Connecting Inventor to the Cloud

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Learning Objectives

- Learn more about the cloud tools available for Inventor
- Learn how Fusion 360 can be used to extend Inventor's capabilities
- Use Fusion Team for managing suppliers and external contractors
- Use the power of the cloud for collaboration

Description

This class will cover leveraging different cloud products such as; Fusion 360, Fusion Team, and Shared Views to further collaboration between companies and suppliers.

Speaker(s)

Ron Jones -

As a kid, I was known for taking apart toys, electronics, and even my first computer, all to understand what makes them work. That kid is now an accomplished adult who specializes in helping companies use Autodesk software to its full ability. I still take things apart, only now it's called reverse engineering... I currently reside in Carmel, Indiana with my fiancé and Labrador Retriever "Juice". Previously I've worked as a Product Engineer in the automotive industry, Mechanical Designer in the automation industry, and an Applications Engineer in the compressed air industry. My educational background is in engineering and drafting from Purdue University. I am professionally certified in Autodesk Inventor Professional, Autodesk Fusion 360 and an Autodesk Certified Instructor.

Contents

Cloud Tools Available for Inventor

Cloud computing as we know it today was thought up in August of 2006 by Google CEO Eric Schmidt. Since summer day a lot has changed in the cloud world. Companies like Amazon and Microsoft dominate the cyberspace. On the other hand, we have the 'design' world, which has stayed the same for the most part, with a few caveats. Design reviews still involve a lot of manual processes; from the trusty red pen, to multiple email strings, design changes often leave a lot of data in many different places and expose all parties to errors.

With advances in technology surrounding cloud computing, design collaboration doesn't just become easy, its actually kind've cool. Throughout this class we are going to look at ways the cloud can help us increase collaboration with Inventor. From Fusion Team, to shared views we will cover the ends and outs on how to transform how your company shares information both internally and externally.

Let's Look at Juicero

The Internet of Things (IOT) is transforming how we interact with machines for the good, bad, and just plain weird. To fully experience the weird part of this let's look at Juicero. Juicero was a San Francisco based technology company, whose sole product was a IOT juicer. This company managed to raise 120 million in venture capital to make a press that would squeeze juice packets into a cup…. All while connecting to your home WIFI network to ensure the juice packet used is always the freshest, and never expired…. I'm sure we all have no idea why the company ceased operations in late 2017. All kidding aside Juicero is a gateway into the future, instead of relying on our judgement on if a fruit is bad, we can let a machine bear this burden and ensure we always drink fresh juice…. Well kind've.

If Juicero taught us anything it's that we are in the midst of a technology revolution, and the design world is a part of this. This revolution is similar to when drafting boards went away in favor of AutoCAD, except now we are seeing it with collaboration and sharing of design data. Using the cloud, we can quickly connect extended members of the design team, or even external stakeholders.

Juicero showed us the future of the cloud and IOT in one very weird way

Software and services run on the internet

Perhaps the biggest advantage to looking at a could solution is that powerful computers and bulky laptops seems to almost disappear. Since the hardwork is being done inside of the cloud most users can access design data from a light weight laptop or even their cell phone. Having this data at your fingertips decreases the amount of time spent trying to convey design changes and increases input from other stakeholders. Truly allowing everyone to have a say in the process.

Increase Collaboration

Collaboration historically has involved multiple methods, each with their own set of drawbacks and pain points. The three we typically see the most are; email, Sharepoint, and local servers. These methods have served us well for years, but let's be honest they're old and clunky, kind've like that old restoration project we all have sitting in our garage or tucked away in the backyard with a garden growing around it.

Using the cloud, we can extend collaboration within and outside of our organization. Using Fusion Team, we can quickly include outside engineering contractors, or suppliers. Shared views give us the ability to communicate design intent without the need of creating a 2D drawing. And finally, the Forge platform is what makes all of this work. Forge gives us the ability to expand into virtual reality, taking design reviews and approvals into the virtual space let's all stakeholders get 'their fingertips' on the product before any material is cut.

Design teams are extended more now than ever before. Using the cloud collaboration now becomes simple. Allowing all users to see the product during initial concepts and provide input along the way.

Extending Inventor's Collaboration with Fusion 360

We've all used cloud storage solutions such as; Box, Dropbox, or Google Drive. The problem with these tools is that they are not "CADaware" they lack the knowledge to recognize file relationships that are present in many 2D and 3D CAD systems. Fusion Team however, has this capability and it handles it very well. See over 50 different CAD file types are supported allowing members from your extended team using different design software to populate and share data from across the world.

Fusion 360 & Fusion Team

The interoperability between Inventor and Fusion 360 allows for design data to be consumed both upstream and downstream of the process. Users can start inside of Inventor and utilize the Autodesk Desktop Connector to save data to the cloud. Once in the cloud external stakeholders using Fusion 360 can manipulate this data via direct edit or include it inside of Fusion 360 models. Bringing Fusion Team into the fray users have the ability to use Web Browser drawing markups, and communicate necessary changes using a chat window that alerts all project members. This functionality also includes the ability to view over 50 different 2D and 3D file formats.

The Fusion platform supporting over 50 2D and 3D file formats, allowing users of nearly any CAD package to communicate.

The final piece of this equation is connecting Vault to the cloud. Vault does a great job of managing designs for internal stakeholders but starting with Vault 2019 users have the ability to share certain folders with external stakeholders through Fusion Team. This feature allows for collaboration to extend to the far reaches of the internet.
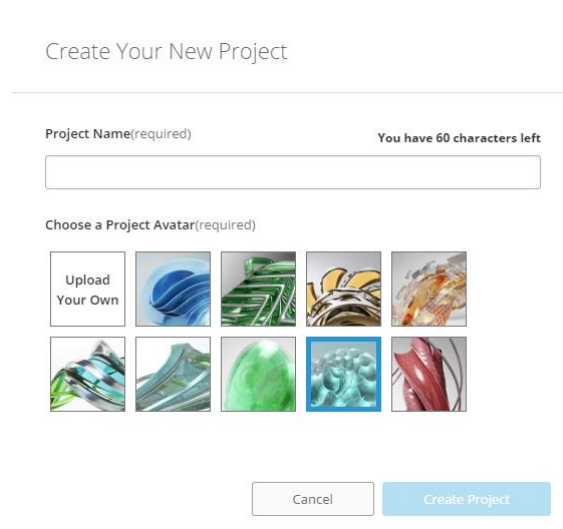
The Desktop Connector and Vault allow for users to collaborate in the cloud without the need for dozens of emails or multiple paper prints. 3D models can be marked up and communicated to the rest of the team in real time.

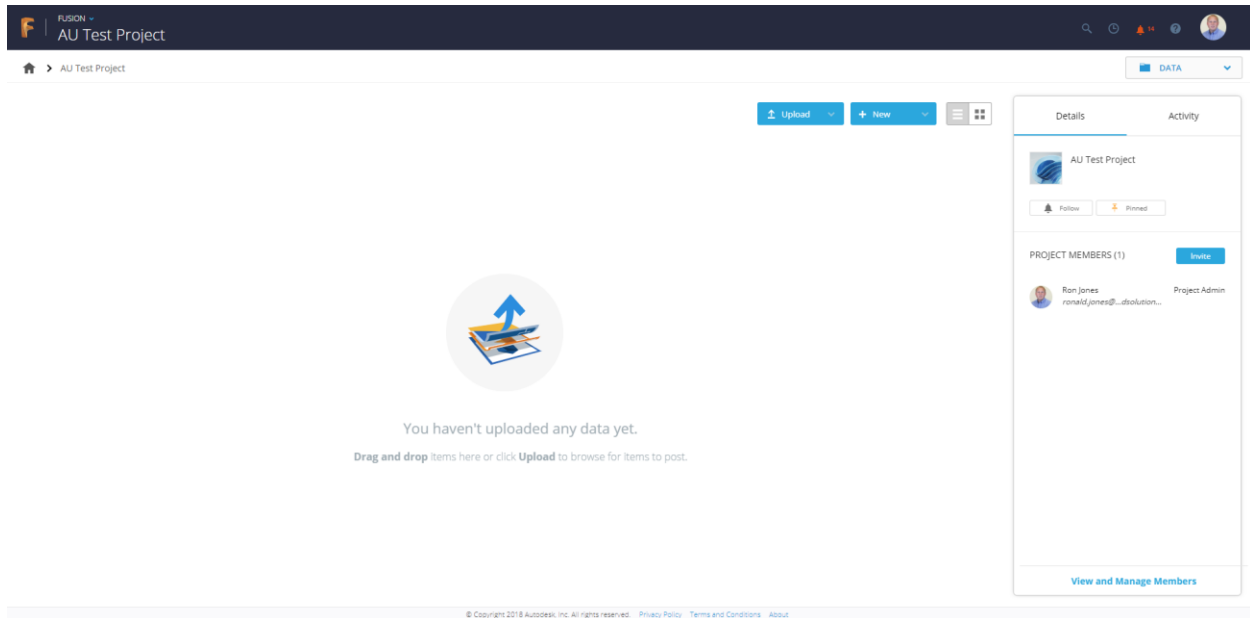# Manage Suppliers and External Stakeholders with Fusion 360

How many times have you experienced the pain of a supplier getting the wrong print revision? My personal experienced resulted in a large loss of parts that were made for the wrong year of Chevy Tahoe. I'm sure the scrap yard loved the 10,000 metal brackets that were made to Revision B instead of Revision C. Back then I communicated with suppliers via email, and so did our purchasing agent. We relied on a network share to house these drawing files, so the purchasing agent accidentally grabbed the wrong revision and cost us time and money. This happens every day and generally speaking everyone has a horror story surrounding it. So how can we prevent this? By using the cloud of course! Fusion Team gives us the ability to add specific suppliers and external stakeholders only to the projects they are involved in. Once added they have the ability to view and download data depending on permission settings.

How to Add Users to Fusion Team

Start by navigating to your Fusion Team Hub, which can be found at Fusionteam.autodesk.com. Once logged in you are brought to the hub homepage. From here you can either create a new project or add a user to an existing project quickly.

Selecting "Create Project" produces this dialog box, to create a new project you will just need to populate the project name and select a Project Avatar.

With the project created you are taken to this landing page. From here to add users select the Invite Button. This will launch another dialog box.

Who do you want to invite to this project?

Email addresses of the people you'd like to invite (required)

ronald.jones@advancedsolutions.com

(Don't use mailing lists.)

Manage Collaborators   Cancel   Send Invitations

Once you have populated the invitation field with an email the user will receive an invitation to join the project.

MANAGE PROJECT MEMBERS   ✕

| Project Members | Join Requests (0) | | | Invite |

NAME AND EMAIL	TITLE	COMPANY		
Ron Jones ronald.jones@...dsolutions.com	Engagement Manager	Advanced Solutions	Project Admin	
Ron Jones ronnie.jones8@gmail.com			⚐ Editor ∨	🗑

With Project stakeholders invited changing permissions is easy. Navigate to the manage members tab. From here you can quickly change permission levels depending on the project members role.
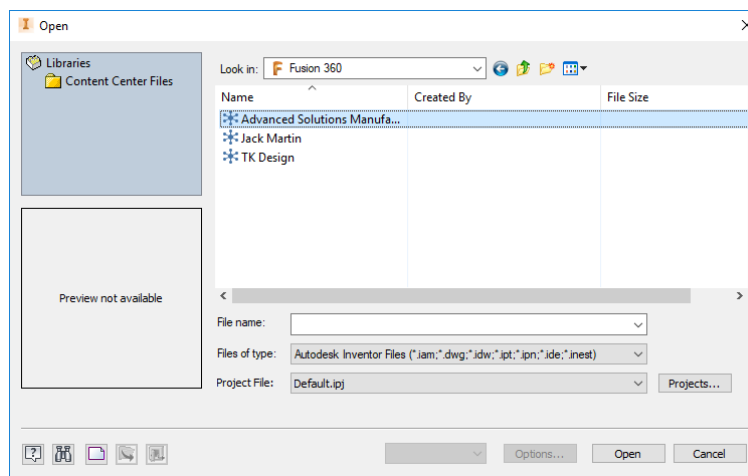
User & Permissions

Now that we've added the external collaborators to the project inside of Fusion Team we need to set permission levels. For instance, a supplier or vendor would likely be a "Viewer" where as an extended member of the design team would be an "Editor". The different levels restrict what the users can and cannot do inside of the Fusion Team project.

Using the Power of the Cloud for Collaboration

Using tools such as the Desktop Connector and Vault we can extend access to external stakeholders easier than ever before. The method will depend on your deployment of Vault or lack of. If you are using Autodesk Vault, you have the ability to link specific folders to projects inside of Fusion Team. If you are not using Vault, then you can use the Desktop Connector to save files directly to the Cloud.

Using the Desktop Connector

The Desktop Connector is available for download for subscription customers from the Desktop App. Once installed users will see an ⊩ Fusion 360 icon in both the open and save menus. From here the process is as simple as executing an 'open' or 'save' to access or contribute files to a Fusion Team project.
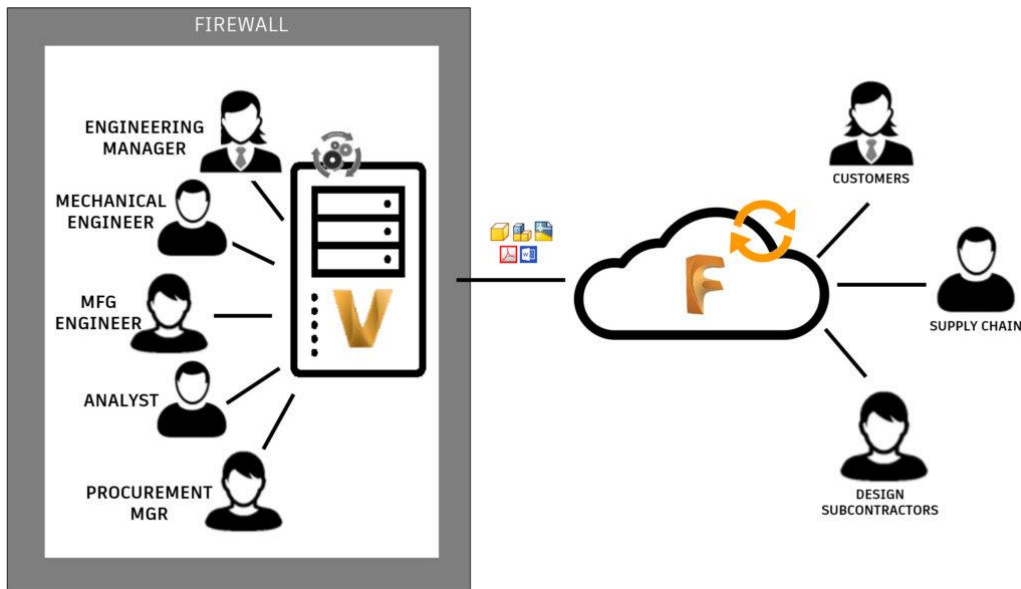

With the Desktop Connector installed users will have the power of the cloud at their fingertips. Access is as easy as save or open from Inventor.
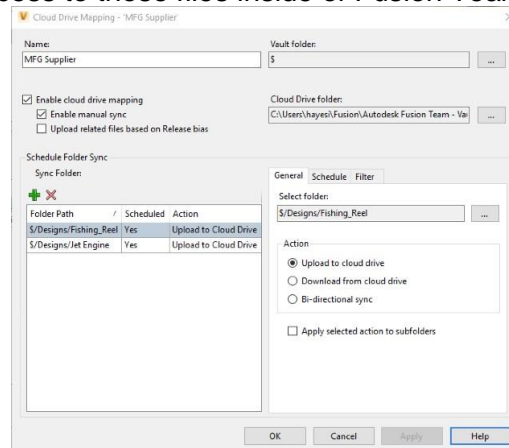
Using Autodesk Vault Professional

Using Vault and Fusion Team we can easily give stakeholders access to files that typically would only exist if the person has access to the internal firewall. Using Cloud mapping in Vault 2019 this all becomes possible. When you want to include a project all you need to do is configure the cloud mapping from the Vault interface.

Using Vault and Fusion Team we can quickly expand beyond the firewall to include a number of different project stakeholders

Configuring Vault & Fusion Team

In order to kick-off the process we must first configure Vault and Fusion Team mappings to allow for files to transfer back and forth. Assuming you have the proper Vault permissions you can choose multiple different options for the sync. Actions give us the ability to setup a bi-directional sync, download, or upload. Filters can be added to choose when the files will be shown. For example, maybe we only want to display released files. Finally, will want to ensure we have a job processor configured in order to process all of this data. Once the job processor is complete we will have access to those files inside of Fusion Team.

Forging into the Future

Using the Forge platform, we have the ability to take this to another level. The Forge viewer allows for customization specific to each company's workflows. Want to include VR/AR capabilities into your design reviews? Forge is the answer. Forge can also be leveraged for automation projects, taking engineering automation to the next level connecting Inventor to the cloud to make designs faster and more efficient.

Helpful Links

Autodesk Vault 2019 Project Sync:

http://blogs.autodesk.com/vault/2018/04/external-collaboration-project-sync/

Internet Powered Juicers and the Future of Design Collaboration:

https://medium.com/@ronjones_88108/internet-powered-juicers-and-the-future-of-design-collaboration-cd5b0d1ef71c

CAD Files on an iPhone:

https://medium.com/@ronjones_88108/cad-files-on-an-iphone-d2f55610f3bc

Using Fusion Team for Collaboration with Inventor:

https://knowledge.autodesk.com/support/inventor-products/getting-started/caas/screencast/Main/Details/5d0c130d-0362-4073-9adc-86de1778d47f.html

How to Add Users in Fusion Team:

https://knowledge.autodesk.com/search-result/caas/screencast/Main/Details/4a48b29a-2acb-4060-b0eb-6cd19c806491.html