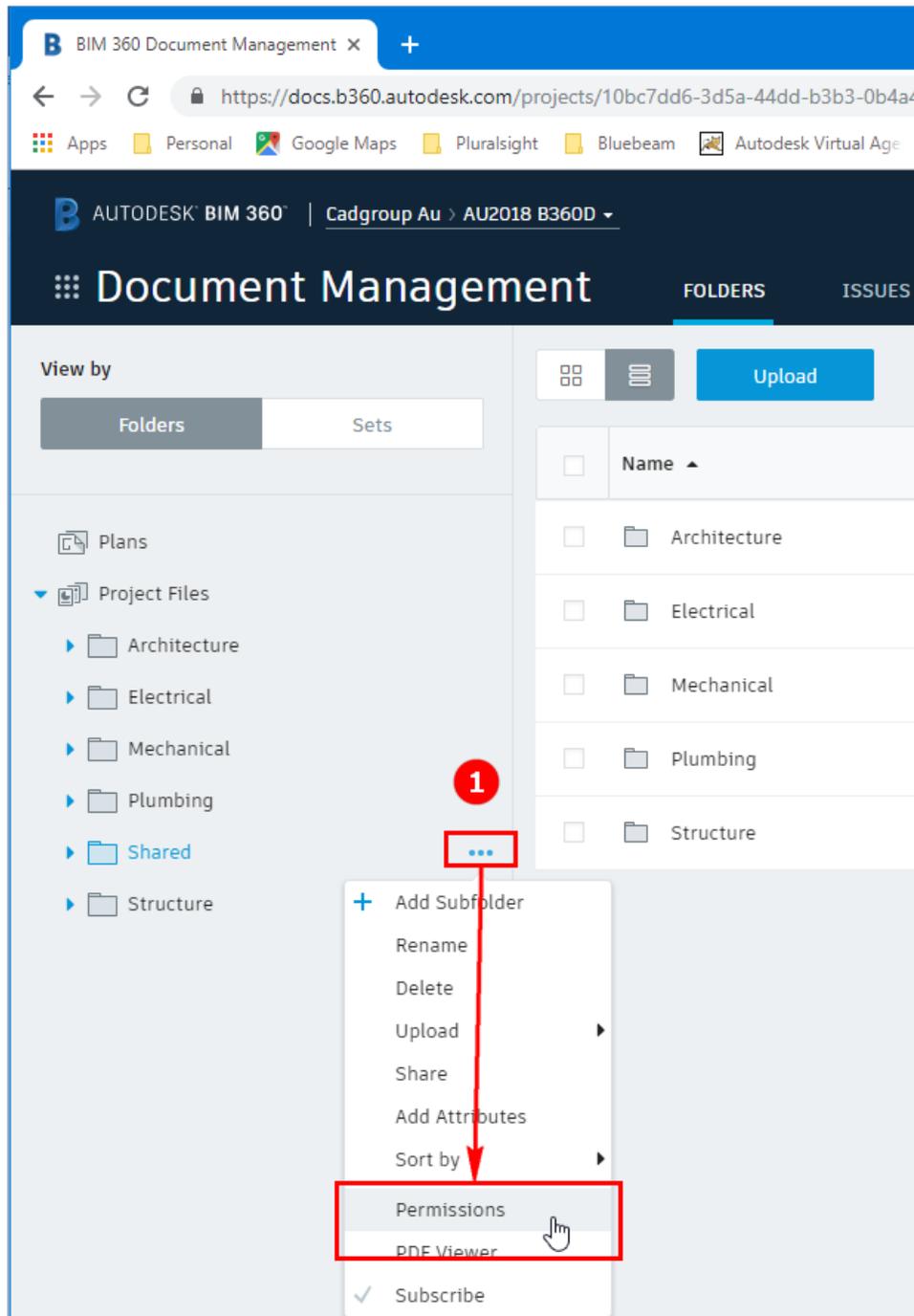
Adding Members Such as Project Managers or Construction Managers to the Shared Folder

As mentioned earlier, the **Shared** folder provides access to each team's shared (released) packages of the Revit models and sheets. This is really handy for the Project Managers or Construction Managers who need to access the released information from each team so that they could review and markup design and create issues, if required. The following is the procedure for providing these members access to the **Shared** folder.

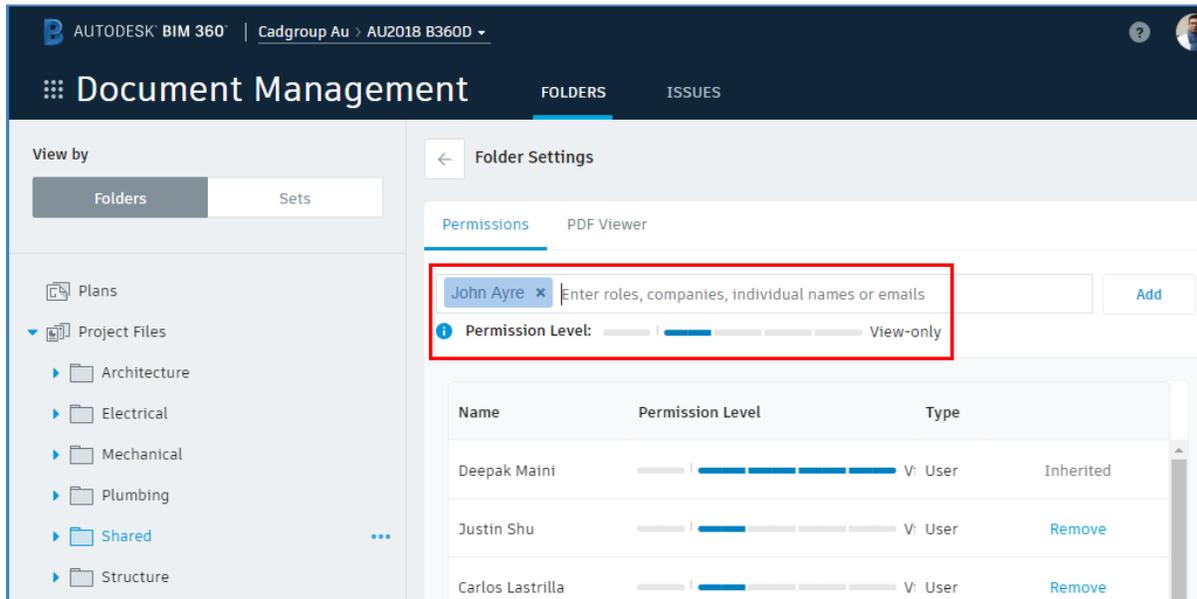
1. Log on to <https://docs.b360.autodesk.com> using your Project Admin or Account Admin credentials.
2. From the **Project Admin** page, click the **Module Selector**, labelled as 1 in the figure below, and then select **Document Management**; the Document Management interface opens with the **Plans** area active.



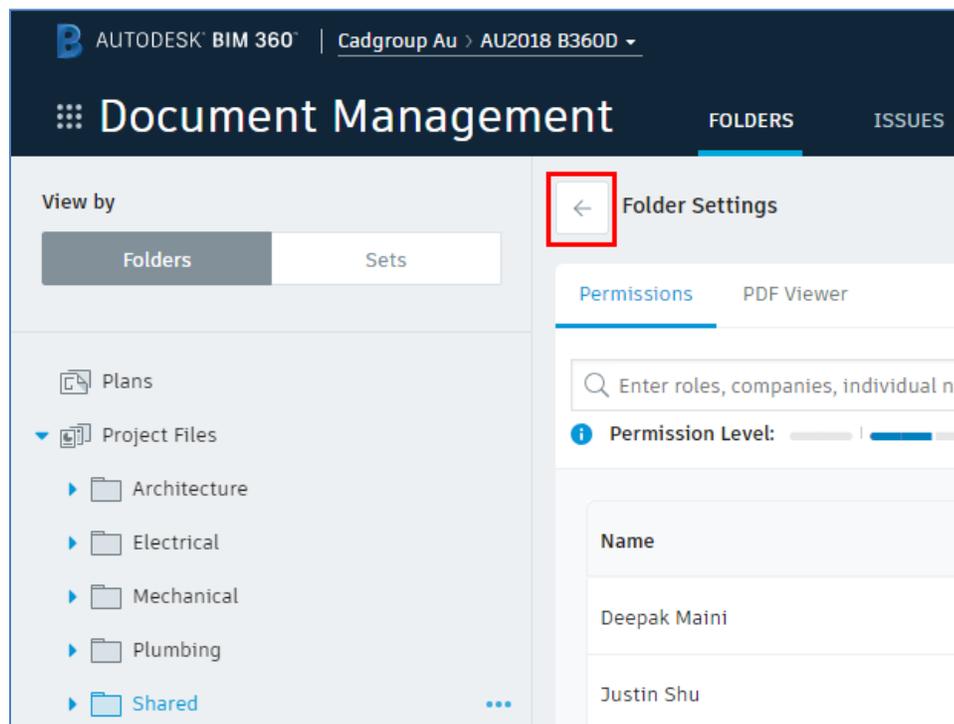
3. In the Document Management interface, hover the cursor over the **Shared** folder and click on [...], labelled as 1 in the figure below, and then click **Permissions**, as shown in the same figure.



- On doing so, the **Permissions** page is displayed. On this page, enter the email addresses of the members you want to give access to the **Shared** folder. Note that if the member you are adding aren't a part of the project, they will be sent an email to be added to the project. Make sure that you provide the **View Only** permission, as shown in the figure below, to ensure those users cannot modify the shared files.



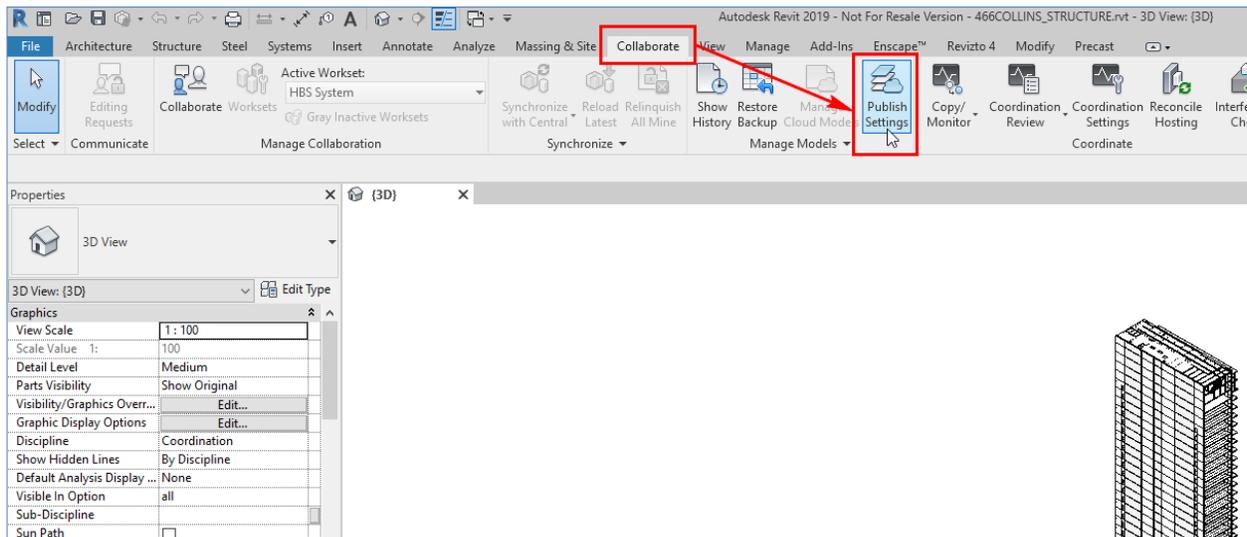
5. Click the **Add** button on the right of the list; the members are added to the **Shared** folder and are notified by an email.
6. Click on the arrow on the left of **Folder Settings**, as shown below, to return to the Document Management interface.



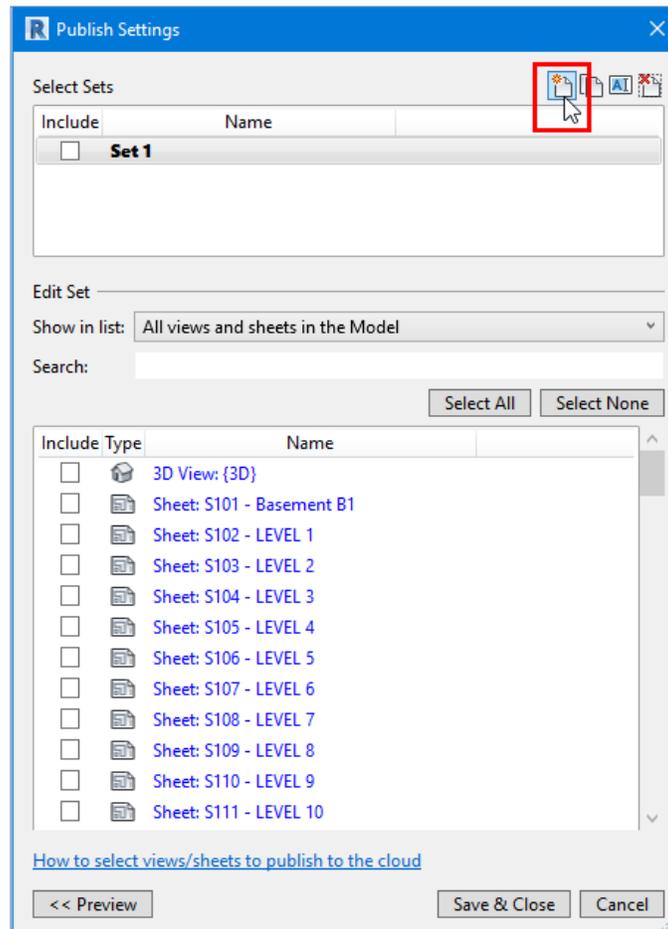
Creating Publish Sets in Revit Files for Viewing in the Document Management Interface

Generally, Revit files contains a large number of views and sheets. However, you may not require all those sheets and views in the Document Management interface for viewing and marking up. Therefore, you can create publish sets with only the required views and sheets before you upload the files. This also reduces the time it takes to make the Revit file available for viewing in the Document Management interface and sharing in the Design Collaboration interface. The following is the procedure for doing this.

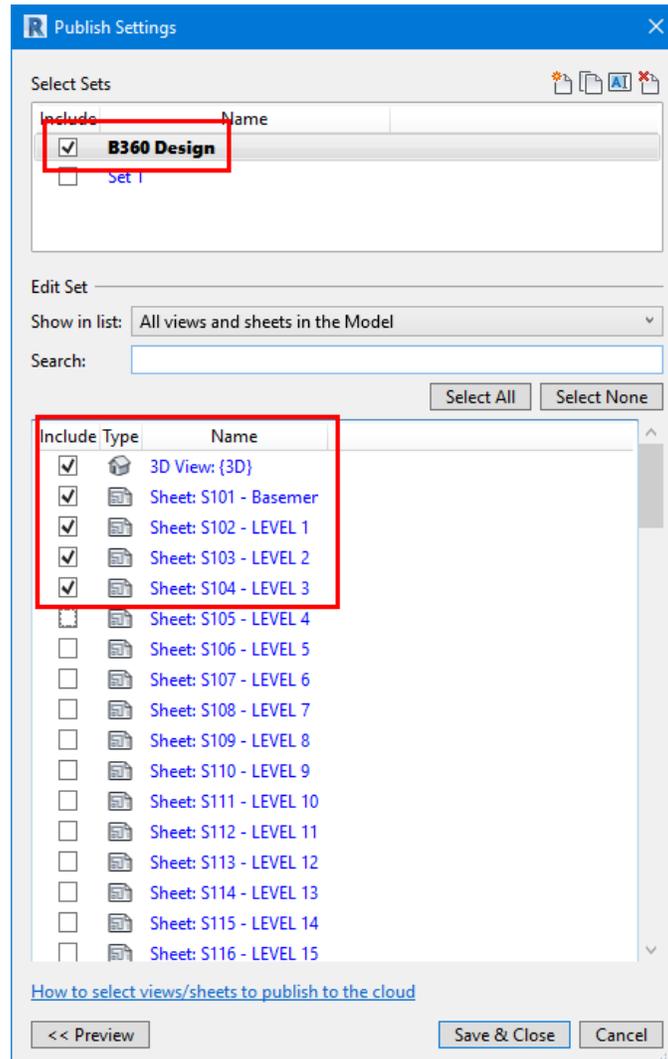
1. Open the Revit file.
2. From the **Collaborate** tab, click **Publish Settings**, as shown below; the **Publish Settings** dialog box is displayed.



3. In the **Publish Settings** dialog box, click **New Set**, as shown below; the **New Set** dialog box is displayed.



4. Enter the name of the set in the **New Set** dialog box and then click **OK**; you are returned to the **Publish Settings** dialog box and the new set is highlighted.
5. Select the tick box on the left of the new set.
6. Select the sheets that you want to be made available in BIM 360 Docs. The following figure shows a 3D view and four sheets selected.



7. Click **Save & Close** in the **Publish Settings** dialog box.

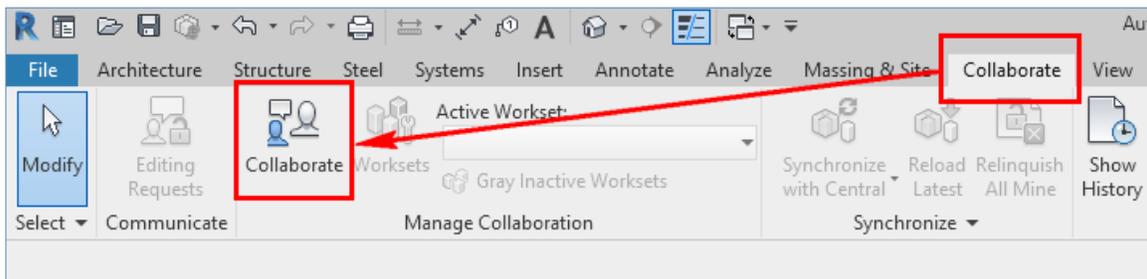
This file is now ready for cloud worksharing.

8. Save the Revit file.

Initiating Cloud Worksharing from Revit

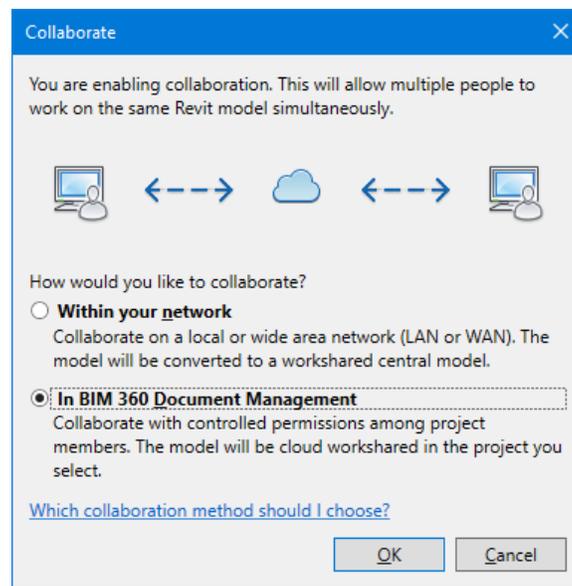
Once the account setup is completed and all the required members are added to their respective teams, it is now the time to start the cloud worksharing process of the Revit models. The following is the procedure for doing this.

1. In Revit, click the **Collaborate** ribbon tab and then click **Collaborate**, as shown below; the **Collaborate** window is displayed.

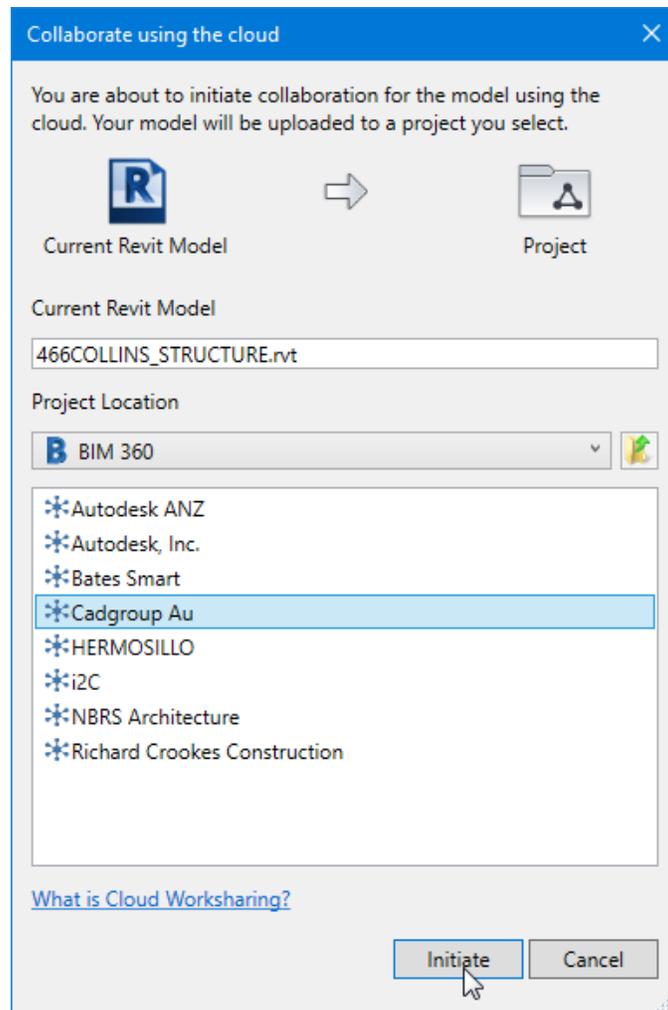


*Tip: If you are using Revit 2018.3, the **Collaborate** window will show the option to initiate cloud collaboration on BIM 360 Team as well as BIM 360 Document Management. This is because, as mentioned in the lecture, Revit 2018.3 is compatible with both BIM 360 Team as well as BIM 360 Document Management. However, if you are using Revit 2019, the **Collaborate** window will only show the option to only collaborate on the cloud using BIM 360 Document Management.*

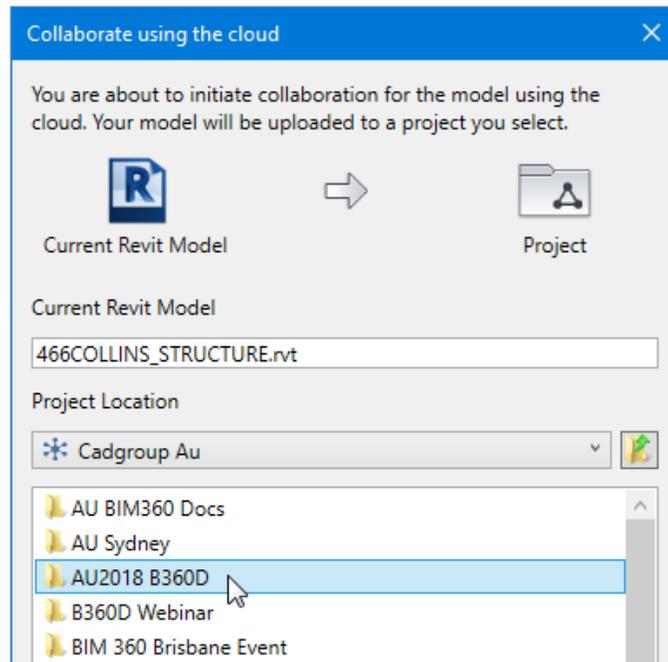
2. In the **Collaborate** window, click **In BIM 360 Document Management**, as shown below.



3. Click **OK** in the **Collaborate** window; the **Collaborate using the cloud** window is displayed. This window shows all the accounts that you are a member of.
4. Select the account on which the project is hosted and then click **Initiate**, as shown below; this window now shows all the projects that you are a member of on the selected account.

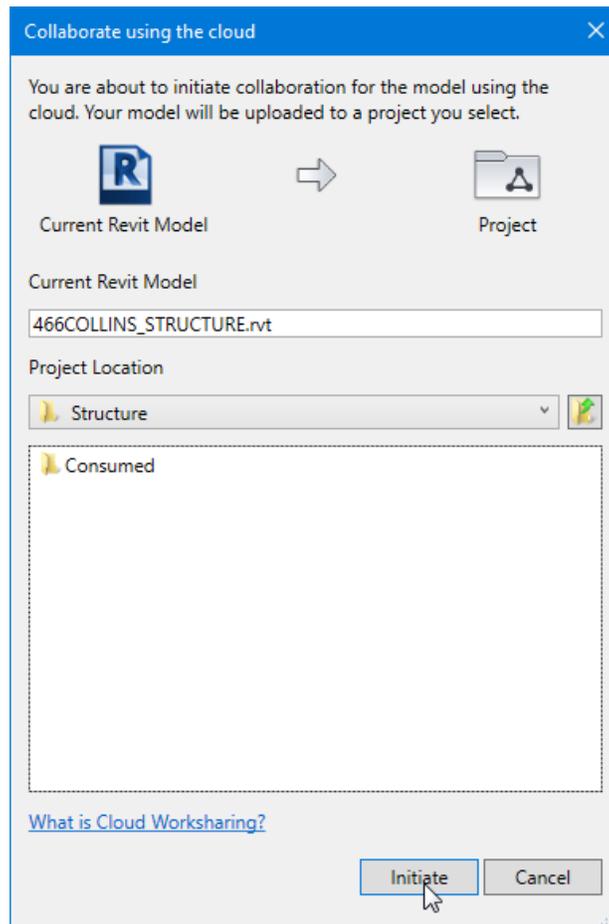


5. Double-click on the project in which you want to upload the model, as shown in the figure below.

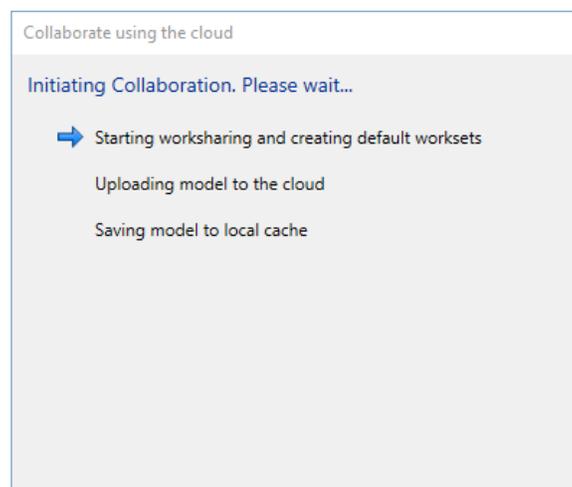


If you are logged in as the **Project Admin**, the next window shows the **Plans** and **Project Files** area. If you are logged in as a non-admin team member, you will only see your team and the **Shared** folder there.

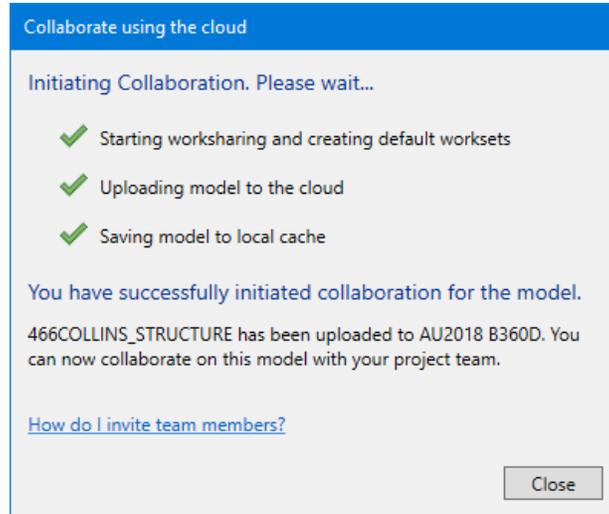
6. If you are project admin, double-click on the **Project Files** area and then double-click on the team name in which you want to initiate the model. If you are non-admin team member, double-click on your team name.
7. Click the **Initiate** button, as shown below.



On doing this, the process of cloud worksharing starts and the window informing you about the process is displayed. This window informs you that initiating the model for cloud collaboration involves three steps, as shown below.



Once the process is complete, Green tick marks are displayed on the left of all three steps, as shown in the figure below.

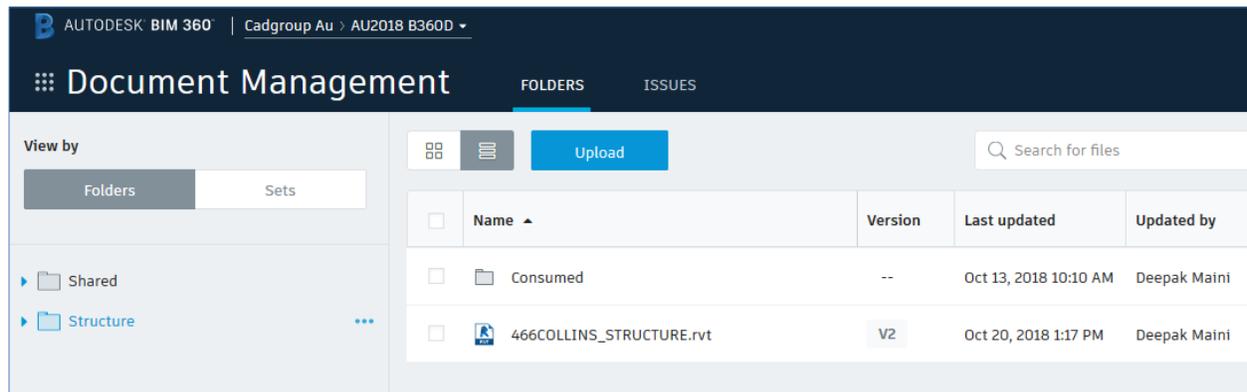


8. Once the process is complete, click **Close** in the **Collaborate using the cloud** window shown above.

Reviewing the Document Management Interface as a Team Member

Once you have initiated the cloud worksharing, it is a good idea to have a look at the Document Management interface of your time.

1. Log on to <https://docs.b360.autodesk.com/session> using your Autodesk credentials.
2. From the Document Management interface, click on your team folder. The following figure shows the Document Management interface with the **Structure** team active.

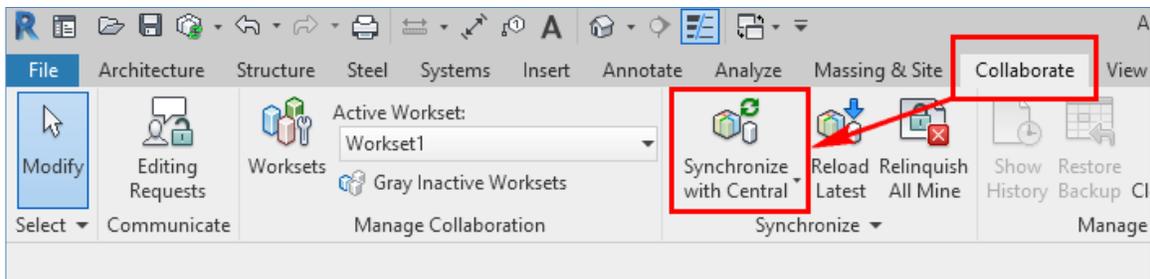


It is important to note that even though it was the first time you uploaded the model, it is listed as V2 in the interface.

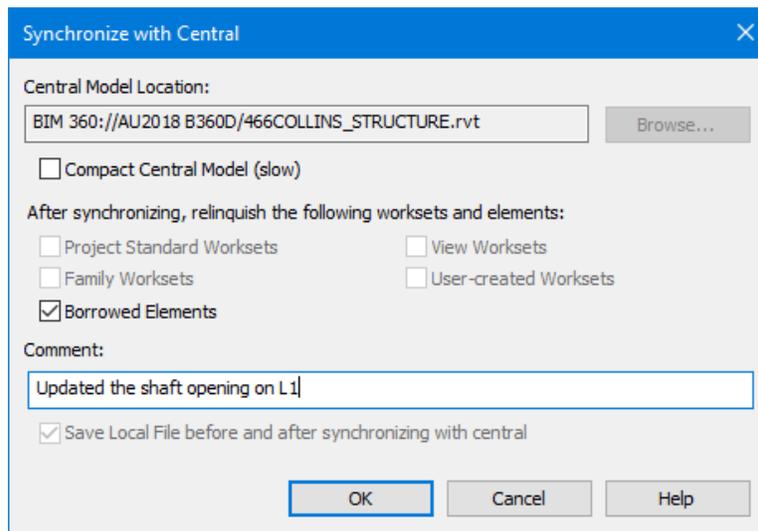
Syncing Files to the Cloud Central

With the BIM 360 Design workflows, after you make changes to the Revit files, you need to save the changes and then sync the file to the cloud central. The following is the procedure for doing that.

1. After the changes are made to the BIM 360 cloud model, save the file.
2. From the **Collaborate** ribbon tab > **Synchronize** ribbon panel, click **Synchronize with Central**; the **Synchronize with Central** dialog box is displayed.



3. Enter the details of the changes you made to the model in the **Comment** field, as shown below.

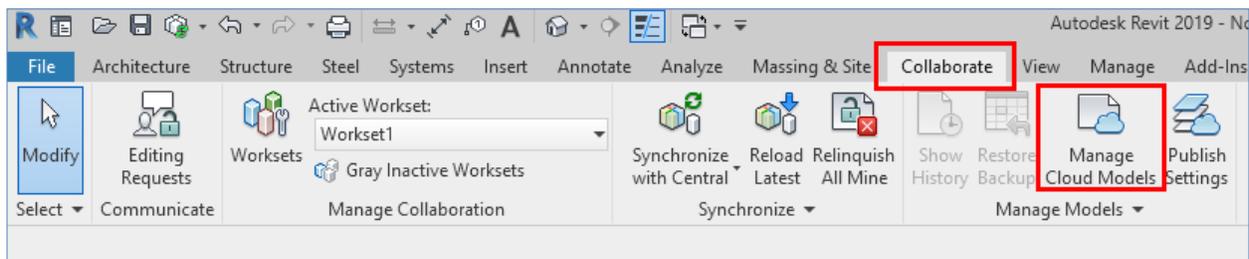


4. Click **OK** in the dialog box; the process of synchronizing the model with the cloud central starts. Once the process is completed the window will disappear.

Publishing Updated Version of Files for the BIM 360 Team Hub Viewing and Markups

As mentioned in the AU lecture and earlier in this handout, when you first upload the models on the BIM 360 server, Version 2 of those files is automatically uploaded on the BIM 360 Document Management interface viewing and markups. However, once you make the changes to the Revit files and sync to the Cloud central, the updated versions are not automatically published on BIM 360. The following steps explain how you can publish the revised version of the project files to be viewed and marked up on the BIM 360 Document Management interface and shared using the Design Collaboration interface.

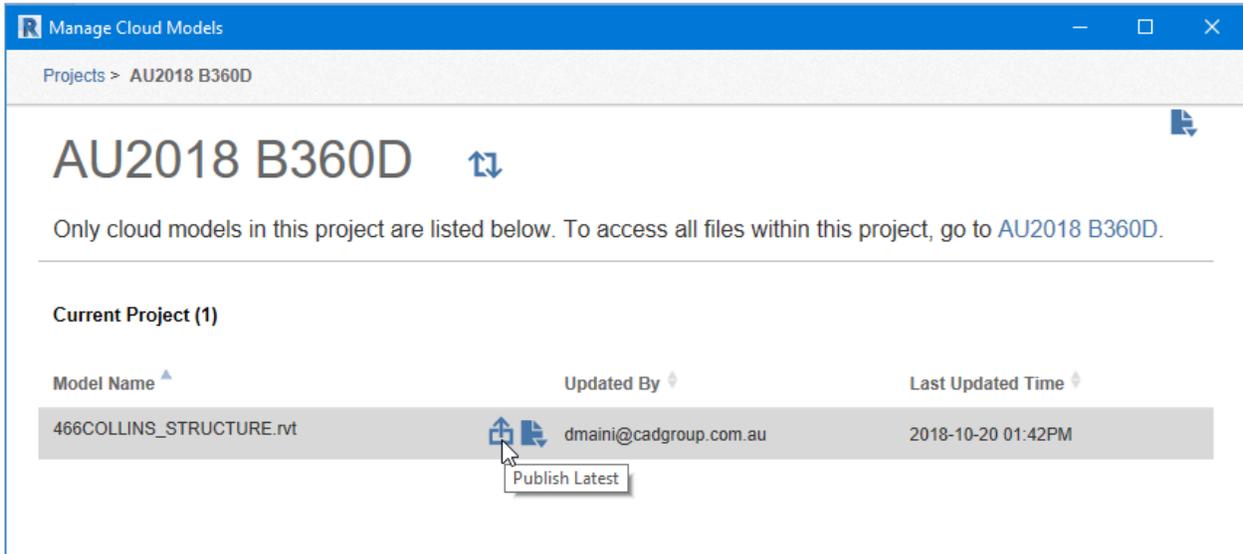
1. From the **Collaborate** ribbon tab > **Manage Models** ribbon panel, invoke the **Manage Cloud Models** tool, as shown below; the **Manage Cloud Models** window will be displayed.



It is important to note that if you are using Revit 2018.3, you will have to select **BIM 360 Document Management** from the **Cloud Service** list to be able to see the BIM 360 Design projects.

2. Click on the BIM 360 Design project name; the models in that you have access to will be displayed in the window, as shown below.
3. Click the **Publish Latest** icon on the right of the model name, as shown below; the **Publish** confirmation box is displayed.

The confirmation box informs you that the current model and any other models linked in it will be available for viewing on BIM 360 Document Management. However, the linked models will not be displayed as separate files in Document Management.



4. Click **Publish** in the confirmation box to publish the latest version of the file for BIM 360 Document Management viewing and sharing.

Once the publish process starts, you can close the **Manage Cloud Models** window and return to it later to check on the progress of the upload.

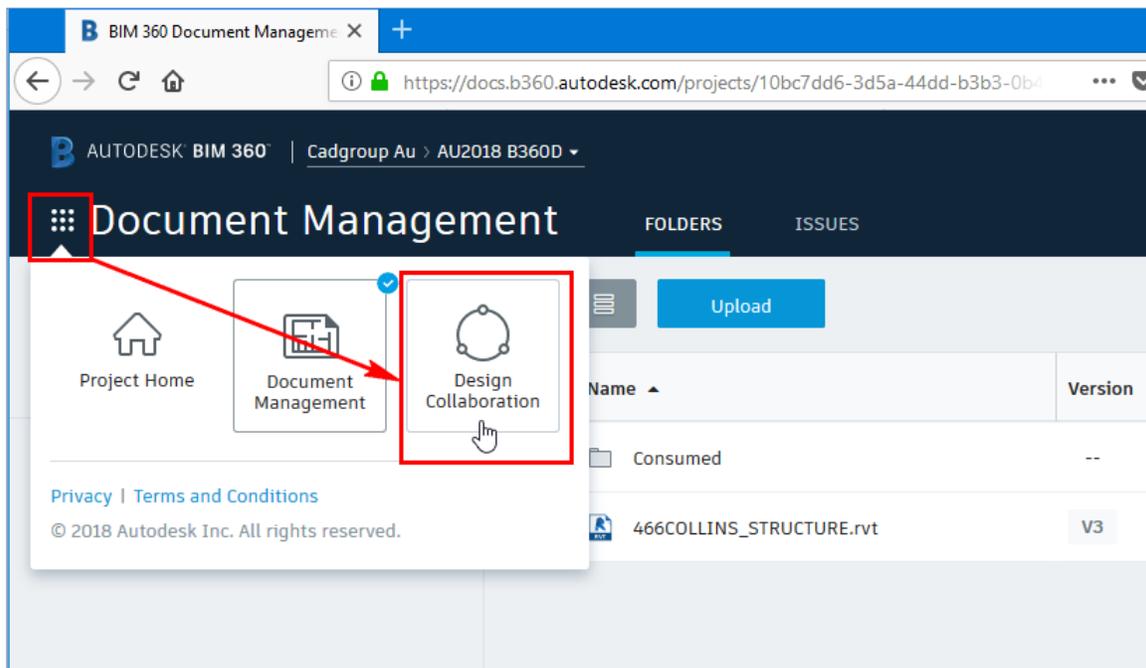
If the top bar in the **Manage Cloud Models** is turned Green, that means the publishing is completed. If you look at the Document Management interface, you will notice that the version of the file is automatically bumped.

Note: *It is important to remember that the time it takes to make the file ready for viewing depends on the number of views and sheets that you included in the publish set, which was discussed earlier in this handout.*

Creating Package to Share Revit Models with Other Teams

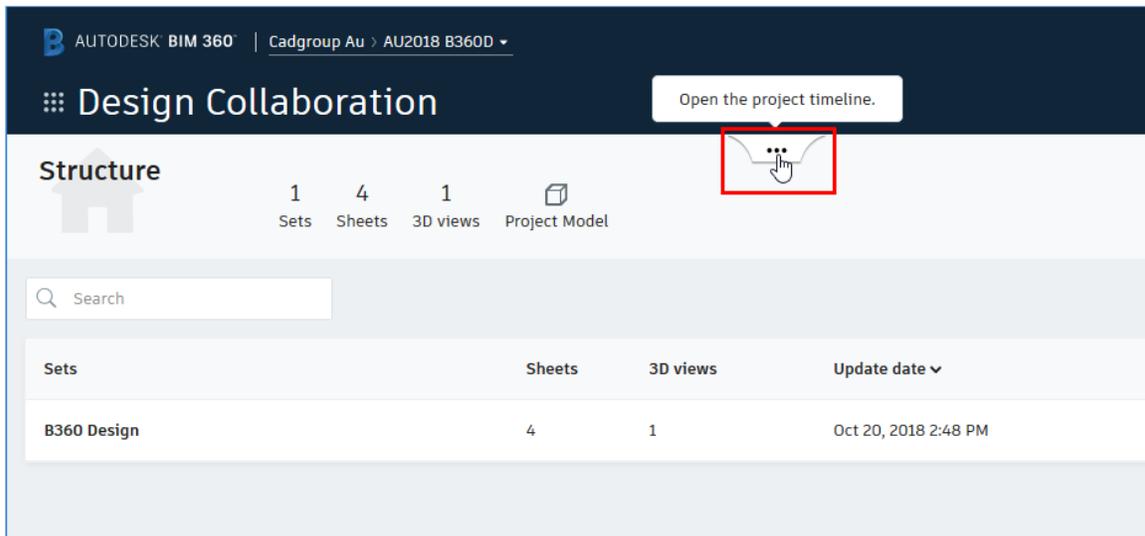
As mentioned in the AU lecture, one of the main advantages of using BIM 360 Design is to be able to share the packages with other teams to issue them your model. The following is the procedure for doing that.

1. Log on to <https://docs.b360.autodesk.com/session> using your Autodesk credentials.
2. Click on **Module Selector** and then select **Design Collaboration**, as shown below.



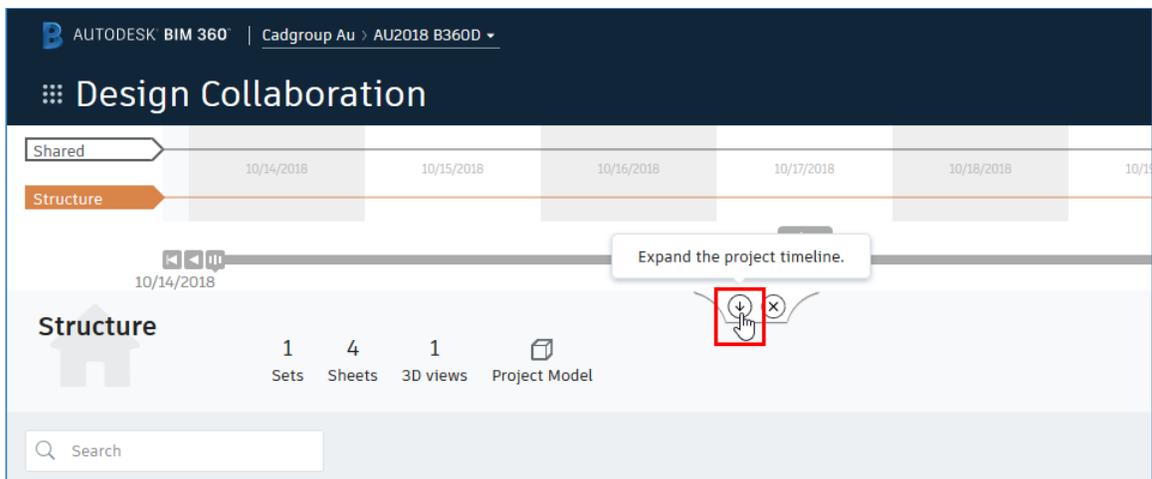
The first step in the Design Collaboration module is to open the **Project Timeline**.

3. Click on the **Open the project timeline** ellipses, as shown below.



On doing so, the project timeline of ONLY YOUR TEAM is opened and you can see the “swim lane” of your team only. However, you will not be able to view the swim lanes of other teams. To do that, you will have to expand the project timeline.

4. Click on the **Expand the project timeline** arrow, as shown below.



On doing so, the project timeline expands and you can see the swim lines of all the teams. Before you proceed with creating and sharing a package, it is important for you to understand the appearance of the project timeline and the swim lanes of various teams. The figure below shows a project timeline of a project that has **Architecture**, **Electrical**, **Structure**, and **Mechanical** teams. This project timeline display is from a member in the **Mechanical** team.



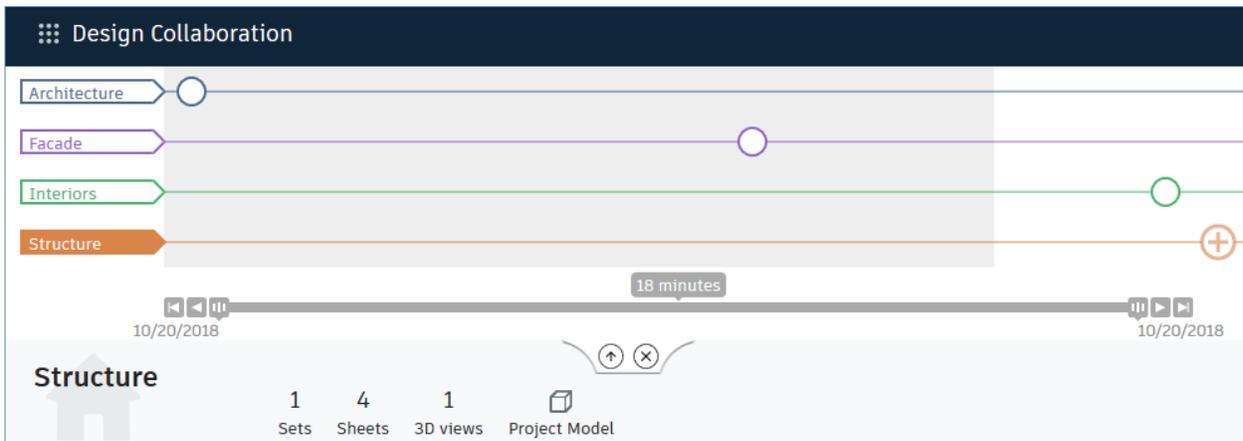
Notice various circles in the swim lanes of the teams. These circles are explained below.

-  **Closed Filled Circle:** This circle represents that this team created and shared a package and you have consumed that package.
-  **Closed Filled Circle with a Number:** This circle represents that this team created and shared multiple packages close to each other and you have consumed all those packages. The number represents the number of packages shared and consumed. For example, if the number shows **2**, that means there were 2 packages shared and consumed. If the number shows **4**, that means there were 4 packages shared and consumed. You can click on this circle with the number to see how close were these packages created to each other.

Note: It is important to note that if you click on a circle with a number on it, the project timeline shrinks to show the duration between those packages. In this case, you will have to manually drag the sliders on the project timeline at the bottom of the swim lanes to see the full project timeline again.

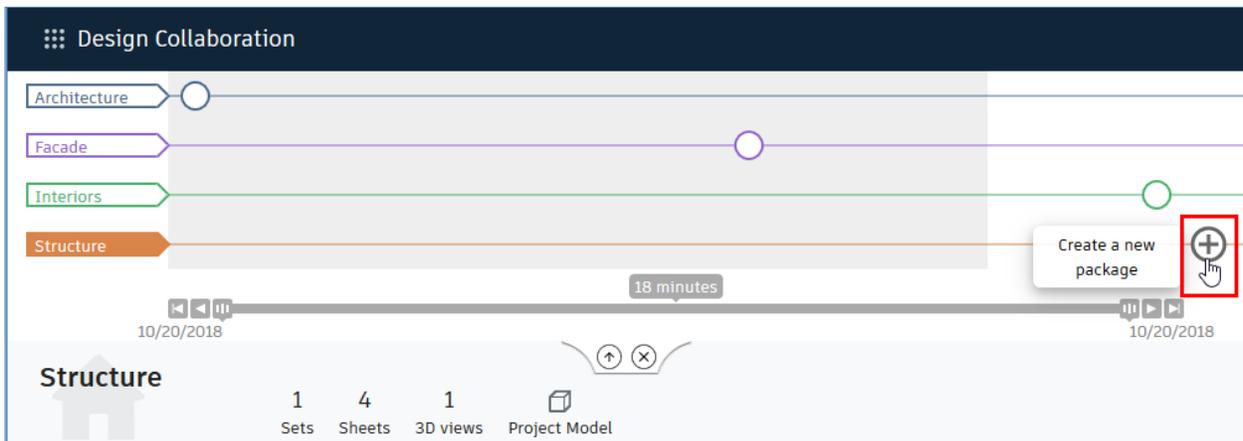
-  **Blank Circle:** This circle represents that this team created and shared a package but you have NOT consumed the package.
-  **Blank Circle with a Number:** This circle represents that this team created and shared multiple packages close to each other and you DID NOT consume any of those packages. The number represents the number of packages created.
-  **Dashed Circle:** This circle represents that this team created a package, but did not share it. It is important to note that only the Project Admin or the members of that team can see the dashed circle.
-  **Half Filled Circle with a Number:** This circle represents that this team created and shared multiple packages close to each other. You have consumed some of those packages and not all. You can click on this circle to see how many packages did you consume.

The following figure shows the project timeline of the current from a **Structure** team member's login, showing the swim lanes of all the teams in the current project. Notice that in this figure, there are blank circles in the swim lanes of all teams, except **Structure**. This shows that all these teams have created and shared packages, but the **Structure** team has not consumed any package yet.

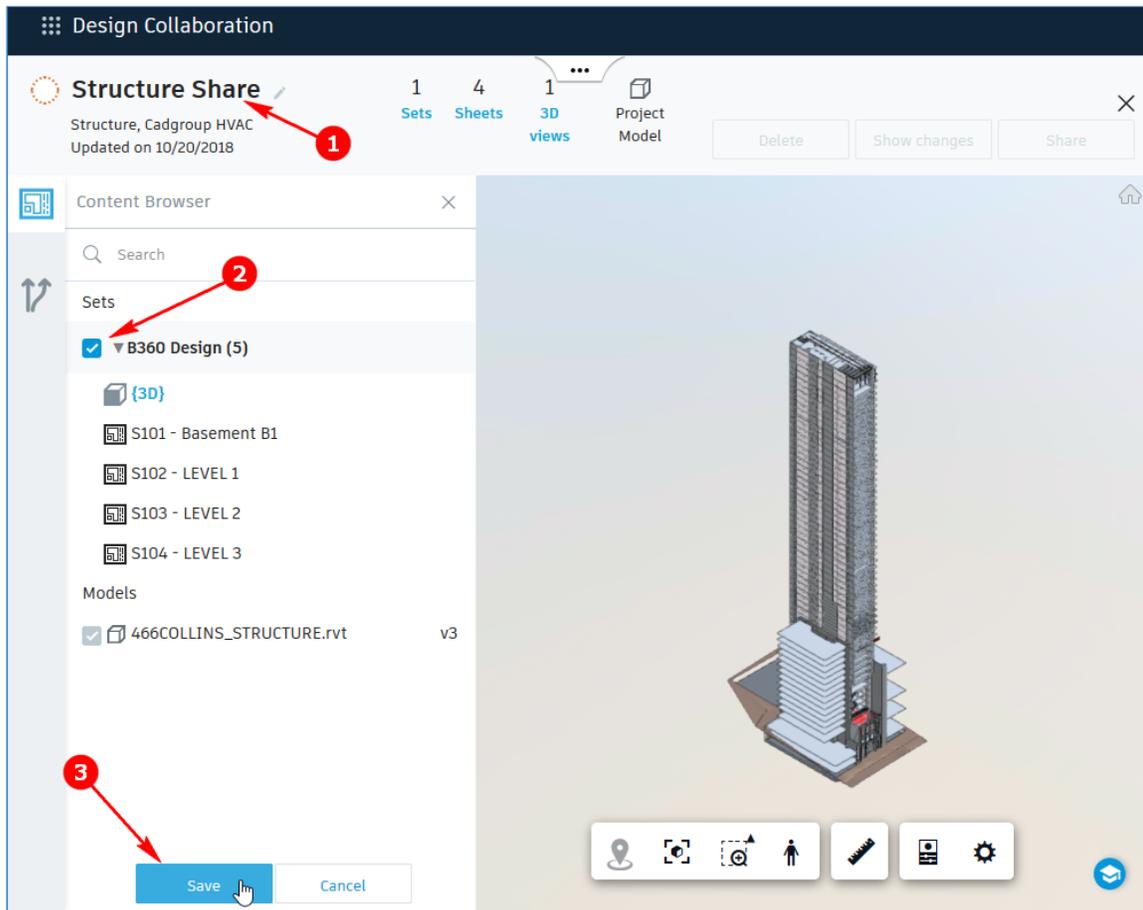


You will first create and share a package and then learn about how to consume a package.

- Click on the **+** symbol on the right of the swim lane of your team, as shown below; the process of creating the package starts and the Design Collaboration interface updates to show the package.



- Click on the name of the packaged, labelled as **1** in the figure below, and rename the package. In this figure, the package is renamed to **Structure Share**.



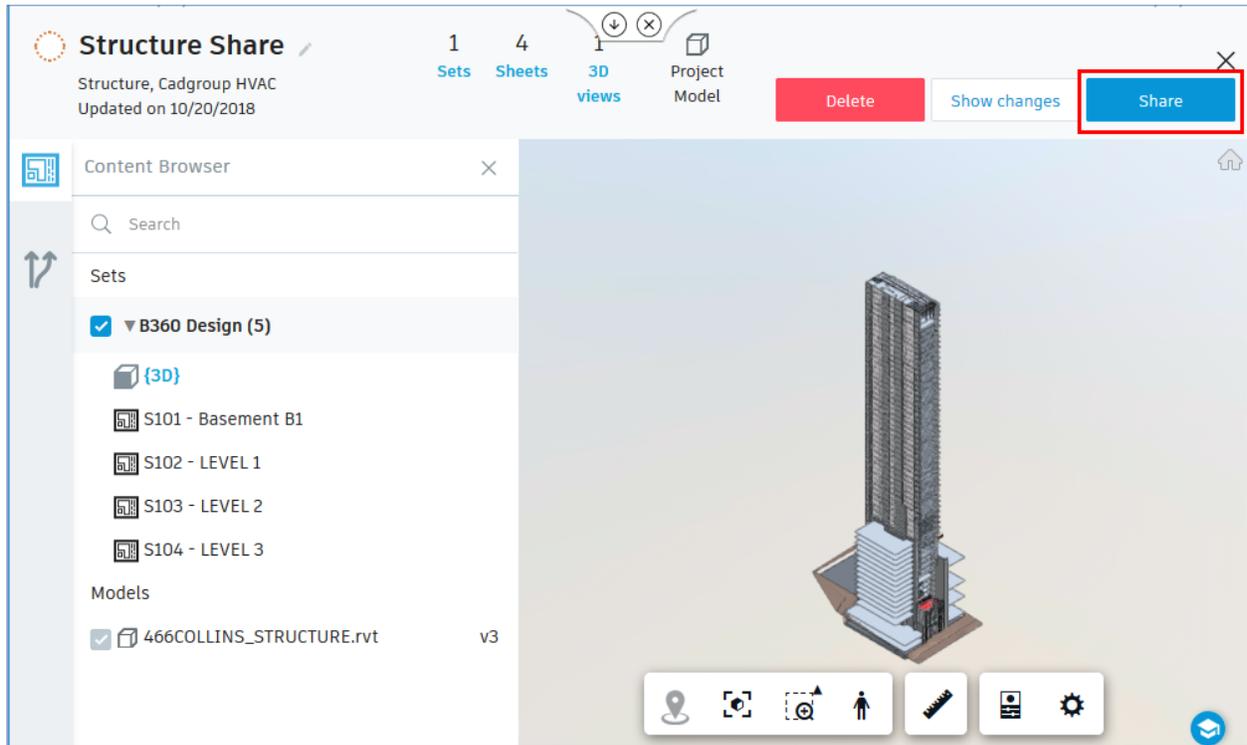
7. Select the set to be included in the package, labelled as **2** in the figure above. In this figure, the set named **B360 Design** was selected. This set has a 3D view and four sheets.

Tip: Before you save the package, you can also click on various views and sheets in the selected set to preview them.

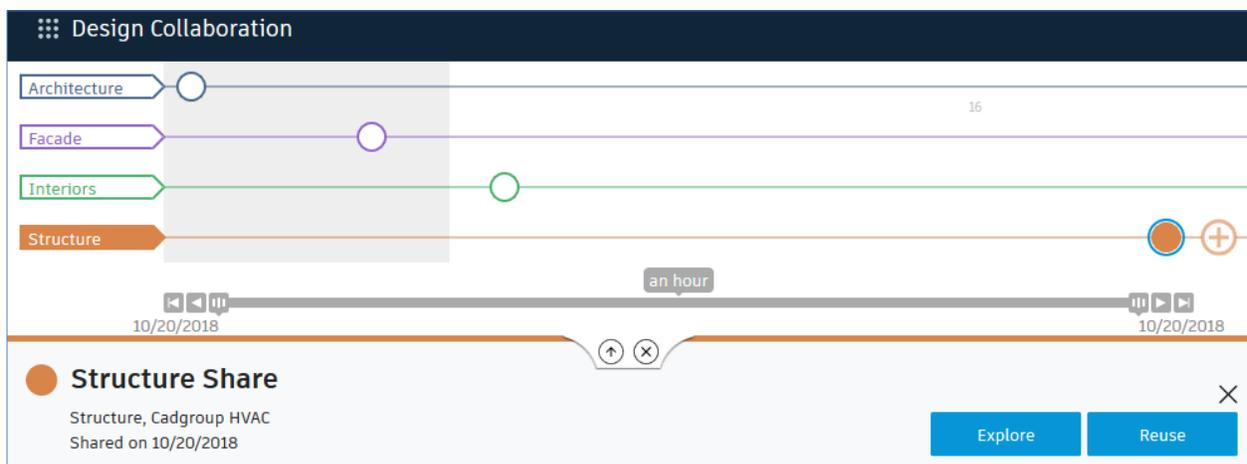
8. Click **Save**, labelled as **3** in the figure above; the package is created.

Once the package is created, it is displayed as a dashed circle on your team's swim lane. Also, the **Delete**, **Show changes**, and **Share** buttons are available on the top right of the preview window. It is extremely important to note that the **Share** button will only be active if you have the **View + edit + share** permissions for your team. These permission settings were discussed in the [Creating Design Collaboration Teams and Adding Members](#) to the Teams section.

- Click the **Share** button on the top right of the preview window, as shown in the figure below; the **Share package** window is displayed.



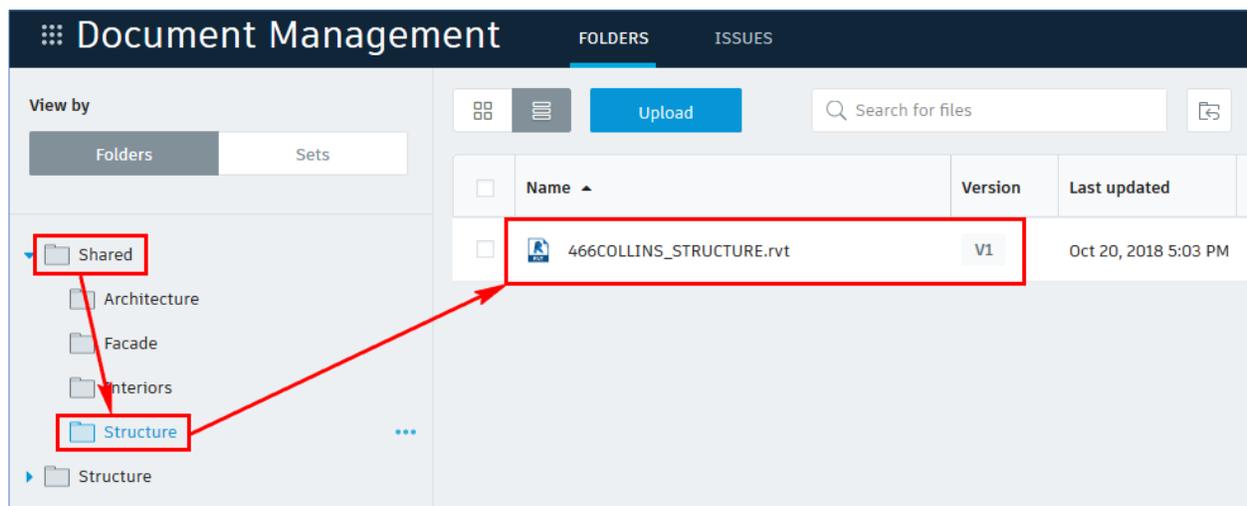
- Enter the package description in the **Share package** window, if required, and then click **Share**; the package is shared and the dashed circle changes to a closed filled circle on the swim lane of your team. The figure below shows the project timeline after creating and sharing the package.



Reviewing the Shared folder in Design Collaboration after Sharing a Package

As mentioned in the AU lecture, once you create and share a package, your model is copied from your team space to the **Shared** folder. It is important for you to review this folder at this stage.

1. Click on the **Module Selector** from the top left of the window and click **Document Management**.
2. Expand the **Shared** folder and click on your team folder. You will notice that your model is now copied into this folder, as shown below.



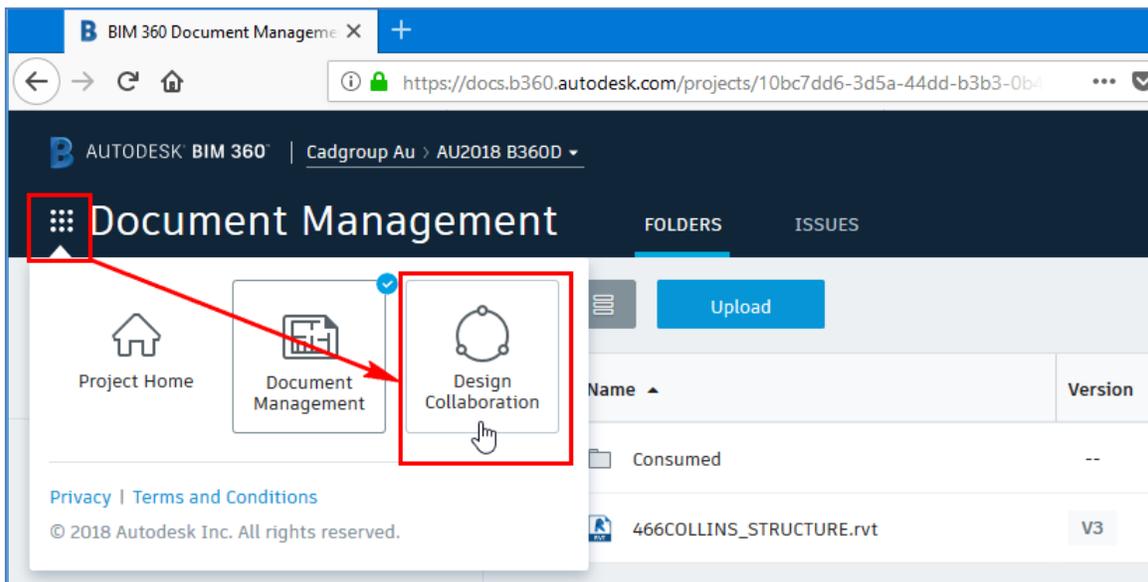
Because it is the first time you shared your model, it is listed as **V1** in the figure above. As you continue to share your packages, the version of your model in this folder will automatically be bumped up.

*Tip: As discussed in the AU lecture, you can provide non-Revit users, such as Project Manager and Construction Managers permission to the **Shared** folder. That ensures that they get access to the models issued by all teams and not to their work in progress models.*

Consuming Packages Shared by Other Teams

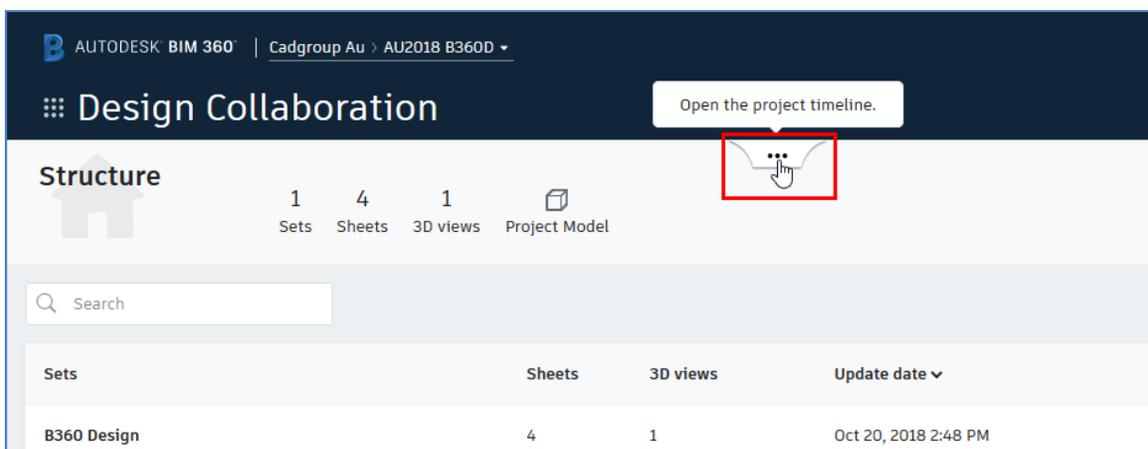
To be able to link the model of the other teams to your model in Revit, you first need to consume the packages shared by those teams. When you consume a package, that model is copied into the **Consumed** folder inside your team space and you can then link the models from that folder. The following is the procedure for consuming the package.

1. Click on **Module Selector** and then select **Design Collaboration**, as shown below.



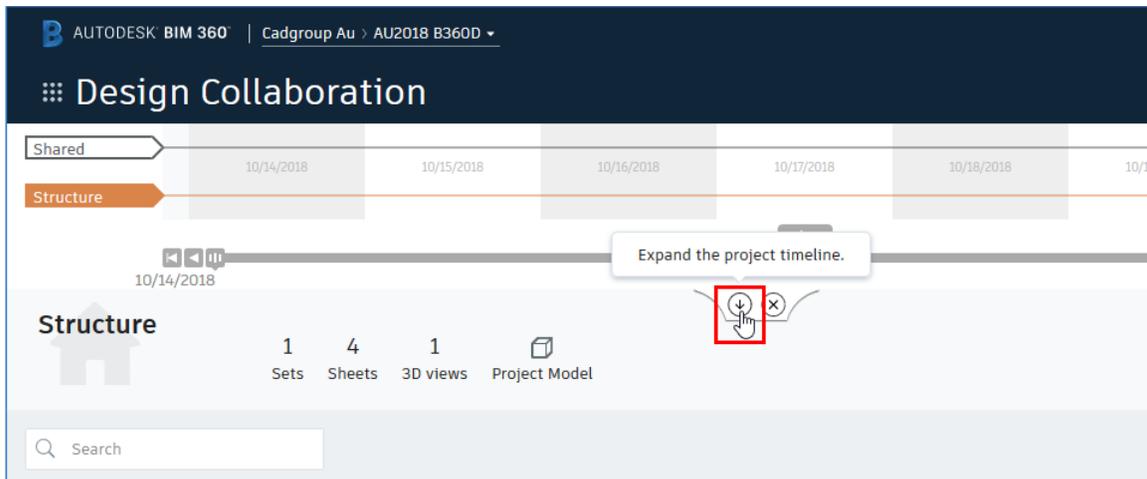
The first step in the Design Collaboration module is to open the **Project Timeline**.

2. Click on the **Open the project timeline** ellipses, as shown below.



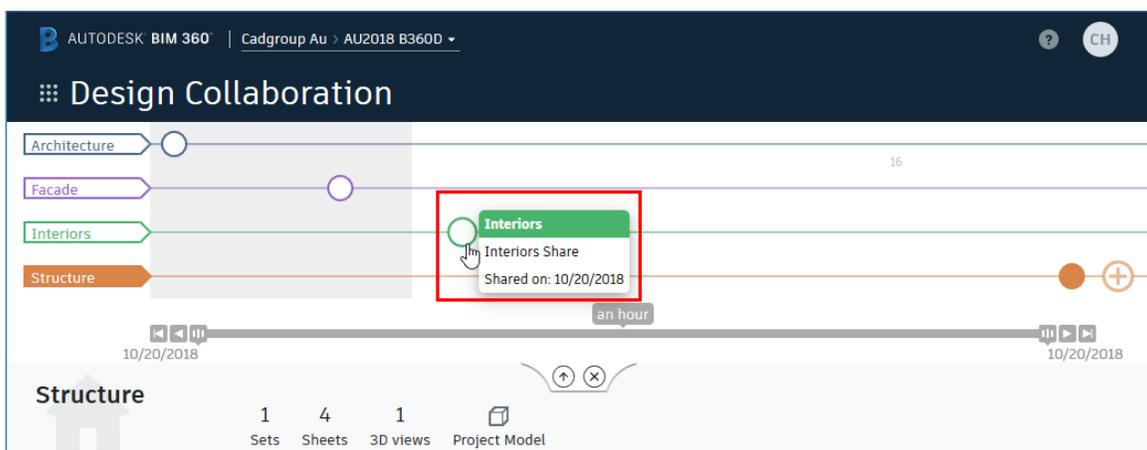
On doing so, the project timeline of your team and the **Shared** folder is opened and you can see the “swim lane” of your team and **Shared** folder only. However, you will not be able to view the swim lanes of other teams. To do that, you will have to expand the project timeline.

3. Click on the **Expand the project timeline** arrow, as shown below.

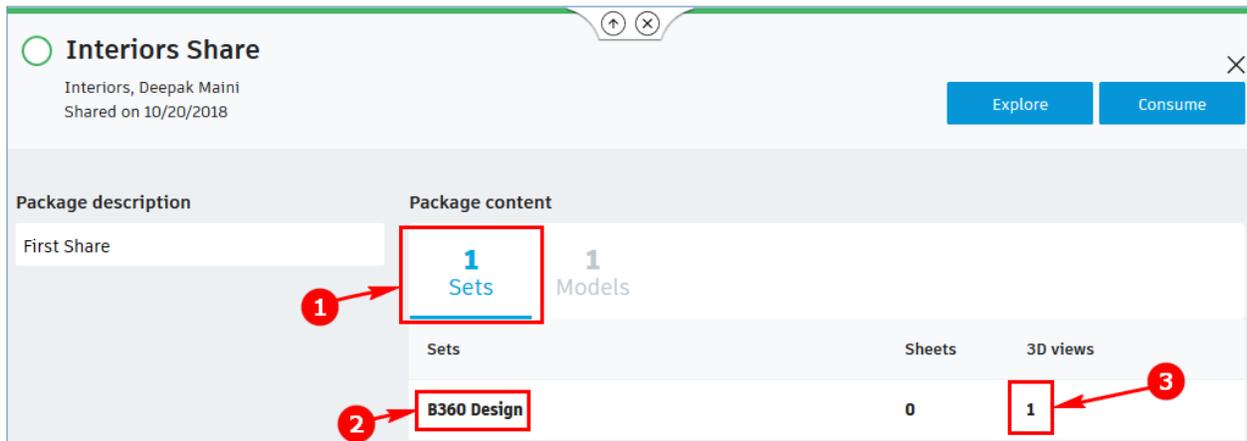


On doing so, the project timeline expands and you can see the swim lines of all the teams.

4. Hover the cursor over the name of the package you want to consume, its name and the issue date is displayed, as shown in the figure below.

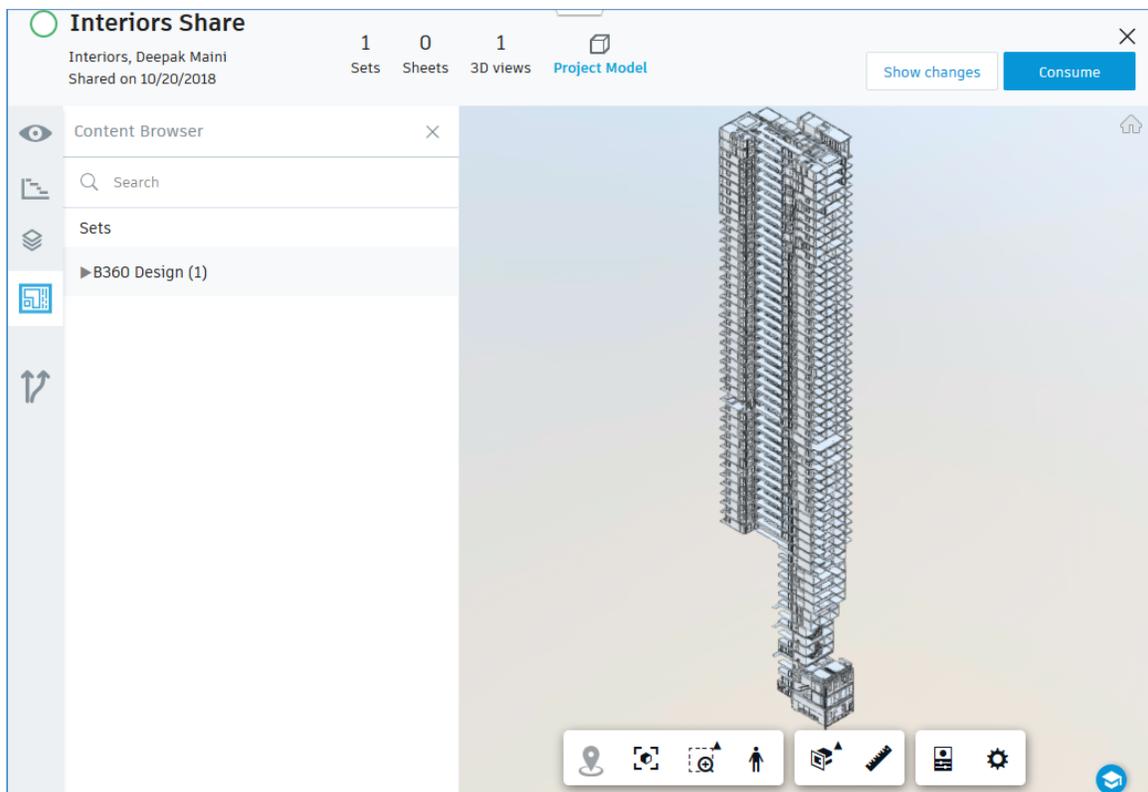


5. Click on the blank circle of the package; the package content is displayed, as shown in the figure below.



Notice that this package contains 1 set, labelled as **1** in the figure above. The name of this set is **B360 Design**, labelled as **2** in the figure above and this set only has one 3D view, labelled as **3**, and no sheets. Before you consume this package, you can explore it to review what the 3D view of this package looks like.

- Click **Explore** from the top right of the package area; the 3D view of the model is opened, as shown in the figure below.



7. After reviewing the package, click **Consume** from the top right; the **Consume package** confirmation box is displayed.
8. Click **Consume** in the confirmation box; the package is consumed and the process of copying the model of the package into the **Consumed** folder inside your team space starts.

*Tip: For any subsequent package, you can click **Show Changes** before you consume the package to review the difference between the last package and the current package.*

9. Repeat this process to consume packages from other teams as well. The **Structure** team's view of the project timeline, after consuming first packages from all teams, is shown in the following figure.

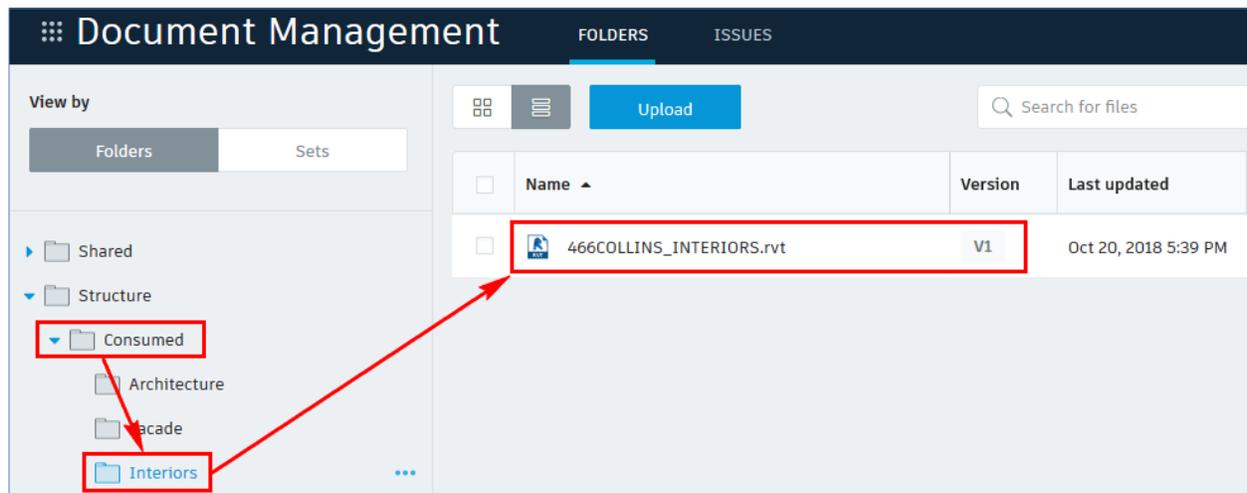


Notice that the circles in the swim lanes of all teams are closed filled. This means that all these packages are consumed by the **Structure** team.

Reviewing the Consumed folder inside your Team Space in Design Collaboration after Consuming Packages

As mentioned in the AU lecture, once you consume a package from a team, their model is copied from the **Shared** folder to the **Consume** folder inside your team space. It is important for you to review this folder at this stage.

1. Click on the **Module Selector** from the top left of the window and click **Document Management**.
2. Expand the **Consumed** folder inside your team folder and then click on any of the team folders; their model is shown in the folder, as shown below.



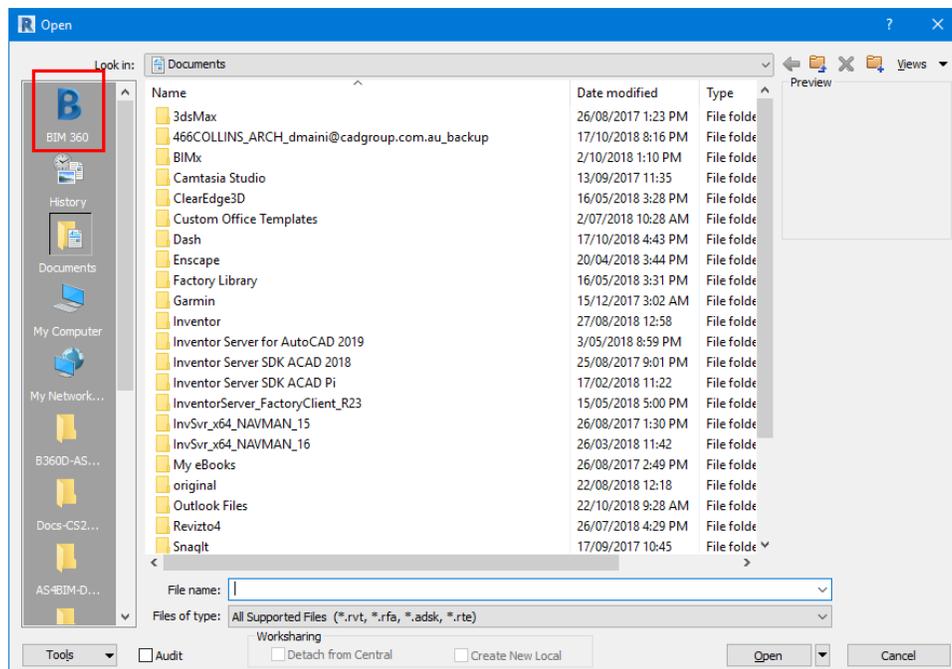
Notice that the model shows V1 as the version. This is because this is the first time you consumed the package from this team. On the subsequent consuming of the packages from this team, this version will be automatically bumped to the next version.

3. Similarly, click on the other team folders inside the **Consumed** folder to review the models from those teams.

Opening a Cloud Workshared Model in Revit

Once you have initiated the cloud worksharing with the Revit model, you need to ensure that you open this model from BIM 360 cloud the next time. The following is the procedure for doing this.

1. Start Revit.
2. Invoke the **Open** dialog box.
3. From the top left in the dialog box, click **BIM 360**, as shown below.

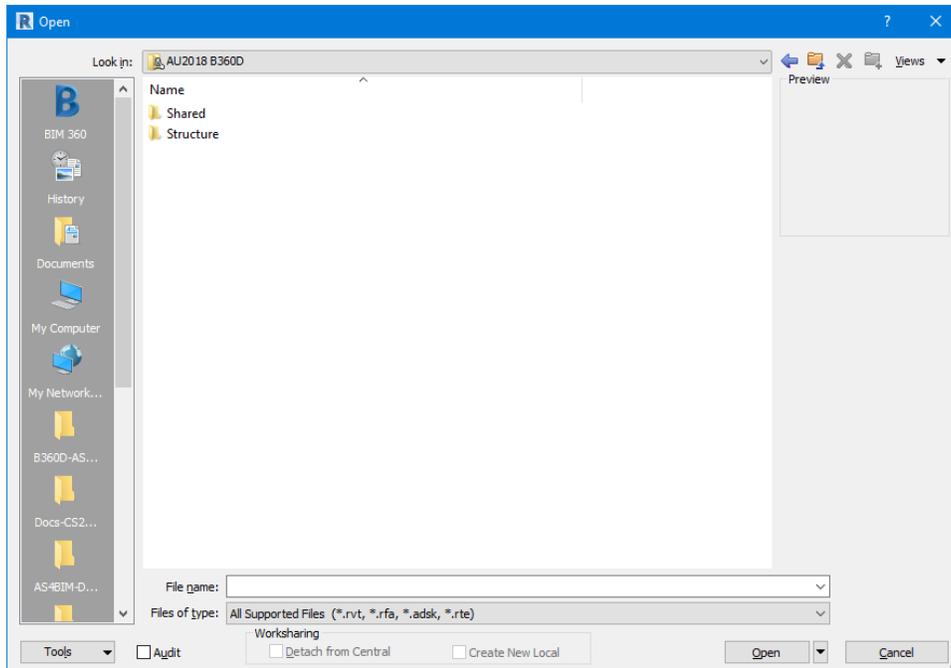


If you are running Revit 2018.3, you will be shown the **BIM 360 Document Management** as well as **BIM 360 Team** option.

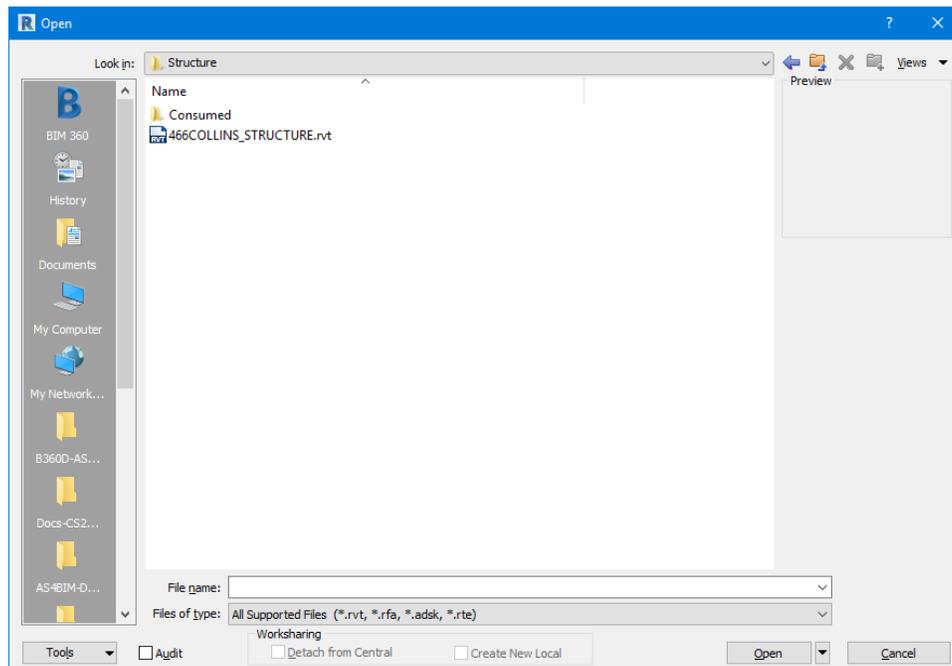
4. In Revit 2018.3, double-click on **BIM 360 Document Management**.
5. Double-click on the account on which the BIM 360 Design project is hosted; all the projects you are a member of are displayed.
6. Double-click on the project from which you want to open the model.

If you are the Project Admin, you will see the **Plans** and **Project Files** folder. However, if you are a non-admin team member, you will see the folder of your team and the **Shared**

folder. The following figure shows the dialog box from the login of a non-admin team member of the **Structure** team.



7. If you are the Project Admin, double-click on the **Project Files** folder and then double-click on the folder of the team from which you want to open the model. If you are a non-admin team member, double-click on your team folder; your model is listed there, along with the **Consumed** folder, as shown below.



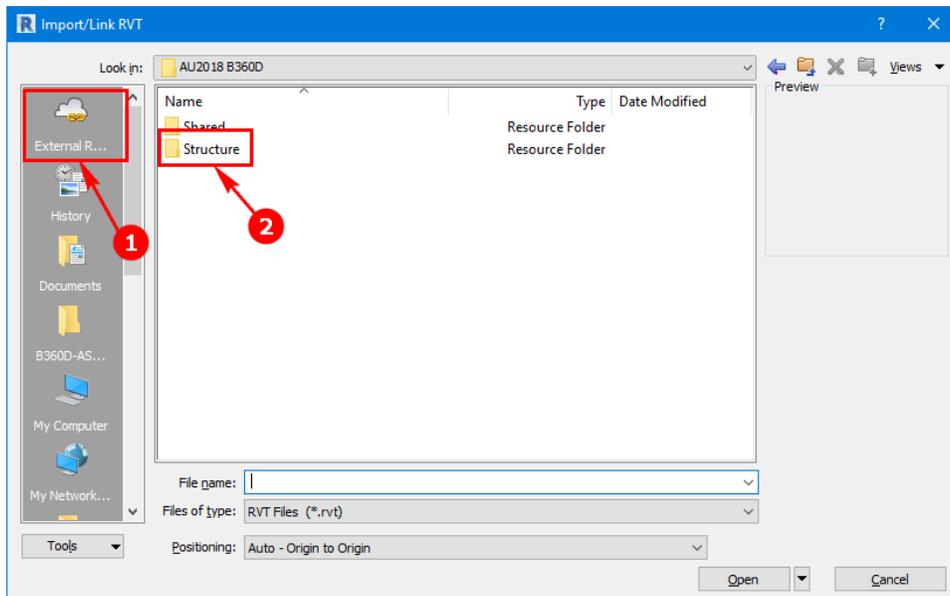
Note: If you go to the **Consumed** folder and any team's folder inside that, you will notice that they don't have any file. This is because although you may have consumed packages from other teams, but the models in those packages are only available for linking and not for opening.

8. Double-click on your file to open the model.

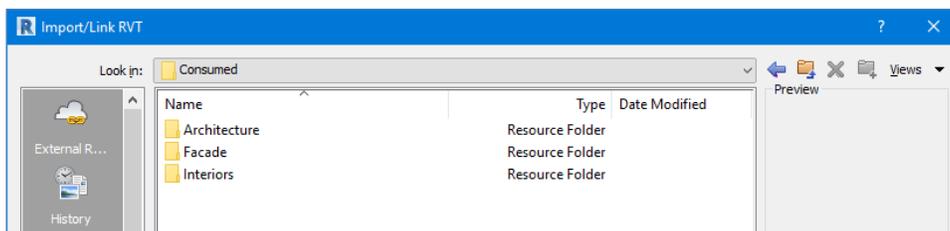
Linking Consumed Models in Revit

As mentioned in the AU lecture, once you consume a package from a team, their model is copied from the **Shared** folder to the **Consume** folder inside your team space. This is the folder that you need to link the models from in Revit. The following is the procedure for doing this

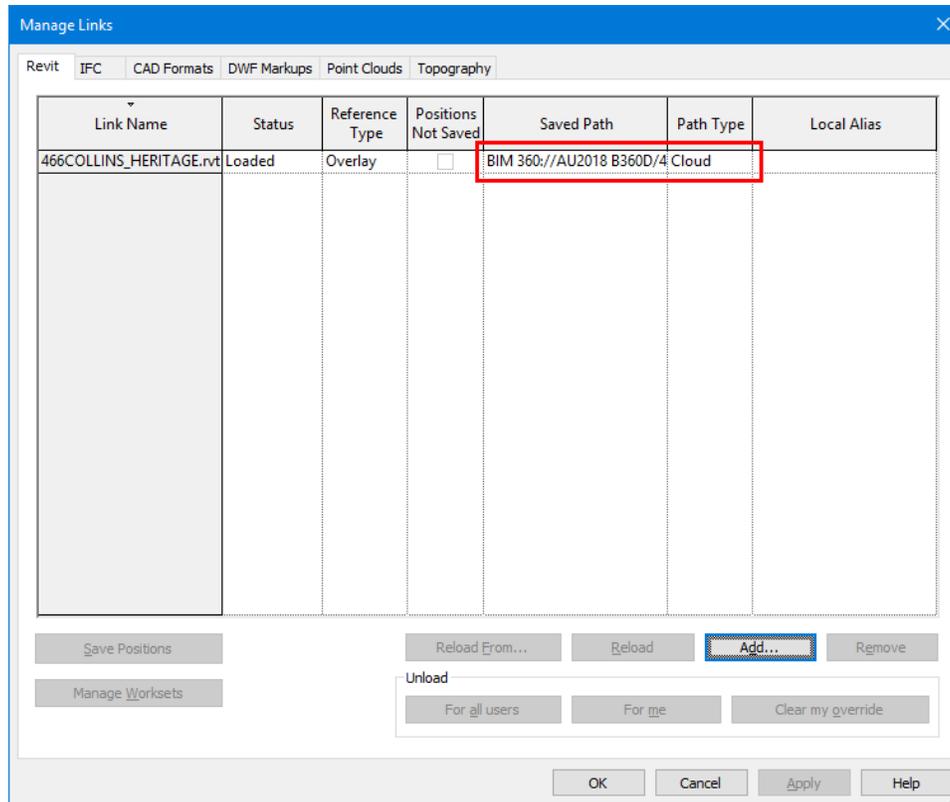
1. From the **Manage** ribbon tab > **Manage Project** ribbon panel, invoke the **Manage Links** tool; the **Manage Links** dialog box is displayed.
2. From the **Revit** tab, click the **Add** button; the **Import/Link RVT** dialog box is displayed.
3. From the left, **External Resource** is selected by default, labeled as **1** in the figure below.
4. Double-click on your team folder, marked as **2** in the figure below; the **Consumed** folder is displayed.



5. Double-click on the **Consumed** folder; all the teams whose models you have consumed are listed, as shown below.



6. Double-click on the name folder of the team whose model you want to link; the model is displayed in the dialog box.
7. Double-click on the model name; it will be displayed in the **Manage Links** dialog box, as shown below.



Notice the path of the linked file shows BIM 360:// in its name, suggesting that the file is being linked from the Cloud server.

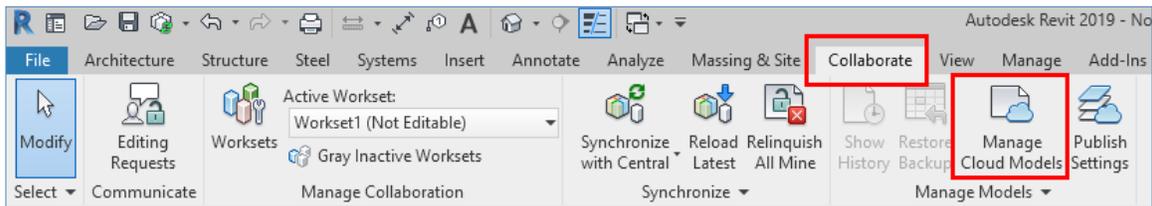
8. Similarly, add the remaining links and click **OK** in the **Manage Links** dialog box.

Tip: After you link the models consumed from other teams, the default 3D view that you have used as publish set will also include all the linked models. Which means that while viewing the 3D view on BIM 360 Document Management, you will see the rest of the models linked to your model as well. If you do not want to do that, it is important to ensure you turn off the visibility of the linked models from the 3D view selected for publishing.

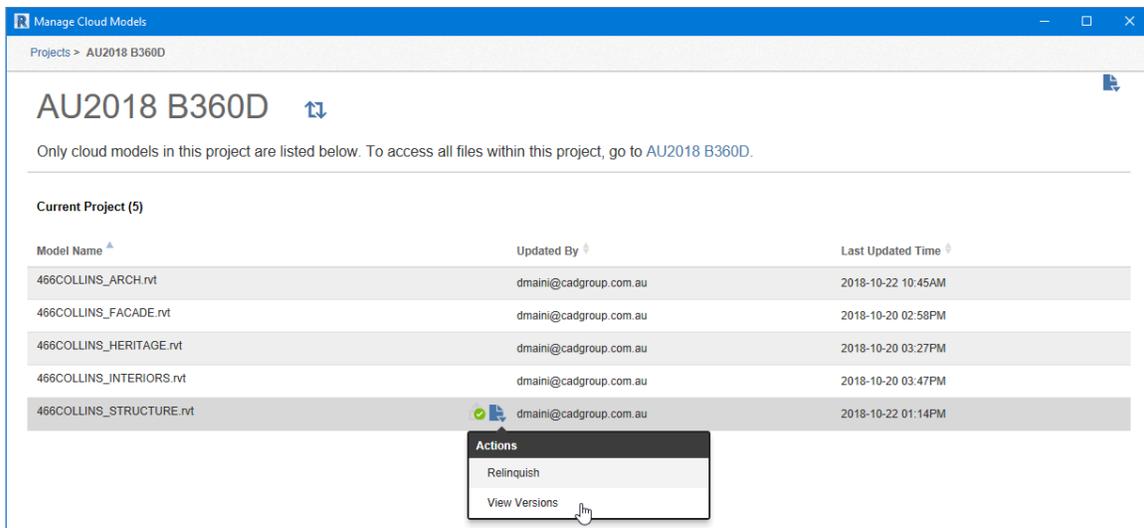
Restoring an Older Version of the Model as the Latest Version

While working in a project, you may make some changes and then sync those changes to the Cloud central to then realize that those changes should not have been made at the first place. In cases like that, the BIM 360 Design workflow allows you to restore an older version as the latest version of the model. The following is the procedure for doing that.

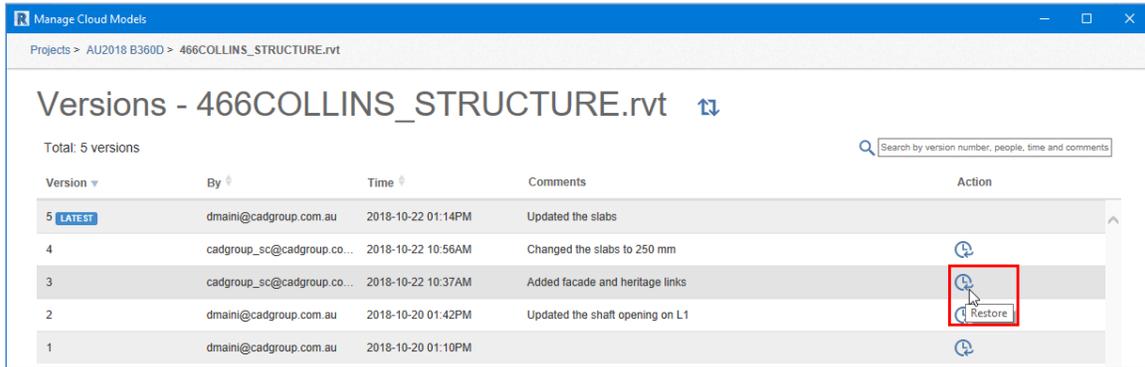
1. From the **Collaborate** ribbon tab > **Manage Models** ribbon panel, invoke the **Manage Cloud Models** tool, as shown below; the **Manage Cloud Models** window will be displayed.



2. Click on your current project name from the **Manage Cloud Models** window.
3. Click on the **Actions** menu on the right of the file name and then select **View Versions**, as shown below; the **Manage Cloud Models** window shows various versions of the model.

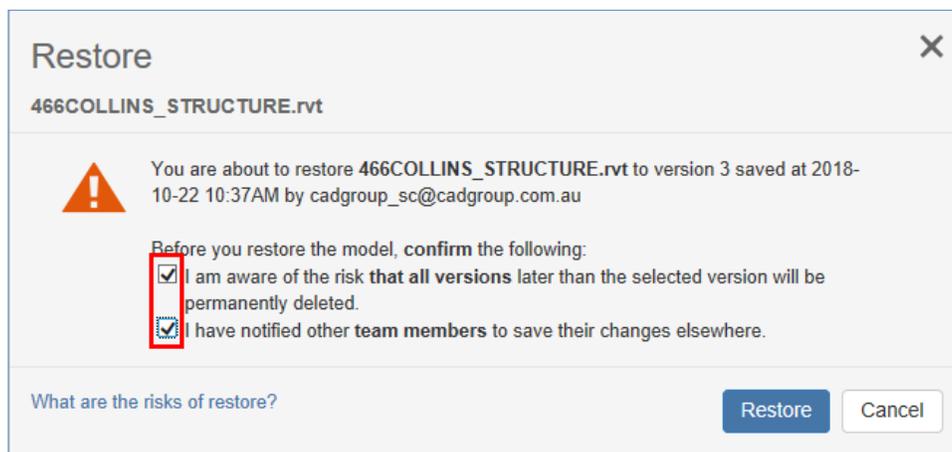


4. From the **Actions** column on the right of the older version to make current, click **Restore** as shown below.



On doing so, the **Restore** window is displayed, informing you the consequences of restoring the older version of the model.

5. Select the two tick boxes, as shown below, and then click **Restore**; the selected version is now restored as the latest version of the model.



Tip: You will have to publish the model for BIM 360 viewing after the restoring the older version of the model as the latest version.