

Elevating Multidisciplinary Transportation Projects through BIM360

Courtney Hawkins

Transportation Designer - AECOM

Stephen McDonald


BIM Collaboration Lead - AECOM

Sean Hulbert

Senior Implementation Consultant - Autodesk



LOCATION

 Toronto, Ontario

CONTACT DETAILS

 courtney.hawkins@aecom.com

 [Courtney's Profile](#)

Courtney Hawkins, EIT

Transportation Designer

#Transportation #CivilEngineering #Civil3D #BIM360

- Transportation EIT with 3 years of industry experience
- Currently working in the Municipal Transportation department at AECOM
- Frequent user of Civil 3D and BIM360



INDUSTRY FOCUS

Transportation, Civil Engineering



EXPERTISE

Transportation Design, Civil 3D and BIM360

Courtney is a Transportation Designer in Toronto and holds a Bachelor's Degree from Carleton University. She has experience working with Autodesk products such as Civil 3D and BIM360.



My passion includes working on complex transportation design projects and finding new and effective ways to collaborate with team members.



LOCATION

 Toronto, Ontario

CONTACT DETAILS

 stephen.mcdonald@aecom.com

 [Stephen's Profile](#)

Stephen McDonald, CET

BIM Collaboration Lead

#Transportation #CivilEngineering #Civil3D #BIM360

- Civil engineer with 13 years of industry experience
- Combines software expertise and collaboration methods to help design teams deliver projects
- Current focus includes adoption of BIM360 as the common data environment for digital files on large scale infrastructure projects



INDUSTRY FOCUS

Transportation, Civil Engineering



EXPERTISE

Civil 3D, BIM360, Autodesk Docs, BIM Collaboration

Stephen is a Civil Engineering Technologist graduating from Dublin Institute of technology, Ireland. He is a registered Civil Engineering Technologist in Ontario.



My passion involves helping large groups of people work together in a smarter, more effective way so that company and project goals are achieved, while also ensuring more time is spent with friends and family



LOCATION

 Portland, Oregon

CONTACT DETAILS

 sean.hulbert@autodesk.com

 [Sean's Profile](#)

Sean Hulbert, PE

Senior Implementation Consultant
#CivilEngineering #Civil3D #InfraWorks

- Civil engineer with 30 years of industry experience
- Combines IT and software expertise with a background in CAD and BIM training
- Current focus includes the rollout of BIM 360 Design for Civil 3D



INDUSTRY FOCUS

AEC, Civil Engineering



EXPERTISE

Civil 3D, InfraWorks, Autodesk Docs, Hydrology and Hydraulic Analysis tools

Sean is a registered Professional Engineer in Oregon and holds an Associate's Degree from South Florida Community College. He is an Autodesk University Certified Professional in BIM for Transportation.



My passion remains working with our end users, rolling my sleeves up and getting my hands dirty on real projects, and embracing their successes—as well as their deltas.

Class Overview

BIM360 is a web-based cloud storage platform that is directly integrated with Autodesk products

- Project Setup
- Document Management
 - Folder Structure
 - Cleaning Files
- Civil 3D Projects on BIM360
- Drawing Creation
 - Models
 - Pipe Networks
 - Data shortcuts
- Collaboration Tools
 - Markup
 - Issues
 - Client Feedback
 - Version Control
- Model Coordination
- Next Steps and Reference Material



Project Overview

Major component of South Civil project:

- 6.7km of segregated guideway.
- 7 Stations (6 Underground + Exhibition station at grade).
- 3 interchange stations (2 with line 1 + Exhibition station with GO services).

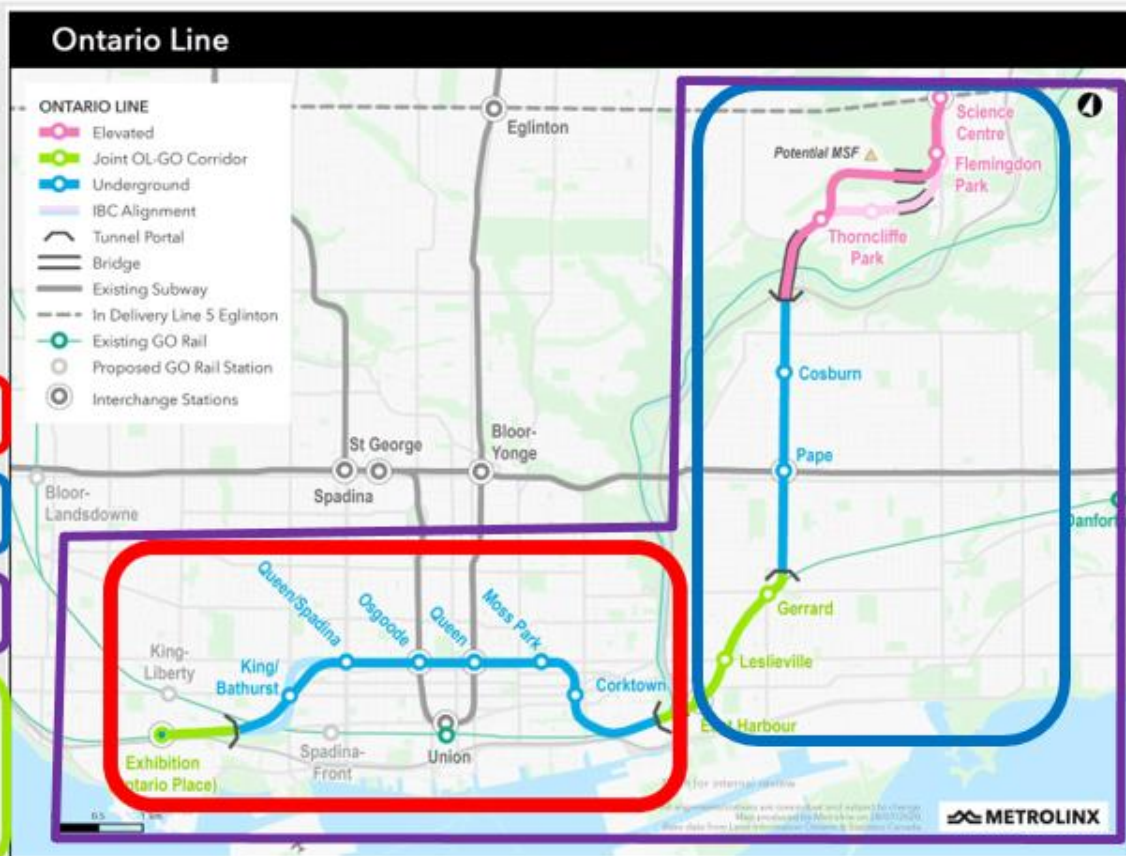
South Civil Stations Tunnel Contract

North Civil Stations Tunnel Contract

RSSOM Contract

Early Work Packages:

- Exhibition station
- DonYard Portal and new bridge.
- OL-GO joint Corridor



Project Setup

- Account administrator – manage the BIM360 hub
- Project administrator – manages the BIM360 project
- Invite project team members to the project site
- Project Home
- View and summary of the project

The screenshot shows the Autodesk University 2021 BIM 360 Project Home dashboard. The top navigation bar includes 'Project Home', 'Autodesk University 2021 (AECOM Canadian Transportation)', and a user profile for Courtney Hawkins. The main content area is titled 'My Dashboard' and features a 'Customize' button. The dashboard is divided into several sections:

- Project Address:** A map of Toronto, ON, showing the project location.
- Weather:** A weather widget showing a current temperature of 26°C and a 'Clear' forecast for the week.
- Project Issues:** A table listing project issues with columns for ID, Title, Type, and Due Date.
- Project Design:** A section for managing project design files, including a 'View by' dropdown (Folders, Sets), an 'Upload Files' button, and a list of files.

ID	Title	Type	Due Date
1	Clash Issue	Coordination	Sep 1, 2021
2	Coordination Issue	Coordination	Sep 3, 2021
3	Client Feedback	Design	Sep 10, 2021

The 'Project Design' section shows a list of files under the 'Plans' category, including 'Live Demo' and 'Project Files'. The '01 WIP' folder is also visible.

Document Management

Used to store project files

Store Project Files

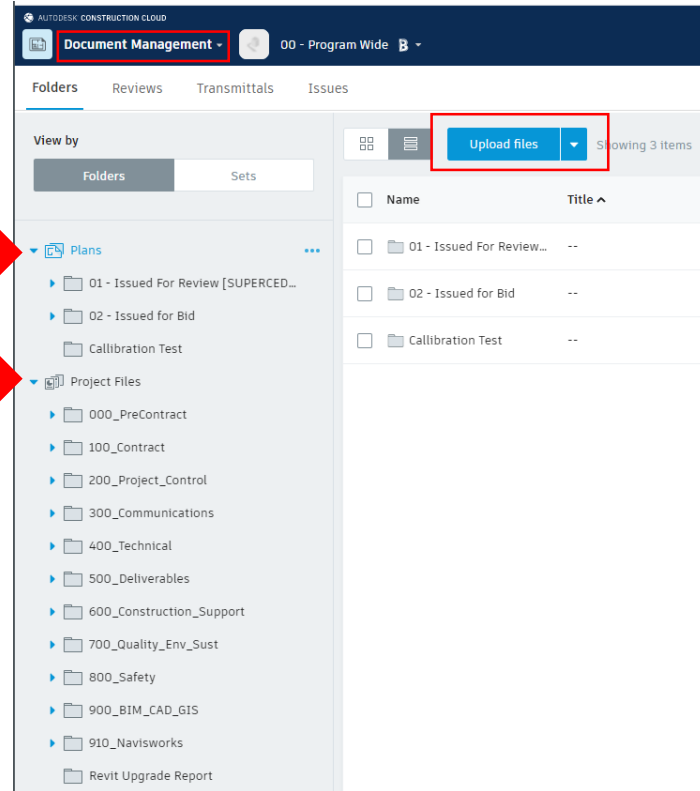
- Contracts
- CAD
- Revit
- PDF's
- Excel Etc...

Folder Structure

- Setting up folder permissions
- Plans vs. Project Files

Version Control

- All previous versions of a file are saved



Name ^	Description	Version	Size	Last updated	Updated by
<input type="checkbox"/> Sample - Version Control.dwg		V3	907.3 KB	Sep 1, 2021 10:52 AM	Courtney Hawkins

Civil 3D Projects on BIM360



BIM360 is directly integrated with Civil 3D

Store Files

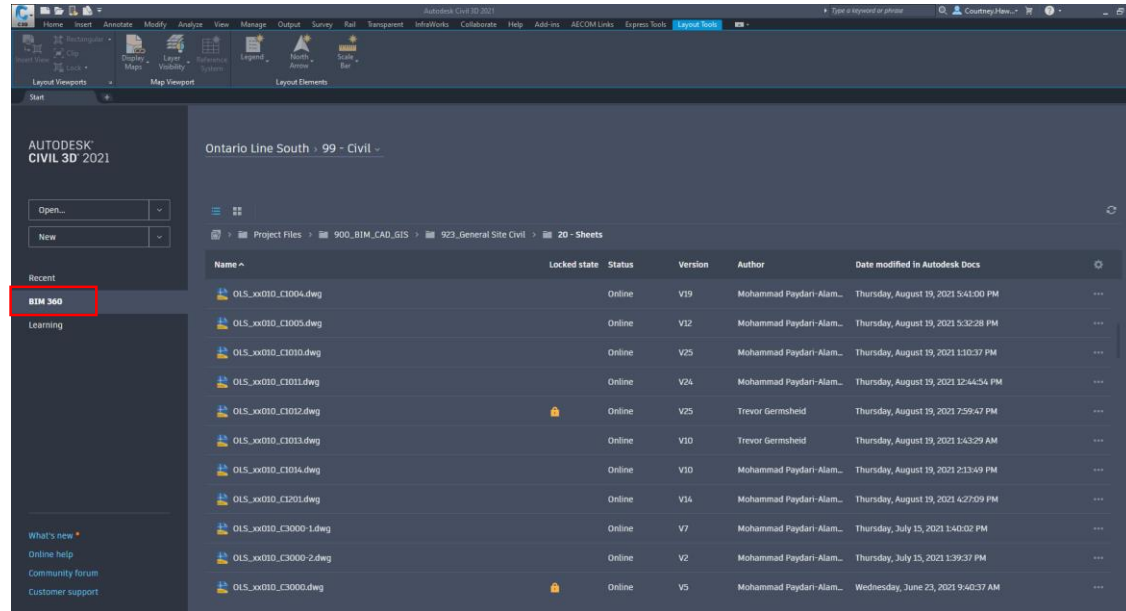
- Design CAD files
- Data Shortcuts
- References

File maintenance

- Removing all broken references
- Regularly purge and audit
- Cleaning inherited files

Tips and Tricks

- Keeping software up to date (Civil 3D and Desktop Connector)
- Checking local hard drive space (allows local files to sync)
- Locate any problem by using reference explorer and health checker



Drawing Creation

Drawing Naming Convention

- Set out standards at the beginning

Model Files

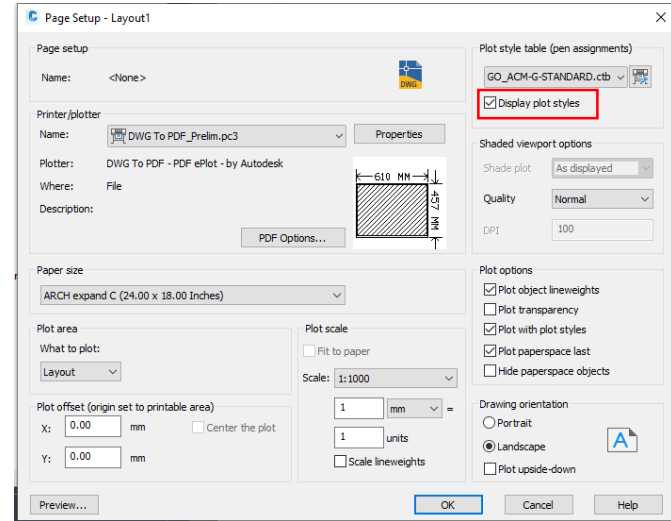
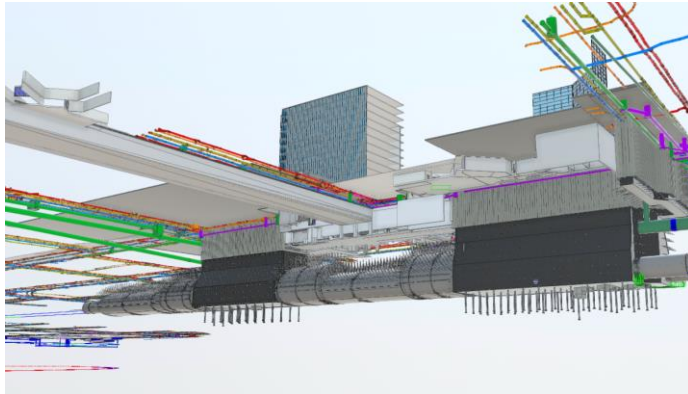
- Setup Autocad project template file (dwt)
- Shared coordinate system

Sheet Files

- Standardized title block
- Setup OCR reader
- Turn on 'Display Plot Styles' in Page Setup

3D Model Creation

- Data Shortcuts
- Container Files



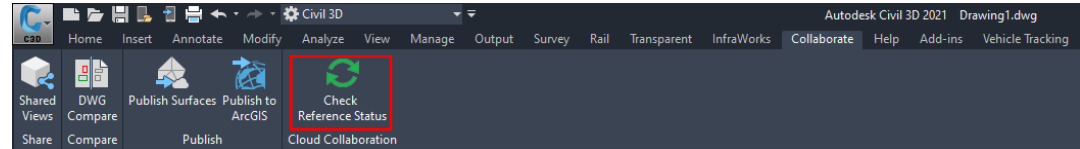
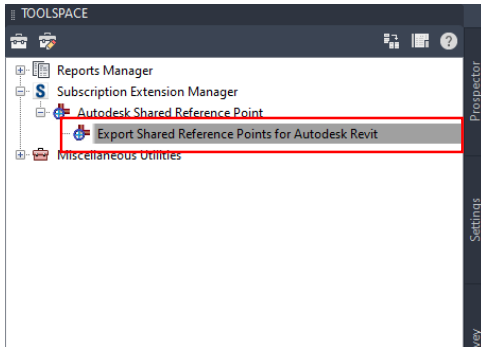
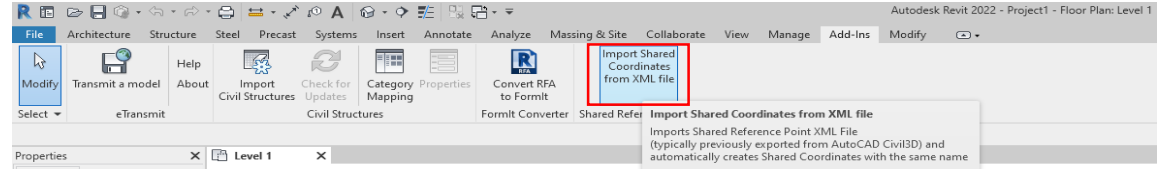
Coordination With Revit



Achieve effective coordination between Civil 3D and Revit

Coordination Between Civil 3D and Revit

- Export Revit Files to DWG
- Shared Coordinates
- Units
- File Naming Convention
- Subscribe to folder



Collaboration Tools

BIM360 collaboration tools include markups, issues and version

Markups

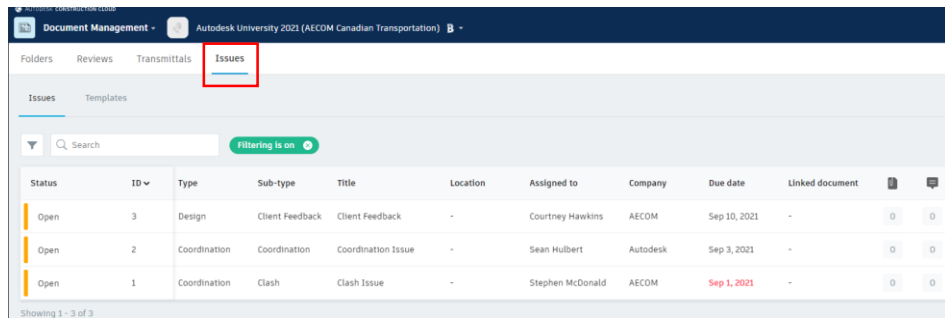
- Provide markups directly into PDF's or CAD files
- Internal QA/QC
- CAD files can be reviewed in the web browser without having AutoCAD installed

Creating Issues

- Assigning to a designer or company
- Tracking to closure
- Activity log allows coordination to occur within BIM360
- Client feedback directly through BIM360

Version Control

- Compare tool
- View the progress of design drawings



Model Coordination

BIM360 Model Coordination provides a 3D view of project models

3D Model View

- Surfaces
- Revit Models
- Pipe Networks

Coordination

- Coordination between Revit and Civil 3D
- Creating Issues
- Clash Detection

The screenshot displays the BIM360 Model Coordination web application interface. The top navigation bar includes the 'Model Coordination' tab and a search bar. The main content area shows a list of models with columns for 'Models', 'Contributor', and 'Updated date'. The 'Models' column lists various container files (e.g., OLS_C21_00_U_Transp 3D Container.dwg). The 'Contributor' column shows names like Simran Patel and Stephen McDonald. The 'Updated date' column shows dates ranging from 23 Aug 2021 to 14 May 2021. A sidebar on the right contains filters for 'Contributor' and 'Company', and a 'Date' section with a 'Choose date' button. The bottom status bar indicates 'Showing 129 of 129 models'.

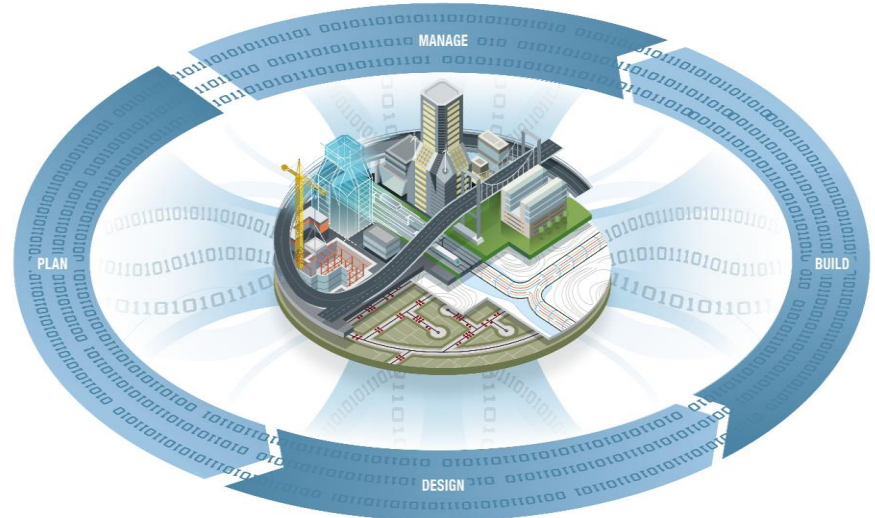
Models	Contributor	Updated date
<input type="checkbox"/> OLS_C21_00_U_Transp 3D Container.dwg	SP Simran Patel AECOM	23 Aug 2021 11:12
<input type="checkbox"/> OLS_C21_00_U_Unitel 3D Container.dwg	SP Simran Patel AECOM	23 Aug 2021 11:12
<input type="checkbox"/> OLS_C21_00_U_Watermain 3D Container Test Pit.dwg	SP Simran Patel AECOM	23 Aug 2021 11:12
<input type="checkbox"/> OLS_C21_00_U_Watermain 3D Container.dwg	SP Simran Patel AECOM	23 Aug 2021 11:12
<input type="checkbox"/> OLS_C21_01_AMDRO1_Liberty Village Surfaces Container.dwg	Stephen McDonald AECOM	14 May 2021 15:07
<input type="checkbox"/> OLS_C21_01_C_New Liberty Street Grading.dwg	Stephen McDonald AECOM	13 May 2021 16:55
<input type="checkbox"/> OLS_C21_01_PN110_Exhibition Pipe Networks 3D Container.dwg	Stephen McDonald AECOM	13 May 2021 16:55
<input type="checkbox"/> OLS_C21_01_PN110_Liberty and Strachan Pipe Networks 3D Container.dwg	Stephen McDonald AECOM	13 May 2021 16:55
<input type="checkbox"/> OLS_C21_01_TG_RCD AT GRADE.dwg	Stephen McDonald AECOM	6 Jun 2021 17:34
<input type="checkbox"/> OLS_C21_02_U_King-Bathurst Sanitary 3D Container.dwg	SP Simran Patel AECOM	23 Aug 2021 11:32
<input checked="" type="checkbox"/> OLS_C21_02_U_PR WM-SAN 3D Container.dwg	SP Simran Patel AECOM	23 Aug 2021 11:32
<input type="checkbox"/> OLS_C21_03_U_PR WM-SAN 3D Container.dwg	SP Simran Patel AECOM	23 Aug 2021 11:32
<input type="checkbox"/> OLS_C21_03_U_Queen-Spadina Sanitary 3D Container.dwg	SP Simran Patel AECOM	23 Aug 2021 11:32
<input type="checkbox"/> OLS_C21_04_U_Osgoode Sanitary 3D Container.dwg	SP Simran Patel AECOM	23 Aug 2021 11:32

Reference Material and Next Steps

Best Practices for Autodesk Docs for Collaboration for Civil 3D

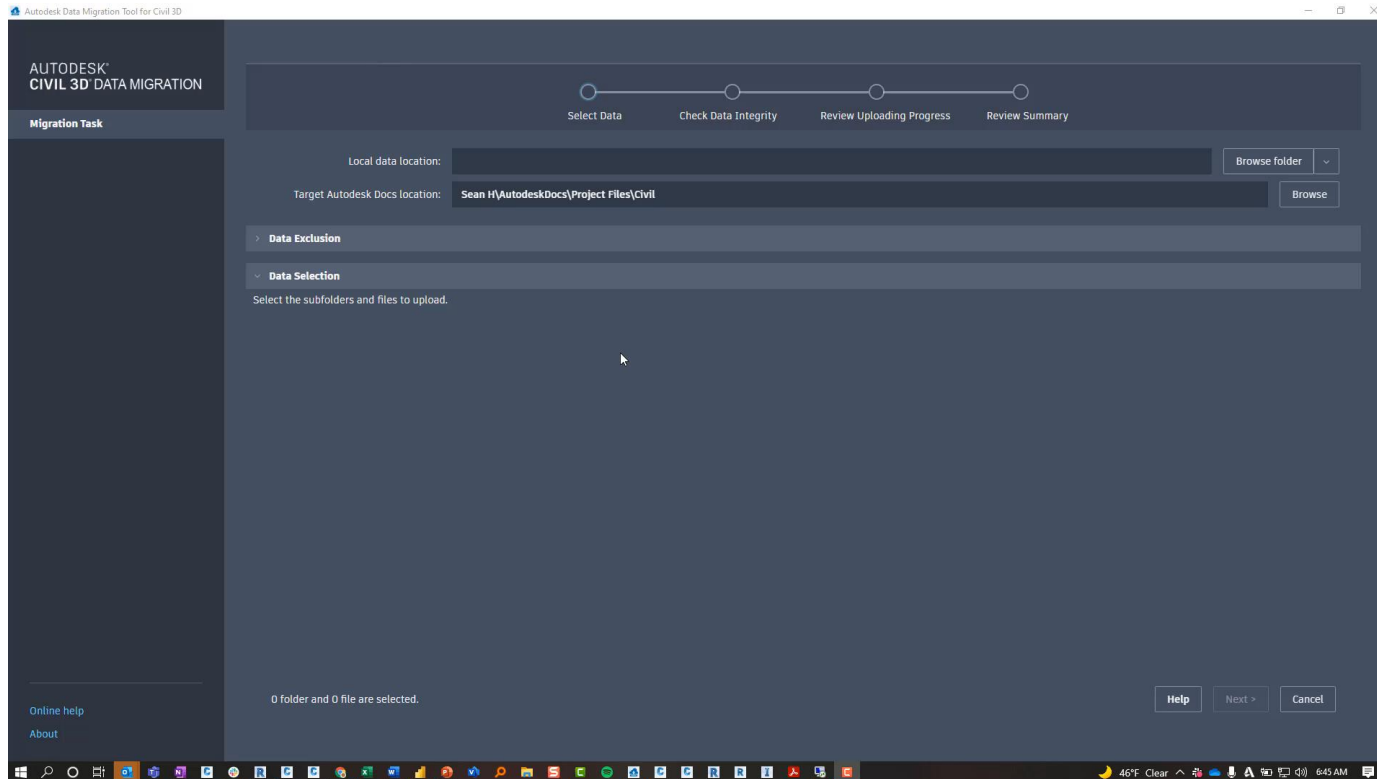
Implementing BIM360 into future projects

- Update Software
 - AutoCAD
 - Civil 3D
 - Desktop Connector
- Prepare Data
 - Check for Drawing Errors
 - Remove Unused Data
 - Locate Redundant Objects
 - Repair Drawings
 - Autodesk Batch Save Utility
- Upload Files
 - Project Migration Tool vs. Manual Migration
- Troubleshooting
 - Autodesk Reference Explorer
 - %temp%



Reference Material and Next Steps

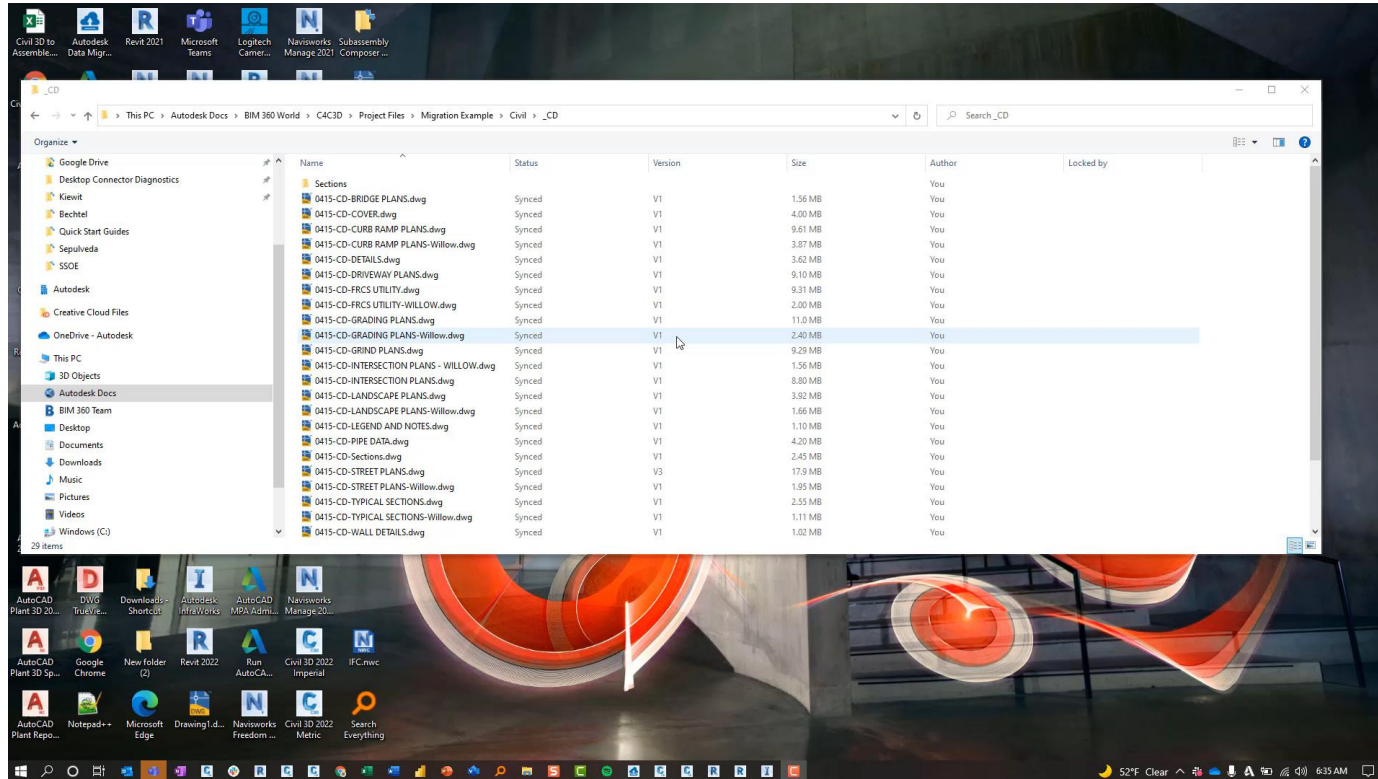
Autodesk Data Migration Tool for Civil 3D



feedback.autodesk.com

Reference Material and Next Steps

Autodesk Desktop Connector Reference Explorer



Reference Material and Next Steps

Reference Material

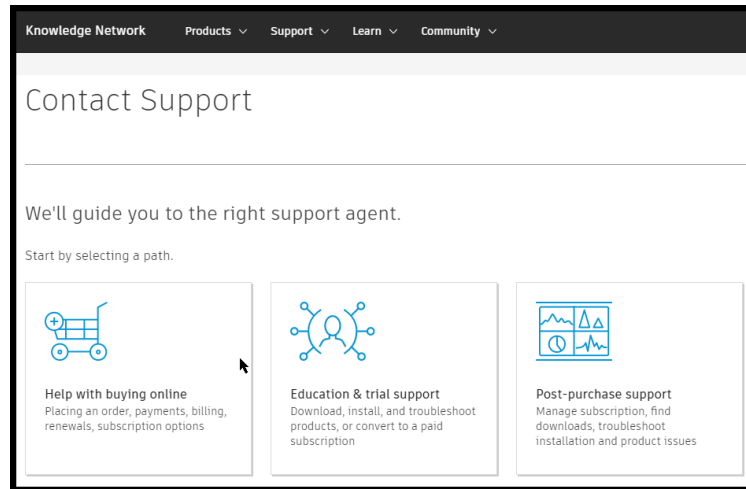
- [Collaboration for Civil 3D](#)
- [Migrating an Existing Project to Autodesk Docs for Collaboration for Civil 3D](#)

Autodesk Support

- [Support Tickets](#)

Lessons learned

- Clean Drawings
- Open Communication
- Team Collaboration



Conclusion

- Successfully host a multidisciplinary project on BIM360
- Improve collaboration across multiple Autodesk products such as Civil 3D and Revit
- Understand best practices to optimize BIM360 performance and maximize user experience
- Understand workflows for hosting Civil 3D and Revit models on BIM360



For an overview of our BIM360 experience please watch out for our other class at AU 2021



Questions?

The background of the slide features four abstract, dark gray geometric shapes in the corners, resembling stylized computer monitors or architectural elements. These shapes are positioned in the top-left, top-right, bottom-left, and bottom-right corners, framing the central text. They have sharp edges and some internal reflections, giving them a three-dimensional appearance.

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