

[CES501172]

Sharing ReCap Projects on Autodesk's Cloud Platforms

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Learning Objectives

- Learn how to migrate ReCap project data to the cloud using various workflows.
- Learn how to share data with your client and integrate feedback into the local model.
- Distribute your project data to your teammates and partners for use in other disciplines.
- Learn about implementing best practices to avoid common issues like those stemming from the migration or working with large data sets.

Description

Whether you're scanning an existing site or capturing as-built data near the end of a project, you've put in the work to create a digital twin of your site in ReCap software. Now stakeholders need to review it or perhaps teammates need it to further their design. We'll discuss how to use secure Autodesk platforms like BIM 360, Autodesk Construction Cloud, and Autodesk Drive to connect colleagues, partners, and stakeholders to your data. We'll start with understanding various workflows to get your project up in the cloud. Once there, we'll use collaborative tools in the Autodesk Forge Viewer API to create markups and annotations that can be synced down to the project locally. We'll cover how teammates and partners can consume your data in other products like Revit software, Civil 3D software, and InfraWorks software. Lastly, we'll discuss where the product may be heading, and how that could affect current workflows. Whether you're a surveyor or a BIM manager tasked with managing point cloud data, you'll find value in this course.

Speakers

I'm a former Water Resources Engineer with a passion for Design Technology. I'm committed to helping others efficiently complete their designs with Autodesk software. I'm particularly interested in developing dynamic workflows to help our industry work faster, smarter, and more collaboratively.

I have several years of experience in Customer Support at Autodesk which has given me first-hand knowledge of issues commonly faced by our customers. I now work as an Infrastructure Enablement Specialist, working to improve our internal resources and the Customer Support experience overall.

Contents

- Initial Groundwork 4
 - Class Scope..... 4
 - Versions used and Recommendations 4
 - Pre-Requisites for you..... 4
 - Pre-Requisites for data Recipients 4
- Migrating ReCap Project Data to the Cloud..... 5
 - Which Method to Use 5
 - Structure 1, the Scan Structure 5
 - Structure 2, the RealView Structure 5
 - Method Deep Dives 6
 - Publish Feature..... 6
 - Publish to Docs 6
 - Publish to Drive..... 8
 - History of Uploaded Structures when Publishing.....10
 - Recreate the desired Structure Manually11
 - Place the entire project on Docs12
 - Exporting and Uploading a Unified file13
 - Creating a Mesh.....14
 - Test the Online Viewer16
- Share your Project and Integrate Feedback19
 - Sharing Project Data19
 - Using Autodesk Drive.....19
 - Using Autodesk Docs.....19
 - Integrating Feedback.....22
 - Connect the Project22
 - Notes for Sharing with Designers22
 - A Special Note for Revit users Linking Point Clouds22
- Key Takeaways.....23
 - Comparing Cloud storage options23
 - Comparing Versions23
 - Comparison Workflows.....24
 - Final Recommendations25
 - Special Recommendations for working with the whole Project on the Cloud25
- Final Gifts.....27
 - the Full Cheatsheet27

Looking forward to the Future!27
Common Issues and Resources.....27

Initial Groundwork

A reminder before we get started about what this class is (and isn't). Plus, a note on the versions used, workflow pre-requisites like software installation, and subscription/licensing for you and those whom you share data with.

Class Scope

This class starts with a completed, locally saved, ReCap project and discusses options to move that data up into the cloud. We skip topics related to the creation and editing of the project itself. In this Handout, I make note of common issues you might run into as you move through the workflow. During the presentation, I'll only mention ones unique to the cloud workflow. For example, a common issue bringing ReCap data into other products is proper geolocation. Since that issue is not unique to the cloud workflow, we won't spend time on it during the presentation, but you may see notes about it in the Handout.

Versions used and Recommendations

To create this Handout, I used ReCap Pro 2023.0 and Desktop Connector 15.6.0.1752. The ReCap cloud workflow is relatively new and ReCap's Development team has shown real fervor in improving it. While this is great for the future of the product, it means that we need to frequently update our understanding of this workflow. That being said, the workflow can be accomplished in earlier versions (although updates may be needed). For Desktop Connector, the release notes rarely mention changes that affect ReCap, but there are some. I recommend version 15.5.0.1684 or newer but watch those Release Notes since that team make updates frequently.

Pre-Requisites for you

- ReCap is installed with a valid subscription and activated license to ReCap Proⁱ
- Desktop Connector is installed and signed into
- Scan-to-Mesh Entitlement is assigned if you plan to use that feature

If Autodesk Docs (BIM or ACC) is the chosen cloud storage:

- Subscription to Autodesk Docs
- Accepted project invitation (unless you created the project)
- Edit permissions or higher

If Autodesk Drive is the chosen cloud storage:

- An active Entitlement to Autodesk Driveⁱⁱ, currently free with purchase of any Autodesk product

Pre-Requisites for data Recipients

If Autodesk Docs (BIM or ACC) is the chosen cloud storage:

- An email address associated with an Autodesk Account
- Accepted project invitation
- Sufficient permissions based on desired usage

If Autodesk Drive is the chosen cloud storage:

- An email address associated with an Autodesk Account
- An active Entitlement to Autodesk Drive, currently free with purchase of any Autodesk product

Migrating ReCap Project Data to the Cloud

Which Method to Use

Before we jump into the procedures for the various methods to upload data, it'd be helpful to know which method to use. The answer to that depends on how you want to use the data once it's uploaded. At the end of this Handout is a Full Workflow Cheat sheet to guide you to my recommended method based on your intended usage. It mentions two project data structures that will be explained further below, and we'll get into details on how to create them later in this Handout.

Note: You may have more than one of these intended uses. For example, you may want to view the project online and share it with your Civil designer. That's ok! Use both corresponding methods then.

Structure 1, the Scan Structure

This structure involves uploading the RCS and RCC files. If you want to be able to view the point cloud in the online Viewer, this structure is the desired end result. If you Publish to Docs with ReCap 2023 or newer, you'll get this structure automatically. You can still manually recreate this structure on Docs with older versions though. Don't bother with this structure if you are on Autodesk Drive. The biggest drawback to this structure is that it takes significantly longer since the RCS and RCC files can get quite large. Below is an image of the folder structure:

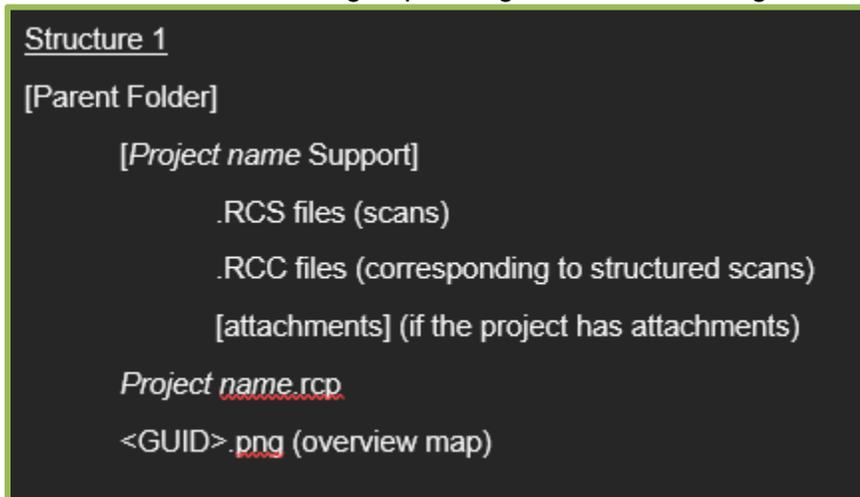


Figure 1 Reference for Structure 1

Structure 2, the RealView Structure

This structure involves uploading the RealView RCH files. It allows you to open the project online and share with stakeholders, but you can't view the point cloud itself. It is much faster to create than Structure 1 since the RCH files are much smaller than the RCS or RCC files. It also has the benefit of working on both Drive and Docs. Below is an image of the folder structure:

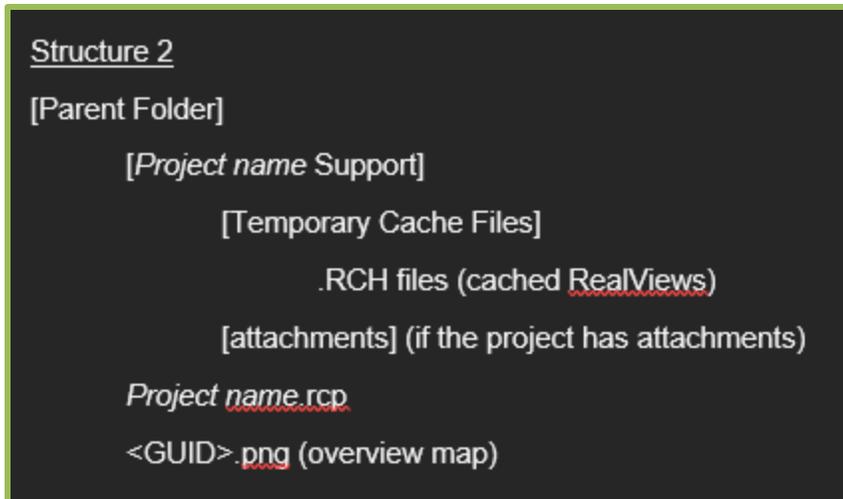


Figure 2 Reference for Structure 2

Method Deep Dives

Now for some meat and potatoes! Hopefully by now we know which method we're aiming for. Let's walk through them together.

Publish Feature

This is the simplest option and the one that the ReCap Development team intended you to use. It routes files through the Desktop Connector, so it can be slow. I'd recommend it for small projects or if you aren't comfortable with the manual method. After a Publish, you can then use the Update feature (found in the same dialog) if changes are made in the local project later that also need to be uploaded.

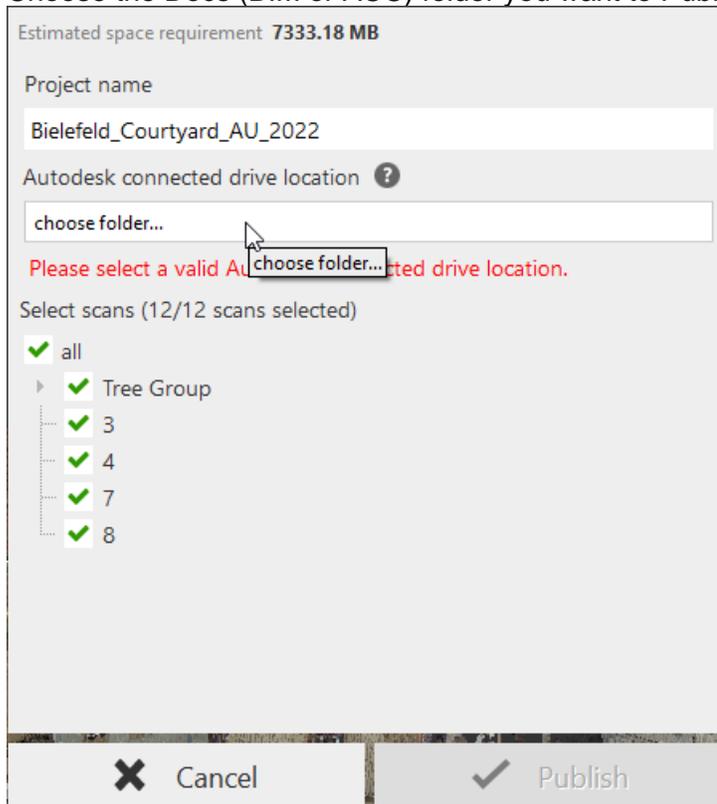
Note: Support for Publishing unstructured scans was recently added in ReCap 2023.

Publish to Docs

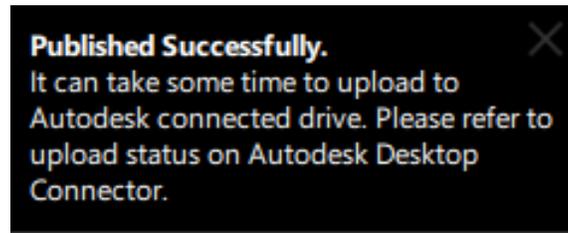
1. Open your project and find the Publish button. Don't see the button? ⁱⁱⁱ



2. Choose the Docs (BIM or ACC) folder you want to Publish to and select Publish.



3. After some time, ReCap will report either a successful or failed publish. I find this message misleading though, as it doesn't mean the files have uploaded to the chosen location. It just means ReCap has finished (or failed) to pass files off to the Desktop Connector.



4. Actions should then populate in the Desktop Connector. Right click on the Desktop Connector icon>Pending Actions to view them. If using ReCap 2023, you'll see one action for all the RCC files and another for all the RCS files. If using older versions, you

might see other file types like RCH files.

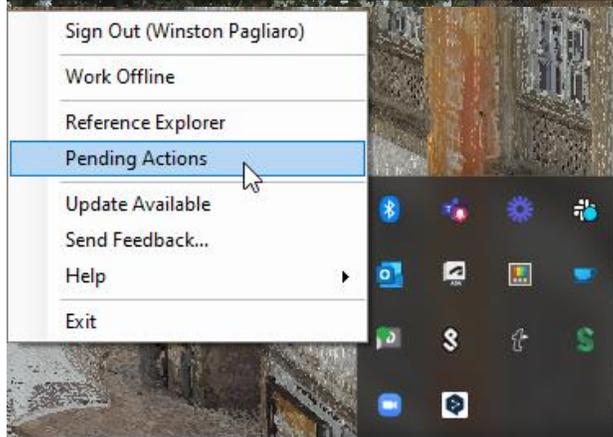
Pending Actions

Time	Name	Action	Source	State
7/1/2022 3:05 PM	Multiple Fi...	Add Files	Autodesk...	Running
7/1/2022 3:05 PM	Multiple Fi...	Add Files	Autodesk...	Pending

Icon	Name	Path	Status
	1.rcc	Autodesk - Winston Pagli...	New
	9.rcc	Autodesk - Winston Pagli...	New
	5.rcc	Autodesk - Winston Pagli...	New
	7.rcc	Autodesk - Winston Pagli...	New
	6.rcc	Autodesk - Winston Pagli...	New
	10.rcc	Autodesk - Winston Pagli...	New
	4.rcc	Autodesk - Winston Pagli...	New

Message

Pending Action Count: 2



5. Monitor the upload progress in the Pending Actions or by logging into Docs. I like having the Pending Actions open in case something fails so I can reapply the action.
6. Wait for the actions to complete. This can take a while, depending on project size.

Publish to Drive

1. Sign in to [Autodesk Drive online](#) and create a new folder to house your ReCap project data. Alternatively, you can open the Autodesk Drive Connected Drive through Windows File Explorer and right click>New Folder. Do not skip this step! Publishing to the generic "My Data" location will cause problems.

 My Data

 Shared with Me

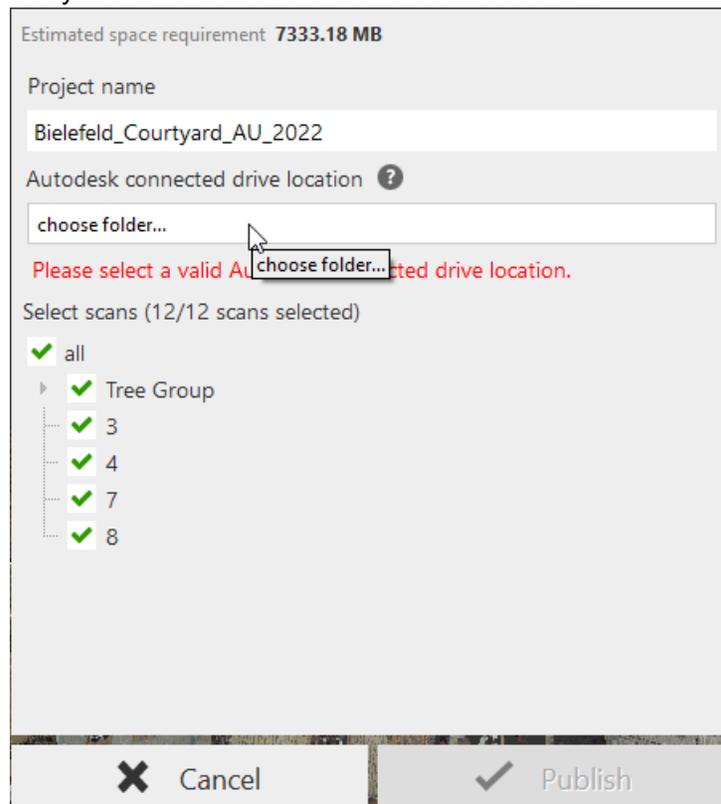
 Upload

 New Folder

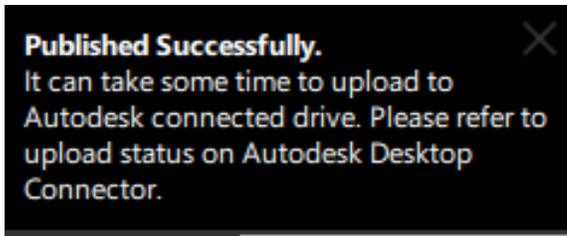
2. Open your project and find the Publish button. Don't see the button? ⁱⁱⁱ



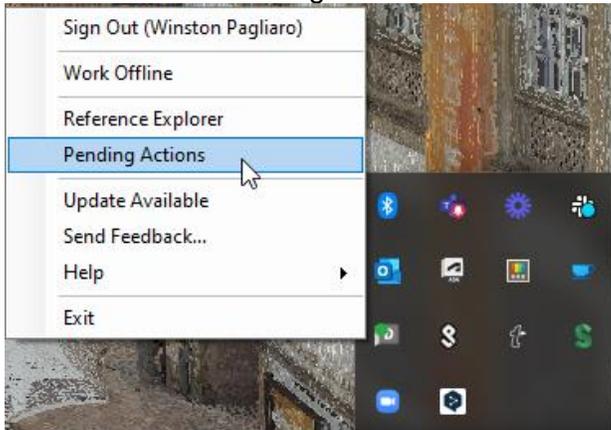
3. Choose a folder you want to Publish to and select Publish.



4. After some time, ReCap will report either a successful or failed publish. I find this message misleading though, as it doesn't mean the files have uploaded to the chosen location. It just means ReCap has finished (or failed) to pass files off to the Desktop Connector.



5. Actions should then populate in the Desktop Connector. Right click on the Desktop Connector icon>Pending Actions to view them.



6. Monitor the upload progress in the Pending Actions or by logging into Drive online. I like having the Pending Actions open in case something fails so I can reapply the action.
7. Wait for the actions to complete. This can take a while, depending on project size.

History of Uploaded Structures when Publishing

The structure that is uploaded when using the Publish feature depends on what version of ReCap you're using and which cloud platform you're publishing to. You don't get a choice in the matter, which is one of the downsides of this method in my opinion. Below is a table to help you know what Structure to expect when you use the Publish feature.

	Autodesk Drive	BIM or ACC Docs
ReCap 2022	Structure 2 (RealViews)	Structure 2 (RealViews)
ReCap 2023	Structure 2 (RealViews)	Structure 1 (Scans)

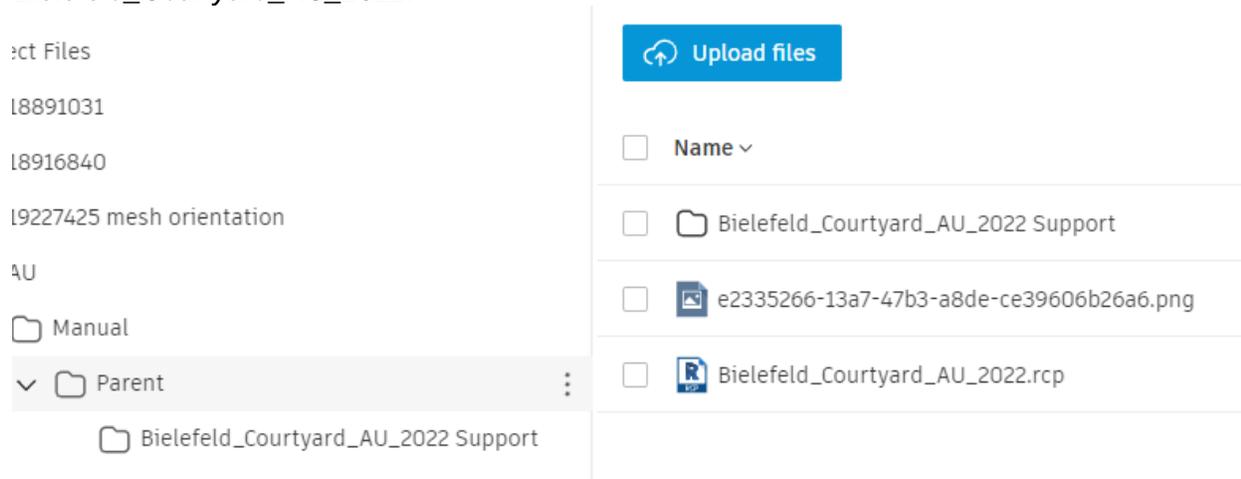
We can see that only ReCap 2023 currently Publishes Structure 1 when going to Docs. This directly coincides with added Support for full point cloud viewing. Since that was such a highly requested feature, my bet is that future versions will likely continue to push Structure 1 when going to Docs as well.

Recreate the desired Structure Manually

If we understand which project folder structure we need, we can manually recreate it. This is often the fastest method, so I recommend it for larger projects. In my testing, I saw about a 25% time savings over the other methods.

Manually Upload Structure 1 to Docs

1. Log in online to Docs.
2. Create a parent folder to house the ReCap project data.
3. Inside that folder, create a folder with the [*Project name* Support] naming format. The image below shows an example with a project named *Bielefeld_Courtyard_AU_2022*.



4. Inside the newly created Support folder, create an [attachments] folder if your project has any attachments.
5. Upload the RCP file and the image with the <GUID.PNG> naming format (found in the Temporary Cache Files folder) to the parent folder. The image is the overview map. Ignore <GUID-map.PNG> files.
6. Upload all RCS and RCC files to the Support folder. There will be one RCC files corresponding to each structured RCS file.
7. Upload any attachments to the attachments folder.
8. Monitor the file upload statuses and opt to Retry any failed file uploads. These seem to be more common with large scans and spotty internet connections.

Hint: If the folder structure is confusing, don't forget to leverage the Figure 1 Reference for Structure 1 Reference for Structure 1 above.

Manually Upload Structure 2 to Docs or Drive

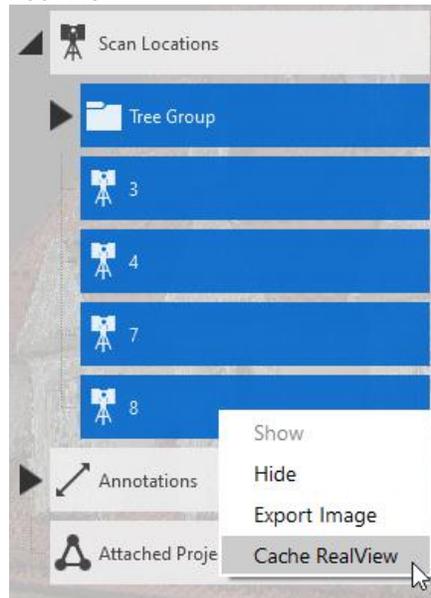
1. Log in online to Docs or Drive.
2. Create a parent folder to house the ReCap project data. Do not skip this step if using Autodesk Drive!
3. Inside that folder, create a folder with the [*Project name* Support] naming format.
4. Inside the newly created Support folder, create a [Temporary Cache Files] folder and an [attachments] folder if your project has any attachments.
5. Upload the RCP file and the image with the <GUID.PNG> naming format (found in the Temporary Cache Files folder) to the parent folder. The image is the overview map. Ignore <GUID-map.PNG> files.
6. Upload all RCH files to the Temporary Cache Files folder. Ignore <GUID-preview.RCH> files.

7. Upload any attachments to the attachments folder.
8. Monitor the file upload statuses for any failed file uploads.

Hint: If the folder structure is confusing, don't forget to leverage the Reference for Structure 2 above.

Note: If you don't see any RCH files or some are missing in Step 6, it means you don't have the RealView files cached. You have a few options for how to cache them:

- Launch the Publish or Update feature. This should cache the RealViews automatically and you can then exit out of the feature. For large projects with many uncached RealViews, this can take a while.
- If you're using ReCap 2023 or newer, you can use the Cache RealView feature. To do so, select all your scans in the Project Navigator, right click>Cache RealView.



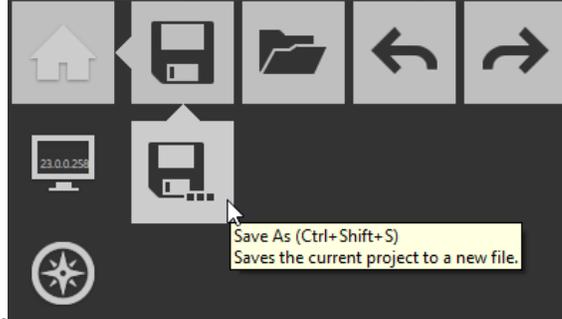
- The last option is to open each RealView that isn't cached. Since the cached RealViews follow a <GUID.RCH> naming convention, you won't know which RealViews to open. I don't recommend this method.

Place the entire project on Docs

The Desktop Connector-enabled Connected Drives made it possible to save a project directly on Docs or Drive. While this was never intended by the ReCap team, customers unsurprisingly tried it anyway with mixed results. We cover it here, but I can't officially recommend it; there are simply too many issues. I wouldn't be surprised if this is the way the product moves in the future though, Collaboration for ReCap in 2024 anyone? Use a small project if you decide to try it.

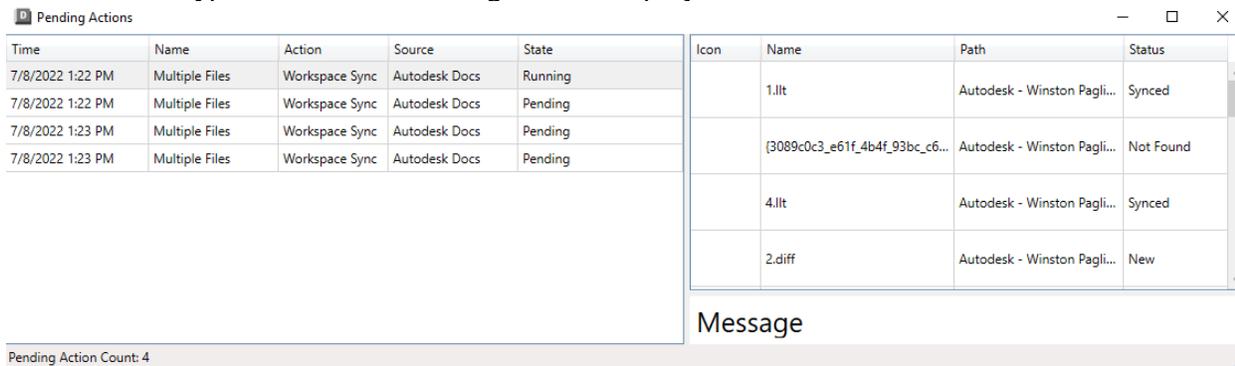
Save As to a Connected Drive

1. Choose the Save As option within ReCap Pro and select a Docs or Drive



location.

2. Since we're selecting a Connected Drive location, this option involves the Desktop Connector and will trigger Pending Actions. You'll notice more actions with more file types since we're saving the whole project.

A screenshot of the 'Pending Actions' window in ReCap Pro. The window has a title bar that says 'Pending Actions'. It contains two tables. The first table lists actions with columns for Time, Name, Action, Source, and State. The second table lists files with columns for Icon, Name, Path, and Status. Below the tables is a 'Message' section and a 'Pending Action Count: 4' indicator.

Time	Name	Action	Source	State
7/8/2022 1:22 PM	Multiple Files	Workspace Sync	Autodesk Docs	Running
7/8/2022 1:22 PM	Multiple Files	Workspace Sync	Autodesk Docs	Pending
7/8/2022 1:23 PM	Multiple Files	Workspace Sync	Autodesk Docs	Pending
7/8/2022 1:23 PM	Multiple Files	Workspace Sync	Autodesk Docs	Pending

Icon	Name	Path	Status
	1.ilt	Autodesk - Winston Pagli...	Synced
	{3089c0c3_e61f_4b4f_93bc_c6...	Autodesk - Winston Pagli...	Not Found
	4.ilt	Autodesk - Winston Pagli...	Synced
	2.diff	Autodesk - Winston Pagli...	New

Message

Pending Action Count: 4

3. Monitor the upload progress in the Pending Actions or by logging into Docs or Drive online. I like having the Pending Actions open in case something fails. In my testing, this method was particularly prone to Failed Actions. This may be because we are sending unsupported file types through the Connector.
4. Wait for the actions to complete. This can take a while, depending on project size.

Exporting and Uploading a Unified file

This is my recommended workflow if you need to get data into the hands of another designer like a Civil 3D or Revit user. You might be wondering why this is even needed if we've already uploaded data in the form of Structure 1. The answer is that I encountered extreme instability in Civil 3D when trying to import point cloud data stored on Docs or Drive that wasn't unified. An additional benefit of exporting a unified file is that you get a chance to decimate, which the receiving designer might appreciate.

1. Open the original local ReCap project.

2. Browse to Home>Export.



3. Select between a unified RCP or RCS file, name the file, and select a local location to save to.



4. Once created, manually upload the unified file(s) to the Docs or Drive location. You could have chosen to export the file directly to a cloud location. As we've seen though, anything that involves the Desktop Connector is slower, so I recommend this extra step.
Note: The exported unified file may lose its structure and texture during export. If the project is structured, you can create a textured mesh using the Scan-to-Mesh feature (more on that in the next section).

Creating a Mesh

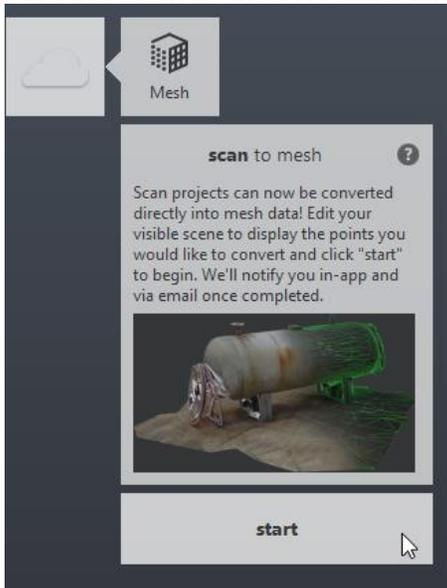
While most Civil designers just need the point cloud to create a surface, Revit or Navisworks users may request a mesh file. This can be accomplished using ReCap Pro's Scan-to-Mesh feature, which was brought back in ReCap 2022.

This isn't a new feature for ReCap 2023 so I likely won't include this in live demos during the presentation, but I would like to point out some things in case you walk down this path.

- Scan-to-Mesh costs Flex tokens (formerly cloud credits). The number of tokens it costs depends on the size of the project and the resolution of the mesh you opt for.^{iv v}
- An additional Entitlement called "Scan-to-Mesh" is required on your Account to use this feature.
- The resulting mesh will only be textured if the project it came from is structured.^{vi}
- As of August 2022, an NWC file is now generated alongside the RCM and OBJ file outputs. This file can be brought straight into Navisworks or linked into Revit.

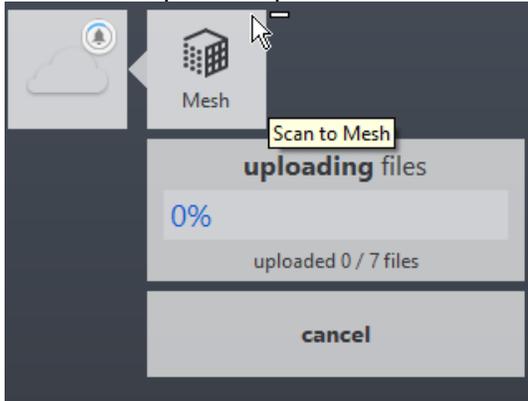
Now on to steps to use this feature:

1. Find the Scan-to-Mesh feature under ReCap's data services>Start.



2. Input your desired mesh options including the location the files will uploaded to, the quality or resolution of the mesh (this affects cost), whether or not you want texture, and the desired output formats.

3. Submit and wait for the data service to create the mesh. You can track the progress bar inside ReCap desktop. You should also receive an email notification when complete.

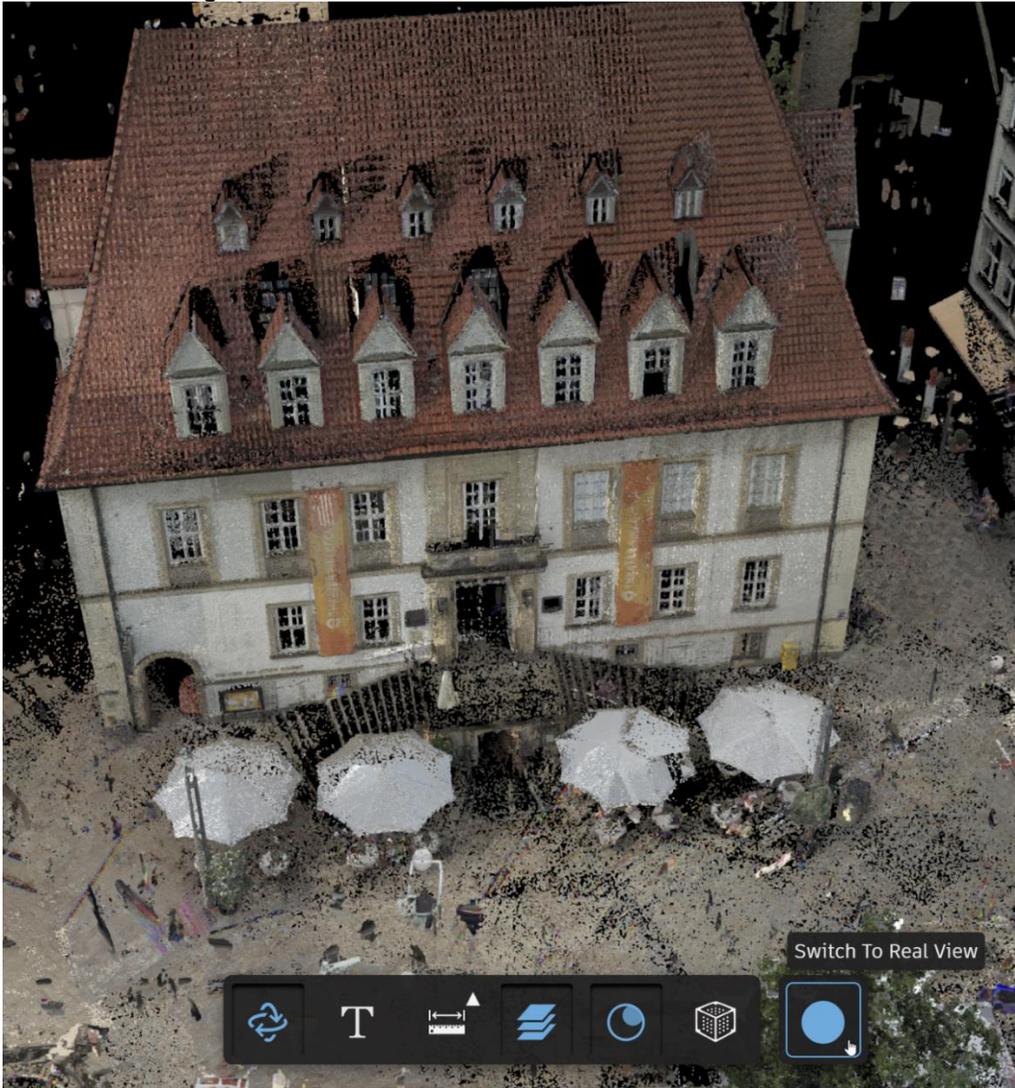


Test the Online Viewer

Now the data should be up in the cloud. Time to celebrate? Not yet. Especially if you chose a Desktop Connector method, check to see if all the files you expect actually uploaded. The following test really only applies if you Published, Manually uploaded, or Saved the whole project to the cloud:

1. Open the project in the online Viewer by selecting the RCP in Docs or double clicking the RCP in Drive.
2. Do a quick check for your scans and annotations in the Project Browser. Also check for your View States if those are needed online. ^{vii}

3. If you used a method that enables point cloud viewing (Structure 1 on Docs), switch between viewing the Point Cloud and the RealViews.



4. If any files are missing, you have a few options depending on which method you used to upload data.
 - Check for Failed Desktop Connector actions if you Published or Saved As and Reapply them. If they continually fail, there may be a deeper root cause.
 - Check for failed file uploads online if you manually uploaded and Retry them.
 - If you used the Publish function, you can rePublish and choose to Update a project. This should only sync missing files or those that have changed so

hopefully it'll be much faster than the original Publish.

Estimated space requirement **216.20 MB**

Update **New**

Project name
Bielefeld_Courtyard_AU_2022

Autodesk connected drive location 
C:\Users\pagliaw\ADrive\My Data\AU 2022\Publish

Select scans (12/12 scans selected)

- all
 - Tree Group
 - 3
 - 4
 - 7
 - 8

 Cancel  Update

Share your Project and Integrate Feedback

Now we should have some data in the cloud! Let's cover sharing it out with stakeholders and designers and how to review any comments they may have left.

Sharing Project Data

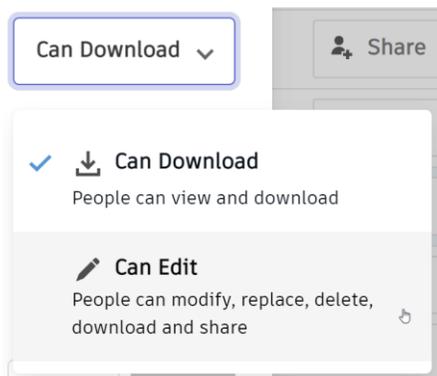
Not all stakeholders have ReCap or are set up to access Autodesk cloud platforms. Let's step through the process for both Docs and Drive. A quick reminder to review the pre-requisites for data recipients back in the Initial Groundwork.

Using Autodesk Drive

1. Log into Drive online.
2. Navigate to the parent folder containing the project data, select to Share.



3. Choose the desired permissions for the recipient. If you want them to be able to leave markups/annotations, select Can Edit. If viewing is sufficient, select Can Download to allow them to View and Download.



4. They'll need an Entitlement to Autodesk Drive to make changes like annotations. Otherwise, they'll only be able to view. An Entitlement to Autodesk Drive is free with purchase of any Autodesk product.

Note: If they haven't purchased an Autodesk product and therefore cannot get Autodesk Drive entitled, they cannot leave annotations. This is definitely a drawback of Autodesk Drive as a cloud platform.

Using Autodesk Docs

1. Log into Docs online (ACC or BIM).
2. [Add the desired recipient as an Account and Project member](#). Their email needs to be associated with an Autodesk Account (which is free). Even if they don't have a Docs subscription themselves, your Project invitation includes one and will allow them to use it

since Docs is included as the image below shows.

Add project members ✕

Enter or copy and paste email addresses *

Company * ⓘ

Role * ⓘ

Project member
Has view access to all tools, but specific permissions vary by role.

Project administrator
Has administrative permissions and can create new projects.

Invite to these products

Members must also have a subscription to the selected products. You can provide a subscription in Account Administration or the member may bring their own subscription. [Learn more](#)

Docs (included)

Cancel Add

3. If you added them as a Project member (as opposed to an Admin), [set their Project permissions by Role or at a folder level](#). Give them Edit permissions or higher if you want them to be able to leave annotations.

Permissions ▾	Type ▾
<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Edit	User
<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> View	
View Only	
View+Download	
<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Create	
View+Download+Publish markups	
View+Download+Publish markups+Upload	
View+Download+Publish markups+Upload+Edit	
<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> View+Download+Publish markups+Upload+Edit	<input checked="" type="checkbox"/>

4. Instruct them to accept the invitation when received.

Autodesk - Winston Pagliaro • Winston's ACC Project



Welcome to Winston's ACC Project

Winston Pagliaro,
Winston Pagliaro added you as a member to Winston's ACC Project.

If you can't access the project, [contact Winston Pagliaro](#), the project administrator who invited you to this project.

Go to your project

5. Share the parent folder or the RCP file itself with them to send a direct link to their email.

<input type="checkbox"/> Name ^	Description	Version	Markuř	
<input type="checkbox"/>  Bielefeld_Courtyard_AU_2022	--	--	--	

 Move folder

 Rename

 Share 

Integrating Feedback

Let's say some stakeholders had some feedback and left some annotations online for you to review. You can see them yourself online, but it'd sure be nice to see them in the Desktop product while you're working.

Connect the Project

1. Open the original project in ReCap Desktop.
2. Select the Connect Project feature.



3. Follow the prompt to select the RCP file that is up in Docs or Drive.
4. Each time you reopen the connected project, the Desktop Connector will check for changes that have been made online like added annotations and sync them down locally.

Note: Each local project can only be Connected to one cloud project at a time.

Notes for Sharing with Designers

- I mentioned this in the Method Deep Dives, but I want to reiterate that the unified project data seems to be the best option in my opinion for sharing data with other designers. You do lose the project structure and texture though. If that's not desirable, you could try inserting uploaded data in Structure 1. If you do, you may have better luck if the files are synced locally.
- Grant designers Edit permissions or higher on either platform.
- Since Designers will have a subscription to at least one Autodesk product, they are eligible for an Entitlement to Autodesk Drive. Therefore, both Docs and Drive are suitable storage platforms, although the storage limit of Drive is still worth keeping in mind.
- Revit and Navisworks can both leverage point clouds, but it's possible designers might prefer mesh files depending on how they plan to use the data. If you use the Scan-to-Mesh feature, I recommend the NWC file output for this use case.

Note: The geolocation of ReCap data when it's inserted into other products is a common workflow issue. It's not unique to the cloud workflow so I won't discuss it in the presentation, but I've compiled some troubleshooting links in the Endnotes^{viii}.

A Special Note for Revit users Linking Point Clouds

A colleague more experienced in Revit mentioned to me that an extra step might be needed for Revit users. It involves changing the Point Cloud root path location in Revit's Options (a link to more information in the Endnotes^{ix}). I didn't find this necessary in my testing, but I thought it worth mentioning as I'm not an experienced Revit user.

Key Takeaways

It's time to bring it home! Let's make sure we understand the pros and cons for each decision we'll have to make throughout this workflow. Then we'll wrap up with some final recommendations.

Comparing Cloud storage options

When A360 was retired, Autodesk Drive was built to be the replacement. Let's compare Drive and Docs as storage platforms in terms of this workflow.

	Storage Capacity	Cost	Support for Point Cloud in online Viewer	Share with Stakeholders	Setup and Maintenance	Other notes
Autodesk Docs (BIM or ACC)	Unlimited	Varies, but not included	Yes	Yes, with an Autodesk Account and potentially a granted license	Account and Project setup Permissions control	ReCap data now on same platform as other disciplines
Autodesk Drive	250 GB ^x	Included with ReCap Pro	No	Yes, with an Autodesk Account and an Entitlement to Autodesk Drive. An Entitlement is included with a purchase of any Autodesk product.	Account setup Permissions control	Inability to check remaining available storage

Comparing Versions

If you're on an older version and not sure whether it's worth it to upgrade to 2023, this section is for you. With 2023 came added support for point cloud viewing in Docs. However, if you're willing to manually upload, you can still get that from 2022. In my opinion, there are two main advantages that 2023 contains:

- The Cache RealView feature
- Support for publishing projects with unstructured data

The Cache RealView feature is invaluable in my opinion. It is definitely a pain to manually cache RealViews individually, especially in large projects.

Comparison Workflows

I've created the following table to compare the options for uploading ReCap project data we discussed. Exporting the unified file and mesh generation is left out of this comparison. The upload ease mentioned in the table refers to how many Desktop Connector actions or file uploads online failed and required attention.

	Upload Speed (for a 12 scan, 7.5 GB project)	Upload Ease on a scale from 1-10, easiest is a 10	Method Advantage	Can view RealViews and capture comments, feedback, annotations?	Can view Point Cloud online?
Publish to Docs from 2023 (Structure 1)	2 hours	10	Can view the Point Cloud online, straightforward	Yes	Yes
Manual Upload to Docs (Structure 1)	1.5 hours	6	Can view the Point Cloud online, fastest method with point cloud online viewing	Yes	Yes
Publish to Drive from 2023 (Structure 2)	10 mins	10	Fast	Yes	No
Manual Upload to Docs (Structure 2)	12 mins	7	Fastest method to Docs from 2023	Yes	No
Manual Upload to Drive (Structure 2)	8 mins	8	Fastest	Yes	No
Save As to Docs	2.5 hours	3	Full project online for later editing by you or others	Yes	Yes

Final Recommendations

- [Consider changing the Desktop Connector workspace](#) if possible, to free up your C: drive. If you're sharing data with a designer as well, they might benefit from doing the same.
 - Explanation: The Connector can temporarily require 2-3 times a given package's size, so you may not have enough space even if you think you do.
- When uploading/downloading ReCap files through the Desktop Connector, refrain from piling on actions for other products like Revit Cloud Worksharing or Collaboration for Civil 3D. The Connector can only do so much...
 - Explanation: The Connector is like an asthmatic man inflating a large balloon.
- Manually upload instead of Publishing for medium to large projects.
 - Explanation: It's hopefully clear by now that anywhere the Desktop Connector is involved, you can expect slower performance. I've heard horror stories of Publish times in the days...
- Choose an option that utilizes Structure 2 if you can live without the Point Cloud in the Viewer in Docs.
 - Explanation: Structure 1 uploads large RCS and RCC files necessary for the point cloud in the Viewer. Ditch them if they aren't necessary to speed things up.
- Export a unified file if the end goal is point cloud consumption by a designer like a Civil 3D or Revit user. If you need the structure or texture that the Export process loses, experiment with inserting files from another method. Hopefully you'll have better luck than me! Have the designer sync files before inserting to improve the chances.
 - Explanation: When inserting non-unified point cloud data from the cloud into Civil 3D, I experienced a fair amount of crashing. You can also decimate to reduce file size for the designer.

Special Recommendations for working with the whole Project on the Cloud

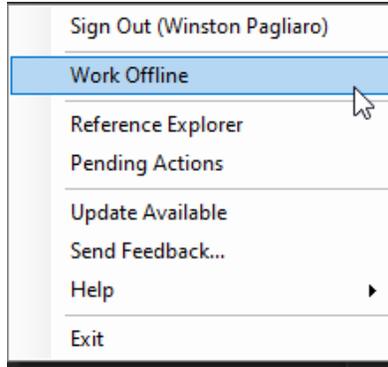
I've made a few attempts throughout this Handout to discourage storage and working in a project stored on the cloud. That being said, I know it will be done anyway so I've prepared a few tips for you:

- Manually lock the RCP file in Docs online once you've opened it or place the files in a folder that only you have Edit permissions to.
 - Explanation: Collaboration for ReCap doesn't currently exist. Therefore, there is no file-locking on ReCap files once uploaded to prevent two users from editing the same files in Docs.



- Before you open a ReCap project saved in the cloud, check that the project files are synced and try taking the Connector Offline. Then place it back Online when you're done.

- Explanation: Once the project is opened, the Desktop Connector will begin running background processes to check that files are the “latest version”, even if the files are already synced. If you actually make edits to the project, you can trigger a cascade of Pending Actions, locking up your machine as large files are processed by the Connector.



Final Gifts

I'd personally like to thank you for watching my presentation, reading this Handout, and in general for being an Autodesk customer! I'd like to leave you with a Workflow Decision Cheat sheet, some troubleshooting links and my thoughts on the future of the workflow.

the Full Cheatsheet

Below is the Cheat sheet that I hope will guide you to the best workflow for your needs. Print it out and stick it on the office fridge! I will also upload this in PDF form to the AU website.

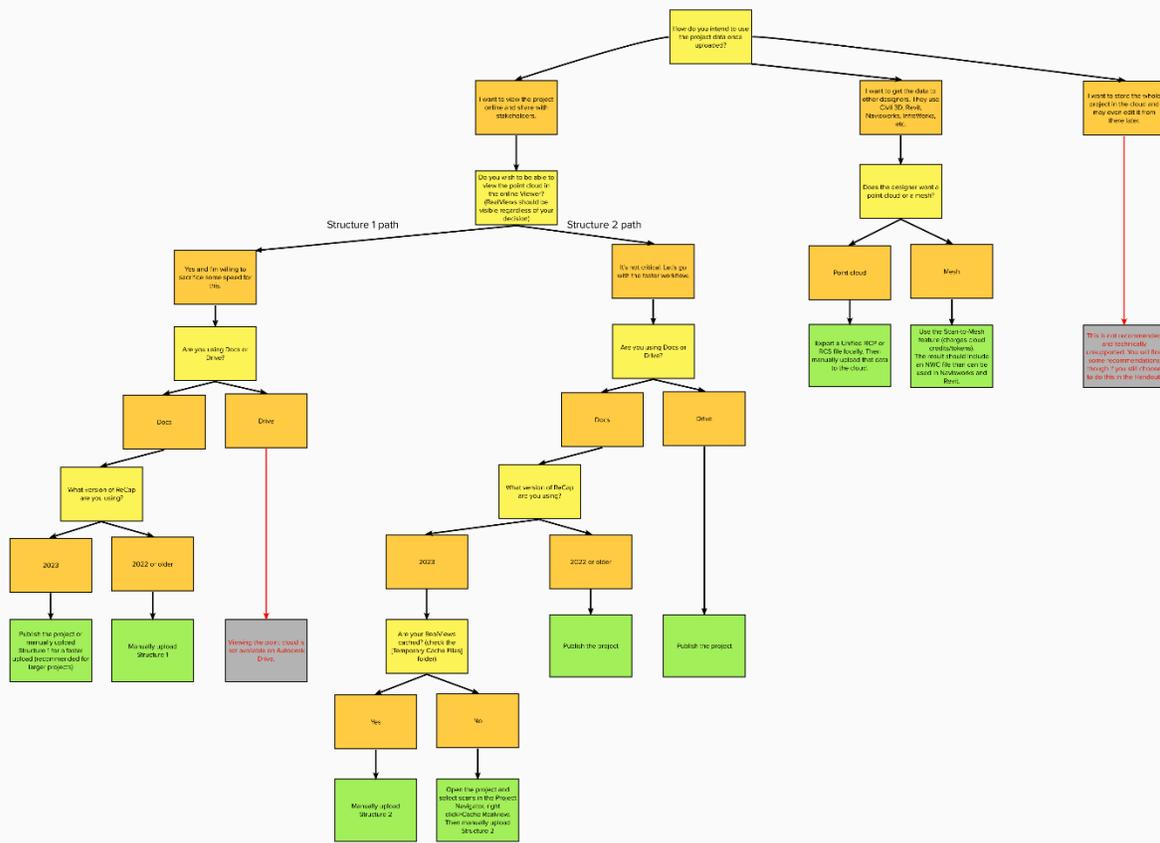


Figure 3 Full Workflow Cheat sheet

Looking forward to the Future!

Cloud workflows are clearly the future; I don't think it's unreasonable to expect more improvements and functionality in this realm. Complete support for storing whole ReCap projects in the cloud would require some sort of file-locking mechanism to prevent project data conflicts and improved Desktop Connector performance; who isn't itching for that? To dream a little bigger, I envision a day where surfaces can be extracted from point cloud data directly in the cloud; no Desktop product needed! We're already seeing clash detection taking place in the cloud; why not surface extraction as well?

Common Issues and Resources

During my past life in Support, I noticed commonly encountered issues with this workflow. I've sprinkled Endnotes throughout this Handout that are organized below with links to what I hope will be useful resources.

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- i ReCap subscription and license activation issues seem to be quite common. Hopefully the following articles will help if you run into this: [ReCap does not recognize the subscription to ReCap Pro](#) and [Unable to activate ReCap Pro](#).
- ii If you don't have an Autodesk Drive Entitlement, you may run into an error indicating just that when you try to log in online. See ["Your entitlement to Autodesk Drive has expired" or " You don't have an active Autodesk Drive entitlement" when logging into Autodesk Drive](#).
- iii There are several potential causes for the Publish button to be missing. See [Publish to cloud button is missing in ReCap Pro project](#).
- iv [Autodesk ReCap Pro: Scan to Mesh and ReCap Photo Cloud Credit pricing updates](#)
- v It should be noted that cloud credits are being replaced by flex tokens. [See this announcement](#) for more info.
- vi If the project is unstructured or if you opt out of texture generation, the resulting mesh will be a grey colorless form. [ReCap Pro Scan to Mesh function creates a gray mesh without color or texture](#)
- vii Whether the View States will make it up to the cloud will depend on how they were created. See [View States missing in ReCap Projects published to cloud](#).
- viii Geolocation of point cloud data in other products has long been a sore subject. Helpful links: [ReCap Point cloud location is incorrect when inserted into Civil 3D](#), [Point cloud not aligning as expected in Navisworks](#), [Inaccurate position of the Point Cloud link when reloaded in Revit](#).
- ix There may be an additional step for Revit users to link in point cloud stored on the cloud. See [Point clouds linked from Desktop Connector locations are not found in Revit](#).
- x ReCap Pro users are granted 250 GB of storage on Autodesk Drive. See [ReCap 2022 - A360 migration and Publish Feature FAQ](#).