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

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in 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.

AECOM

LOCATION

Toronto, Ontario

CONTACT DETAILS

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in Stephen's Profile

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.

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

"

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

AECOM

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

LOCATION

Portland, Oregon

CONTACT DETAILS

✉ sean.hulbert@autodesk.com

in Sean's Profile

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.

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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.

AUTODESK

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

ONTARIO TRANSIT GROUP
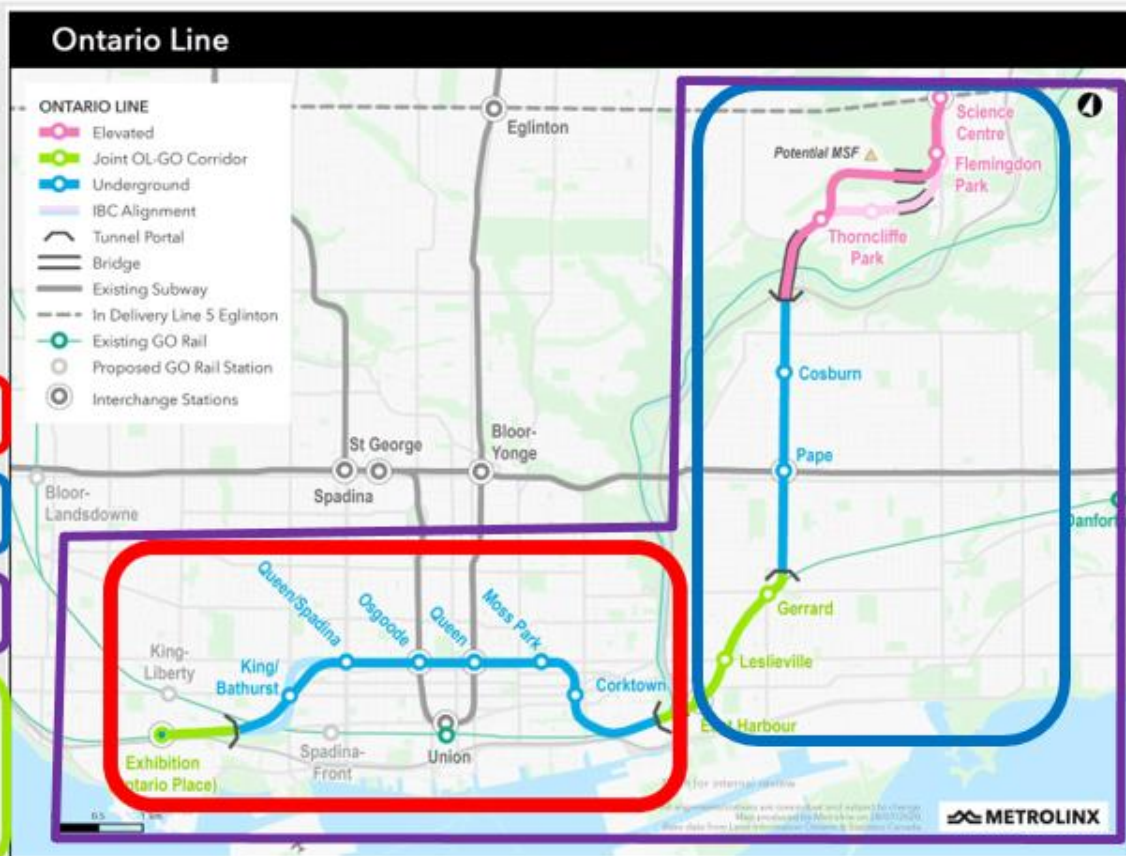
Project Setup

- 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

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
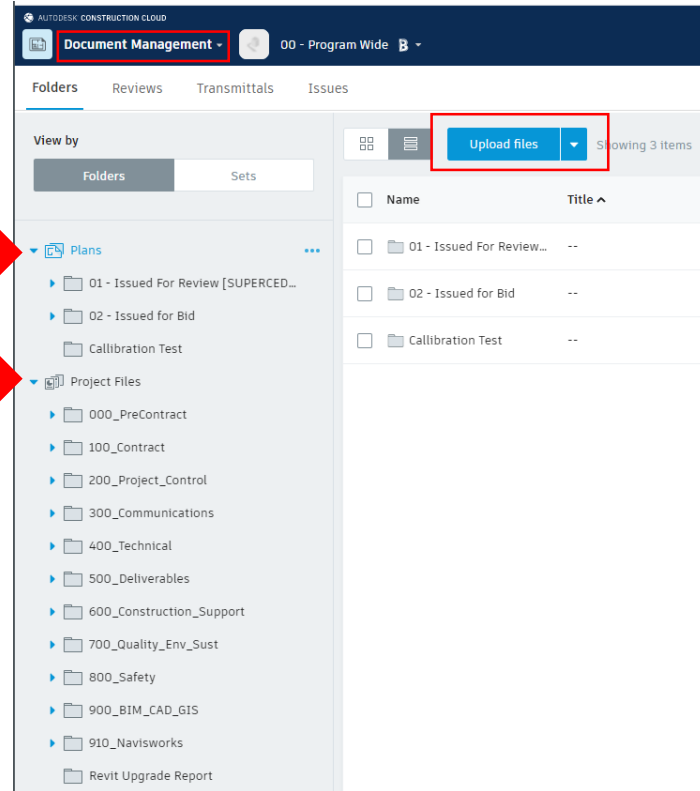
Civil 3D Projects on BIM360

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
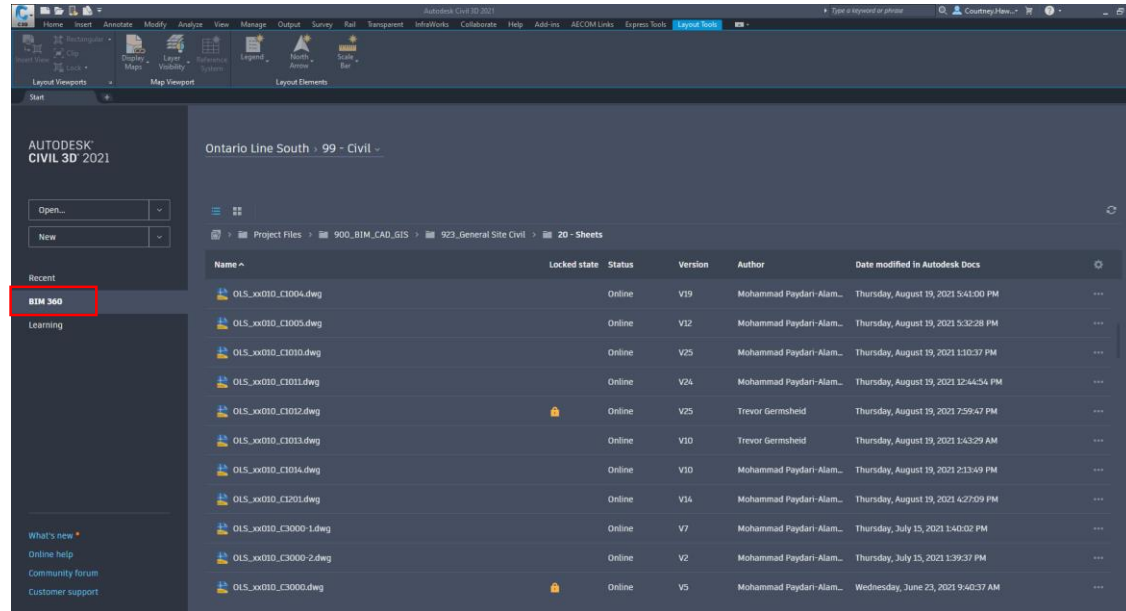
Drawing Creation

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
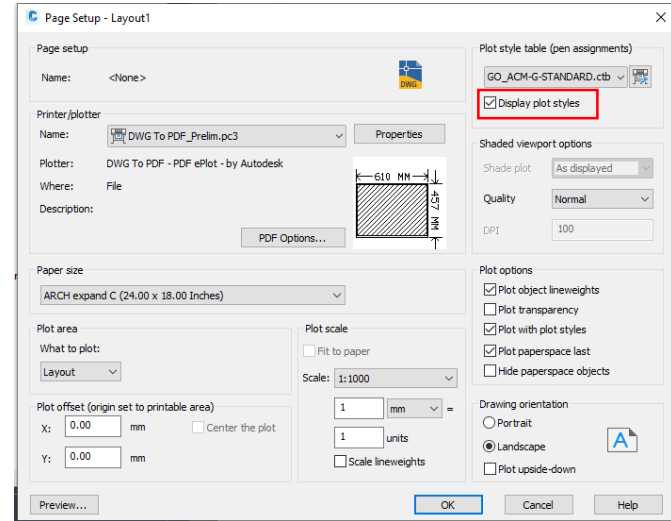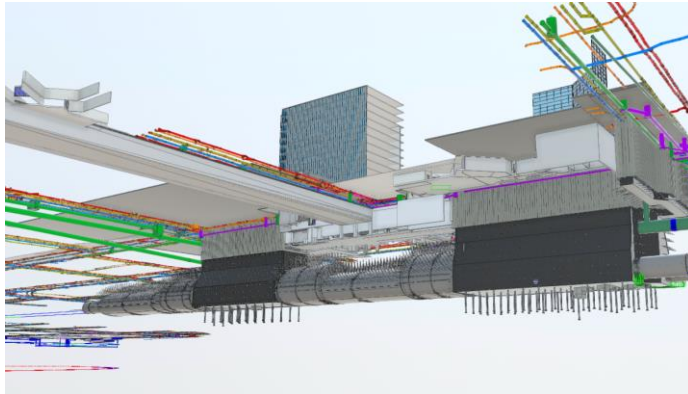
Coordination With Revit

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
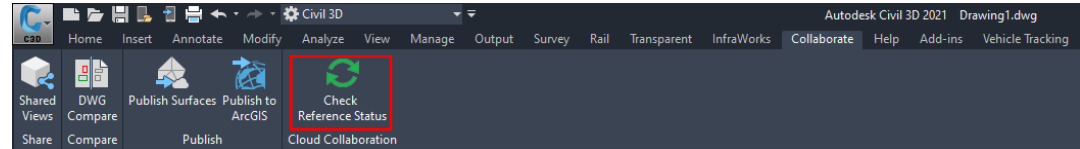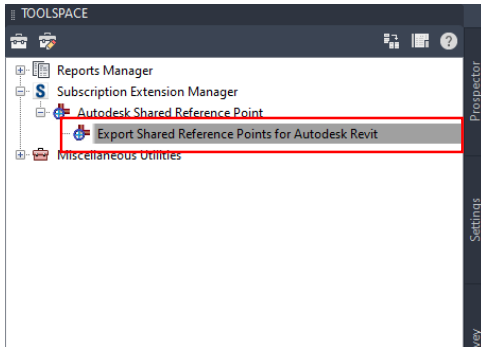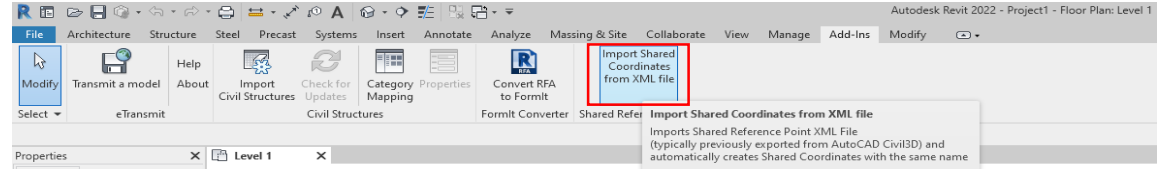
Collaboration Tools

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
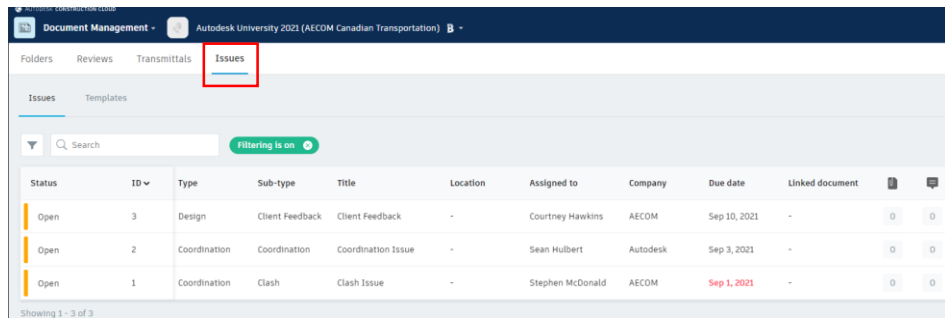
Model Coordination

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

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
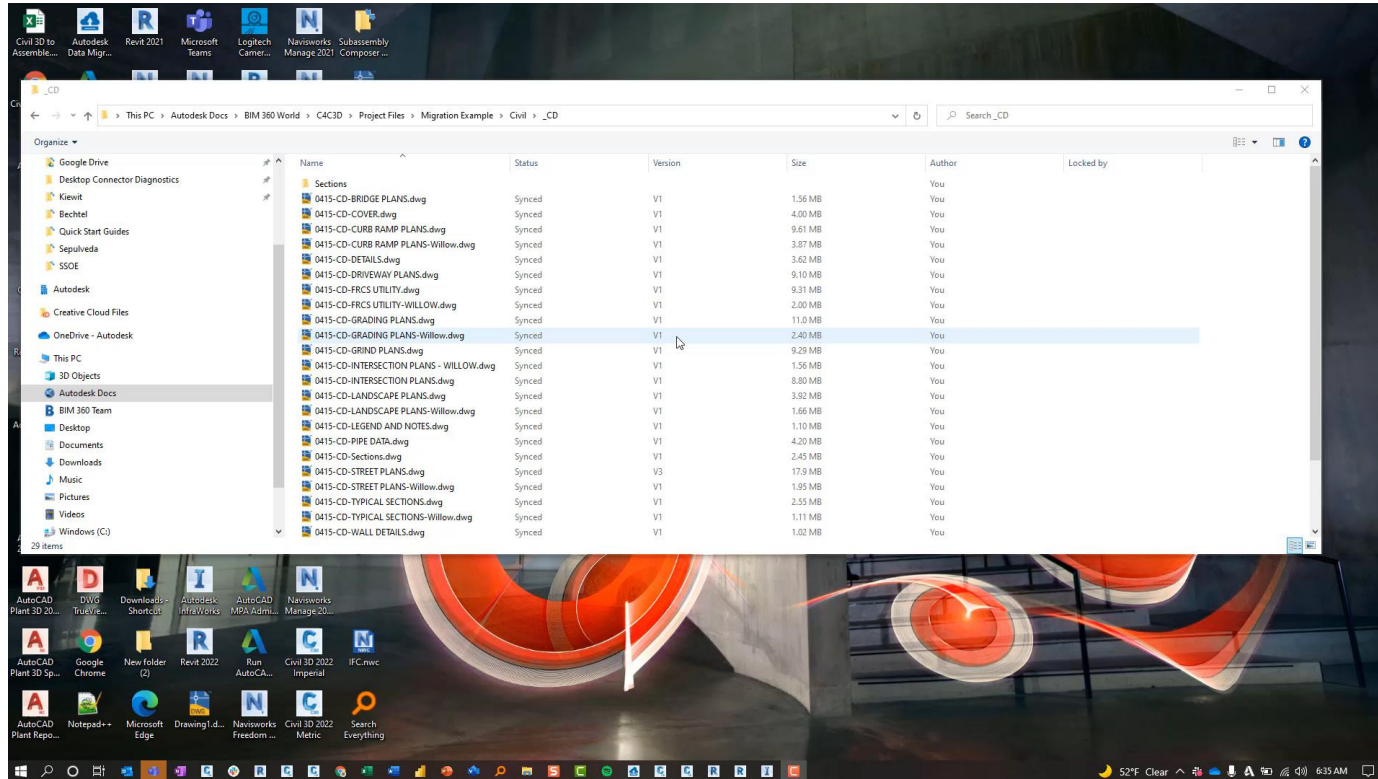 - %temp%
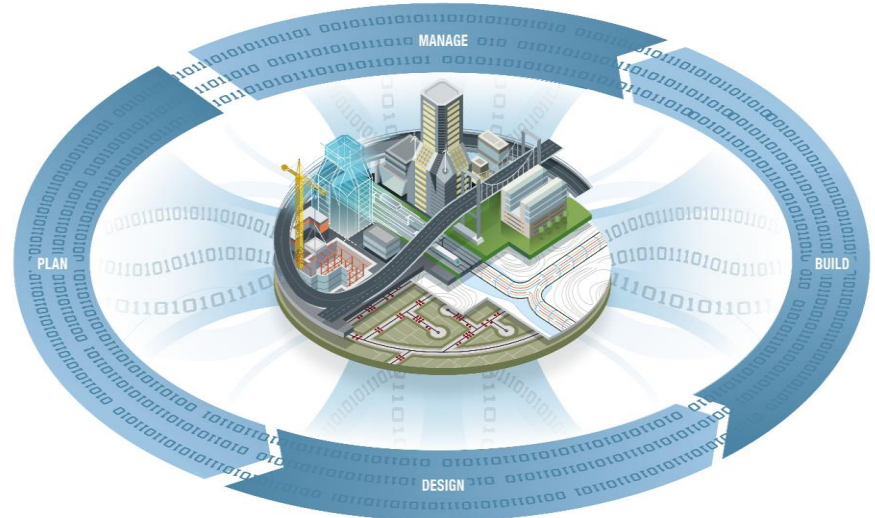
Reference Material and Next Steps

Autodesk Data Migration Tool for Civil 3D
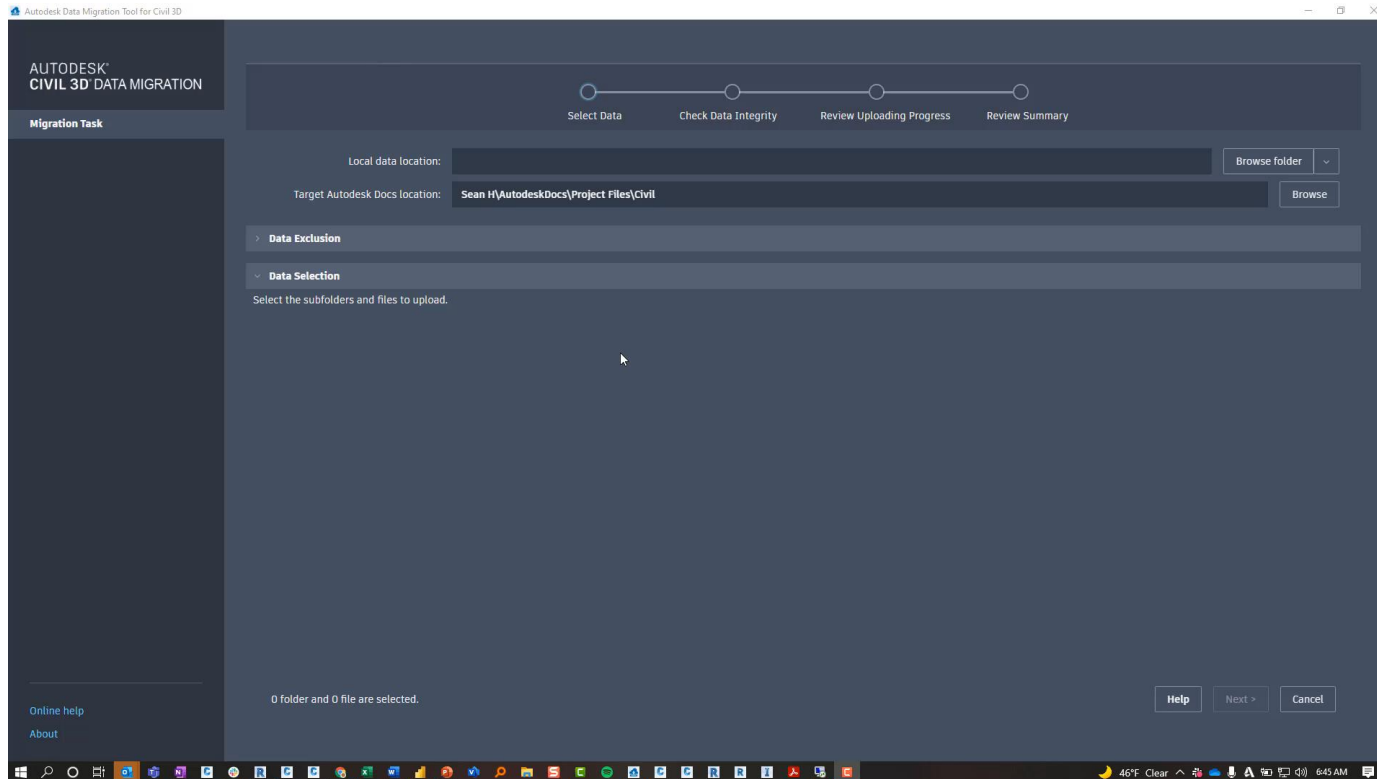
feedback.autodesk.com

Reference Material and Next Steps

Autodesk Desktop Connector Reference Explorer

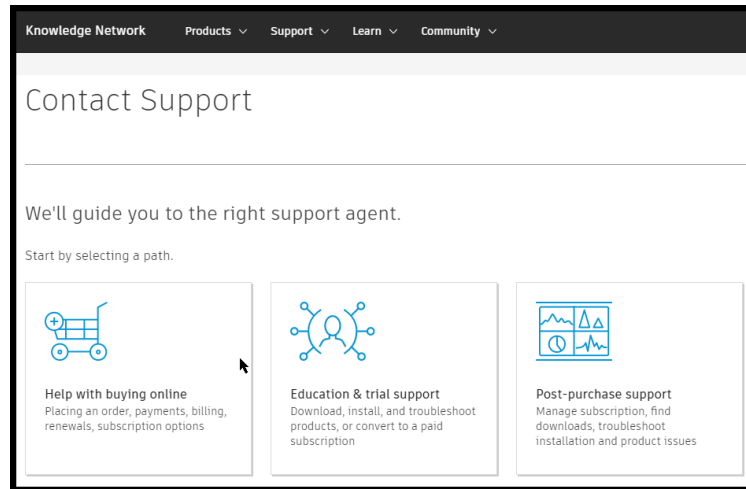# Reference Material and Next Steps

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?

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