

ENR469519

# Nothing But Net: Meet the next gen Plant 3D Collaboration with BIM 360 Docs

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## Learning Objectives

- Discover Collaboration for AutoCAD Plant 3D and how it works with BIM 360 Design in version 2021.
- Explore the process and tools for AutoCAD Plant 3D project managers on collaboration projects.
- Learn what is different about working in collaboration for AutoCAD Plant 3D from a user's perspective.
- Discover several resources that you can keep to help you be more successful with Collaboration for AutoCAD Plant 3D projects.

## Description

In this session we will look at the next generation of Collaboration for AutoCAD Plant 3D 2021 software in order to help you get started successfully. After an overview of Collaboration for AutoCAD Plant 3D features and services, we will touch on each of these topics: how to create and manage projects in BIM 360 software and minimal user permissions; how to share an AutoCAD Plant 3D project to BIM 360; how to manage other project tasks like backing up, archiving, and versions; differences involved in working in Collaboration for AutoCAD Plant 3D; new Collaboration for AutoCAD Plant 3D workflows; Collaboration for AutoCAD Plant 3D best practices and do's and don'ts. We will show you the Autodesk Health Dashboard and the Collaboration for AutoCAD Plant 3D services to subscribe.

## Speaker



My name is David Manning.  
I am the Founder and Chief Designer at 3DOM Engineering.

I provide design, coaching and support services, focusing on quality and a holistic approach to design on all our projects.

I have worked in the Piping and Plant industry for over 20 years, five of which was working as a Designated Support specialist with Autodesk working Enterprise customers to maximize their potential and value with a range of Autodesk tools.

I have worked with many customers since 2018 to help them understand and adopt Plant 3D Collaboration tools. This year I have really enjoyed working with a lot of people on the next generation collaboration solution with BIM 360.

## Discover Collaboration for AutoCAD Plant 3D and how it works with BIM 360 Design in version 2021.

OK, so before we get into the details. Let's go into the overview of what Collaboration for Plant really is, and if this is the right solution for you.

### Benefits of Collaboration for AutoCAD Plant 3D?

- Allows secure multi-office collaboration across the internet.
- No file or database server requirements.
- File locking and versioning through check-in/check-out.
- Performance increase due to working in local collaboration cache.
- Minimal change required to existing user workflows in Plant 3D.
- Ability to check-out and modify Plant 3D project settings while others are working.
- Highly configurable BIM 360 Permission control.
- Enable Intelligent P&IDs in Revit with Revit P&ID Connector



SLIDE 6

The Benefits of Collaboration for Plant 3D are massive.

It enables secure multi-office collaboration natively in Plant 3D across the internet and avoids the need for costly WAN infrastructure solutions.

As a result of the fully online environment it removes the need to have file and database servers for Plant 3D Projects.

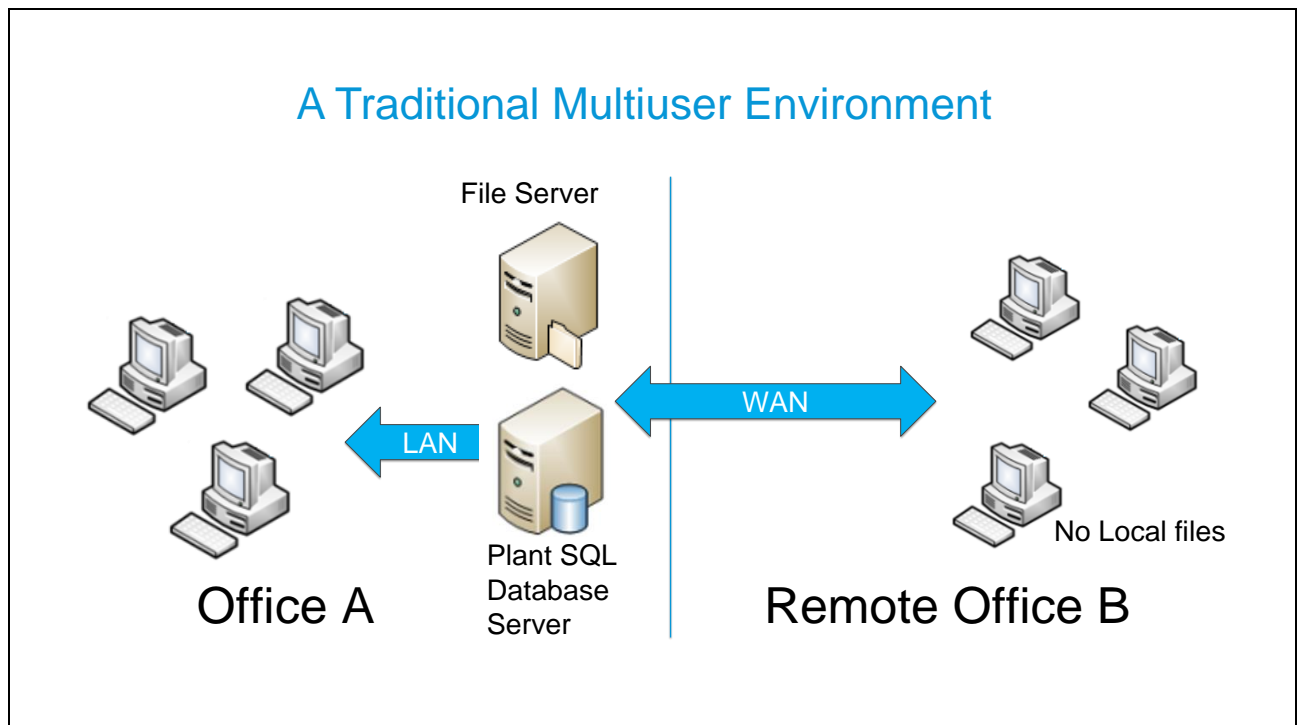
Many customers are reporting a significant performance improvement over WAN type solutions. Even those migrating from BIM 360 Teams have reported performance improvements, due in part to the new platform.

There is minimal change to the way users need to interact with Plant projects. With adequate training and guidance, the learning curve is very short, and it is really easy to adopt.

A massive advantage for CAD Managers, is a result of the addition of the check-in and out functions, where the project setup can now be edited on a live project while it is actively being used. You no longer need to kick the users out of the project.

And on top of all that, by moving to the BIM 360 next generation platform, we are introducing highly configurable permission control. The permission control is a native function of BIM 360, so as it evolves, and changes Plant 3D Collaboration projects can automatically take advantage of those changes as part of the BIM 360 holistic environment.

As a side note as Autodesk's only intelligent P&ID solution, using a P&ID project in the collaboration environment means that Revit users can use the "Revit P&ID connector" feature to leverage intelligent P&ID's for Revit MEP services.



SLIDE 7

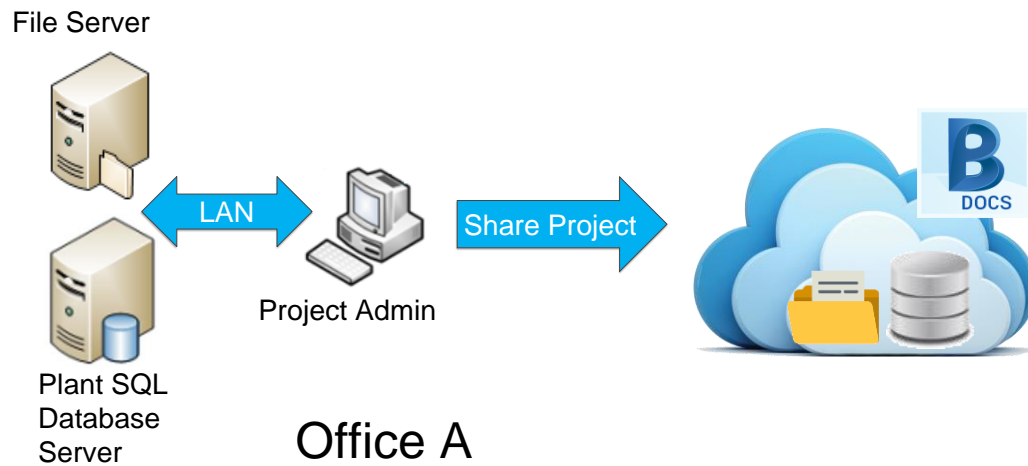
Ok so let's look at the environment for a plant project.

First, let's review the typical multi-office configuration for a Plant 3D SQL project.

In this case, one office typically hosts the DWG files on a file server and the SQL server to manage the Plant 3D databases.

Users in that office, which is Office A in this case, will have a relatively fast response time for opening drawings and modifying project data. However, users in the remote locations, Office B in this case, because they are also connecting and working on those same servers, they are reliant entirely on the WAN connection and the associated infrastructure. Any degradation in the access and WAN speed means a reduction in the remote offices ability to work efficiently. This speed reduction when it gets to great can cause a lot of user frustration and even data corruptions can occur.

## Changing to a Plant 3D Collaboration Environment

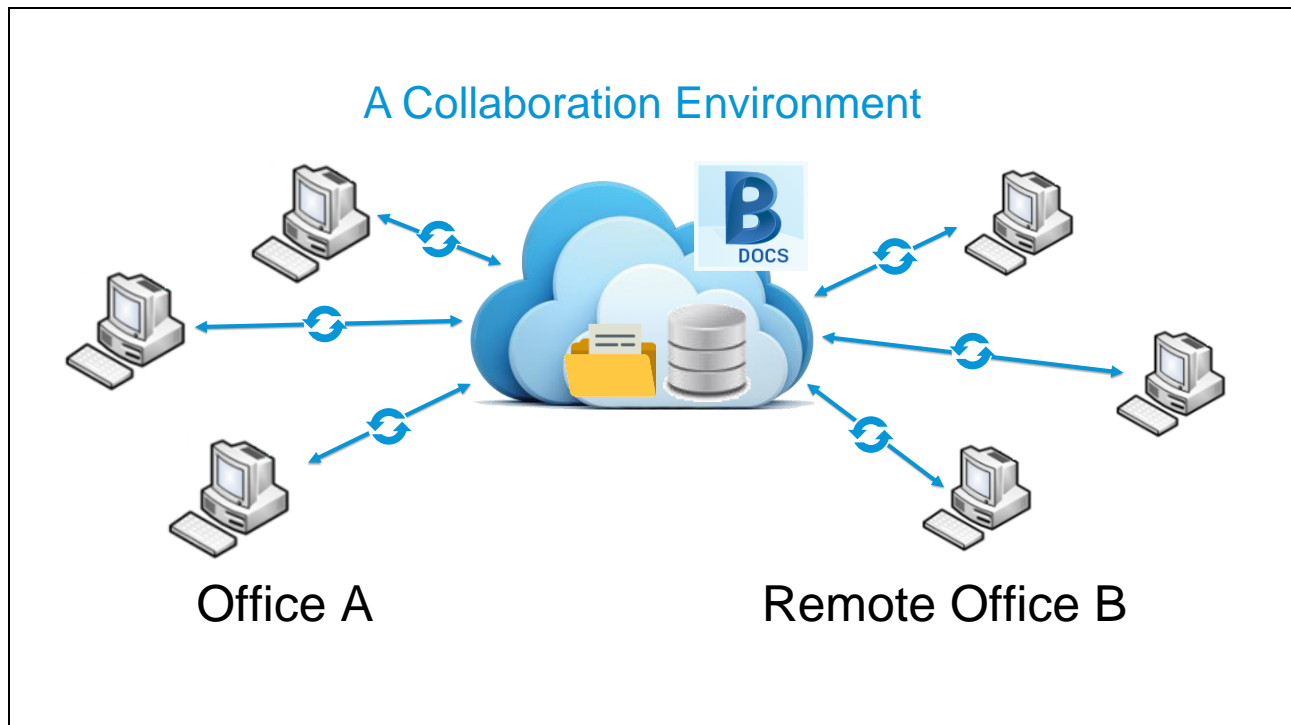


SLIDE 8

To move an existing project to a BIM 360 collaboration environment it is really easy. We will go through the specific steps later, for now it's as simple as grabbing the existing project in any of the existing environments. It does not matter if it is an SQLite project, on a server or even a Vault project.

A project administrator opens the project and shares it to the BIM 360 Docs project. The files and the databases are all copied to the cloud storage all hosted and managed by Autodesk. There is no change to the project on the servers and the online version is a full copy.





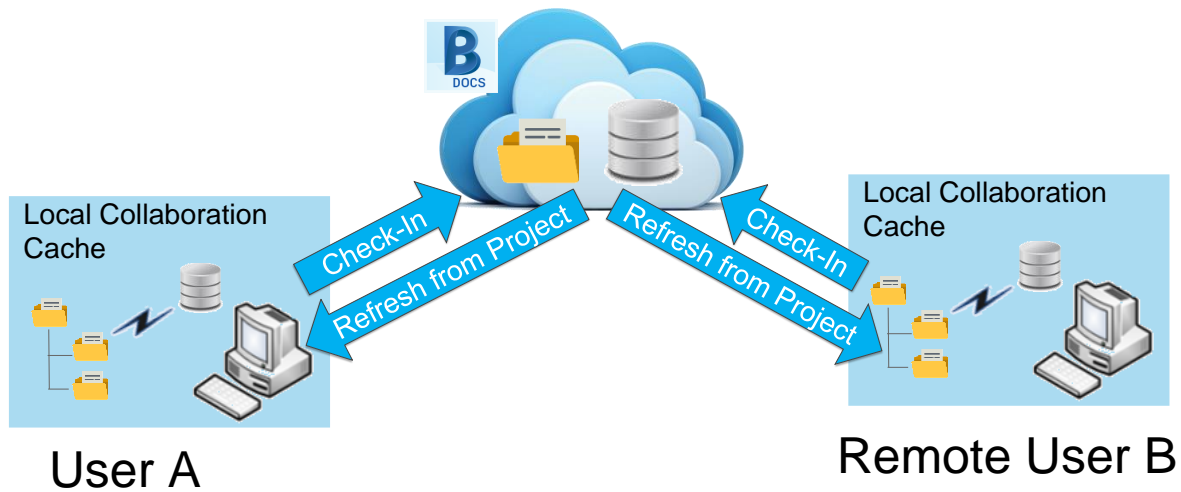
SLIDE 9

Once the project has been shared to the BIM 360 Environment, all Plant 3D users with appropriate access will be able to access the project in Plant 3D.

Users basically just need to be invited to the project. Once they have project access opening the Plant project is easy, and it downloads all necessary files to the user's local system, or collaboration cache. The user's or their computer and the project on BIM 360 are directly and individually connected. Plant 3D and BIM 360 will keep all files and the project in sync, when required.

So, this has removed any dependencies on LAN or WAN use and makes full use for the internet instead. Additionally, users can access the same project from any machine around the world, so long as it has Plant 3D 2021 and they sign in with their Autodesk ID.

## How does Collaboration for AutoCAD Plant 3D work?



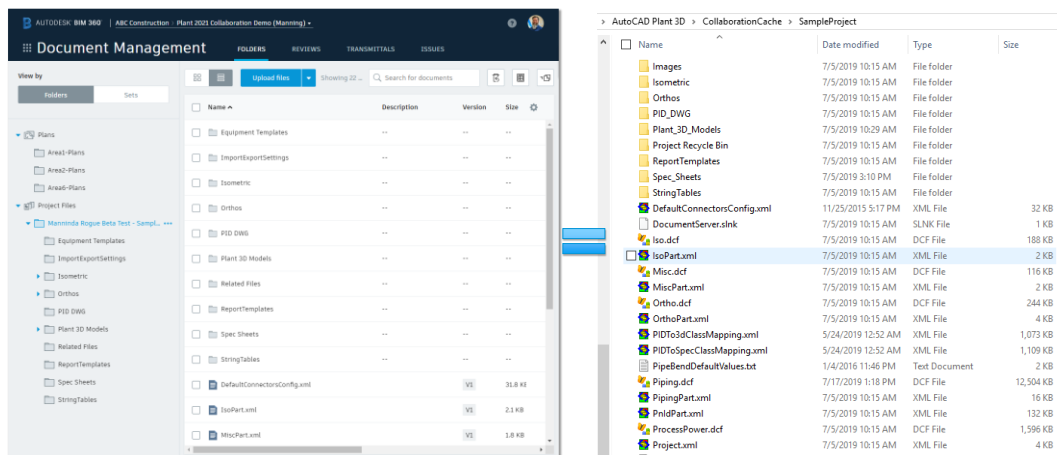
SLIDE 10

To look at that in a slightly different way, with Collaboration for Plant 3D projects, every user is working in a local SQLite project with files located in local folders on their computer. This local storage location is called the "local collaboration cache" and is one of the reasons that users see an improvement in performance over projects reliant on LAN and WAN speeds for the user interactions between the files and database. The Plant 3D software also performs occasional background checks to the cloud-hosted collaboration project to notify users if there are changes to files made by other users as well as for validation of local data with the project database, for example, equipment tags.

When working in Collaboration for Plant 3D projects the user location or Office is no longer relevant as users now communicate directly via BIM 360 Docs.

This process we are looking is indicating that when a user has edited a file they save, and check-in and all data is synchronized to BIM 360. While the whole time Plant 3D is monitoring the BIM 360 environment for changes by other users.

## BIM 360 Docs and the Collaboration Cache



BIM 360 Docs Project

Collaboration Cache

SLIDE 11

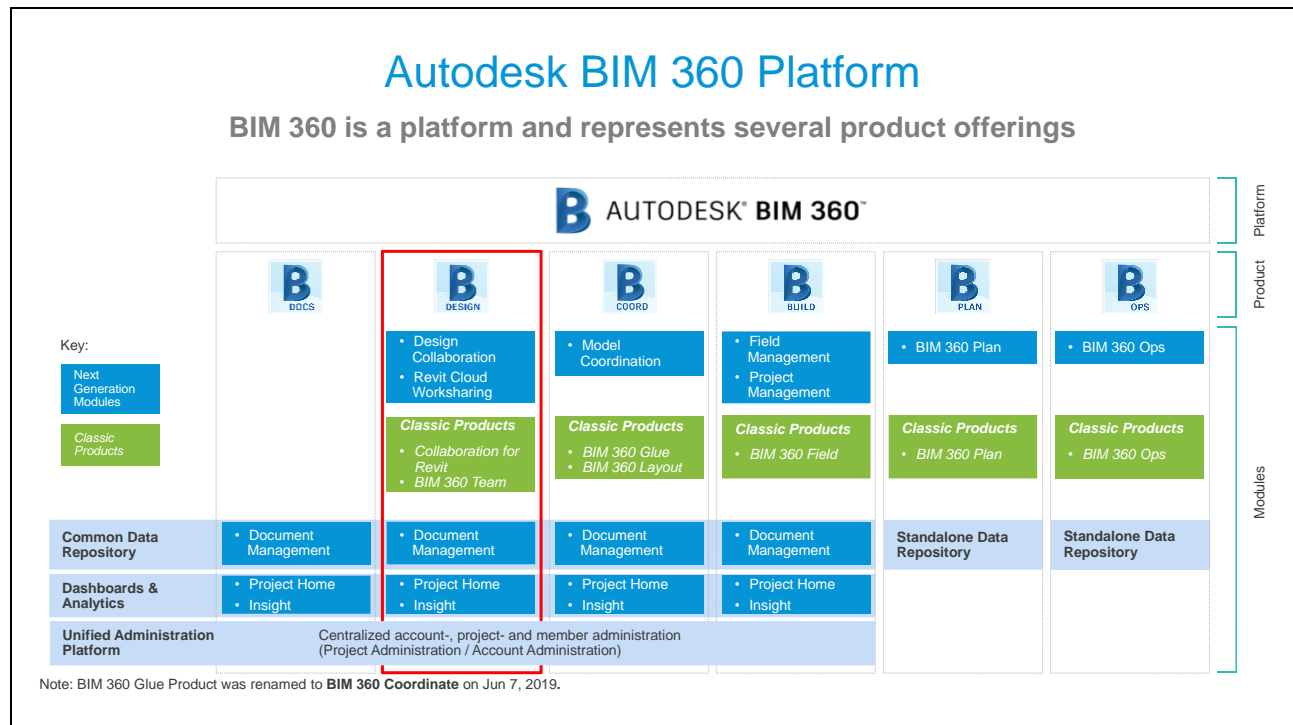
The two images on this slide show the folder for the project. The left as it looks in BIM 360 Docs, and the right in the collaboration cache on the local drive.

The local collaboration cache is a complete, local SQLite Plant 3D project that is being managed by Plant 3D and therefore should not be modified through other means. This includes using Windows File Explorer or other Autodesk applications (like AutoCAD) to open or modify files in the collaboration cache. The entire set of Plant project files will be copied down from the BIM 360 Docs project to the local collaboration cache when you open the project for the first time.

What I mean is all project files required to start the project like settings and the databases, etc. it does not include the project drawing files like; 3D Models, P&IDs, Orthographics or Isometrics or unused Specs. These files are only synchronized and copied down to the local collaboration cache when required.

Please note that while they look identical there is slight differences between a collaboration project and an SQLite project. You can't copy a local cache and open it like it was an SQLite project.





SLIDE 12

Let's take a pause here and talk about the BIM 360 Platform, so that we are all on the same page.

The main information we want to show you here is how Collaboration for Plant 3D integrates with the BIM 360 Platform and that BIM 360 Design is required for "Collaboration for Plant 3D" as the entitlement for the feature to work.

In BIM 360, the files are stored in the system known as BIM 360 Docs, which is the unified file storage system or "Common Data Environment" for the BIM 360 Platform. Note that BIM 360 Docs is a part of almost every Product and is not required separately for Plant 3D or BIM 360 Design users.

BIM 360 is the Autodesk name for the whole system or "Platform", shown here by the banner across the top. You may have noticed the indicator on the right side showing it as the platform.

The next layer is what we call the "Products". This is what you subscribe to or buy, and provides access to a number of features, tools and functions.

Then there are the "Modules" that are provided under each of the products. These are the components and tools that you get access to as part of a subscribing to a product. They are shown as the blue or green blocks in each column under a product.

For example. On the far left you'll see the product BIM 360 docs. This is the minimum you need to get started with BIM 360, is the foundation modules and is where most projects will start. This

is in the simplest terms, a file storage facility, with enhanced analytics, dashboards and a lot of functionality attached.

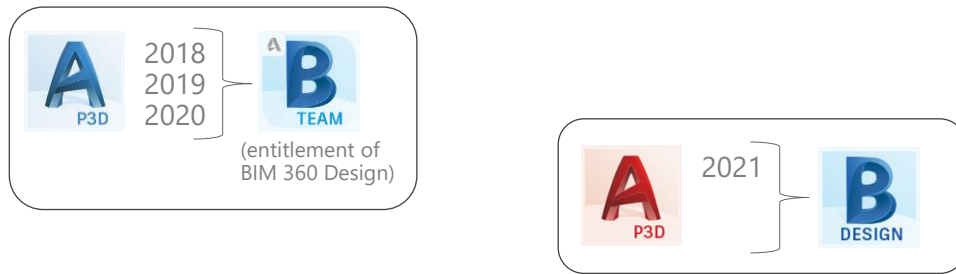
You can see this represented as common file repository for all of the products by the fact that the blue box is included at the bottom of each column showing document management, project home and project insight. This is not the case in Plan and Ops, which are different systems with their own standalone data repository.

In the next column, with the red box, there's BIM 360 Design. This is a requirement for Collaboration for Plant 3D to function. The key takeaway here is when you want to use Collaboration for Plant 3D you need each user to have access to BIM 360 Design. This allows access to the design collaboration features for not only Plant 3D, but also Revit Work-sharing and other general design collaboration features.

You can see by the blue boxes at the bottom that BIM 360 Design column, that document management comes included, so you only need to have access to BIM 360 Design.

Other people on the project who are not design tool users only need BIM 360 Docs, and they can still access the project models on BIM 360 and leverage the tools of Docs like live the model viewer, and reviewing functions using only a Docs license.

## Versions and Platforms



- No migration required between versions 2018 to 2021
- No file format change 2018 to 2021

SLIDE 13

Taking a minute to clarify a few things around versions and platforms and avoid some potential confusion.

Autodesk has had Collaboration for Plant 3D available since the release of Version 2018. This however uses the file storage service BIM 360 teams. Version 2018, 2019 and 2020 all use BIM 360 Teams for Plant 3D Collaboration file storage.

With the release of Plant 3D 2021 the collaboration file storage has moved to BIM 360 Docs. The file storage is locked into the in code so version 2018, 2019 and 2020 can only access collaboration projects in BIM 360 Teams, while 2021 can only access projects in BIM 360 Docs.

Apart from that however there is no migration required, and no schema or file format changes between 2018 and 2021. What that means is that you can open a Plant 2018 project in Plant 3D 2021 make some changes and save, and this project will still function normally in Plant 3D 2018.

So, this is really nice and make life a little easier.

## Environment Configuration

- **All Plant 3D Users will need to;**
  - have “Collaboration for AutoCAD Plant 3D” enabled in the “BIM 360 Design” entitlement enabled in Autodesk Account.
  - be able to access BIM 360 from their workstation.
    - Following pages will briefly go through setting up the BIM 360 Account, BIM 360 Project and inviting users.
    - Have a selection of users validate that they can access the BIM 360 Project in a web browser.
- **Plant 3D 2021 must be installed as a minimum to use collaboration with BIM 360 Docs.**
  - For collaboration projects it is more important than ever to install the latest updates to reduce issues.
  - Check [Manage.Autodesk.com](https://manage.autodesk.com) for the latest available updates.

*SLIDE 14*

As a final clarification and a CAD manager check list, if you are thinking about using Collaboration for Plant 3D with BIM 360 Docs these are the requirements to get started.

In short, all Plant 3D users will need to have “Collaboration for AutoCAD Plant 3D” entitlement enabled in Autodesk Account, and all Plant 3D collaboration users will need to be on version 2021.

Don’t forget to install all available updates to minimize any issues. This is all the more important for internet connected services.

If there are any concerns on this, please join me in the live Q&A or reach out to me via the comments option on the AU2020 class page.

## **Explore the process and tools for AutoCAD Plant 3D project managers on collaboration projects.**

This section is for you Project and CAD Managers on collaboration projects. But it can be good for users to understand these processes as well.

I am not going to go through these procedures in laborious detail, we just don't have time.

My intention here is to give you an understanding of the process and some learnings from my experience working with collaboration projects.

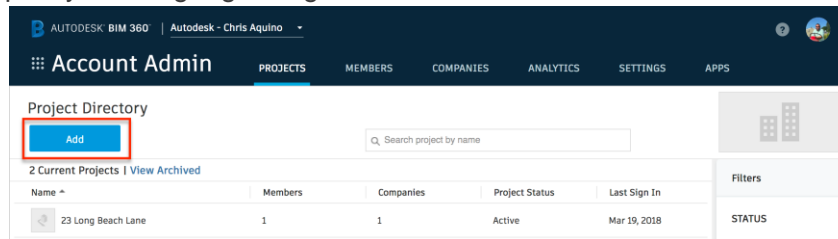
I encourage you to download the handout and the presentation so that you can go through each process in detail and let me know if there are any questions.



## Create a BIM 360 Project

Lets setup a Project for the users to practice their new skills.

- An Account administrator should set-up a new BIM 360 Project
- Account administrators can create projects and assign project administrators to BIM 360 services. To create a project:
  1. In Account Administration, click Projects, then Add.
  2. In the Create Project Profile dialog box, specify the project name, and enter the project information. Required fields are marked with an asterisk.
  3. Specify the language. English is the default.



SLIDE 16

Before we get into Plant 3D, the first thing we need for a Collaboration project is a place for it to live in BIM 360. For that we need a BIM 360 Project.

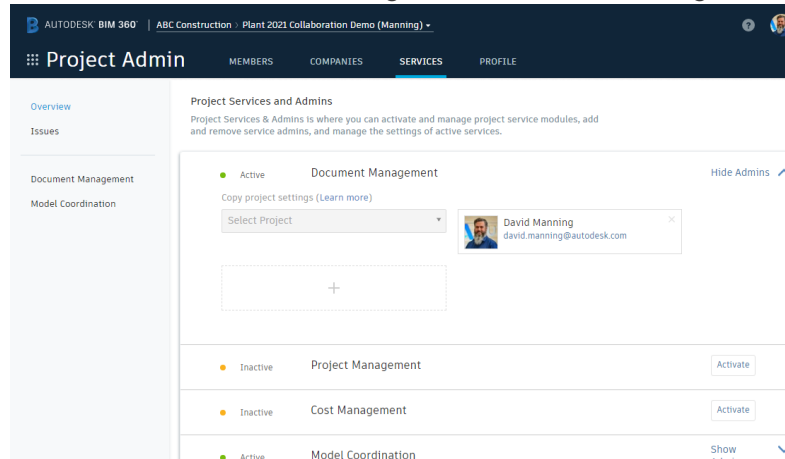
To create a new project you need to be a BIM 360 Account Administrator. The Account administrator set's up the project on BIM 360 and assigns a Project Administrator or Administrators.

So that you understand the process, in the Account Admin section the administrator will add all relevant project details like the project name and activate the necessary services.

For a Collaboration for Plant 3D project only the BIM 360 Docs service needs to be activated. When activating a service, the Account administrator will assign at least one project administrator to that service. It is then normally up to the project administrator to configure and setup the project from there.

## Service Activation

- After creating a project profile, choose the services to activate. For Collaboration for Plant 3D projects, activate the Document Management service and assign a service Admin.



SLIDE 17

If you would like to know more about service activation, I have left this slide here for reference. You can get more details in the BIM 360 Help documentation.

Reference article:

<https://knowledge.autodesk.com/support/bim-360/learn-explore/caas/sfdcarticles/sfdcarticles/BIM-360-Design-Getting-Started.html>

You can activate services when creating a new project, or after the project is created. If you are activating services now, go to item 4 in the following section.

Account Administrators can activate services and add project administrators to a project. To add Project Admins to a project:

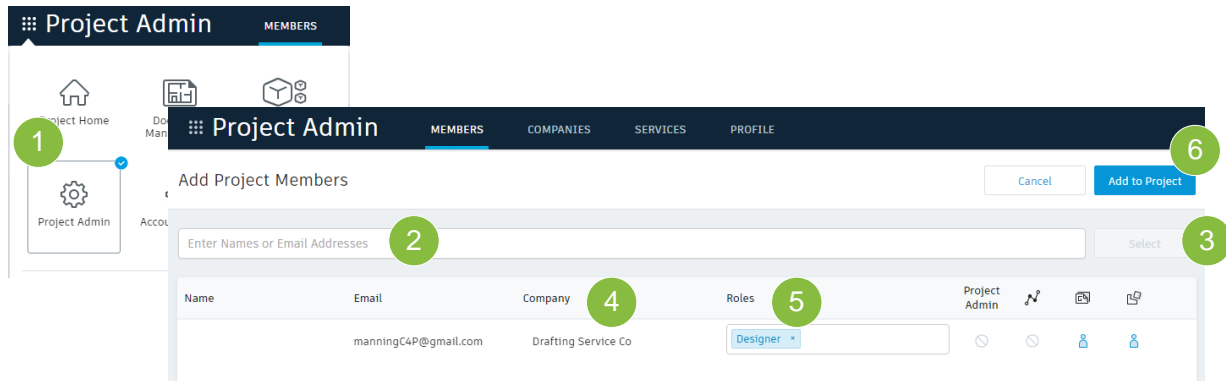
1. In account administration, click Projects.
2. Click a project in the list.
3. On the Project Admin page, click Services.
4. Choose the desired BIM 360 service and click Activate. For example, for BIM 360 Document Management, click Activate to add an administrator and integrate BIM 360 Document Management with the current project.
5. Enter the member's name or email. Click Save to send the welcome email. This email allows project administrators to sign into the account with their Autodesk ID.

Note: Existing members are notified that they've been added to the account as project administrators.

## Invite Team Members to the Project

### Project Admin / Members

- Project Administrator should select the members tab in the Project Admin module.



The screenshot shows the 'Project Admin' interface with the 'MEMBERS' tab selected. The interface includes a sidebar with 'Project Home' and 'Project Admin' (1), a top navigation bar with 'Project Admin', 'MEMBERS', 'COMPANIES', 'SERVICES', and 'PROFILE' (6), and a main content area titled 'Add Project Members'. The main area has a search bar 'Enter Names or Email Addresses' (2) and a 'Select' button (3). Below the search bar is a table with columns: Name, Email, Company (4), Roles (5), and Project Admin. A sample entry is shown with Email 'manningC4P@gmail.com', Company 'Drafting Service Co', and Role 'Designer'. The 'Add to Project' button is also visible.

SLIDE 18

As a project administrator you will need to invite users to the project. This is fairly straight forward, and there is a more detailed explanation in the BIM 360 help files. But the short version is this.

When in the project, select the Project Admin module, then the Members tab to be able to add members.

If the user is already a member of the BIM 360 Account you can search for users by name. Otherwise enter their email address. Hit enter to accept the entry.

The Select button then becomes active to add them to the list.

Once in the list, add the company name if not already populated.

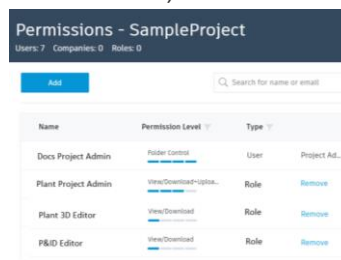
Enter the user's role for the project. This will set the users permissions for the services according to the project settings.

When all users have been entered into the list as required. Hit "Add to Project".

The users will be sent an invitation email and be shown as Pending in the Members list.

## Add users Folder Access Permissions

- As a project administrator, you can restrict project member access to certain folders or limit access according to role or company.
- Sub-folders automatically inherit the permission level of the parent folder, but can be changed later. If changed, sub-folder permissions must match the access level of the parent folder or else have a greater (less restricted) access level than the parent folder.



Name	Permission Level	Type
Docs Project Admin	Folder Control	User
Plant Project Admin	View/Download/Upload	Role
Plant 3D Editor	View/Download	Role
P&ID Editor	View/Download	Role

- For more details on Folder Permissions see here: [Folder Permissions](#)

SLIDE 19

As the project administrator, you now have the option to limit a user's access to folders in BIM 360 Docs. You may also need to specifically allow a user access to the Plant 3D Project folders in order to access the project.

BIM 360 can manage permissions by Role, Company, or specific user. In general, using the Role and Company based permission makes management much easier.

In this example we have four example roles, Project Administrator, Plant project Administrator (who might be the CAD Manager or spec editor), a P&ID draftsman and a 3D modeler. This is just an example and you don't have to setup roles specifically for Plant 3D users.

Reference article:

<https://knowledge.autodesk.com/support/bim-360/learn-explore/caas/CloudHelp/cloudhelp/ENU/BIM360D-Documents-Management/files/To-Work-with-Documents-Management/To-Work-with-Folders/GUID-2643FEEF-B48A-45A1-B354-797DAD628C37.html.html>

## Add users Folder Access Permissions

Example of a highly controlled (Low Trust) permissions settings

Plant Project Folder
P&ID DWG Folder
3D Models Folder

**Permissions - SampleProject**  
Users: 7 Companies: 0 Roles: 0

[Add](#)

Name	Permission Level	Type	
Docs Project Admin	Folder Control	User	Project Ad...
Plant Project Admin	View/Download+Uploa...	Role	<a href="#">Remove</a>
Plant 3D Editor	View/Download	Role	<a href="#">Remove</a>
P&ID Editor	View/Download	Role	<a href="#">Remove</a>

**Permissions - PID\_DWG**  
Users: 7 Companies: 0 Roles: 0

P&ID Editor [View/Download+Uploa...](#)

Plant 3D Editor [View/Download](#)

**Permissions - Plant\_3D\_Models**  
Users: 7 Companies: 0 Roles: 0

P&ID Editor [View/Download](#)

Plant 3D Editor [View/Download+Uploa...](#)

- Also consider permissions for folders like; Isometrics, Orthos, Project Recycle Bin, etc.
- For more details on Folder Permissions see here: [Folder Permissions](#)

SLIDE 20

If you do want to consider setting up an environment controlling who can access what folders in the project. This extends the example previously shown.

For someone to be able to edit the contents of a folder they need to have "View/Download+Upload+Edit" permissions assigned.

For a Plant 3D user that is not permitted to edit a folder contents, they only need "View/Download".

In the example on the slide in the left column this is the Plant 3D project root folder permissions settings for this example. You can see that the Plant Admin has View/Download+Upload+Edit" permissions at the project root folder. This allows the Admin to edit the project setup. In the same folder the 3D Modeler and P&ID draftsman only have "View/Download" access. This allows them to download the needed files to work on the project but not change them. In a similar way the P&ID Editor has edit rights to the P&ID folder, but the 3D Editor can only view and download. The opposite is true for the 3D Models folder. This means that the P&ID Editor can't edit a 3D Model, and the 3D Model Editor can't edit the P&IDs.

Project administrators setting up a low trust environment need to also consider the access the people may need to other files like Isometrics, Ortho's and recycle bin.

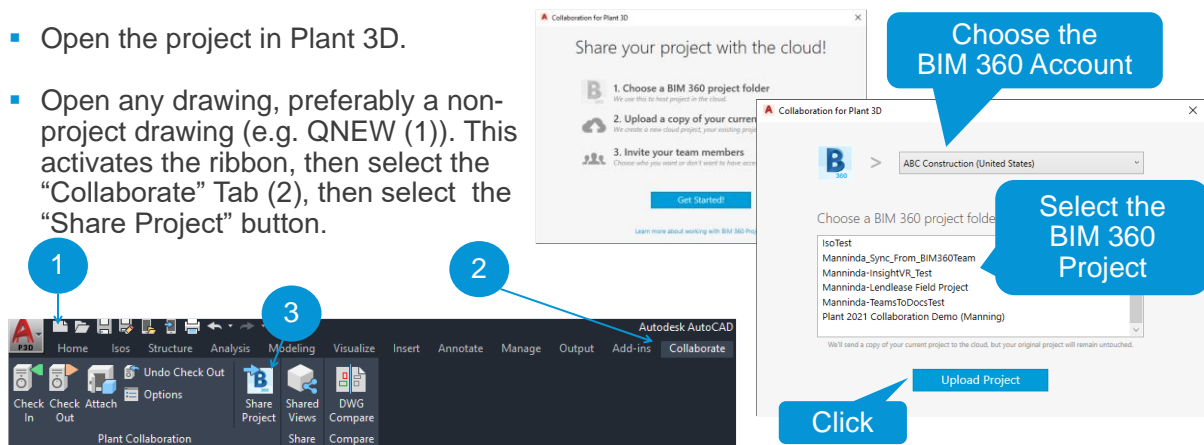
Reference article:

<https://knowledge.autodesk.com/support/bim-360/learn-explore/caas/CloudHelp/cloudhelp/ENU/BIM360D-Document-Management/files/To-Work-with-Document-Management/To-Work-with-Folders/GUID-2643FEEF-B48A-45A1-B354-797DAD628C37-html.html>



## Share a Plant 3D Project for Collaboration

- A Plant 3D collaboration project starts with an existing non collaboration project.
- Following the check window, the share project window opens.
- Open the project in Plant 3D.
- Open any drawing, preferably a non-project drawing (e.g. QNEW (1)). This activates the ribbon, then select the “Collaborate” Tab (2), then select the “Share Project” button.



SLIDE 21

For Project administrators, let's look at how to share a project.

First off, while you can share any existing Vault or Network project directly, I recommend creating a project backup and doing some project maintenance on that version before using it for sharing. By doing this there is less change for errors and the projects are going to be cleaner after being uploaded.

So, the process. Start by opening the project you want to share in Plant 3D 2021.

You need to have an open drawing to access the ribbon. I personally prefer to use QNEW, but any drawing will do. Just note if it is a Project drawing it will need to be closed to allow the project to be shared.

Now that you can access the ribbon, find and click on the “Collaboration” tab, then the “Share Project” button.

This will then open the check window, where you click on “Get Started” to start the process.

This next window is where we indicate where the project is going to be stored in BIM 360, in other words we need to tell it the BIM 360 Project.

If the project is in the list, you can simply pick on it and click upload project. If you have a long list you might need to scroll, or you can filter the list by selecting the required BIM 360 Account from the pull-down filter at the top of the window.

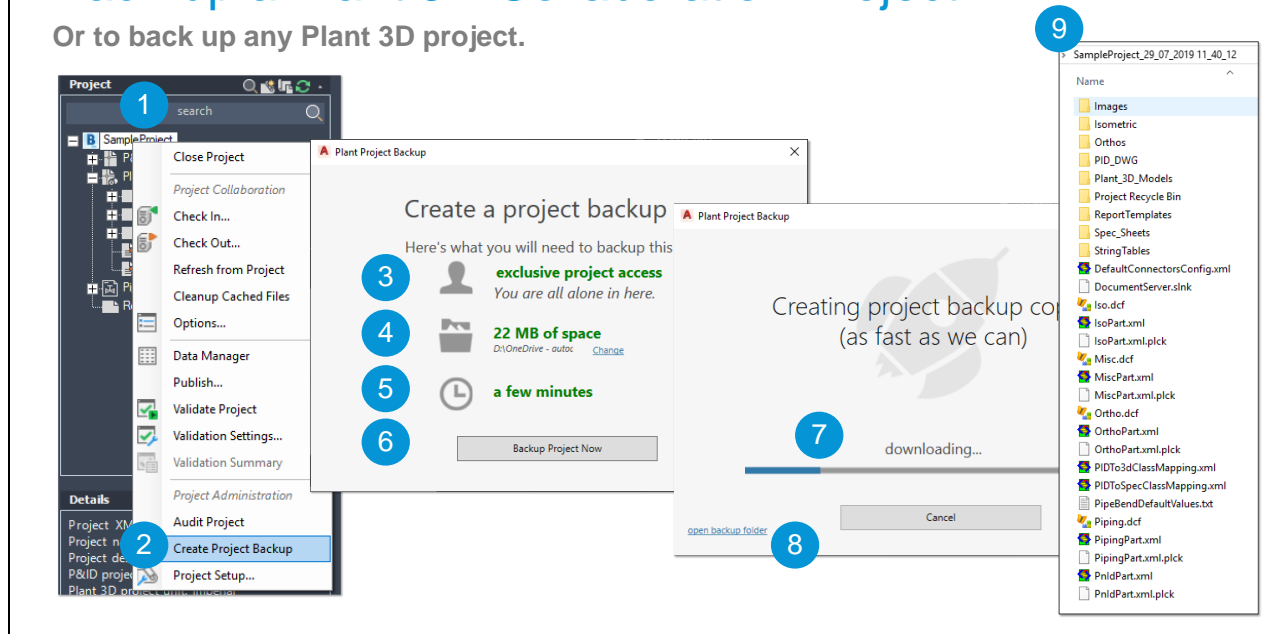
Once you click “Upload Project” the process will start, and a progress window will open. Your Plant 3D will not be accessible during this process.

When the upload is complete, Plant 3D will automatically open the collaboration project on your machine. You may notice a Project open progress dialog appear for a short while.

When the project is finished synchronizing to your local cache, it is ready.

## Back-up a Plant 3D Collaboration Project

Or to back up any Plant 3D project.



SLIDE 22

I mention before about taking a project back-up to use for a new Collaboration project. This process is so simple and creates a complete SQLite copy of a project. It does not matter if it is a collaboration project or one on Autodesk Vault or an SQL server project.

Start by opening the project that you would like to back-up. Then,

- 1 – Selecting the Project name to open the context menu with a right click on the mouse, and
- 2 – Select the “Create Project Backup” option.

This opens the Project Back up window showing the relevant information. What we are looking for here is all text field to be green.

3 – You need to be the only person in the project for this to work. The first section here checks that and shows you if there are active users with files checked out so that you can chase them to check in before creating a back-up.

4 – The second field is the location that the project will be saved. Make sure that you have edit access to this location and that there is enough storage space.

5 – Finally this is a rough estimate of the time it will take to back up the project. This is only an estimate to help you plan when to do this. Normally it very quick.

6 – If fields 3,4 and 5 are green then you can go ahead and click the “Backup Project Now” button and the process will start.

The create window will close and the backup process tracking window will open.

The process window provides a real time estimate of the percentage complete, as well as the option to cancel the back-up if required.

7 – This is process bar tracking the back-up process.

8 – You can open the back-up folder directly from this window by clicking on this hyperlink.

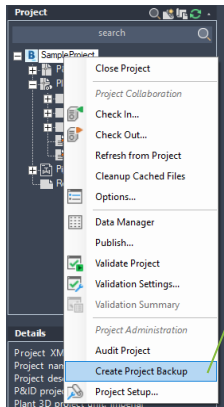
Once complete the entire project will be recreated in the specified location as a full SQLite copy of the project.

The project folder itself get created with the date and time that the back-up was created. This allows multiple backups to be stored in the same location.

Note the date is in the following order – “Day\_Month\_Year Hour\_Minutes\_Seconds” (aka: DD:MM:YYY HH:MM:SS)

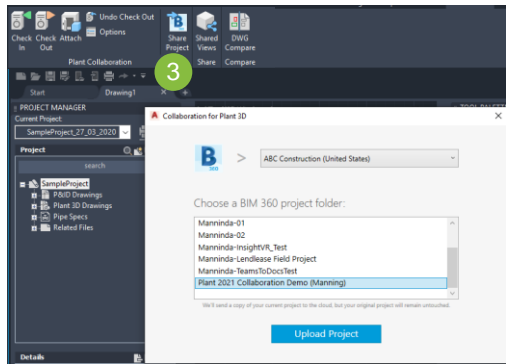
## How to Convert a BIM 360 Teams Project

**Backup BIM 360 Teams Project**



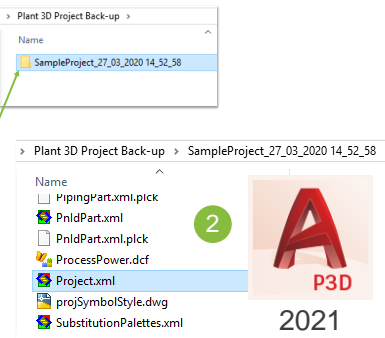
1

**Share to BIM 360 Docs**



3

**Open in Plant 3D 2021**



2

SLIDE 23

If you have Collaboration projects in BIM 360 Teams you can't share it directly to BIM 360 Docs. This is because Collaboration projects in Teams are only on Plant 3D versions 2018, 2019 and 2020.

The simple process to convert a BIM 360 Team project to a 2021 BIM 360 Docs project is to first create a back-up copy of the BIM 360 Teams project.

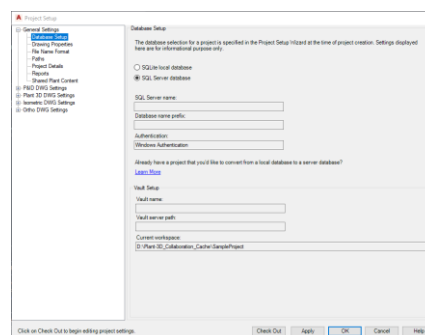
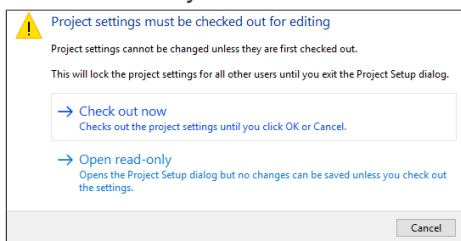
Then open the SQLite backup version in Plant 3D 2021 and share the Project to BIM 360 Docs using the normal process.

Again, I do recommend doing project maintenance like a project audit before sharing the project.



## Editing Project Set-up for Collaboration Projects

- Collaboration for Plant 3D introduces Check-out and Check-in functionality to Project workflows. This has the advantage of being able to edit project set-up while users are in the project. The settings will copy to their workspace.
- Now when opening project setup you will now be asked if you want to check it out.
- If you open it read only you can check out later without exiting setup.



- APPLY updates the online project but setup remains checked out to you.
- OK checks project setup back in.

SLIDE 24

Now that we have a project in BIM 360 Docs, what do we need to do to actually manage the project?

By the addition of the Check-in and Check-out function this means that you are now able to edit the project set-up while users are actively working on the project.

When you go to open the project set-up as you normally would you will now see a new dialog asking if you want to Check-out the project set-up. If you don't intend to make changes, then select "Open Read-Only". In which case the project setup will open fairly quickly.

Of course, if you are going to make changes then by all means select "Check out now". This will then go through the checkout process for all project setup files.

If you do open project setup read only and you find that you need to make a change, that is not a problem. In the project setup window, you will notice at the bottom there is now a "Check Out" button. Clicking this will check out the project setup to you, assuming no one else has it checked out. You can then make the changes required.

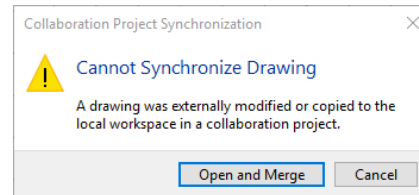
Clicking the Apply button synchronizes the changes to the project, on BIM 360, but it remains checked-out to you. Alternatively, if you're finished, clicking on the OK button synchronizes everything back to BIM 360 and checks all the project setup files.

Nice and easy.



## Restoring a Previous Version of a File

- In some cases it may be needed to revert a drawing to a previous version.
- Do not use the BIM 360 “promote” function to do this. Doing will result in drawing corruption
- Correct Process:
  1. Check-out the drawing from Plant 3D Project Manager (without opening).
  2. From BIM 360, download the required version. Save this version over the local file in the folder in the collaboration cache.
  3. Open the drawing in Plant 3D. You will be warned that the drawing is out of sync.
  4. Select Open and Merge option to sync the drawing to the project.
  5. Check-in the drawing.
  6. The drawing should be successfully restored.



SLIDE 25

On BIM 360 Docs there is also a full version history record. That is every time a file is updated on BIM 360 by saving or checking in, a new version is created. Do not worry about trying to keep numbers low there is no practical limit on BIM 360 for file versions. Because of this it is possible to go back to a previous version of a file. On BIM 360 this is referred to as promoting a version. However, for Plant 3D Project files, DO NOT DO THIS.


This process is the way to achieve the same result for a Plant 3D project.

Basically, on BIM 360 you need to open the version that you want to ‘promote’ and download that version. Then in Plant 3D Open the project and checkout the drawing, but don’t open it. You can do this from the ribbon, or the right click menu.

Then in windows explorer take the version you downloaded from BIM 360 and copy it over the newly checked out DWG file.

Going back into Plant 3D you then open the dwg which will open the local file. Plant 3D will realize that it is out of sync and give you a prompt to “Open and Merge”. Clicking on the open and merge button will merge the drawing back into the project. Then checking in will synchronize this version of the file back to BIM 360 as a new version.

I don’t expect that you would need to be this very much.

The slide features a background of abstract, layered blue and white geometric shapes, possibly representing architectural or engineering models. A semi-transparent white rectangle is centered over the image, containing the title text.

## Other Project resources to Consider and Manage with Collaboration Projects

*SLIDE 26*

As a Project or CAD Manager there are also a number of other things to consider for Collaboration projects

This is not something that we can go into in detail, but rather a prompt for you to consider these things before they become a problem for your team.

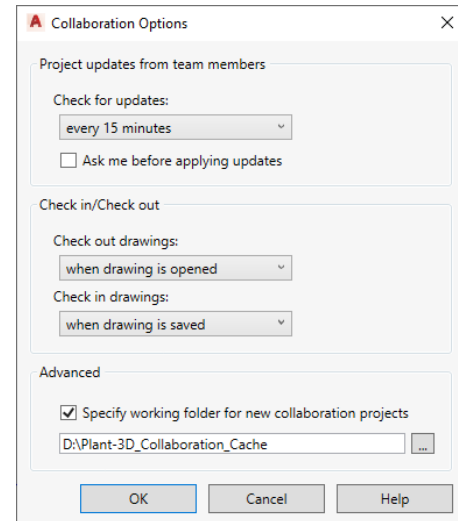
We don't have any one best solution for these because there are so many variables. It's up to you to decide what solution best suits your organization.

If you have any concerns with any of these please reach out to me directly in the class comments or come to the live Q&A and ask me there.

## User Environment Options

### To control or Not to Control

- Project Updates: Refreshes the Project manager on the specified cycle
- Check-in and out options
  - Check-out
    - When drawing is opened (default)
    - Manually
  - Check-in
    - When drawing is saved (default)
    - When drawing is closed
    - Manually
- Working Folder (a.k.a Collaboration Cache):  
The location a project is stored when it is first opened from BIM 360.



SLIDE 27

User Environment options are just that. Each user has the ability to change these for themselves.

I recommend defining an organizational level default setting for these and documenting that. Then if the users need to change them, they can, but they will always know what the expected setting are going to be.

The Check in and Check out options define the point at which a file is checked out and when it is checked back in again. The defaults are set to make the process as seamless for the users as possible and mean that there are the fewest clicks required while ensuring that the files are updated as often as possible.

Regarding the working folder or Collaboration cache, this defaults to the user's windows directory on C: drive.

C drives are often struggling for space and the folder path can take a large chunk out of the 255-character file name and path limit that exists in windows systems. Personally, I like to re-path this to a more useful location like D drive.

Just note that this collaboration cache is and must be unique to each user. So, there is no value to pointing it to a network drive or to the same location as another person using the same machine. These choices will only cause problems.

## General Considerations for Shared Content

- When working on a Collaboration for Plant 3D project, Plant 3D manages most files but not all of them that may be necessary in a collaborative user environment.
- System Administrators need to think about what resources or content may be needed to be accessed by those not on the local network, or other standard corporate file share systems. Some examples of these are: AutoCAD profiles, tool palettes, Catalogues and template files.
- Another thing to consider is how this content is best shared with all Plant 3D users.
  - Would existing corporate systems suffice?
  - What is the most appropriate file sharing platform for shared content?  
BIM 360 Teams will store almost any file type, however Plant 3D is limited in the file types this can be managed by the project and only DWGs can be managed as project Source files, Orthographics or Isometrics.
  - How will access and rights be managed?
- Reference article: [Using Desktop Connector for Plant 3D Shared Content Folder](#)

SLIDE 28

### Shared Content.

Keep in mind that a Plant 3D project shares everything required for that project to work, including the specs, the Projects Specs that is.

It does not however manage the Shared Content. Shared content being the catalogues and other resources in the shared content folder, which is typically, C:\AutoCAD Plant 3D 2021 Content\.

Because of this System or CAD Managers need to have a think about any content that may not be being managed by Plant 3D and how project members are going to get access to these files. If you're working with subcontractors or other people outside the organization this means that a network location is not something they can access, at least easily. Some examples of things that they may need access are your Customized AutoCAD profiles, Tool Palettes, template files and catalog resources.

We will be touching on each of these more on the next pages.

The questions here are to help you consider this and help stimulate thought.

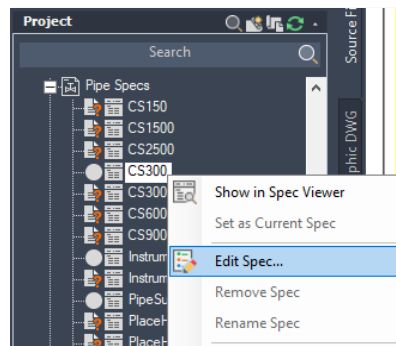
I have also included a reference article where an Autodesk Specialist has tested uploading the Shared Content to BIM 360 Docs, as one option for a solution. It was not a good solution when I was testing, I was not satisfied enough to recommend it. The Desktop Connector has and will continue to see improvements, so I suggest do your own testing of the many different options. This topic is one of the things that might be good to discuss in the Q&A if you are coming.

Reference article: <https://knowledge.autodesk.com/support/autocad-plant-3d/getting-started/caas/simplecontent/content/using-desktop-connector-for-plant-3d-shared-content-folder.html>

## Spec and Catalog Management

### Project Specs vs Shared Content

- Project Specs are stored within the Project and are managed by Plant 3D project manager.
- To edit these, use project manager.
- Shared content is stored (default) in C:\AutoCAD Plant 3D 2020 Content\...
- Shared Content Specs are imported into new projects (if you are not using a template project).



Windows (C:) > AutoCAD Plant 3D 2020 Content > CPak ASME	
Name	Date modified
ASME Pipes and Fittings Catalog	5/07/2019 12:30
ASME Valves Catalog	5/07/2019 12:30
ASME Pipes and Fittings Catalog.pcat	7/01/2019 00:32
ASME Valves Catalog.pcat	7/01/2019 00:32
CS150.pspc	7/01/2019 00:33
CS150.pspcx	7/01/2019 00:27
CS300.pspc	7/01/2019 00:33
CS300.pspcx	7/01/2019 00:27
CS600.pspc	7/01/2019 00:33
CS600.pspcx	7/01/2019 00:27
CS900.pspc	7/01/2019 00:33
CS900.pspcx	7/01/2019 00:27
CS1500.pspc	7/01/2019 00:33
CS1500.pspcx	7/01/2019 00:27

SLIDE 29

### Project Specs versus Shared Content.

Project Specs are stored and managed in the project so there is nothing to worry about there. To edit any of these, if there is a local file simply right click and hit "Edit Spec". It will open the Spec in Spec Editor, automatically checked out to you, you can make your changes and when your done saving and closing will bring you back to Plant 3D and check-in the spec. A really nice and simple workflow, avoiding any unnecessary steps or clicks.

The Specs that you see in the Shared Content location, these are not your project specs. These are the specs that get used to create a new project from scratch. If you want to you can also remove the unused ones from here so they don't appear in your new projects. I prefer to move them to a ZIP file in the same location, making it easy to get them back if I need them.

If you do have customizations to these however you will need to likewise think about how these are made available to those that need them. It would generally only be the people that manage or edit catalogues or perhaps those that create projects that would need access to specs in the Shared content location.

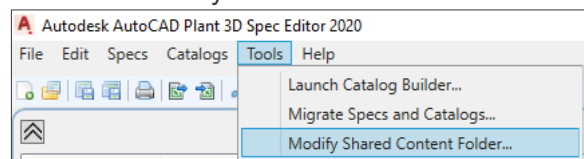


## Spec and Catalog Management

### Do catalogues need to be shared?

- For general users, Specs don't need to be shared as they are managed by Plant 3D.
- Catalogues (specifically) don't need to be shared with users either. The catalogue support files however need to be able to be accessed by the project users. Dynamic tool palettes missing icons is an example of missing support content.
- Other files are accessed from the shared content location as well. For example, the configuration of the Ortho view cube edit environment.

- For Administrators, it is important to define and manage a common shared content location. This ensures that all catalogue editors are able to edit the same files and that the edits are shared with all admins and users.
- How to edit the shared content location: Open the Spec Editor and select the menu 'Tools - Modify Shared Content Folder...'



- Rights to edit the local system Registry are required to do this.

SLIDE 30

### Spec and Catalogue Management.

Specs don't need to be shared because the Project specs are managed by the project.

Do catalogues need to be shared? In general no, Users don't need access to catalogues. If you have customs content however, they need access to resources created when added the components to the catalogue.

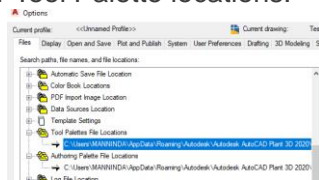
For example, if your specs don't contain any custom parts, then there is no problem. But if you do create custom parts, which is highly likely, you will need to think about how various elements of the custom parts get to the users and to their shared content location. The most common issue I have seen is when you create a custom part the tool palette PNG files are also created and stored in the shared content folder. If this is on the C drive of the CAD Manager, then users will be missing the graphic from their tool palette. In a different way, if you have multiple catalogue editors, they will want to be working on the same files. You'll need to consider how this works for your environment and on your collaboration projects.

To change the Shared content location, it needs to change a registry entry. You can do that directly or through a tool in Spec Editor, which I prefer.

To edit the shared content location with Spec Editor, the user must be a system Administrator or, if the user has local privileges, launch Spec Editor using "Run as Administrator". The "Modify Shared Content Folder" tool is under the "tools" file menu.

## Using Shared Tool palettes

- While Plant 3D modelling uses dynamic tool palettes linked to the specs, P&ID modelling does not and the parts need to be manually added.
- You may need to review the standard process for sharing Tool Palettes to accommodate collaboration projects.
- There are a number of different ways to share tool palettes, one example for network drives below can be adapted to reflect the collaboration project and the teams requirements.
- Have a look at the AutoCAD options for your Tool Palette locations.



### AUTOCAD P&ID

LEARN DOWNLOADS TROUBLESHOOTING FORUMS

#### Project-Specific Tool Palettes for AutoCAD P&ID Projects

Products and versions covered

By:  AUTODESK Support  
May 12, 2020

<https://knowledge.autodesk.com/support/autocad-pid/learn-explore/caas/sfdcarticles/sfdcarticles/Project-Specific-Tool-Palettes-for-AutoCAD-P-ID-Projects.html>

SLIDE 31

### Shared tool palettes.

If you are using Plant P&ID, you are probably customizing P&ID Tool palettes. These need to be given the same consideration as the Plant 3D shared content, or specifically the customer component content. The Plant P&ID tool palettes are basically AutoCAD tool palettes so there is a lot of resources for how to manage these in corporate environment.

A lot of these articles will be a little older, so they are focused on the network server type environment. But they can usually be redefined for other systems as well fairly easily. The article reference at the bottom right is a favorite of mine. I have shared this with a lot people. Have a look at it if you don't have corporate standard tool palettes, I think you'll find some value in the short read.

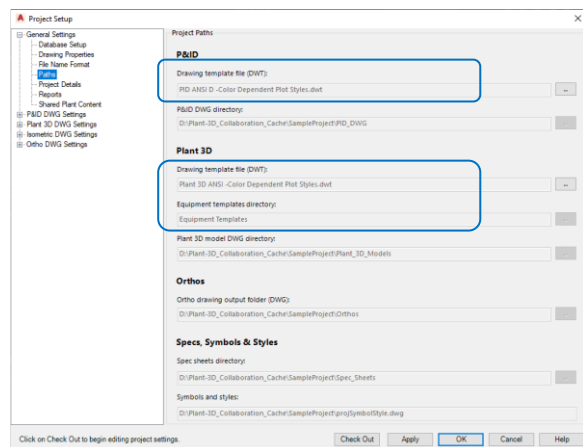
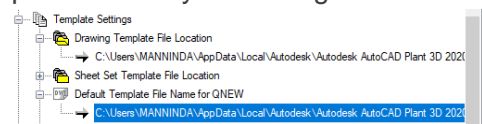
In general, I think it is a good idea to have corporate tool palettes. That is ones that are controlled by the CAD Management team and can't be edited by users. By creating a specific locked set for users to access you are also allowing them to use their own customized tool palettes to be more efficient. If you find that one of your users has a good set of tools maybe they would be a good opportunity to adopt them. It is best to give the team the tools they need to do the job and the space to get it done as best they can.

Reference Article: <https://knowledge.autodesk.com/support/autocad-pid/learn-explore/caas/sfdcarticles/sfdcarticles/Project-Specific-Tool-Palettes-for-AutoCAD-P-ID-Projects.html>

## Template Files

Where are the Template files and are they accessible to all users?

- AutoCAD can be very clever, and if it can not find the template files in the default location will search all supported locations. If the required template file is not found an alternative will be used. This can cause some confusion where a user does not have access to the corporate or project template files.
- The default template files are in the default AutoCAD directory. Look at the AutoCAD Options to find your setting.



SLIDE 32

Template files are a really interesting topic.

There are four different template files inside Plant 3D. AutoCAD and therefore Plant 3D can be really clever in the way it searches through Support directories, but this can cause some issues for the unaware Plant 3D users.

The right-side graphic here, is the Paths page from project setup. I have highlighted the P&ID and Plant 3D template drawing settings. You'll notice in this default setting it is only a file name not a path, or even a relative path. This is because when Plant 3D is installed these files are added to the default templates folder, and that is where Plant 3D finds them. However, it can't find the required file there it will search through all the support directories until it finds a file of the same name.

That is great, unless you have old version lying around and it finds the wrong version first. You can specify a full path in these field, but you can't specify a relative path. So that is something you need to consider when defining the location of your template files.

One trick I have seen used for Collaboration projects, is to use a standard working cache location like D:/C4P/..., then add the template files with unique names to the related files folder of the project and point it to that DWT.

Now a user needs to manually 'get' a copy of the DWT from the related files to their working cache, but if everyone has a consistent path then they the system will find the DWT specified.

Now regarding the Ortho's and Iso's these are included inside the project, so they are managed by Plant 3D and are not something you need to be worried about.

## Collaboration Project Isometric Styles

- Create a new isometric style:
  - Open and check-out project settings.
  - Create a new style as normal.
  - Check in (OK) project setup when complete.
- To edit an existing isometric style:
  - Open and check-out project settings.
  - Edit the isometric style as normal.
  - Check in (OK) project setup when complete.
- Settings will copy to users local workspace in due course.

*SLIDE 33*

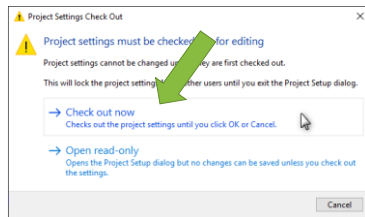
Managing isometric Styles in a Collaboration project.

The steps here are the steps to create and edit Isometric styles. It is basically the normal workflow, with the addition of the check-out and check-in steps.

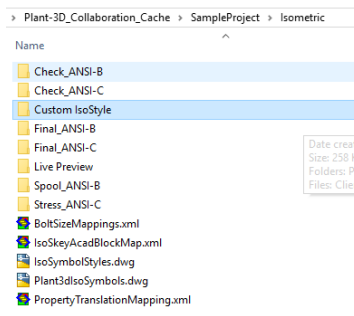
# Collaboration Project Isometric Styles

## Delete a Collaboration Isometric Style

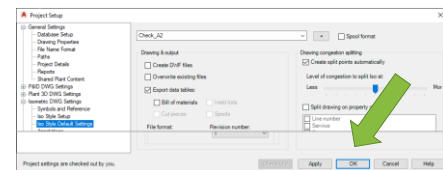
### 1) Checkout Project Setup



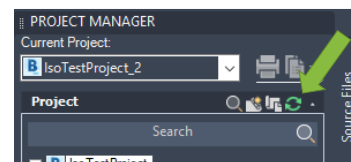
### 2) Manually Delete the Isometric Style Folder



### 3) Check In Project Set-up "OK" Button.



### 4) Refresh DWG Status



SLIDE 34

However, if you find that you need to delete an Isometric style, you'll likely notice there is no remove option. This is the tested procedure for removing an Isometric style.

Check out the project setup which checks out all setup files to you.

In windows explorer delete the isometric style folder from your collaboration cache.

Then in Plant 3D check-in the project setup and the project will sync the empty folder to the server.

This will in turn sync to the user's machines as well. You may well be left with the empty folder in the project, but you won't see it anywhere in Plant 3D and you won't see the iso style in the create isometric dialog.

## Resolving Files Outside the Project Folder

1. Create the required folders under the project root folder.
2. In project set change all the project paths to point to folders under the project.
3. Recreate the Project folder structures in project manager starting with using the “new Folder” command.
  - a) This creates the new folder in the new location.
4. In Project Manager move the existing drawings to the new folders
  - a) This will move the drawings to the new folder structure and update the database.
  - b) Best practice is to move small batches or individual files (approx. 10 max)
5. Manually confirm that there are no drawings in the original folders before removing them.

Note: this will not work for Isometrics.

*SLIDE 35*

In a collaboration project ALL files must be held in a sub location of the project root folder. In other words, inside it.

If you have had the situation where parts of a project were not like this, you will need to bring them back within the project before trying to share it.

This is a procedure I developed to help some of the enterprise customers. If you need it it's here, otherwise you can skip it.




## Learn what is different about working in collaboration for AutoCAD Plant 3D from a user's perspective.

What is different when you work on a collaboration project.

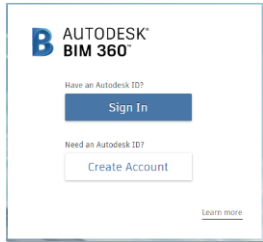
We are not going to teach you how to use Plant 3D here, but rather show you the main differences in everyday workflows.

### Joining a project is new!



**Step 1:** In the email you'll receive from the Admin, access the project by clicking on "Go to your Project".

➔



**Step 2:** Sign in to BIM 360 with your Autodesk ID and open your project.

SLIDE 37

The first thing that will be different is that you need to be invited to a project.

On the left is an example of an invitation that you will receive from the project administrator. It is specific to your Autodesk login, so it will not work if forwarded to other individuals (this is a layer of project data security).

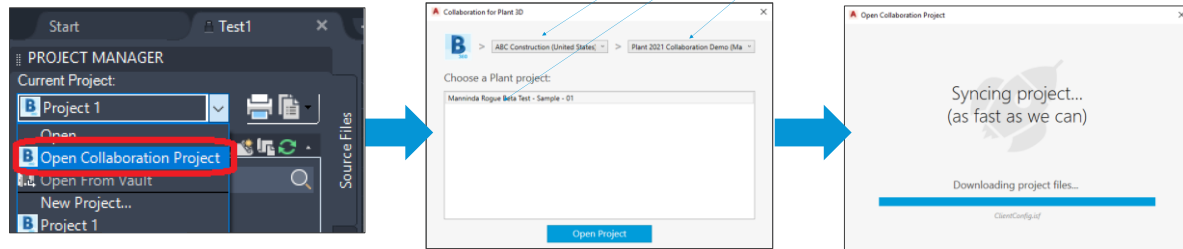
While it may not be necessary to accept the email invitation, it is good practice to ensure that your enrolment in the BIM 360 project is accepted and functional before trying to access a project in Plant 3D.

Click on the button in the email to open the project. Sign in with your Autodesk ID, and check that you can see the project folder in BIM 360 Docs.

If this is all good, you're ready to move over to Plant 3D. If you can't see the project folders, check that a project has been uploaded (or shared), if it has then you need to have the Project administrator check your permissions in Docs.

If you can't see the folders, Plant 3D won't see the project.

## Opening a project is different!



Step 1: After accepting the BIM 360 project invitation you can open it from Project Manager

Step 2: Select the BIM 360 Account, the BIM 360 Project and finally the Plant 3D project.

Step 3: Wait for the files to download.

### SLIDE 38

Once you have accepted the project invitation. The next thing is to open the project in Plant 3D.

To open a project, you need to use the "Open Collaboration Project. The window that opens will list the projects you have access to.






At the top you have two menus that will filter the project list.  
The left is the BIM 360 Accounts (or sites), the other is BIM 360 projects.  
Highlight the desired project by clicking on it in the window. Then Click on open Project.

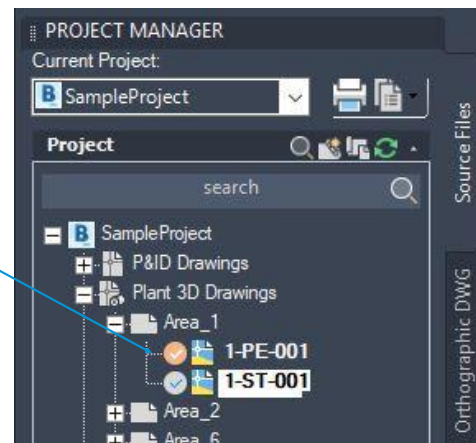
A new window will open showing the progress of the project sync. When it has finished you will be in the project ready to work.

## What is different about Collaboration for Plant 3D?

Project Manager looks different:

- File status icons appear next to files:

Icon	File Name	Status
NO Icon		No local file
		File is on your local workstation, read-only, but you don't have it checked out. File is available for checkout.
	BOLD	Checked out to you.
	BOLD	Checked out to you and modified.
		File has been updated in the Collaboration Project. "Refresh from Project" to update.
	Grey file name	Checked out to another user.
		Status can't be established.



SLIDE 39

One of the first things you will notice when opening a Collaboration for Plant 3D project is that there are additional status icons and file name highlighting in the Project Manager, this is to assist with working on project files.

By learning what the status indicators mean you will be able to work with Plant 3D and know the status of the project files at a glance. You'll also be able to find out who has a file checked out, and whether you need to refresh your local cache with file updates that are waiting in BIM 360.

The dot that you see represents the local file. No Dot no file, if there is a dot there is a local file. If it has a blue tick it's checked out to you, and you may notice that when a file is checked out to you the name is also bold. As soon as you modify the file the dot changes to orange to indicate that the local file is the only current copy and should be checked in as soon as practical.

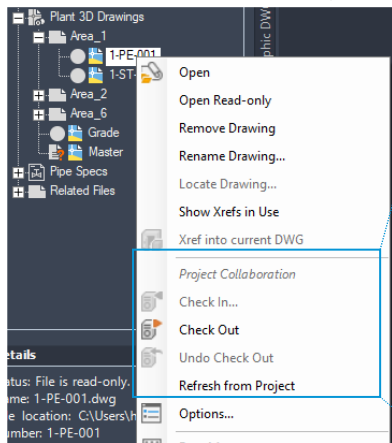
The chasing arrows mean that someone else has updated the file on the server and your local copy is out of date.




If someone else has a file checked out, you will notice that the file name turns grey, to let you know. If you hover over any file name you can see who has it checked-out and when. Which I think is cool.

The last one is best thought of as an "I don't know" icon. It is often seen next to Specs that are not locally synced yet and is just Plant 3D saying it doesn't know the status, for some reason. The main thing about this one is don't be concerned when you see it.

## Project File Actions:

- The Project Manager right-click context menu now has several options when you select a project file:



Icon	Action	Behind the Scenes...
	Check In	Check in a new or existing active drawing to the cloud. This involves copying the version of the drawing from your local collaboration cache folder up to BIM 360 Docs. You have the option of then keeping the drawing checked out for further editing.
	Check Out	Check out the active open drawing from the cloud. This involves copying the latest checked-in version of the drawing down from BIM 360 Docs to your local collaboration cache folder and then locking the file in BIM 360 Docs to prevent editing.
	Undo Check Out	Drops any changes made to the open drawing and cancels the check-out. The last checked-in version of the drawing is copied down from BIM 360 Docs to your local collaboration cache folder.
	Refresh from Project	Copies latest project files from BIM 360 Docs to your local collaboration cache folder (except checked out files).

SLIDE 40

Understanding what it means to “Check out” or to “Check In” a drawing is important to managing ownership of, or the ability to change files in Collaboration for Plant 3D. Only one person can have any Plant 3D file checked out, or editable, at any one time. This rule includes 3D models, P&IDs, orthographic and isometric drawings, as well as the Project Setup.

A bit later we will talk specifically on how to check files out and back in again. But for now, the most important thing to note is what this means.

Feel free to pause here and read the text blocks if you are not 100 percent familiar with file control like this. If you have used Vault this will be very familiar to you.

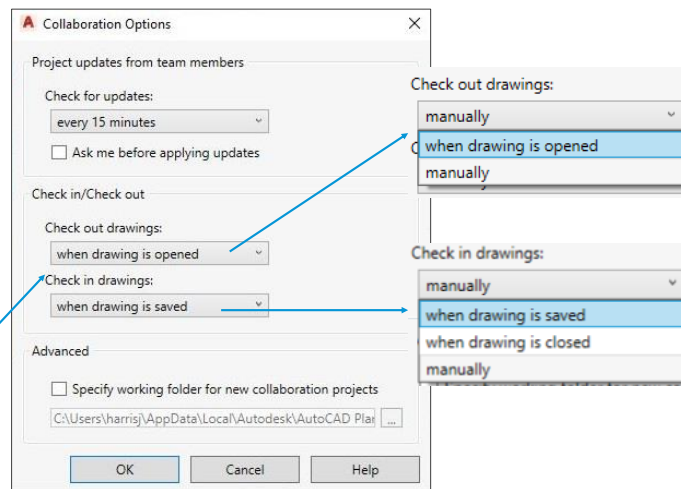
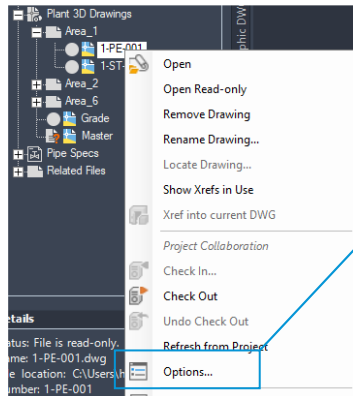
Before we move on, I do want to touch on Undo Check Out and Refresh from Project.

For Undo Check Out, it's a bit like the CTRL+Z function for checking out of files. There are only two ways to release control of a drawing Check-in, which creates a new version, or Undo Check out. When you use Undo Checkout the local version you have is deleted and replaced with the version from BIM 360. Your check out is forgotten like it never happened, or in other words there is not version added anywhere. It simply reverts the version before you checked it out.

The Refresh from Project button is great when you have local copies of drawings that have been updated by the team. Selecting this from the right click menu of a file or even a folder will update the local copy of any drawing that you have locally and is not checked out to you.

## Project File Actions:

- Default behavior for opening and saving of files is set in the Project Collaboration "Options" right-click context menu:



SLIDE 41

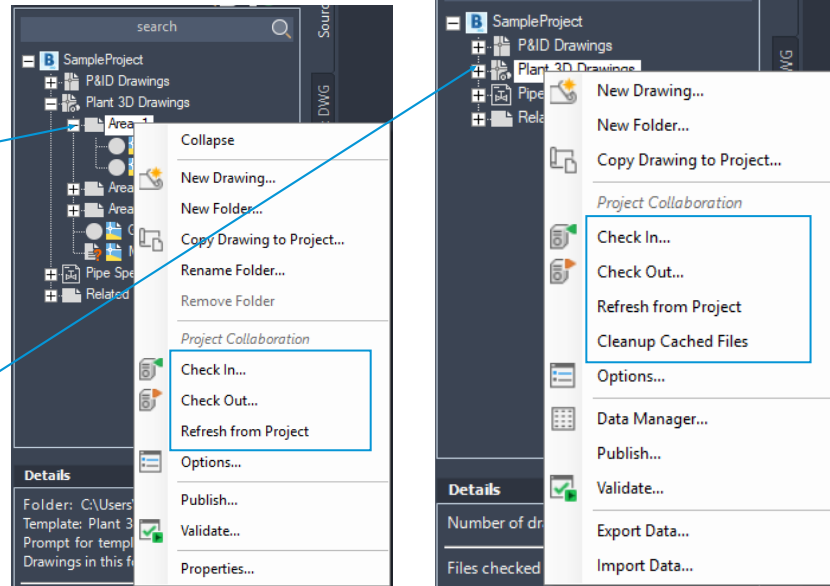
We did discuss the user options, when talking about managers settings. I have left this here as a reminder that these are user configurations and if the user is having difficulties with the synchronization of files these options can be adjusted to help.

My recommendation is whenever possible leave these at default, except the collaboration cache location.



## Project Folder Actions:

- The Project Manager right-click context menu has several options when you select a project *folder*.
- The Project Manager right-click context menu has several options when you select a project *Source file category*.



SLIDE 42


We also talked about what the check-out, check-in, refresh from project tools. What you might not know is that these tools also work on folders and it makes the change to all files within the folder. These also work at the project level and will affect the whole project. The main difference when doing it this way is a dialog will open allowing you to select the files with pick boxes. This is great if you need to make a small change to a lot of files.

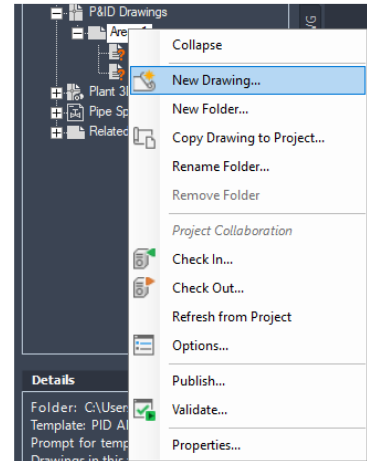
The new tool here is the "Clean Cached Files". This will remove any drawing that you have in your local cache that is not checked out to you.

The purpose of this is to help keep the drive free of unnecessary files. Keep in mind that every file you have locally is routinely checked for its status by Plant 3D, with large numbers this may have an effect on performance.



## Creating a P&ID and 3D Model

- In Project Manager, right-click and select “New Drawing” on the *Source File category* or project *folder*.
  - Enter the information in the *New DWG* dialog; your drawing will be opened in a new editing session.
  - Note: Until you check-in the file, the icon next to the new file name will look like this: 
- Perform file edits, save and close file.
- Right-click on the new file in Project Manager and select “Check In” and wait for the file to be copied to the cloud.
  - Note: You will have the option of keeping the file checked out if you want to continue editing the drawing.



SLIDE 43

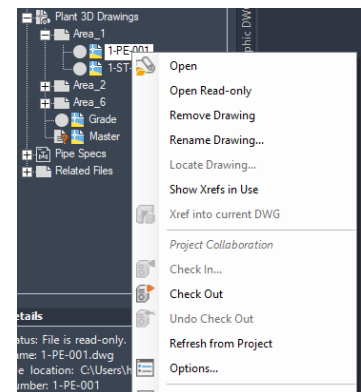
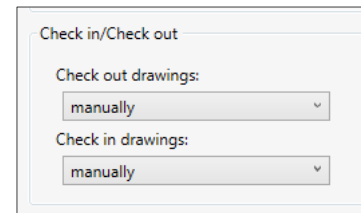
Creating a P&ID is the same as any other project. The difference is that the Icon is different after the file is created. The icon you can see here is showing a circle or dot, indicating a local file. But the green cross now shows that it has not yet been added to BIM 360. It is my personal preference to check these in and out again for editing so that they match the rest of the system.

If you use the folder or project level check-in tool there is a tick box in the check-in window to allow you to immediately check the files back out to you. This has the effect of syncing to BIM 360 while remaining in edit control.

## Editing a Project Drawing (option 1)

With Collaboration Options set to “manually”:

- In Project Manager, right-click and select “Check Out” on the file name.
  - When the file copy to local is complete you will see the icon next to the file name change to include a green check.
- Right-click on the checked out file and select “Open”.
- Perform file edits, save and close file.
  - After modifying the file you should see the icon next to the file name change to an orange circle.
- Right-click on the checked out file and select “Check In” and wait for the file to be copied to the cloud. Note: You will have the option of keeping the file checked out if you want to continue editing the drawing.



SLIDE 44

The process for editing a drawing changes depending on the user settings.

In this example we are assuming that you have set your collaboration options to require that the file check-out and check-in actions are performed manually.

In this case the user will need to manually select the check-out option for a file otherwise they will not be able to make changes to the project.

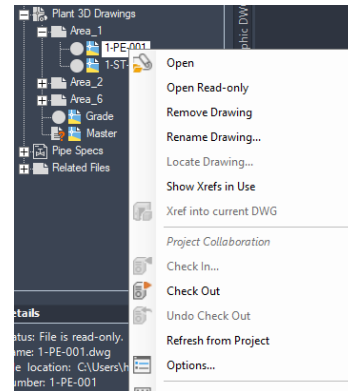
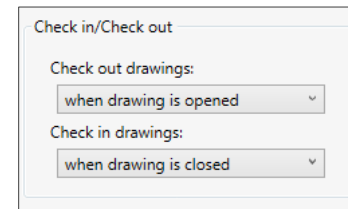
When the changes are done, they will also have to manually select Check-in to sync the changes.

This is not my recommendation as this is labor intensive and uncomfortable for most users and means that there is a higher risk of data loss as files are generally not saved and versioned on BIM 360 as often. But can be helpful if you are on a slow internet connection.

## Editing a Project Drawing (option 2)

With Collaboration Options set to “when drawing is opened/closed”:

- In Project Manager, right-click on the file you wish to edit and select “Open”. You may have to wait for a few moments while the file is copied to your local collaboration cache as it is checked out to you.
  - Note: you can’t open a file with these automatic check out settings if it is already checked out to another user.
- Perform file edits, save, close file and wait for the file to be copied to the cloud. It will be automatically checked in to the Plant 3D Collaboration project.



SLIDE 45

If you are on the default setting that you will likely hardly notice the check-out and in process. But if you are struggling with delays due to the syncing when a file is saved, it is easy enough to change to the next best option, which is when it is closed.

In this case there is still no manual clicks required but there are less versions saved to BIM 360. If you don’t check-in or close the file for long periods and something goes wrong, you are going to lose more data than if you have synced when you saved.

As you can see, with file check-in and check-out linked to the “open” and “close” actions there are fewer steps involved in editing a drawing, however there are other considerations with these settings:

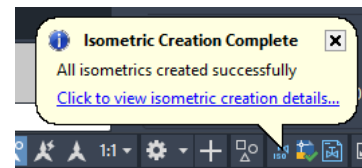
- You cannot open a file with these automatic check-out settings if it is already checked out to another user,
- There will be more traffic between the cloud and the local machine if the file is checked out every time it is opened and then checked back in every time it is closed. This will involve longer wait times for those actions.

The benefit of these settings are:

- Fewer manual steps and a higher level of assurance that the cloud project contains all updates,
- Higher level of file availability for editing since users are less likely to have files checked out inadvertently.

## Creating an Isometric Drawing

- In Project Manager, right-click on the file name of the 3D model containing the piping which is going to be extracted to an isometric drawing and select “Open”. Note: You do not need to check out the 3D model unless you plan on making changes to it.
- When the isometric drawing(s) are finished being created you can view them in the usual fashion using the *Isometric Creation Results* dialog. Note: You do not need to check in the isometric to make it part of the collaboration project, however you must check out any isometric drawings prior to editing them.



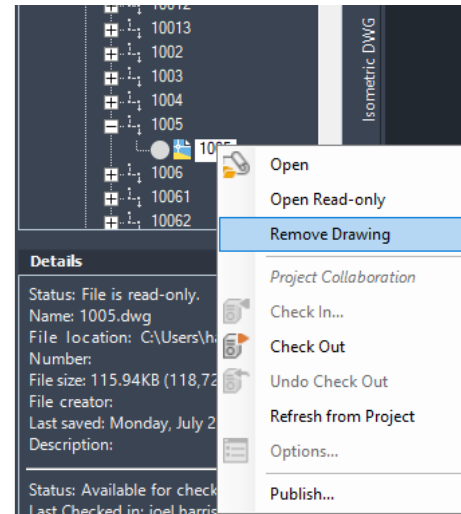
SLIDE 46

The first thing to note about creating Isometrics, is you do not need to check-out the 3D model, just open it read only. The process from there is the same as any other project.

You will notice however, that when the isometrics have been created that they are already checked into the project and synchronized. If you need to make any changes you will need to check them out as you normally would for any drawing, but they are also available to the whole project team automatically.

## Removing a Project Drawing

- In Project Manager, right-click and select “Remove Drawing”.
  - You do not need to check out a Plant 3D project drawing to remove it from a Collaboration project
  - Note that although this removes the drawing (.dwg) file from the local Collaboration Cache – there may be a backup (.bak) file remaining.
- After removing any project drawings, there will be a renamed copy of the dwg left in the BIM 360 Docs “Project Recycle Bin” folder.



SLIDE 47

If you need remove a drawing from the project this is also the same as a non-collaboration project.

In this example I show the steps to remove an isometric drawing from a project. There is no check-out required to remove a file from the project. Removing a drawing from the Project in Project Manager, will move it to the project recycle bin. It will do the same to the project on BIM 360, that is Plant 3D will also immediately remove the file from the cloud project on BIM 360 Docs.

As indicated on the slide, there will be a renamed copy of any removed drawings stored in the BIM 360 Docs “Project Recycle Bin” folder.

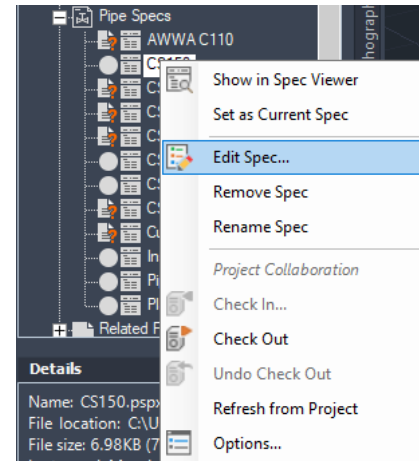
If the user removing the drawing does not have the correct access to the BIM 360 folders including the Project Recycle Bin, they may not be able to remove the files. I have had mixed results testing this.

## Editing a Piping Spec

Before you attempt to edit a piping spec, be sure that a copy of the spec file exists in the local collaboration cache. One indication that there may not be a local copy is the presence of this icon next to the spec name:



- In Project Manager, right-click and select “Edit Spec” on the spec name. The spec is automatically checked out to you.
- Perform edits, save and close the Specs and Catalog Editor.
- In Project Manager, right-click and select “Check In” on the spec name. The spec is then checked back in to the cloud project for others to use.



SLIDE 48

To edit the Spec, Right Click and selected Edit Spec. As we discuss previously in “Spec and Catalog Management”, Plant will take care of the rest of the check-out and check in process.

If there is not a local copy of the piping spec, you will need to get a local copy before you can check it out.

You could select the spec in the drawing model space to cause Plant 3D to pull it down, then edit it as normal. Alternatively, you can select the check-out option from the right click menu, which I think is faster and more convenient.



**Discover several resources that you can keep to help you be more successful with Collaboration for AutoCAD Plant 3D projects.**

Wow, that's a lot to get through, but that's most of the changes and things to learn today. What we have next is a bunch of resources and references for further reading and learning.



## Do's and Don'ts Reference Cards

These Do's and Don'ts pages I created a long time ago when I migrated a drafting team to a Vault environment.

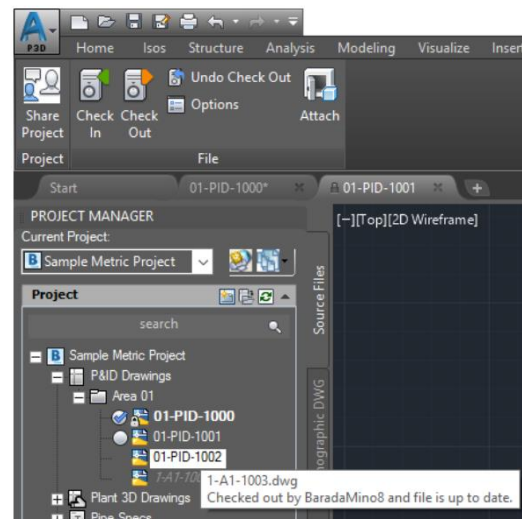
It helped the team keep to the rules and reduced issues. It is really a summary of some basic rules from personal experience.

After all that's why we are all here, to learn from the experience of others.

## Plant 3D Collaboration User: Do's and Don'ts

### Do's:

- Manage all Project files from within the Plant 3D Project Manager.
- Regularly Check-in files (minimum daily).
- Open files read-only if you don't intend to edit them now.
- Xref (Attach) Plant Drawings only from the same project using the PLANTATTACH command, not AutoCAD XREF.
- Use BIM 360 web interface to view and comment on files only.
- If in doubt, ask your administrator or subject matter expert.



SLIDE 51

This is the Do's for the users.

Do manage all project files from within Plant 3D. That is, use the Plant 3D project manager in to manage files rather than any other process including BIM 360. You cannot manage any files in BIM 360, at least as a general rule.

Regular checking-in files or as a minimum daily this is a personal preference and something, we encourage you to think about. The more often we check-in the less chances there are for errors and the more synchronous the project is going to be.

I have always traditionally encouraged my teams to check-in whenever you leave the computer, like when you get up for a coffee or if you go out for lunch, or any other time that is convenient or logical. As an absolute minimum, they should check-in files and close the application down at the end of the day so that everything is backed up to BIM 360 and there is fewer problems if you can't come back in on the following day.

Open files read only if you don't intend to edit them. It's a simple rule that avoids people having files checked out for prolonged periods of time and others who need to edit them having to chase them down. If you're not going to edit something right now or you don't plan to be editing it for some time, just open it read only. It also speeds things up because it hasn't doesn't have to go through the cheque in and checkout process, and you can always check out later.

Xref or attached plant drawings only from the same project using the plant attach command. Do not use AutoCAD Xref. This rule is because Plant 3D will manage external references within a collaboration project for you. That is if you open a drawing that has Xrefs it will download them read only automatically as well. If you use the AutoCAD Xref tools in a collaboration project, then there is no management of those external references by Plant 3D. It won't do anything to the Xref record, it just means any other users that don't have the same file paths or this access to the same files will see a broken Xref

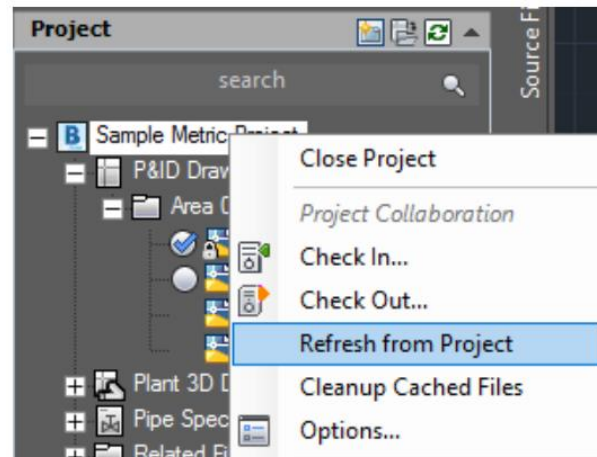
Use BIM 360 web interface to view and comment on files only. This is basically saying that for users we should not be doing anything other than viewing or commenting in BIM 360, and that is perfectly legitimate thing to use BIM 360 for comments mark-ups and reviews, even on Plant 3D projects.

And lastly if in doubt ask your administrator or a subject matter expert. It's important that people need to be comfortable with the system and once you develop an understanding of what's how things work and what you can and cannot d. but if you get to comfortable and assume things "should be a right" it is an easy way to end up with corruptions quickly. The better option is if you don't know that you can do something, especially when you're starting out, ask someone who has experience. That is should be you administrator with subject matter expert

## Plant 3D Collaboration User: Do's and Don'ts

### Don'ts:

- Do not use BIM 360 web to manage a project or the files and folders.
- Do not use File Explorers to change locally stored files or folders.
- Do not assume that an action "Should be OK" just because it works in AutoCAD or regular Plant 3D.
- Do not work in "Offline Mode" if possible.
- Do not Xref files that are not part of the same Plant 3D Collaboration project.



SLIDE 52

On the flip side we have the Plant 3D the Collaboration Users Don'ts page.

I have carried a lot of similar common comments but in the negative phrase so in some ways you can choose which one you prefer to have

These are similar to the Do's page, but there are some differences.

Don't use BIM 360 web to the manage project, project files or folders. As we said you can use it to view and to comment and mark-up but do not manage the files in there you must use the Plant 3D tools.

Do not use file explorers to change locally stored files or folders. In the same way that you don't change them in BIM 360 you should not use windows Explorer or other Explorer type tools to edit the project in the local collaboration cache. This will cause broken links and things not to synchronize and ultimately corrupt projects. There are some exceptions to these rules for administrators and they will come up in the next slides

Do not assume that an action should be OK just because it works in AutoCAD or regular Plant 3D. Collaboration for Plant 3D is really projects have the BIM 360 file synchronization and the database that needs to be managed and it does not follow the exact same rules as Plant 3D in a network environment or a standalone SQL environment.

Do not work in offline mode if possible. What this means is if you lose internet momentarily Plant 3D will continue to work just fine although you will likely see some error messages. This is because of the structure with the local collaboration cache which will allow you to continue

working for a period. When the Internet is connected again plant will synchronize checked-in files and the database. Everything should synchronize to the servers. However, the more data needs to synchronize the more chance is there going to be corruptions or errors or things to be corrected. So, minimizing offline time is recommended.

In the past I have talked with people who thought this would be a good way to work with files on site without an Internet connection, by checking out all the files required and then going offline for a long time. I don't recommend that, there is high potential for error when you're trying to check-in the drawings. The point here is if you do lose Internet connection you can work for a period without any concerns, but I certainly wouldn't do it for one periods of time

And do not Xref files are not part of the same collaboration project. We touched on that before in that if you do X ref things that are not part of the collaboration project the other users may not have access to, we end up with broken X refs. Always use Plant Attach where you can. There are exceptions to that, but you need to think about it when you're rolling out the application or a collaboration project.

## Plant 3D Collaboration Admin: Do's and Don'ts

### The Do's for Project Administrators

- Manage all project files from within the Plant Project Manager. There are some exceptions to this. It is important to understand how Plant 3D handles project files and test to be sure.
- Check-in routinely. Regularly checking in ensures that all files are copied to the project online and available to other users. It also updates the database so regular check-ins can reduce the chances of duplicated tags and long upload times, and possible errors.
- Open files read only if you don't intend to edit them now.
- Xref drawings only from the same Plant project, not the BIM 360 Project. User must use the Plant 3D project manager to add Xref files. The AutoCAD Xref function will still complete the task but the Xref files will not be available to any other users.
- Refer to the Autodesk Knowledge Network for the latest information and Help files.
- Use BIM 360 to manage user permissions and Project members.

SLIDE 53

These two pages for the next two pages the do's and don'ts for project or collaboration administrators.

Plant 3D Collaboration projects are a great solution to some typical design office issues. To ensure that the robustness of the project and to avoid project corruptions or data loss the following rules should always be adhered too.

As the project administrator you will most likely be one of the user's first point of contact when they are not sure of the correct process to follow. It is always best practice to adopt a policy of "If in doubt ask".

For the most part these are fairly similar to the user Do's and don'ts, but there are times that an administrator needs to bend the rules and others that they may need to break them. To maintain project reliability, it's important to know the difference.

For the most part these are self-explanatory.



## Plant 3D Collaboration Admin: Do's and Don'ts

### The Don'ts for Project Administrators

- Do not use BIM 360 web browser to work with plant projects. Except for certain administrative tasks, use the Project Manager to manage plant projects folders and files.
- Do not use File explorers to change project files or folders in the collaboration cache
- Do not assume that an action "Should be OK" (risk of drawing or project corruption). If necessary, copy the project and test in the copy before replicating the 'fix' in the production project. If there is not other choice always take a backup.
- Do not work in "Offline Mode" in AutoCAD Plant 3D Collaboration projects. In cases there this occurs unintentionally, on reconnecting the project should sync, but there has some risk.
- Do not Xref files that are not part of the same collaboration project.
- Do not move or delete files without using Project manager.

*SLIDE 54*

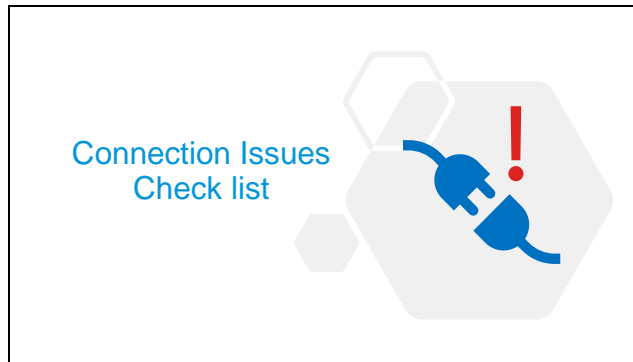
In the end here I want to make a final takeaway point. Plant 3D is a complicated project tool designed to make life easy, while maintaining control.

It is important to keep in mind at all times that the project is more than the files. The project is a both the files and a joined database, or five databases in fact.

The Plant 3D application keeps these two areas in sync and it's when this does not happen properly that problems start to occur.

If you keep this in mind and ask yourself how does this affect the project, and will it cause the files and the database to be out of sync? Then you're on your way too many successful projects.

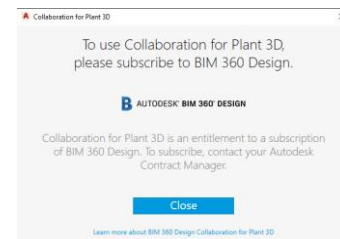
This applies equally to all types of projects.



With Plant 3D collaboration projects, the first issues most people come across is trying to connect to the project.

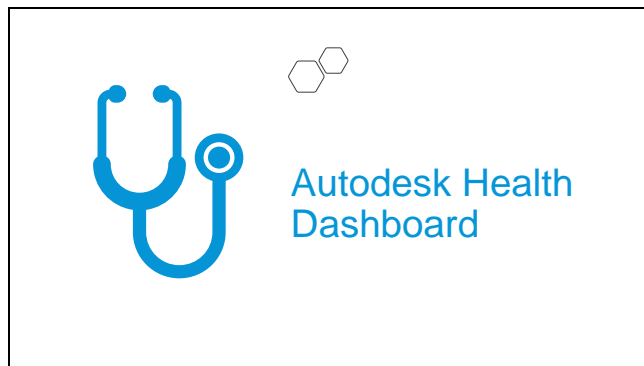
## Connection Issues Check list

- Has the user been given BIM 360 Design entitlement in Autodesk Account?
- Has the user accepted the invitation to the BIM 360 project?
- Can the user access the BIM 360 Project in a web browser.
- Does the user have at least “View+Download+Upload+Edit” permissions to the Plant 3D project folder?
- Is there a corporate network or security setting preventing access?
  - Can the user access the project off the corporate network?
- Do you have the latest updates installed (AutoCAD and Plant 3D)?



SLIDE 56

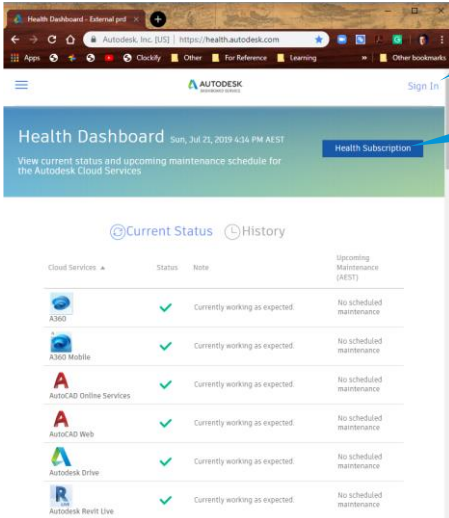
This checklist is a process to eliminate various common issues as the cause. If none of this helps, then reach out to the Community and Autodesk for support.



Sometimes, when you can't connect, it's not actually your fault, or that IT guy. Sometimes, just sometimes its Autodesk. Although it is rare.

## Autodesk Health Dashboard

<https://health.autodesk.com/>



Sign In

Click Here

2021 + Services

2021 + File Storage

2018 - 2020 File Storage

2018 - 2020 Services

Health Subscription	
A360	Yes No
A360 Mobile	Yes No
Cloud Rendering	Yes No
Collaboration for AutoCAD Plant 3D	Yes No
Collaboration for AutoCAD Plant 3D (Europe)	Yes No
Configurator 360	Yes No
BIM 360 Cost Management (Europe)	Yes No
BIM 360 Design Collaboration	Yes No
BIM 360 Design Collaboration (Europe)	Yes No
BIM 360 Docs	Yes No
BIM 360 Docs (Europe)	Yes No
Fusion Production Manager	Yes No
Fusion Team / BIM 360 Team	Yes No
Generative Design	Yes No
HDS TEST	Yes No
InfraWorks	Yes No
Plant Collaboration Services	Yes No

SLIDE 58

The Autodesk Health dashboard is a way to stay connected with the health status of Autodesk's online services.

For collaboration projects is most important to make sure that there's no broken link between the Plant 3D and BIM 360 or the Plant 3D services being managed by Autodesk

By subscribing to the health dashboard, you will be notified if the service is down for some reason and even if there's planned maintenance, which means it's going to be down at some point in the future.

This doesn't happen all that often certainly it's not down unplanned very much at all but when it does go down and you're in the middle of a project it's really good to get an email to tell you that something is going wrong and there's nothing you can do to fix it right now so you don't pull your hair out.

For Plant 3D projects there's two main areas you need to subscribe. The first is to the file storage which is BIM 360 docs and the second is the plant collaboration services which is shown here as "Collaboration for AutoCAD Plant 3D".

If you're using versions 2018-2019 or 2020 using the classic series of BIM tools and you'll need to subscribe to those services marked with those versions.

If you're using 2021, they are a different set of services. Another difference you might pick up is that there are two services for Plant 2021 users. The one that has Europe in brackets after it this is the European server.

If you have a BIM 360 hub that is in Europe, you'll need to subscribe to the services with "(Europe)" after the service name.

The other services not labeled as Europe are based in the USA.

Alternatively, the one without Europe behind it is the USA service which is most common one at least to my knowledge.

and of course if you've got projects that happened to be on both servers like some organizations have service in both to deal with a global organization then you may need to subscribe to both it's entirely up to you

To subscribe its straightforward browse to the address you see here and sign-in at the top right-hand corner with your standard Autodesk ID, then clicking on the health subscription button will open that menu you see on the right-hand side and sliding the boxes to yes will subscribe you to the various services.

<https://health.autodesk.com/>



Further Learning Resources:

I have added here several resources that you may find useful to refer to on Collaboration for Plant 3D as well as some other general information that you might find valuable.

## Create a BIM 360 Project and Invite Users

- We recommend that all Project Administrators should complete the following BIM 360 learning;
  - Guided Learning Path: [Learn BIM 360: Document Management](#)
  - BIM 360 Help:
    - [Project Admin](#)
    - [Manage Project Members](#)

SLIDE 60

BIM 360 is new to the Plant 3D environment. Particularly the document management side and there's so much in there that we have barely scratched the surface today.

So as a minimum I would recommend it at least project administrators should review or go through the guided learning path called learn pin 360 document management. But it is fairly short, and I would recommend that any user finished this as well.

There is also some excellent help pages in the BIM 360 help online, which gives you more information. If you haven't read these recommend that you at least read the Project administration and Manage Project Members sections.

These links are not on the slide because they are not strictly related but are good to know about should you want to get more out of BIM 360.

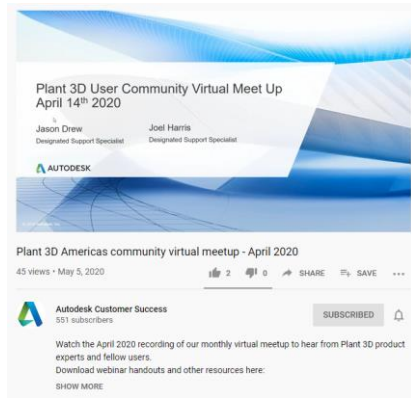
- <https://learnbim360.autodesk.com/document-management>
- Set up a project in BIM 360 Docs  
<https://acceleratorcatalog.autodesk.com/#/product/0827c147-710b-40b7-9754-c34dd2806230>
- Communicate changes with BIM 360 Docs  
<https://acceleratorcatalog.autodesk.com/#/product/22f6083c-6f75-448a-a453-19aa2e0ebe14>



## Online Collaboration for Plant 3D Recordings

Monthly Virtual meetings in three time zones

- Plant 3D Community Virtual April Meetup - Collaboration for Plant 3D
- Plant 3D with the Experts vlog. Collaboration for Plant 3D 2021 series.



[Link to Recordings](#)



[Video Part 1 Link](#)

[Video Part 2 Link](#)

[Video Part 3 Link](#)

SLIDE 61

The four recordings shared on this page cover Collaboration for Plant 3D services at two different levels of detail

On the left we have the April Plant 3D Community Virtual Meetup where we talked about the Next Generation collaboration coming out, the new version of Plant 3D.

On the right we have a three-part series of short videos going through the project setup to and how it works.

The buttons in the presentation have hyperlinks.

Plant 3D Community Virtual April Meetup - Collaboration for Plant 3D

<https://youtu.be/g8tfPJyf2Tw>

YouTube Video Part 1

<https://youtu.be/wJ5Btbyoa2o>

YouTube Video Part 2

<https://youtu.be/DyUPJo1g-rq>

YouTube Video Part 3

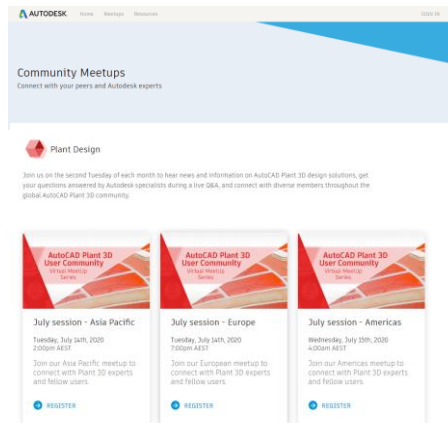
<https://youtu.be/J5wSKckTADA>

## Plant 3D Virtual Community

Monthly virtual meetings in three time zones

- Resources Page: Plant 3D Virtual Community Meetup Resource Store  
<https://customersuccess.autodesk.com/articles/plant-3d-virtual-community-meetup-resource-store>

- Registration:



<https://customersuccess.autodesk.com/meetups>

SLIDE 62

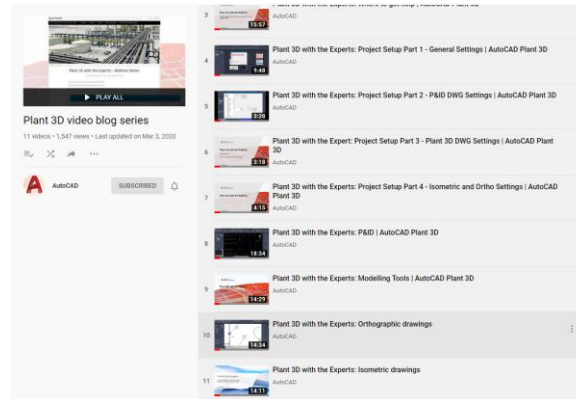
And what we're talking about the Plant 3D Virtual Community, these meetups happen every month. If you're interested it's easy to register with these links.

Resources Page: Plant 3D Virtual Community Meetup Resource Store  
<https://customersuccess.autodesk.com/articles/plant-3d-virtual-community-meetup-resource-store>

Registration page  
<https://customersuccess.autodesk.com/meetups>

## Plant 3D with the Experts Vlog

- Vlog Resources and reference page: Plant 3D with the Experts - Video Blog Series  
<https://customersuccess.autodesk.com/articles/plant-3d-with-the-experts-webinar-series>
- Playlist:



[https://www.youtube.com/playlist?list=PLXEyem\\_18syPZPb68zSgiLQHwuWJRJaLW](https://www.youtube.com/playlist?list=PLXEyem_18syPZPb68zSgiLQHwuWJRJaLW)

SLIDE 63

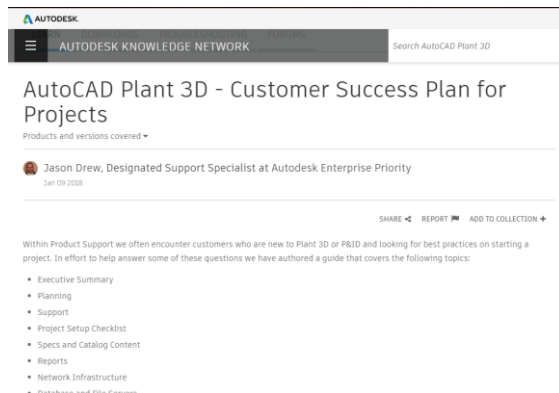
And the YouTube videos were talking about before are a subset of the “Plant 3D with the Experts” video log, which is a playlist on YouTube.

If you haven't seen this either it's a great little resource. The intention is to help people understand what Plant 3D can do, and how to use it.

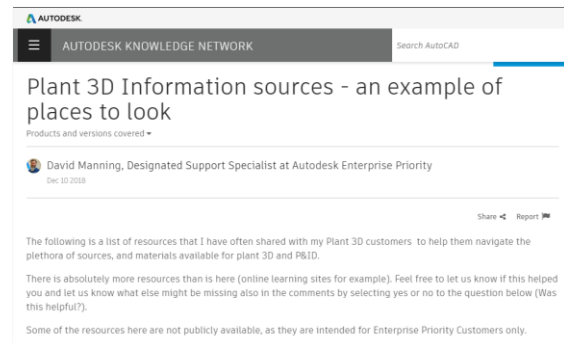
Vlog Resources and reference page: Plant 3D with the Experts - Video Blog Series  
<https://customersuccess.autodesk.com/articles/plant-3d-with-the-experts-webinar-series>

YouTube playlist  
[https://www.youtube.com/playlist?list=PLXEyem\\_18syPZPb68zSgiLQHwuWJRJaLW](https://www.youtube.com/playlist?list=PLXEyem_18syPZPb68zSgiLQHwuWJRJaLW)

- AutoCAD Plant 3D - Customer Success Plan for Projects  
<https://knowledge.autodesk.com/support/autocad-plant-3d/getting-started/caas/simplecontent/content/autocad-plant-3d-customer-success-plan-for-projects.html>



- Plant 3D Information sources - an example of places to look  
<https://knowledge.autodesk.com/support/autocad/getting-started/caas/simplecontent/content/plant-3d-information-sources-example-places-to-look.html>



#### SLIDE 64

On Autodesk Knowledge Network there is a lot of information, don't overlook it as a resource. Here there are a couple of articles that are general in nature, and not specific to collaboration projects.

The one on the left, called "Customer Success Plan for Projects" is a bit like a getting a project started checklist. It has a whole bunch of hyperlinks and is an immense resource that points you to a whole bunch more resources.

The page on the right is a list of resources and places where you can go to get more information on Plant 3D. I put this together to help customers, and I was sharing with people all the time by email. I eventually decided that was not efficient, so I built it into an article and now I just share the one link. It's a great place to bookmark and if you need to look for something you can open it and use the many hyperlinks to information that you need.

AutoCAD Plant 3D - Customer Success Plan for Projects

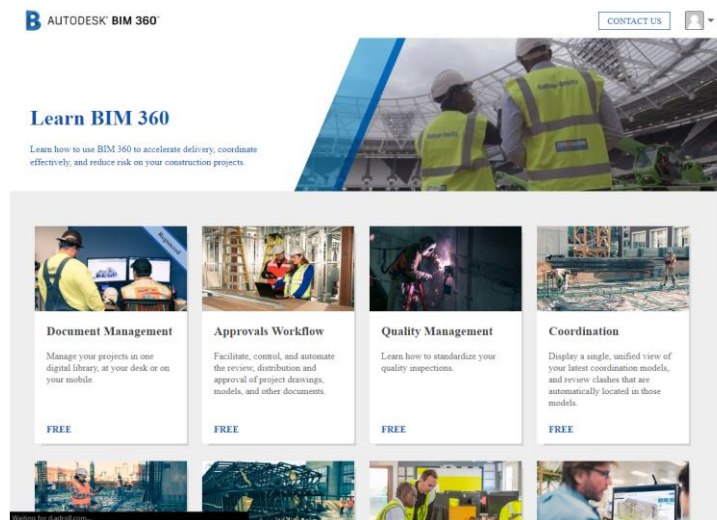
<https://knowledge.autodesk.com/support/autocad-plant-3d/getting-started/caas/simplecontent/content/autocad-plant-3d-customer-success-plan-for-projects.html>

Plant 3D Information sources - an example of places to look

<https://knowledge.autodesk.com/support/autocad/getting-started/caas/simplecontent/content/plant-3d-information-sources-example-places-to-look.html>

## Learn BIM 360

<https://learnbim360.autodesk.com/>



SLIDE 65

And finally, <https://learnbim360.autodesk.com>

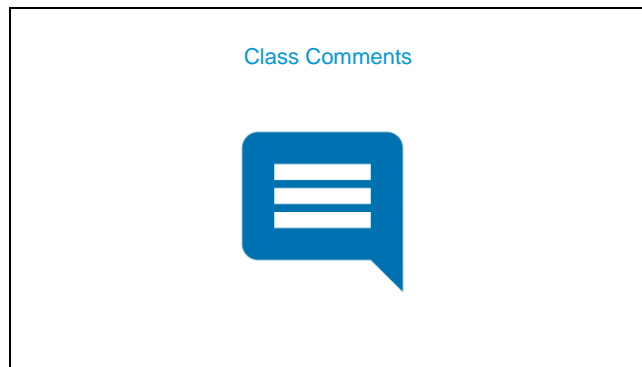
We talked about this a little before. That is, I mentioned the “Document Management” module. You can see the document management module on the left side in this graphic, and there is a bunch more on this page, providing training or guidance in BIM 360. If you sign-in at the top, it will track your progress, so you always know where you left off. It is a really great resource that is nothing too arduous with really short, really dense information so you can jump in and get a lot with just a few minutes of your time.

I recommend project managers do document management as a minimum, and I would also recommend that you do the approval workflow as this might be something you can leverage to simplify or enhance your process.

Similarly, the Coordination module is for automated clash detection and the related issue management all within BIM 360. If you haven't seen that or I don't know how that works, it's great to have a look at it as well.

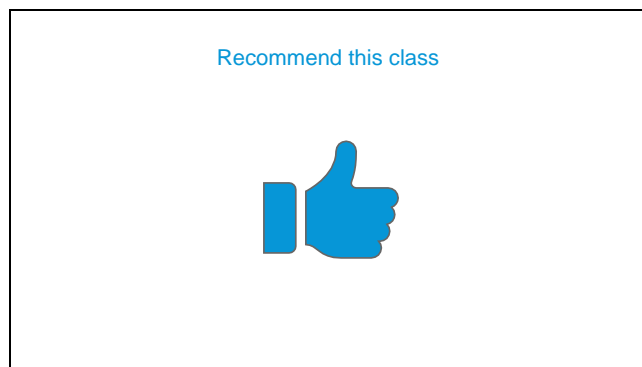
There is a bunch more modules, obviously, you can see them down the page. Have a look at these and see if there is one that might be useful.





SLIDE 68

If you can't make the live session for some reason, you're more than welcome to reach out to me directly through the AU class page and the comment section. If you go to the class page, you'll see an icon very similar to the one shown here. I think it will be on the top right corner. Clicking on that you can send a message to me directly with your questions or your comments on this class. I'd love to hear your feedback, as feedback is always a gift as they say. I will be aiming to answer any questions that I come in as soon as possible during the conference days.



SLIDE 69

And while you're on the class page, next to the comments button there's also a "recommend this class" button good. If you've got anything out of today or you got a little bit of value click on the "recommend" button to indicate that you did enjoy it and there was some value to you. The more recommendations and views of Plant content will help to inform the sessions of the future.



Well that ends this session. Thank you very much for persisting if you've made it this far through the handout, you are awesome.

Hopefully I'll get to see you next year in person at AU2021 which will hopefully be a live event, but we'll just have to see how that goes in due course.

Until then Stay Safe, and good luck with your projects.