

Robert Ostermann Factory Designer





Content & Learning Objectives

Introduction

- o Is the Autodesk Construction Cloud the only Tool for Factory Planning?
- Powered by Autodesk's Cloud Solutions The CAD Workflow
- Powered by Autodesk's Cloud Solutions Involved Systems, Used Examples & Software Packages
- Powered by Autodesk's Cloud Solutions Critical Use Cases

CAD Data Exchange for Factory Integration

 Explore how to exchange data via the Desktop Connector between Vault Professional and Autodesk Docs or Fusion Team

CAD Data Issue Management for Factory Integration

- Learn how to set up a holistic factory model in a model coordination space within Autodesk BIM Collaborate Pro and Navisworks Manage
- Explore the possibilities of reviewing issues & models and verifying & communicating model changes

CAD Data Viewing for Factory Integration



Is the Autodesk Construction Cloud (BIM 360) the only Tool for Factory Planning?

Beneficial Functions & Workflows

ACC (BIM 360)

- Issue management
- Viewing in a web browser
- File versioning
- Shared data drive
- CAD data comparison

Could it be a relevant part? Navisworks Coordination Add-In

- Issue management
- Clash detection
- Change data visualization (color, transparency, material)
- Properties extraction & reuse

- 3D markups & comments Viewing in a web browser
- File versioning
- Shared data drive
- CAD data comparison
- Milestones (lifecycle states)
- File dependencies
- (for major 3rd party CAD data, e.g. CATIA. Solidworks....)

Fusion Team

- AnyCAD referencing & viewing

Vault Professional

- 3D markups & comments Viewing in Large Model Viewer
- File versioning
- Connector to shared data drives
- Milestones (Revisions)
- File dependencies
- AnvCAD referencing & viewing
- Library management
- Library properties extraction
- External data sharing, e.g. a library (Vault Gateway)
- Data standards for properties

Combination

- Issue management
- 3D markups & comments
- Viewing in a web browser
- File versioning
- Shared data drive
- Connector to shared data drives
- CAD data comparison
- Milestones (lifecycle states)
- File dependencies
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- Properties extraction & reuse
 - Library management
- Library properties extraction
- External data sharing, e.g. a library
- Data standard for properties
- Model coordination
- Data backups





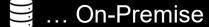
Powered by Autodesk's Cloud Solutions

The CAD Workflow

C ... Collect

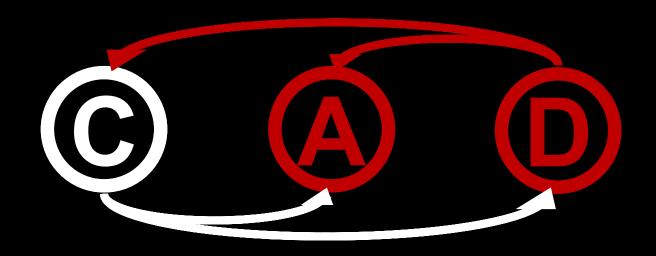
A ... Analyze

... Decide



Off-Premise

🚳 ... native Data



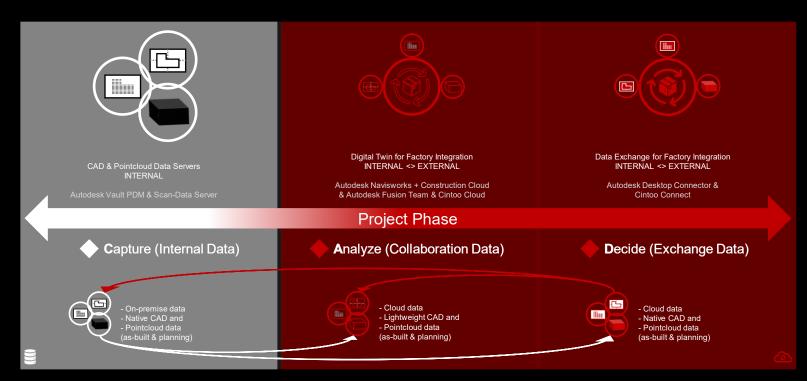
by Autodesk Consulting, Daniel von Känel & Klaus Lörincz



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Involved Systems







Powered by Autodesk's Cloud Solutions

Used Examples







Powered by Autodesk's Cloud Solutions

Used Software Packages





Powered by Autodesk's Cloud Solutions

Critical Use Cases









Autodesk Docs & Desktop Connector & Fusion Team





Workflow & Systems

Current Situation





Purpose: CAD data exchange for factory integration

Users: Planners and maintenance operators

Tools:



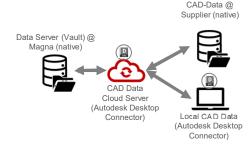


Data Transfer System

Vault Professional

Future Situation





Purpose: CAD data exchange for factory integration

- · Data in the center of communication
- Performant and unified user experience for data viewing
- · Rights & roles management
- · Easier, consistent & traceable data exchange
- Data versioning
- 2D/3D model synergy

Users: Planners and maintenance operators

Tools:





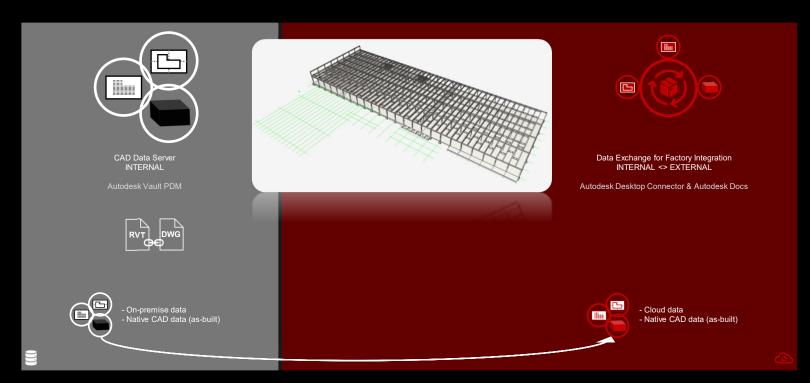
Desktop Vault Connector Professional

MAGNA

Data Exchange: On-Premise to Cloud Service

+ Easier, consistent & traceable data exchange







Data Exchange: On-Premise to Cloud Service

+ Easier, consistent & traceable data exchange



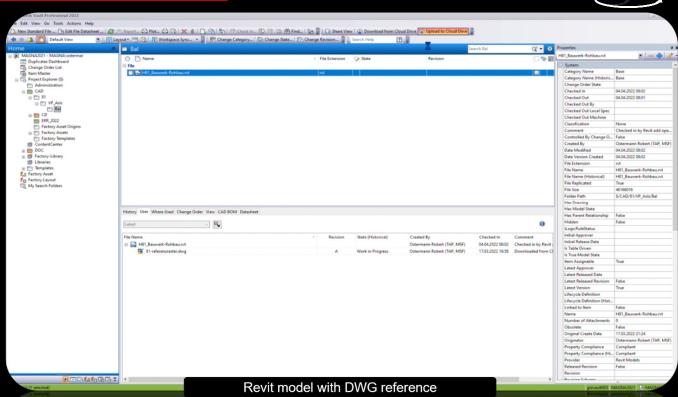


Vault Professional



Desktop Connector







Data Exchange: On-Premise to Cloud Service

+ Easier, consistent & traceable data exchange



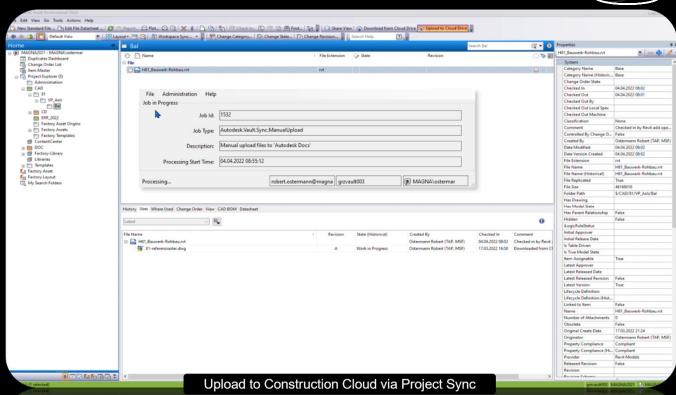


Vault Professional



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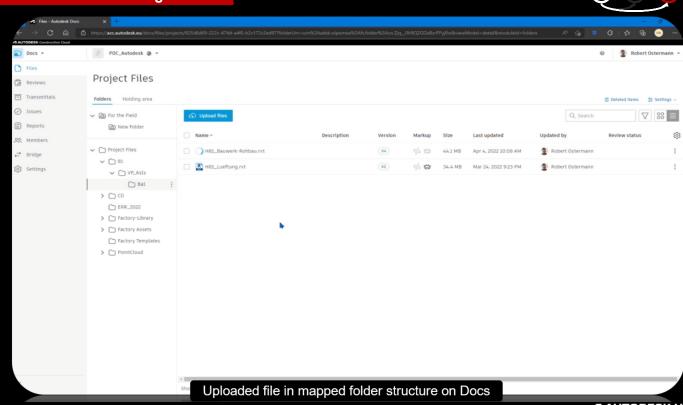


Vault Professional



Desktop Connector





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Data Exchange: On-Premise to Cloud Service

+ Easier, consistent & traceable data exchange





Vault Professional



Desktop Connector







Data Exchange: On-Premise to Cloud Service

+ Easier, consistent & traceable data exchange





Vault Professional



Desktop Connector



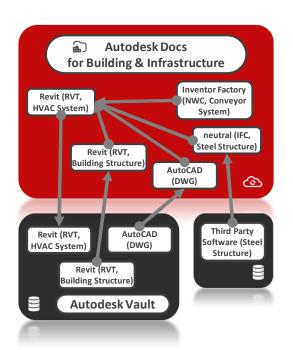




Workspace for a Building & Building Infrastructure Designer

- + Faster, consistent & traceable communication
- + Data in the center of communication











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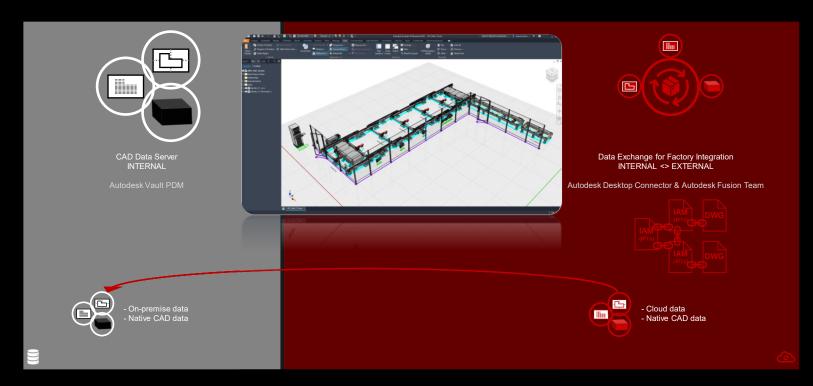


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Data Exchange: Cloud Service to On-premise DMS

+ Easier, consistent & traceable data exchange







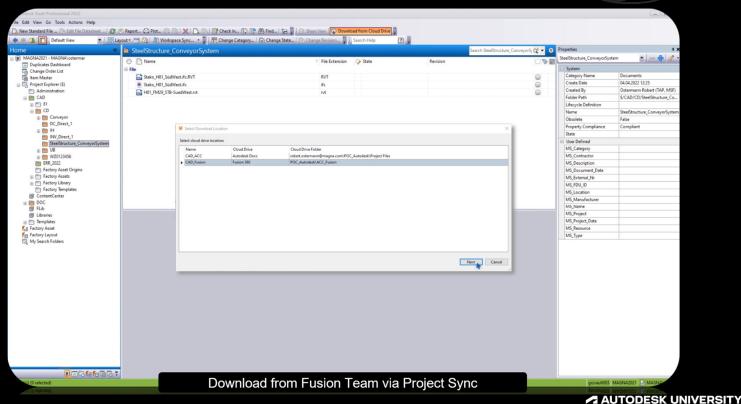
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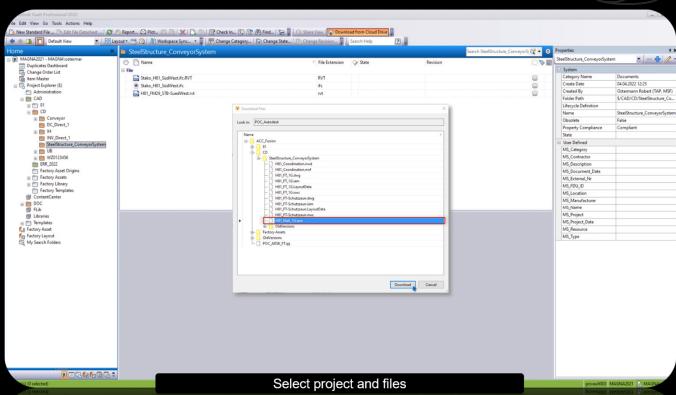
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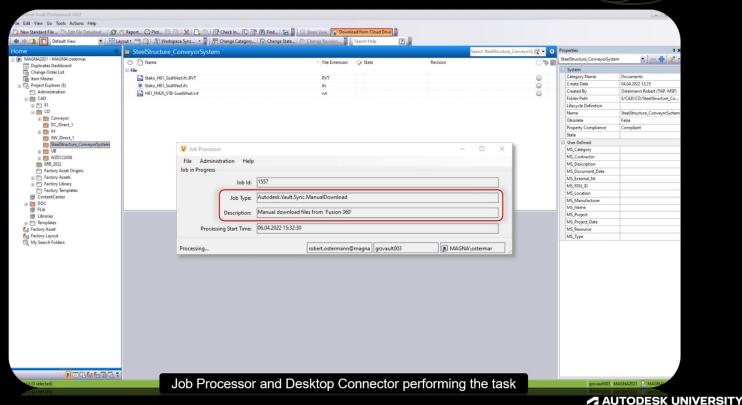
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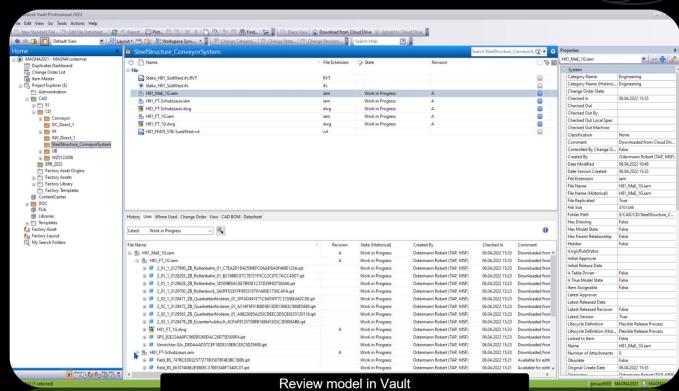
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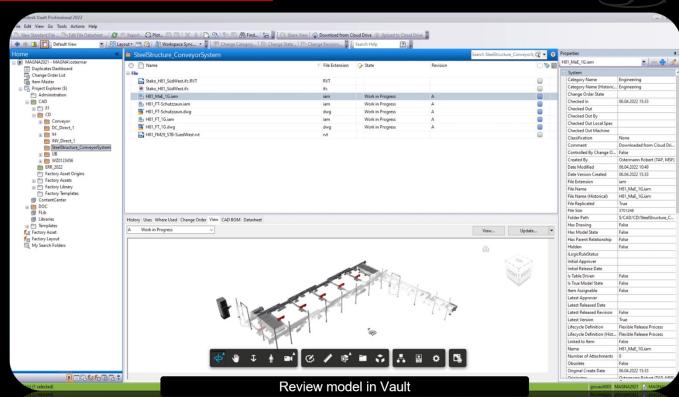
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+ Easier, consistent & traceable data exchange







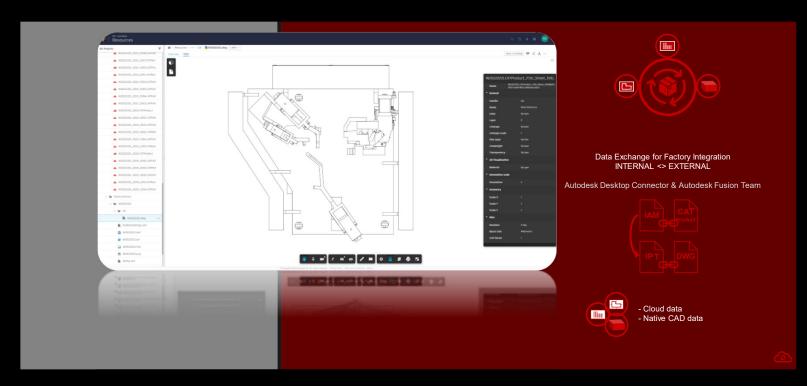


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Data Exchange: New Project Data on Cloud Service

+ Data in the center of communication





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Data Exchange: New Project Data on Cloud Service

+ Data in the center of communication





Desktop Connector

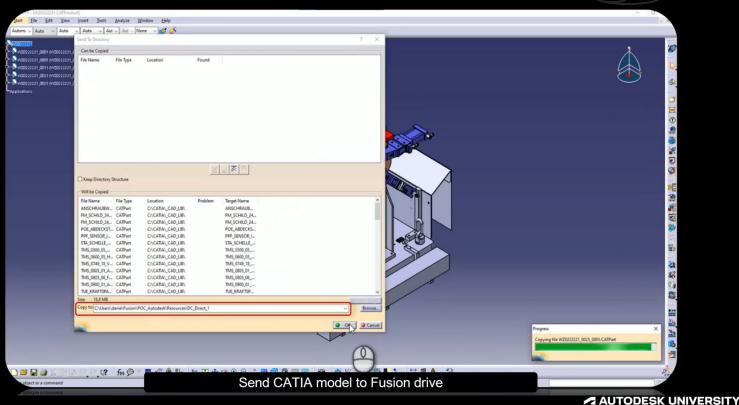


Inventor



Fusion Team







Data Exchange: New Project Data on Cloud Service

+ Data in the center of communication





Desktop Connector



Inventor



Fusion Team





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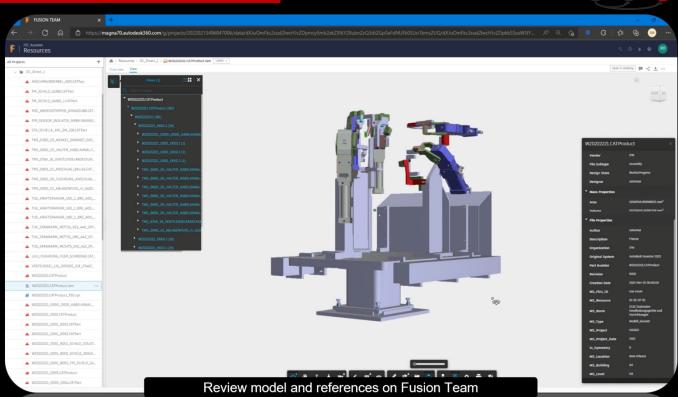


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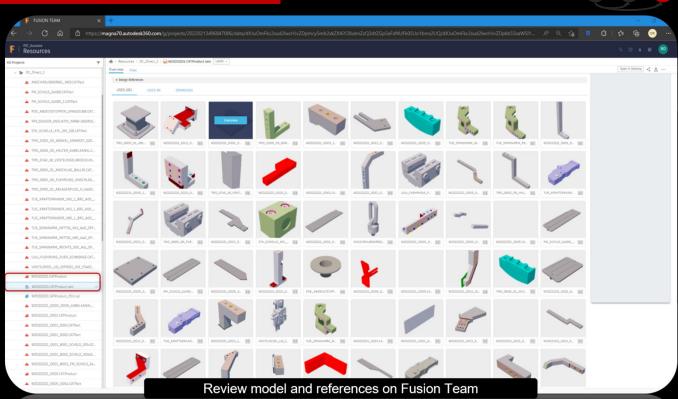


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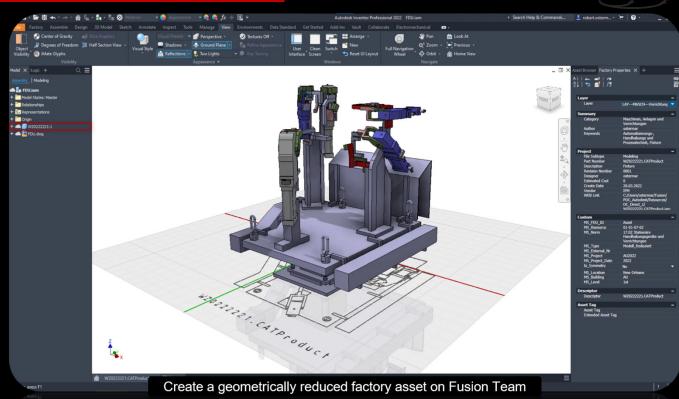


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Fusion Team







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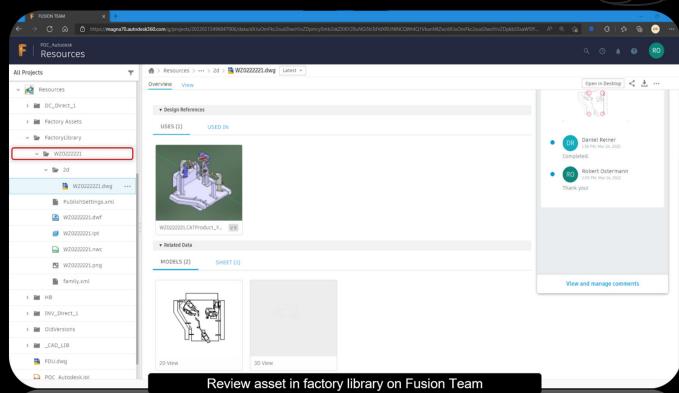


Inventor



Fusion Team



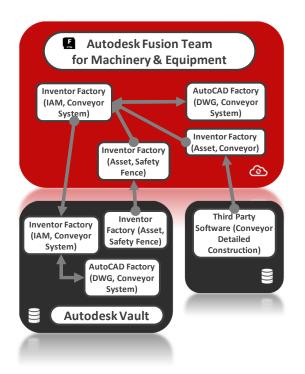




Workspace of a Machinery & Equipment Designer

- + Faster, consistent & traceable communication
- + Data in the center of communication











Conclusion

Beneficial Functions & Workflows



ACC (BIM 360)

- Issue management
- Viewing in a web browser File versioning
- Shared data drive
- CAD data comparison

It can be a relevant part.

Navisworks Coordination Add-In

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Fusion Team

- File versioning
- Shared data drive

- e.g. CATIA. Solidworks....)

Vault Professional

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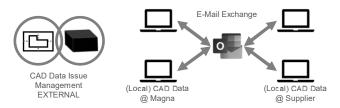


CAD Data Issue Management for Factory Integration



Workflow & Systems

Current Situation



Purpose: CAD data issue management

Users: Planners and maintenance operators

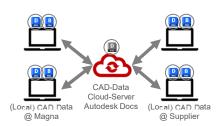
Tools:



Microsoft Office

Future Situation





Purpose: CAD data issue management

- Data in the center of communication
- Performant and unified user experience for data viewing
- Faster, consistent & traceable communication
- Rights & rolls management
- Applicable on mobile devices
- No software installation needed for collaboration workflows

Users: Planners and maintenance operators

Tools:



Desktop Connector



Docs



BIM Collaborate

CAD Data Issue Management for Factory Integration



Autodesk Construction Cloud: Collaboration

+ Faster, consistent & traceable communication



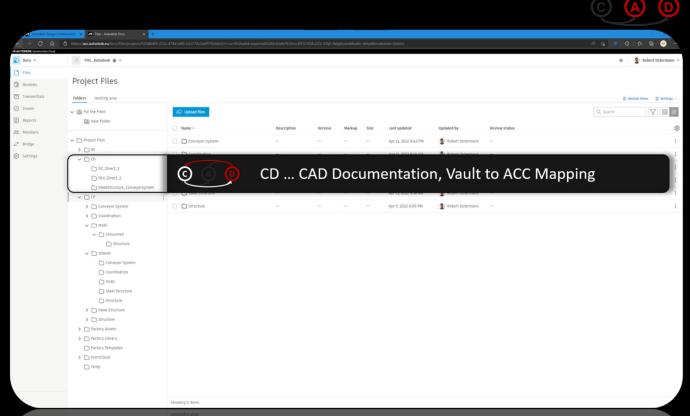


CAD Data Issue Management for Factory Integration



Autodesk Construction Cloud: Structure and Preparations



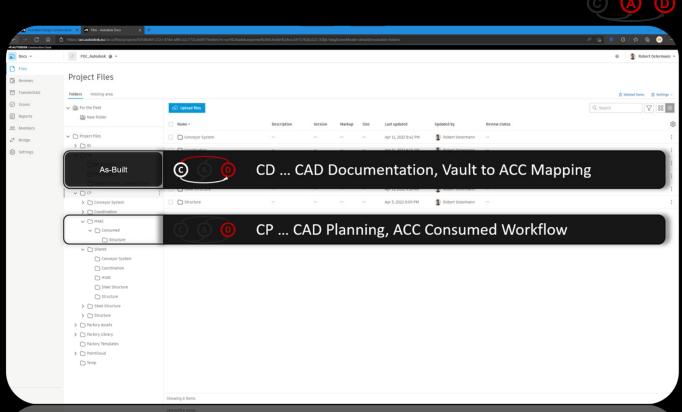




Autodesk Construction Cloud: Structure and Preparations



Docs (Construction Cloud)

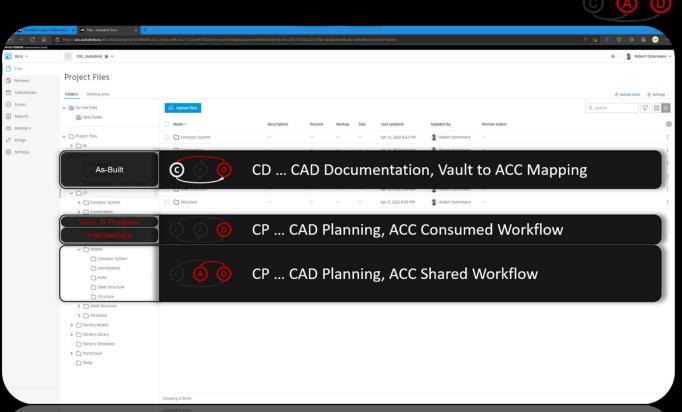




Autodesk Construction Cloud: Structure and Preparations



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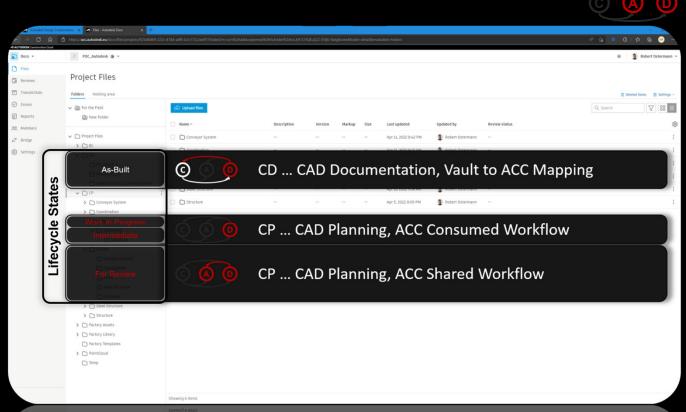




Autodesk Construction Cloud: Structure and Preparations



Docs (Construction Cloud)





Autodesk Construction Cloud: Fusion Team Integration



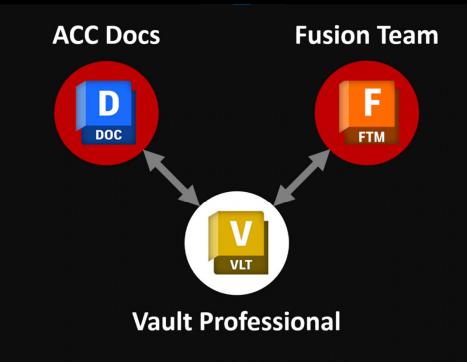


Docs (Construction Cloud)



Fusion Team







Autodesk Construction Cloud: Fusion Team Integration



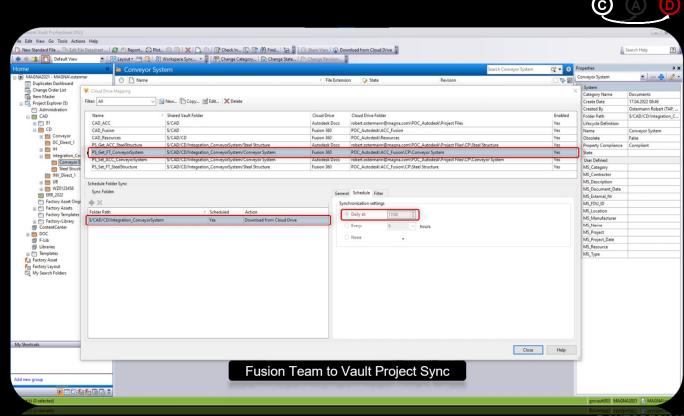
Docs (Construction Cloud)



Fusion Team



Vault Professional





Autodesk Construction Cloud: Fusion Team Integration



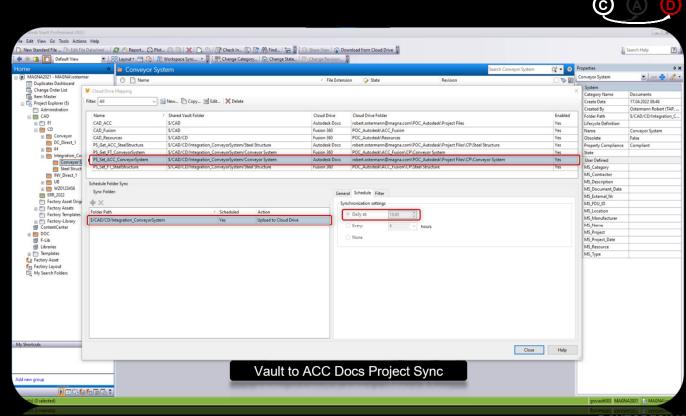
Docs (Construction Cloud)



Fusion Team



Vault Professional





Autodesk Construction Cloud: Fusion Team Integration



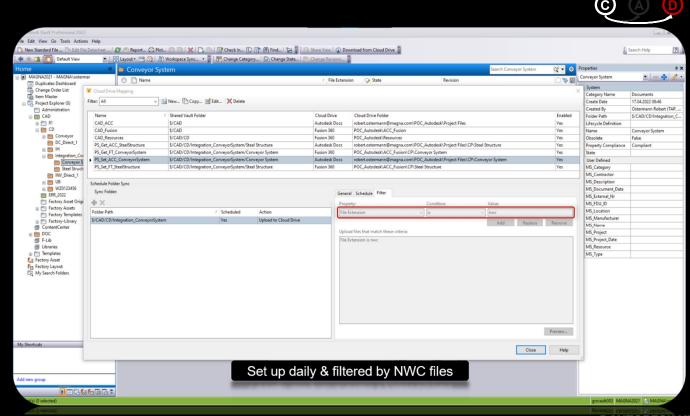
Docs (Construction Cloud)



Fusion Team



Vault Professional





Autodesk Construction Cloud: Fusion Team Integration

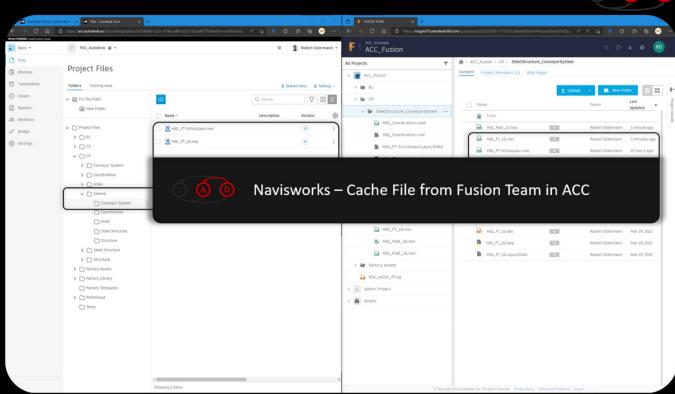




Docs (Construction Cloud)



Fusion Team



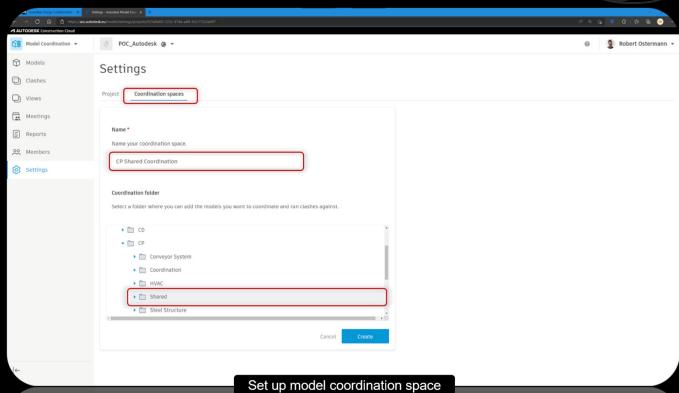


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Autodesk Construction Cloud: Coordination Space





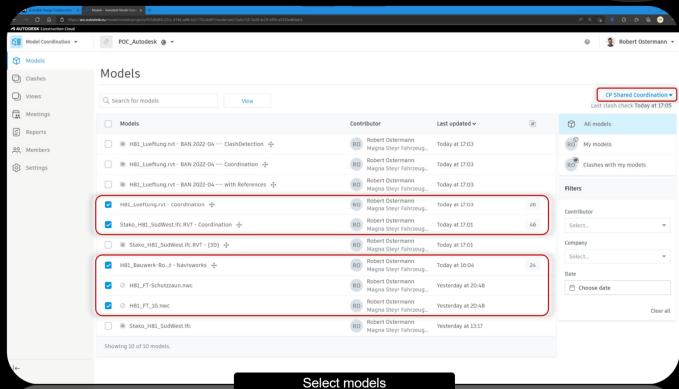




Autodesk Construction Cloud: Coordination Space





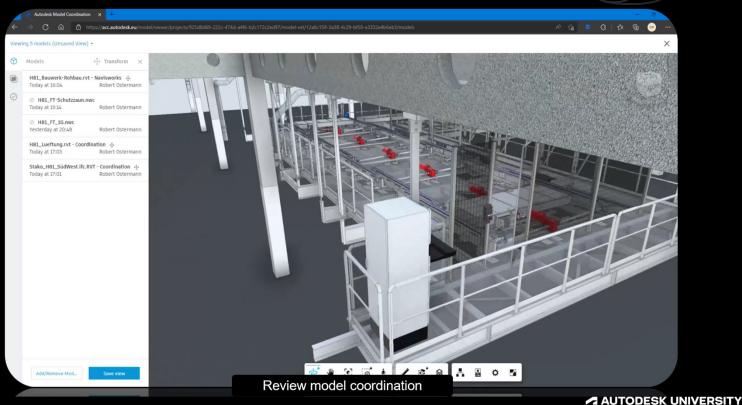


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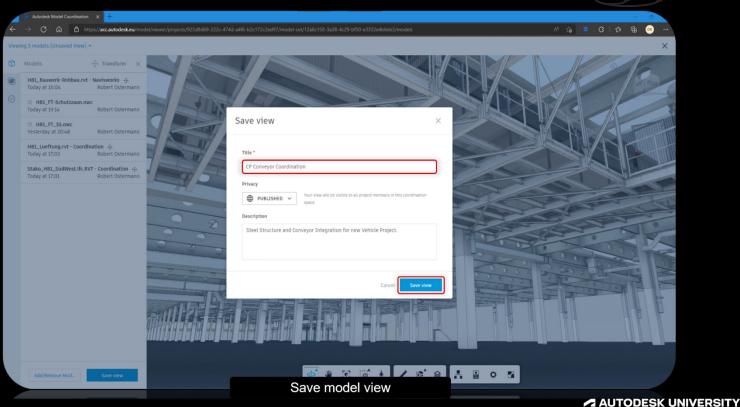




Autodesk Construction Cloud: Coordination Space







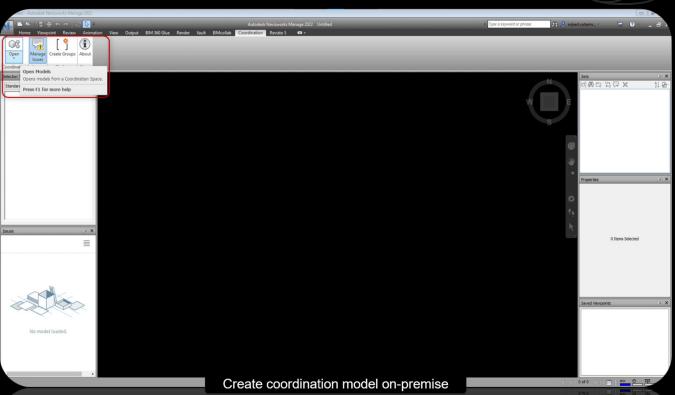


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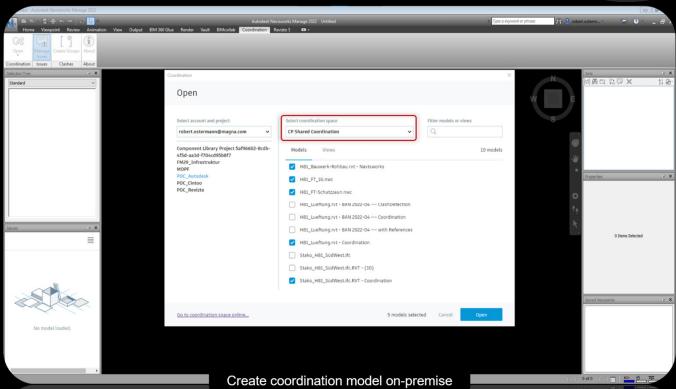




Autodesk Construction Cloud: Coordination Space





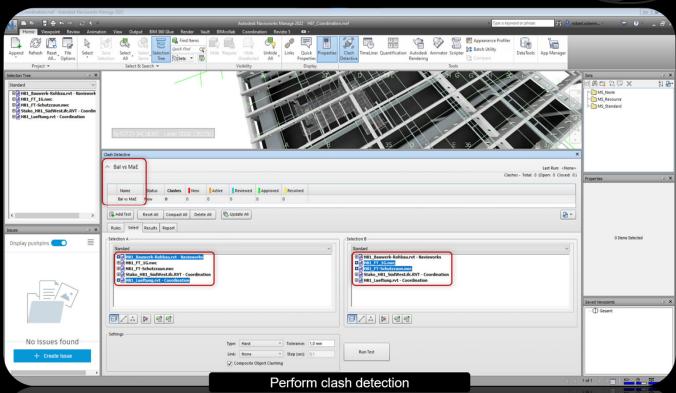




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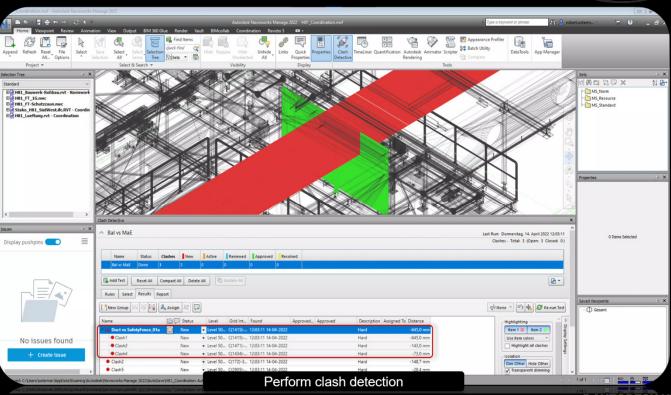




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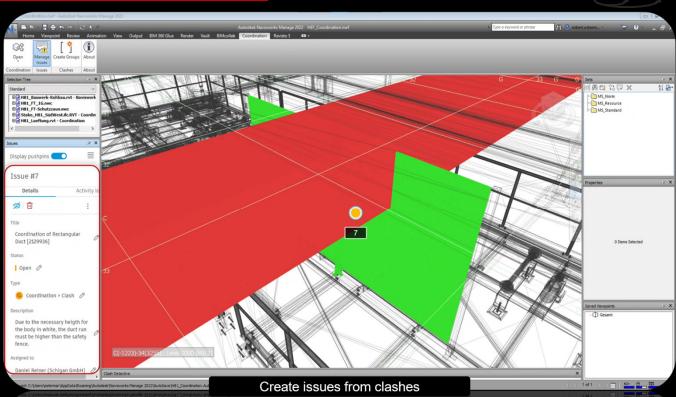




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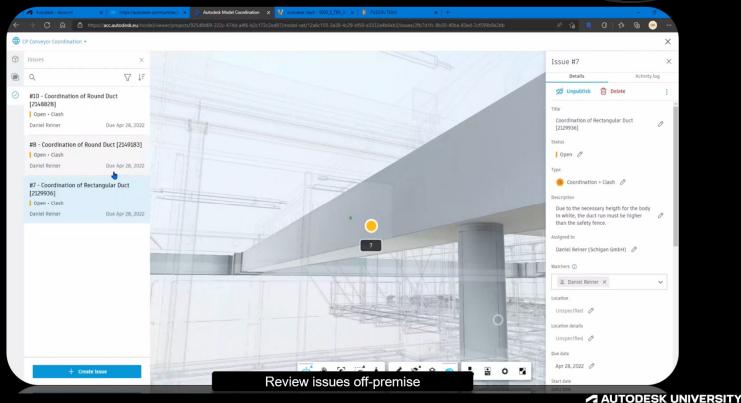




Autodesk Construction Cloud: Coordination Space





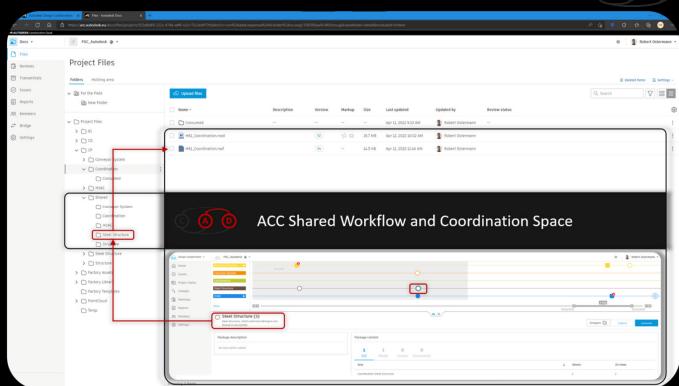




Autodesk Construction Cloud: Coordination Space









Autodesk Construction Cloud: Review Process

+ Faster, consistent & traceable communication



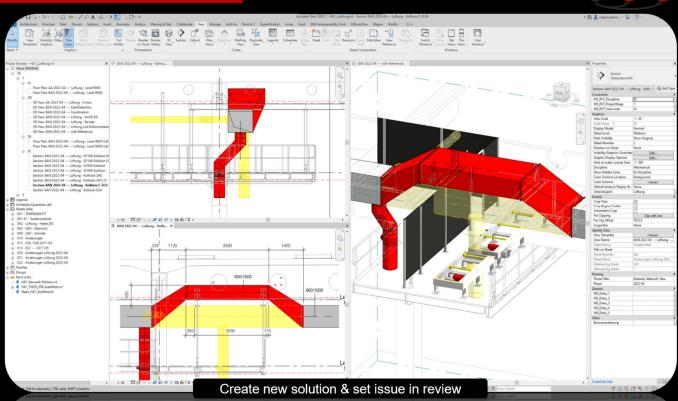


Revit (RVT, IFC, NWC)



Model Coordination (Construction Cloud)







Autodesk Construction Cloud: Review Process

+ Faster, consistent & traceable communication



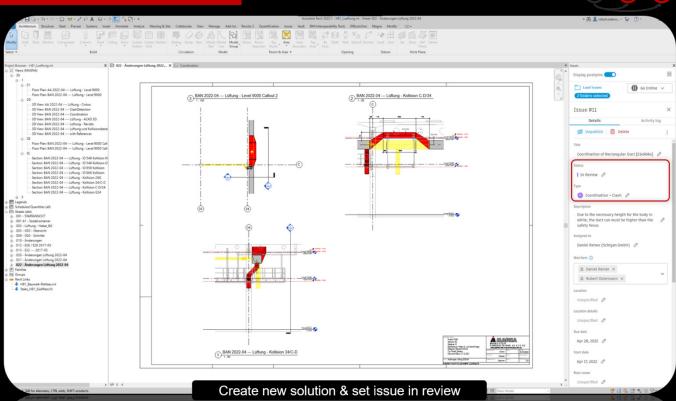


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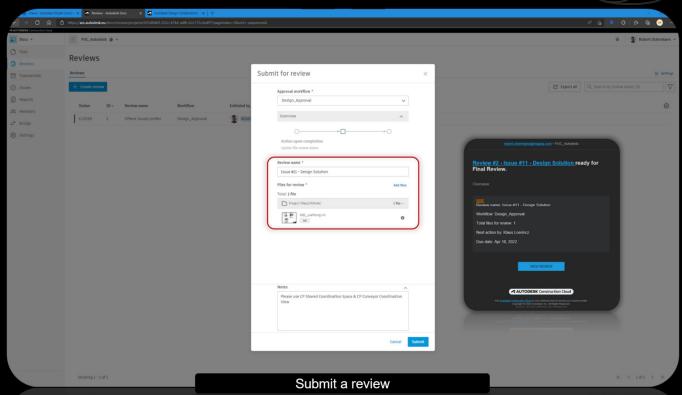


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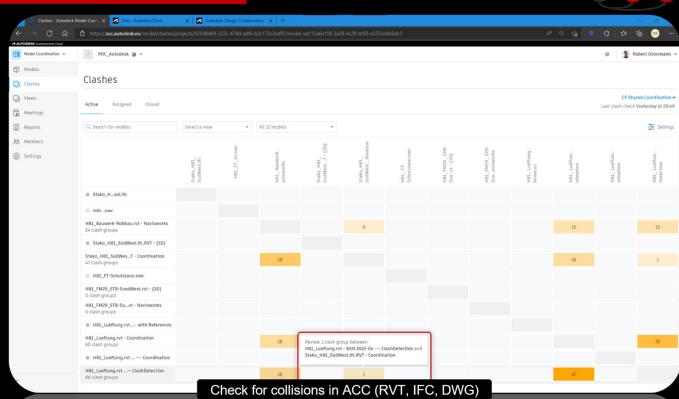


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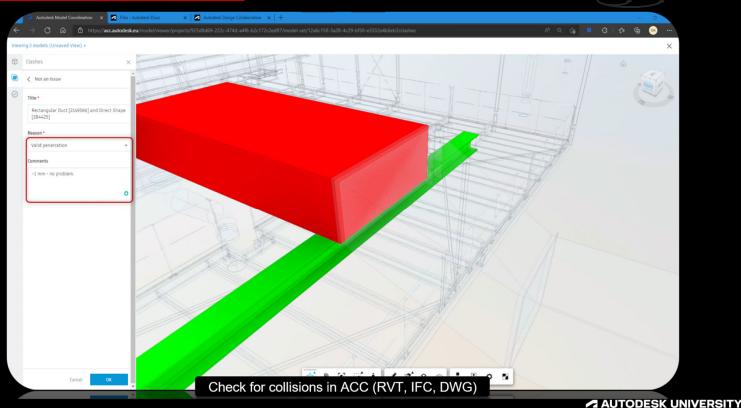


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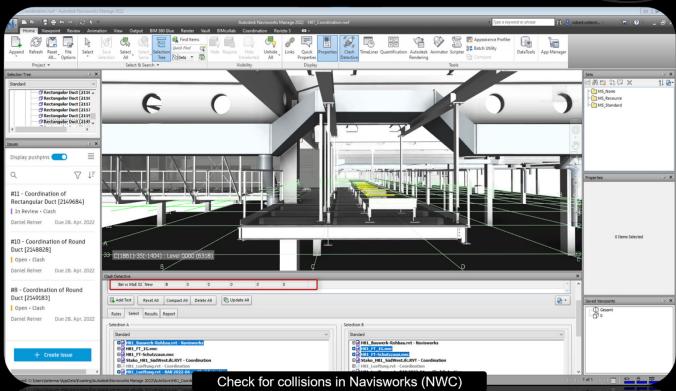


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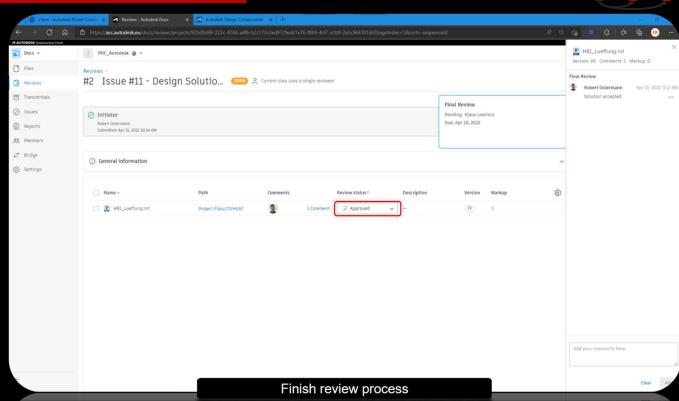


Revit (RVT, IFC, NWC)



Model Coordination (Construction Cloud)





Coordination vs. Interoperability Model within Revit

Inventor to Revit

- Exports sometimes taking far too long to finish
- Keeping the model up to date is too laborious and too difficult to trace
- Can't be used in a cloud shared Revit model!
- Needs to be converted into a Revit cloud model each time an update is available
- Critical due to performance in Revit
- Needs rework concerning views & levels in Revit
- Properties of elements aren't transferred to Revit
- Will enable clash detection for machinery & equipment on ACC
- Will be available in sections & views as well as for measuring & dimensioning within Revit

Better for workflows where elements of building & infrastructure and machinery & equipment need to match exactly

Inventor to NWC

- Referencing Inventor files is not a strength of Navisworks, but is acceptable due to time to finish
- Keeping all used Inventor models up to date is a klick on the Update button in the Navisworks project
- Visual appearance of elements can be easily changed in Navisworks
- Good performance of referenced NWC files in Revit
- NWC files aren't visible in Revit sheets
- NWC files can't be used for measurements and dimensions in Revit
- Elements of NWC files can't be selected or turned off in Revit
- Properties of NWC elements aren't available within Revit

Better for workflows concerning clashes and clearance between building & infrastructure and machinery & equipment design





Autodesk Fusion Team: Collaboration



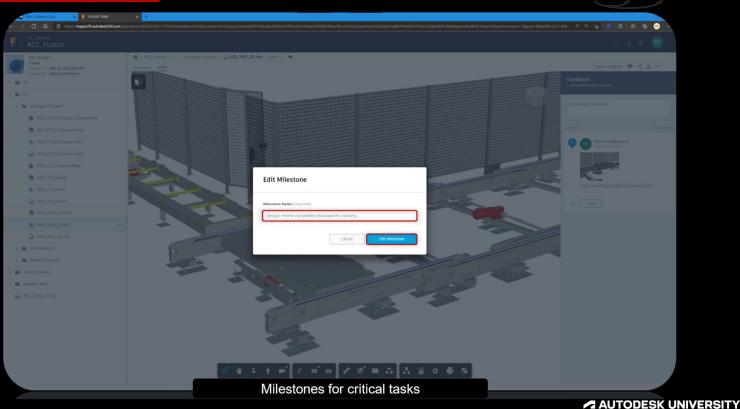




Autodesk Fusion Team: Collaboration





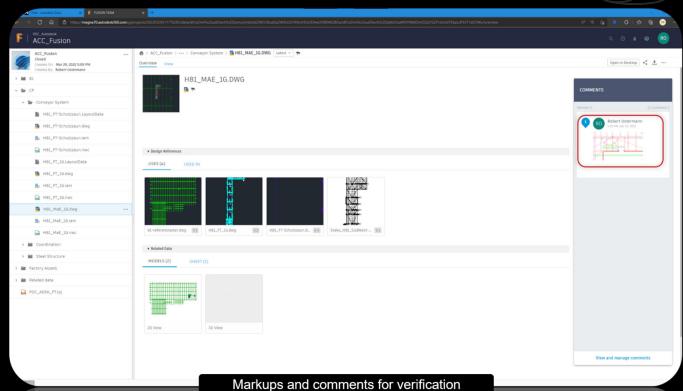




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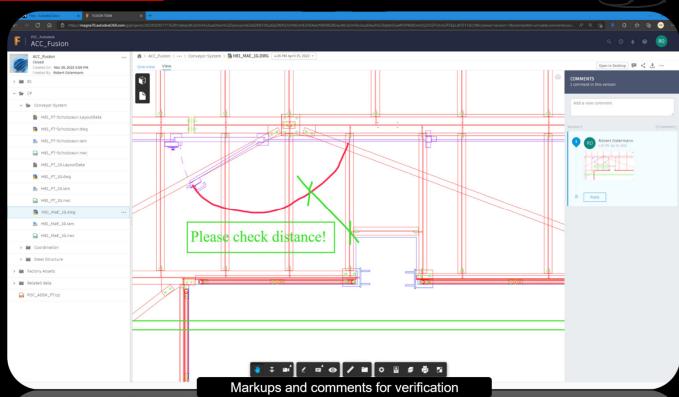


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Autodesk Fusion Team: Collaboration





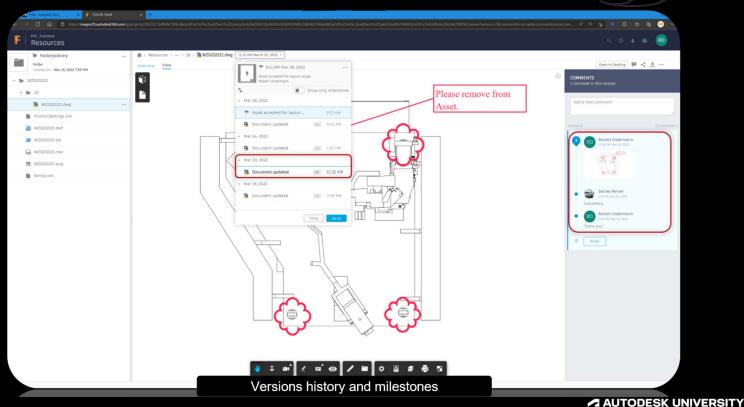




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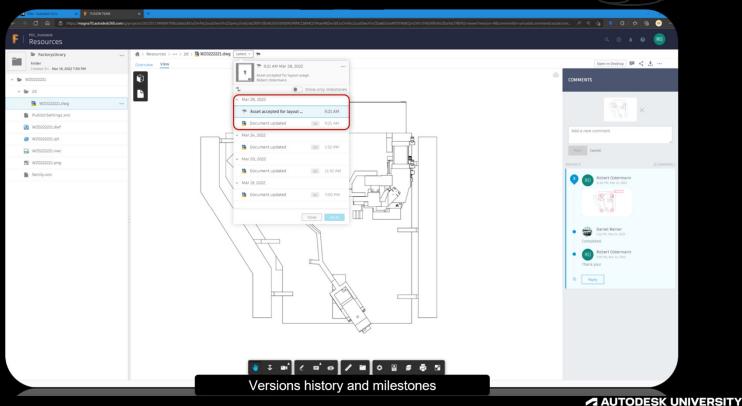




Autodesk Fusion Team: Collaboration





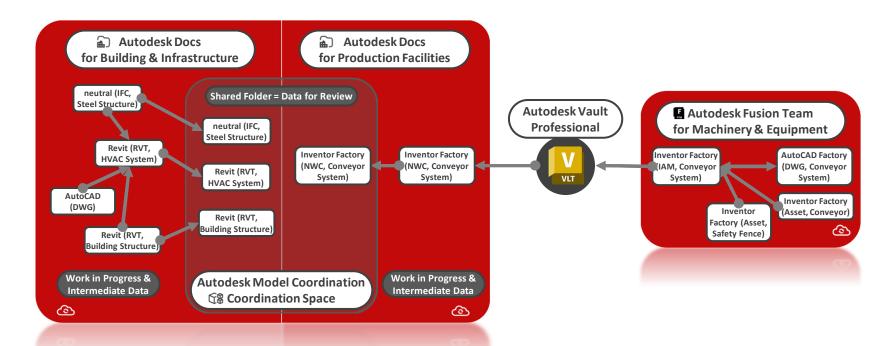




Best Practice – Data Flow Summary

- + Faster, consistent & traceable communication
- + Data in the center of communication





The Future of Integrated Factory Model Collaboration



Conclusion

Beneficial Functions & Workflows

- Issue management
- Viewing in a web browser
- File versioning
- Shared data drive
- CAD data comparison

It is a relevant part!

ACC (BIM 360)

- Navisworks Coordination Add-In
 - Issue management
- Clash detection
- Change data visualization (color, transparency, material)
- Properties extraction & reuse

- 3D markups & commentsViewing in a web browser

Fusion Team

- File versioning
- Shared data drive
- CAD data comparison
- Milestones (lifecycle states)
- File dependencies
- AnyCAD referencing & viewing (for major 3rd party CAD data, e.g. CATIA, Solidworks....)

- Vault Professional
- 3D markups & comments Viewing in Large Model Viewer
- File versioning
- · Connector to shared data drives
- Milestones (Revisions)
- File dependencies
- AnyCAD referencing & viewing
- Library management
- Library properties extraction
- External data sharing, e.g. a library (Vault Gateway)
- Data standards for properties

- Issue management
 3D markups & comments
- Viewing in a web browser
- File versioning
- Shared data drive
- Connector to shared data drives

Combination

- CAD data comparison
- Milestones (lifecycle states)
- File dependencies
- AnyCAD referencing & viewing
- Clash detection
- Change data visualization
- Properties extraction & reuse
- Library management
- Library properties extraction
- External data sharing, e.g. a library
- Data standard for properties
- Model coordination
- Data backups





Collaboration: Integrations with 3rd party platforms

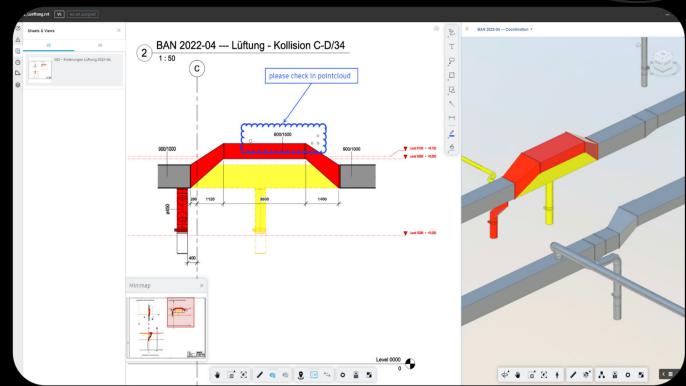
+ Faster, consistent & traceable communication





Docs (Construction Cloud)







Collaboration: Integrations with 3rd party platforms

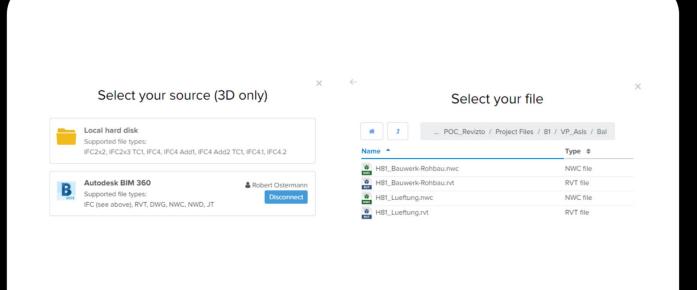
+ Faster, consistent & traceable communication





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Import model (live link with update function)



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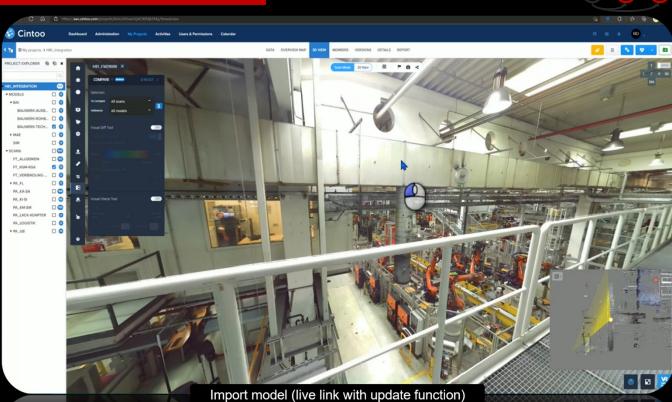
Collaboration: Integrations with 3rd party platforms

+ Faster, consistent & traceable communication



Docs (Construction Cloud)





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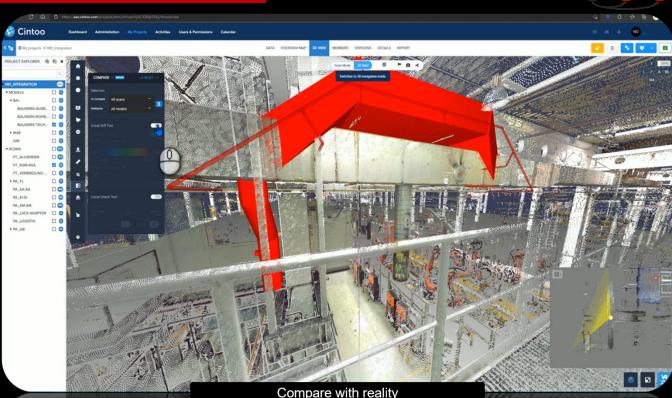
Collaboration: Integrations with 3rd party platforms

+ Faster, consistent & traceable communication



Docs (Construction Cloud)







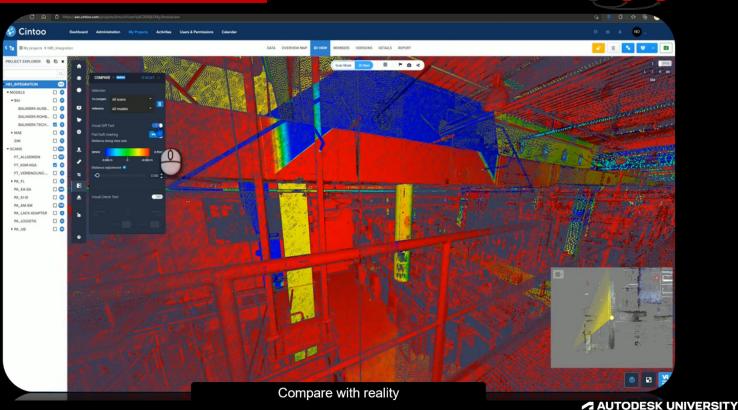
Collaboration: Integrations with 3rd party platforms

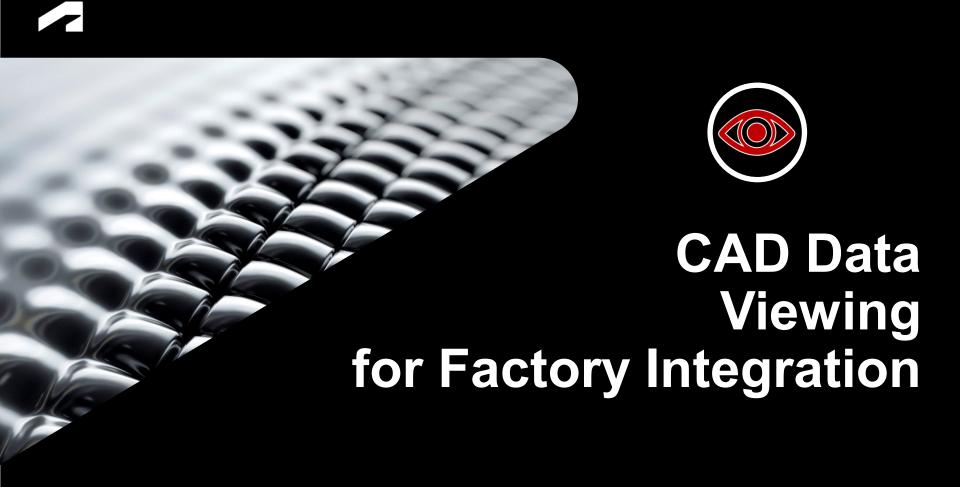
+ Faster, consistent & traceable communication



Docs (Construction Cloud)





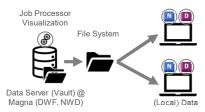




Workflow & Systems

Current Situation





Purpose: CAD data viewing

Users: Planners and maintenance operators

Tools:





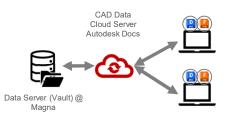




Freedom

Future Situation





Purpose: CAD data viewing

- Data in the center of communication
- Performant and unified user experience for data viewing
- Rights & roles management
- 2D/3D model synergy
- Applicable on mobile devices
- No software installation needed for viewing tasks

Users: Planners and maintenance operators

Tools:



Vault Professional



Connector







Viewing Experience: Comparison between ACC & Fusion Team

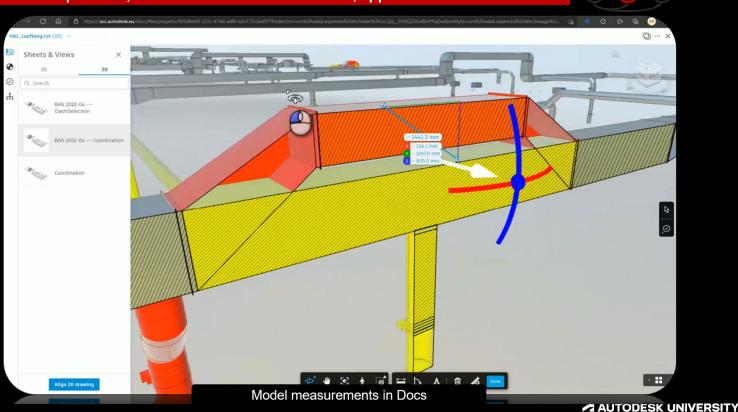
+ Performant and unified user experience, no software installation needed, applicable on mobile devices





Docs (Construction Cloud)







Viewing Experience: Comparison between ACC & Fusion Team

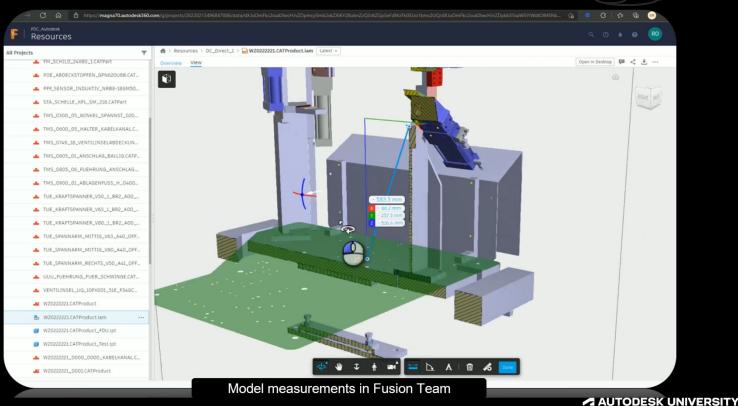
+ Performant and unified user experience, no software installation needed, applicable on mobile devices





Docs (Construction Cloud)







Viewing Experience: Comparison between ACC & Fusion Team

+ Performant and unified user experience, no software installation needed, applicable on mobile devices





Docs (Construction Cloud)







Viewing Experience: Comparison between ACC & Fusion Team

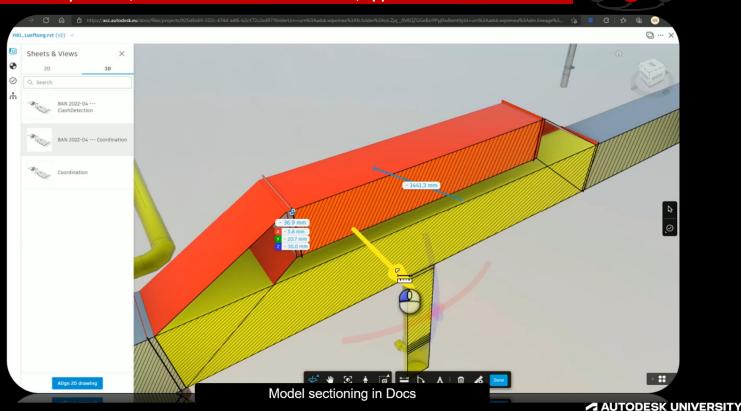
+ Performant and unified user experience, no software installation needed, applicable on mobile devices





Docs (Construction Cloud)







Viewing Experience: Comparison between ACC & Fusion Team

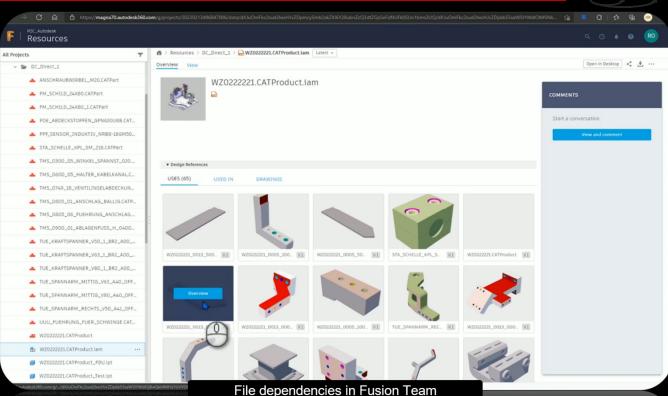
+ Performant and unified user experience, no software installation needed, applicable on mobile devices





Docs (Construction Cloud)







Viewing Experience: Comparison between ACC & Fusion Team

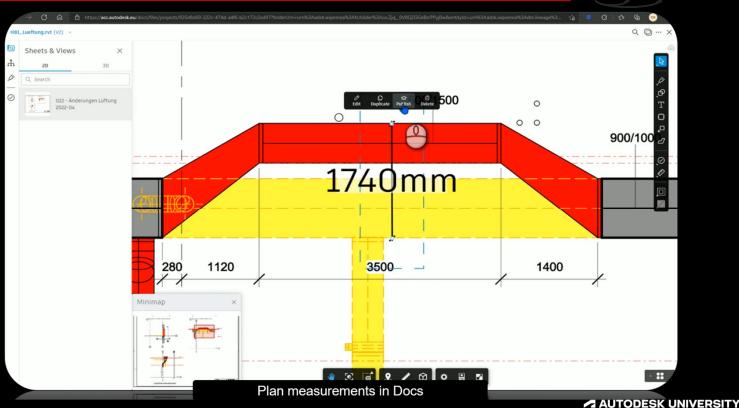
+ Performant and unified user experience, no software installation needed, applicable on mobile devices





Docs (Construction Cloud)







Viewing Experience: Comparison between ACC & Fusion Team

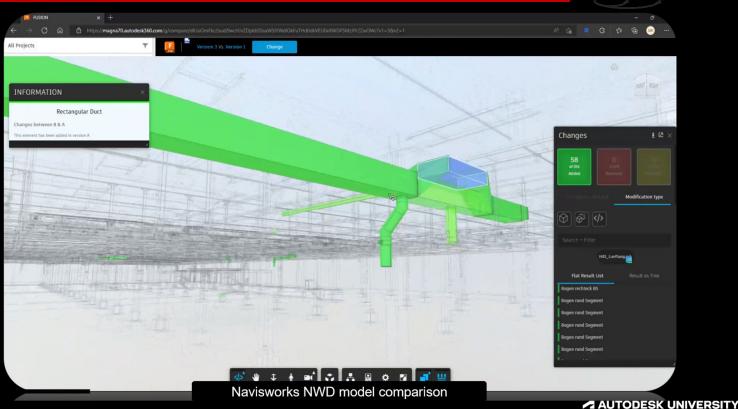
+ Performant and unified user experience, no software installation needed, applicable on mobile devices





Docs (Construction Cloud)







Viewing Experience: Comparison between ACC & Fusion Team

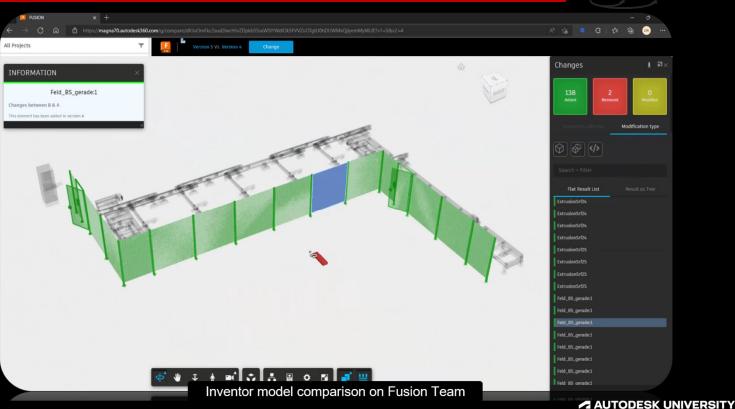
+ Performant and unified user experience, no software installation needed, applicable on mobile devices





Docs (Construction Cloud)







Viewing Experience: Comparison between ACC & Fusion Team

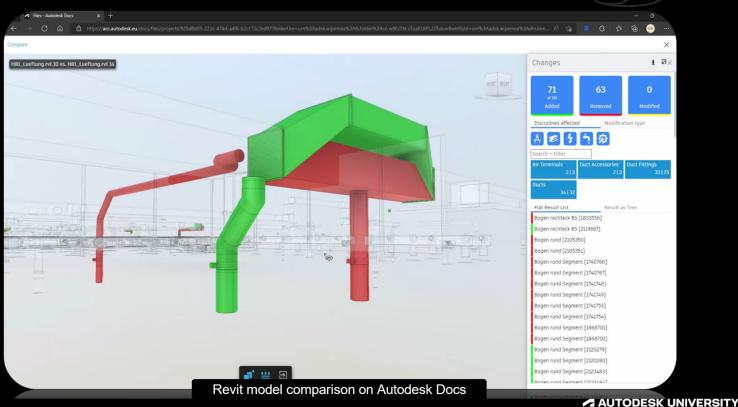
+ Performant and unified user experience, no software installation needed, applicable on mobile devices





Docs (Construction Cloud)





Powered by Autodesk's Cloud Solutions - Conclusion AMAGNA



- Data in the center of communication
- Faster, consistent & traceable communication
- Performant and unified user experience for data viewing
- Including rights & roles management
- Applicable in a web browser
- No software installation needed for collaboration & viewing tasks

Forward. For all.

