



TR20550 - L.A. Metro Westside Extension: Tips 'n Tricks in Managing a BIM Rail Project

Aracely Argumaniz (Thompson)

BIM Manager

Maria Minassian

BIM Coordinator

PARSONS



Class summary

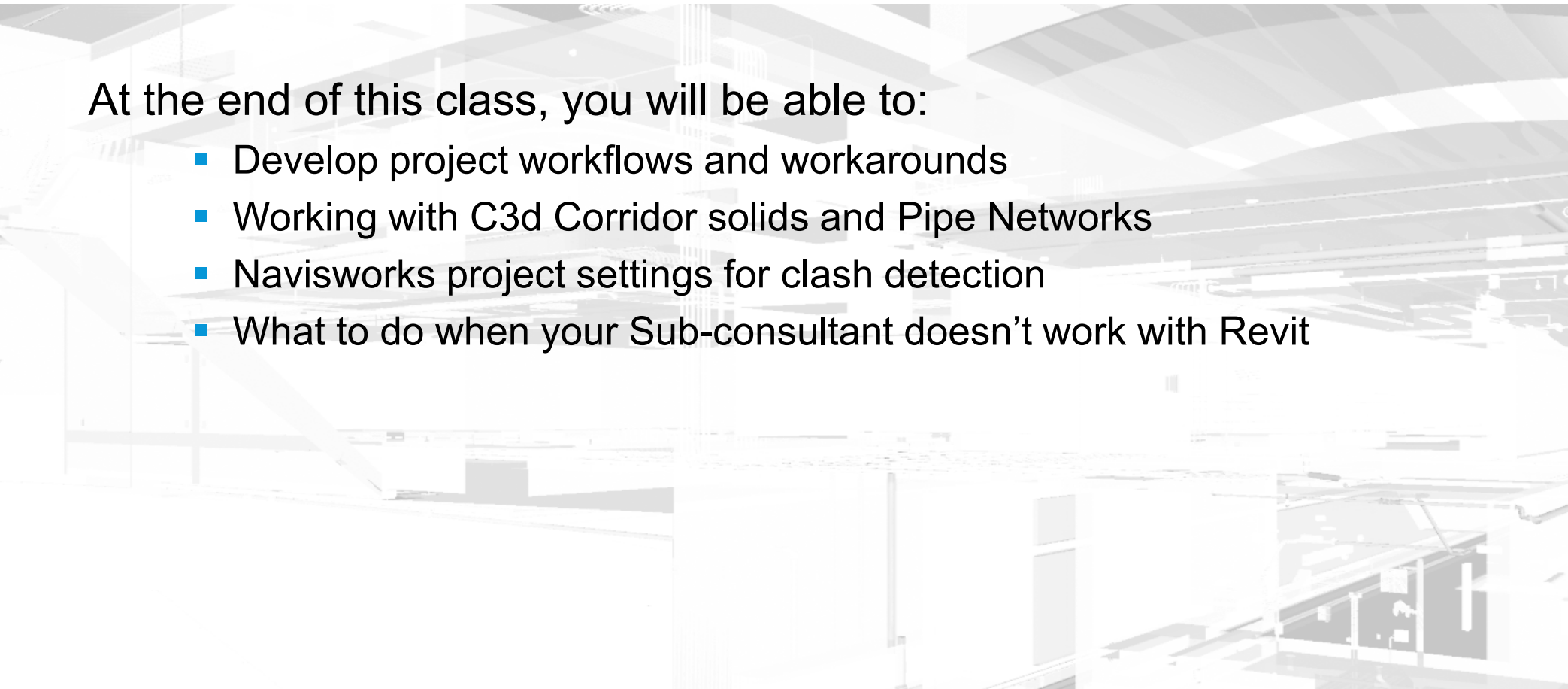
- This session will cover the workflows and obstacles encountered while working on the L.A. Westside Project as well as covering some of the workarounds.



Key learning objectives

At the end of this class, you will be able to:

- Develop project workflows and workarounds
- Working with C3d Corridor solids and Pipe Networks
- Navisworks project settings for clash detection
- What to do when your Sub-consultant doesn't work with Revit





Los Angeles Westside Extension

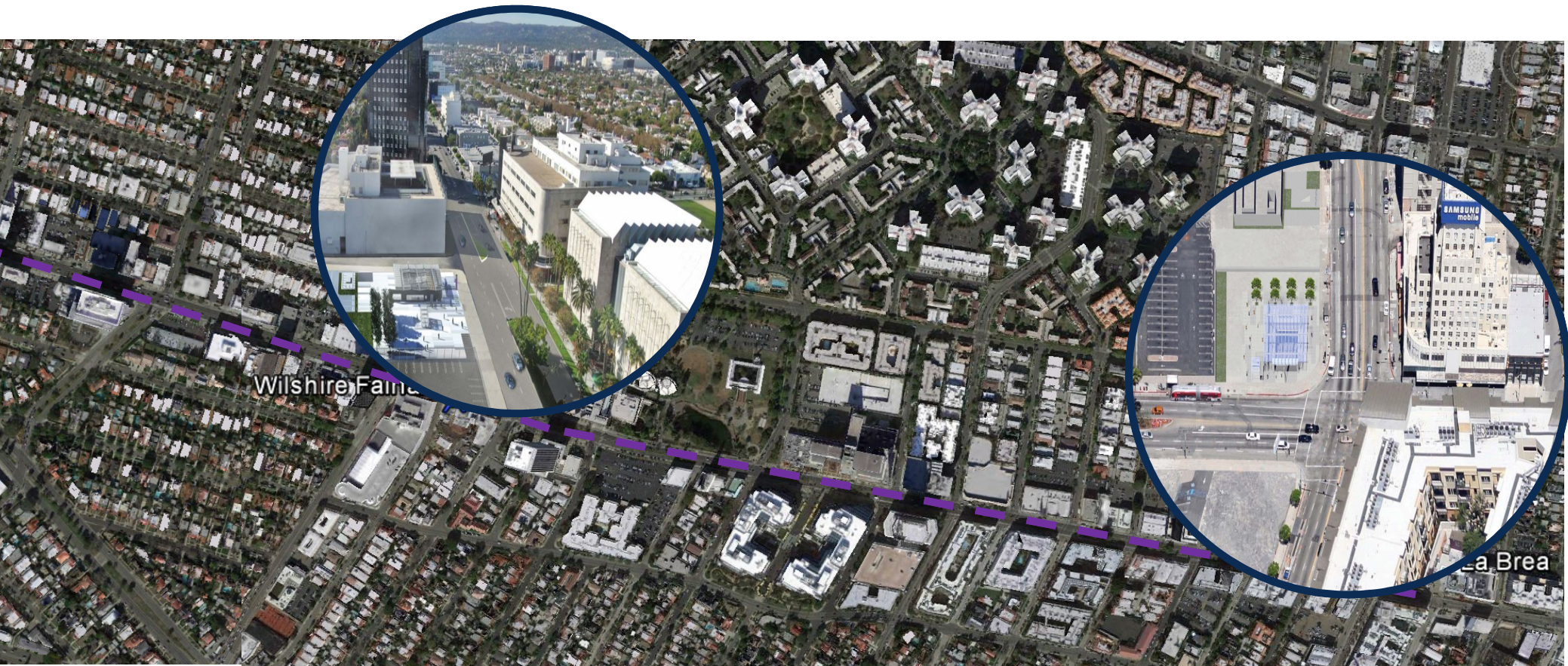


Project Overview

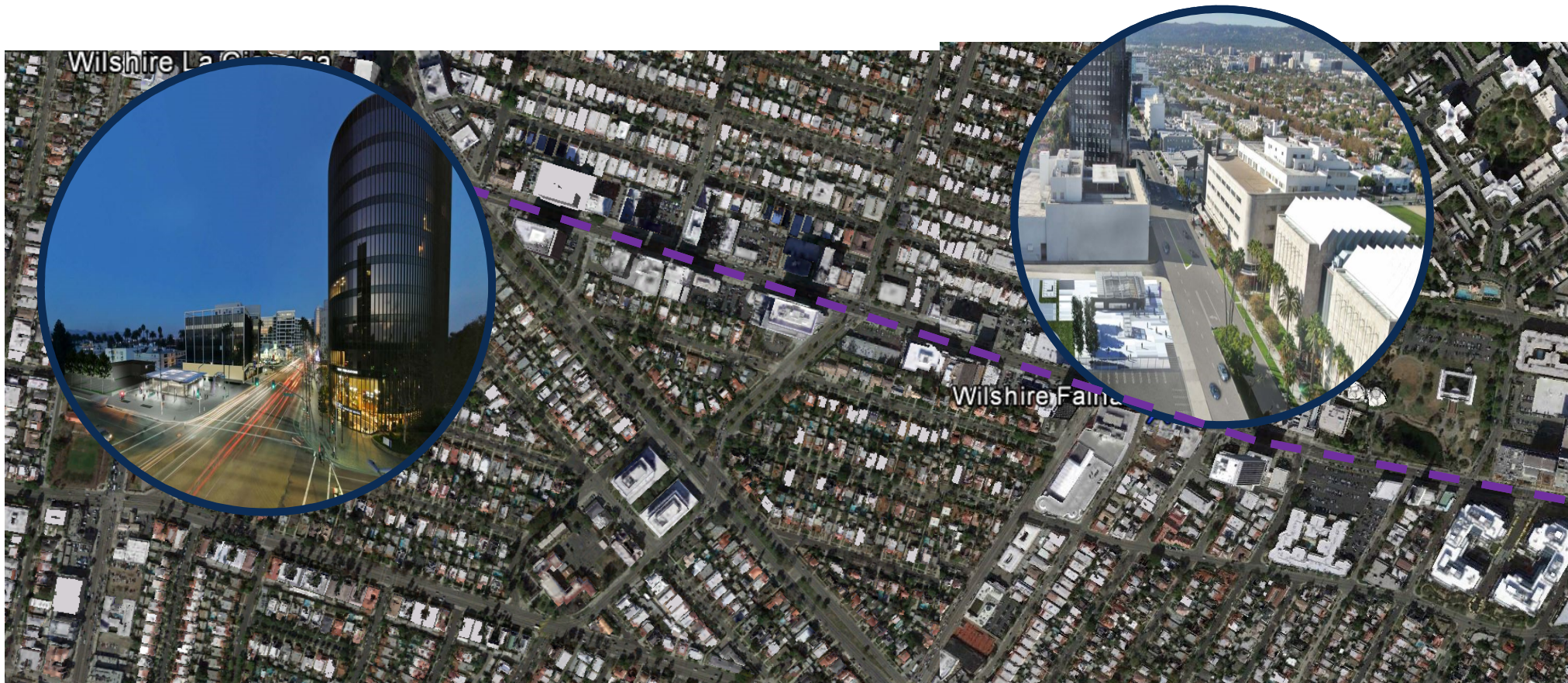
- \$1.7 Billion Design Bid Build Project (Phase One)
- 4.5 Mile extension to existing subway system (Purple Line)
- Interface chamber and 3 below grade stations
- Goal of 100% completely interactive/dynamic design environment
- First Metro Project to use BIM from Preliminary Engineering to design.



Overview



Overview



Interoperability Development



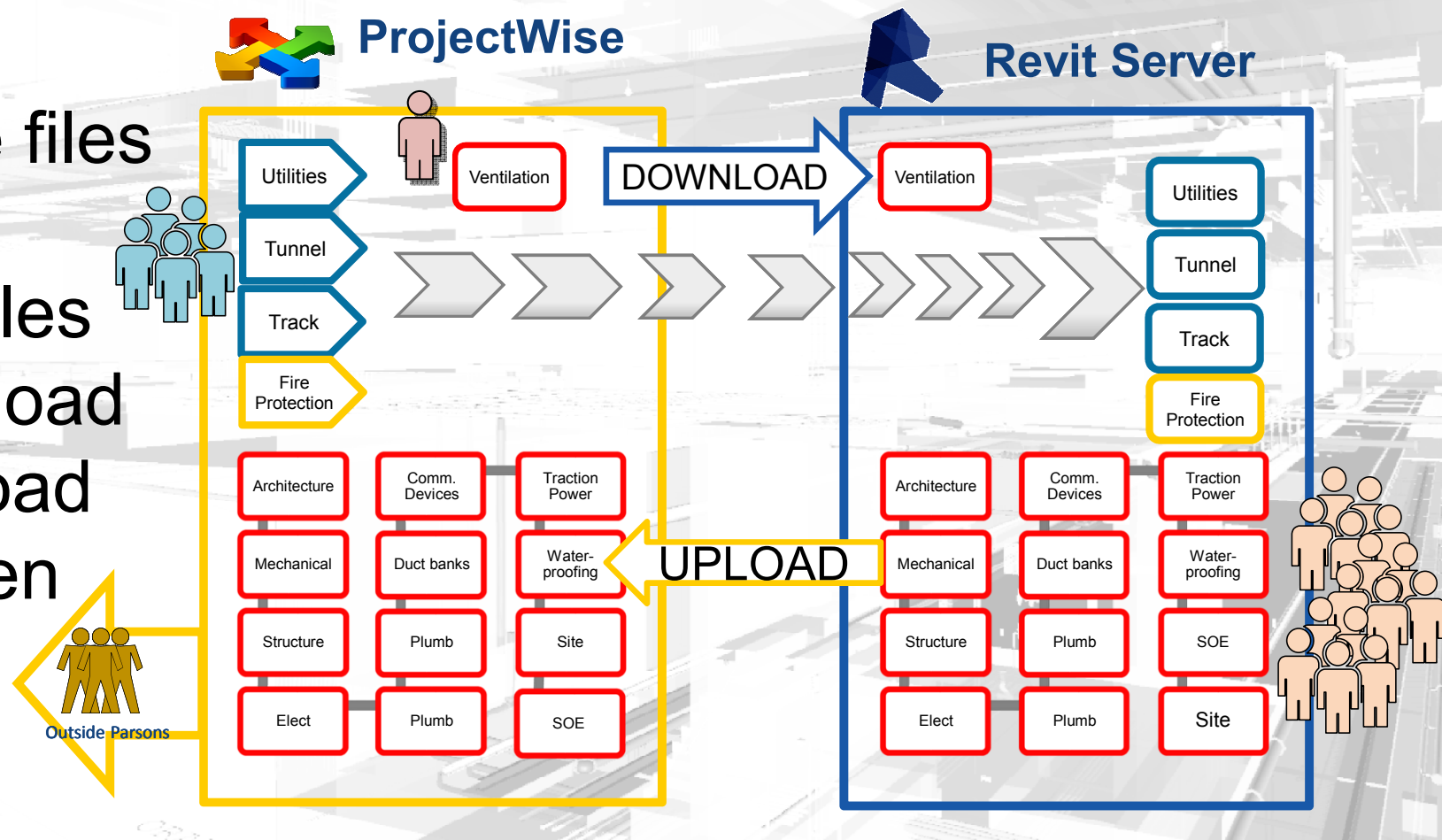
Integrated Design Platforms

- Involve BIM Leads at kick off meetings
- Establish software interchange
- Document the workflow



Collaboration

- How are files shared
- Define files to download and upload
- How often



CAD Interoperability

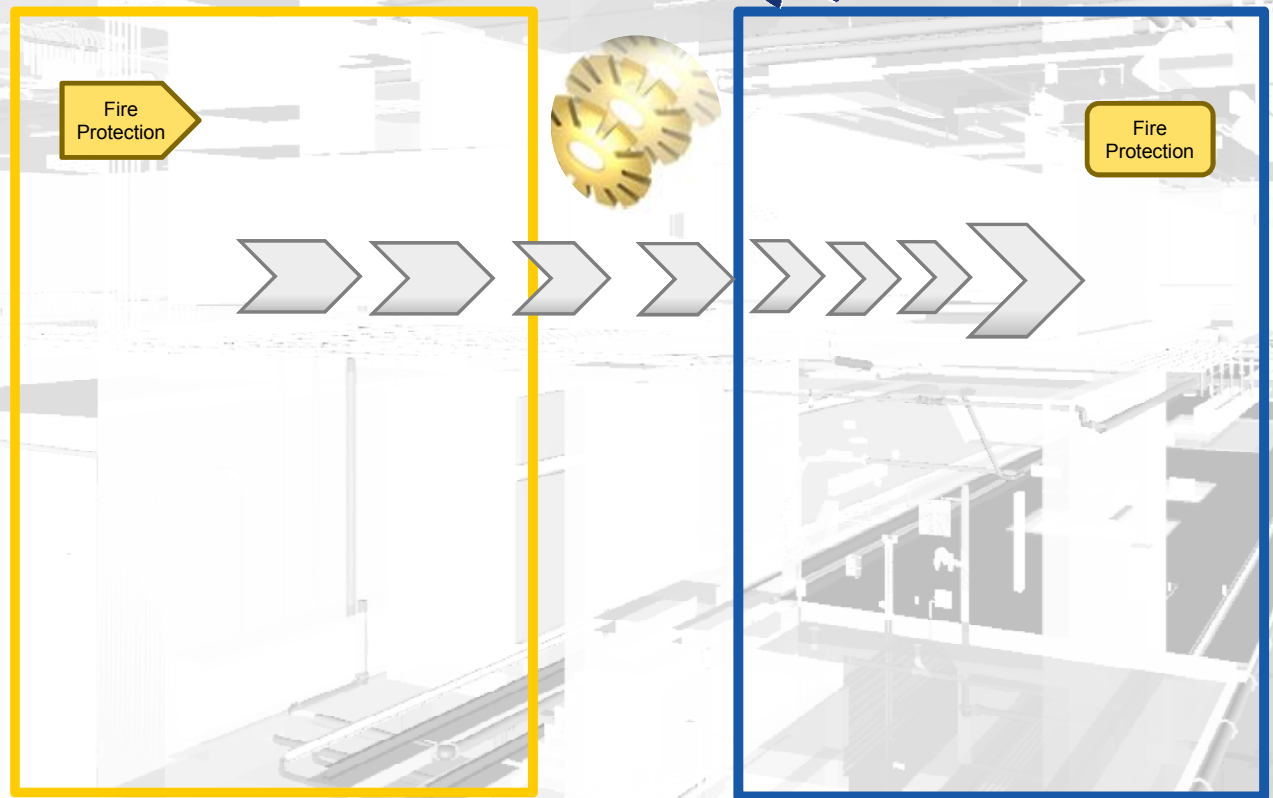
- AutoSprink
 - CAD export or MRV



ProjectWise



Revit Server

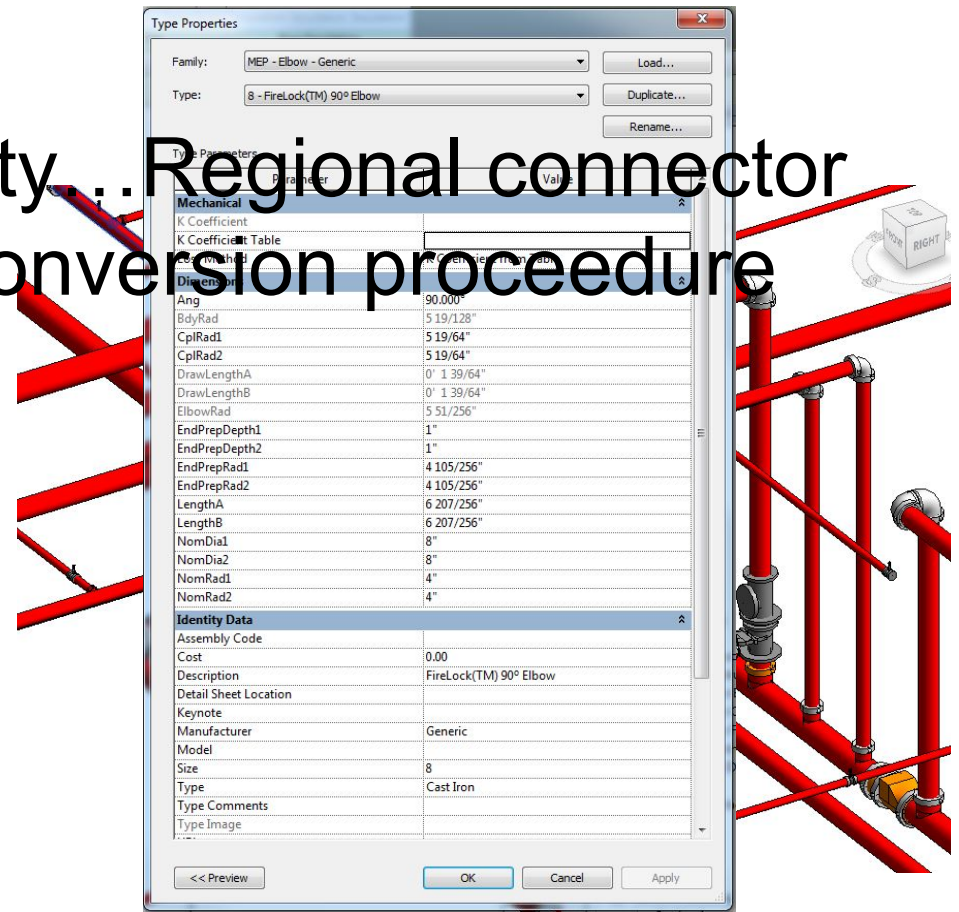
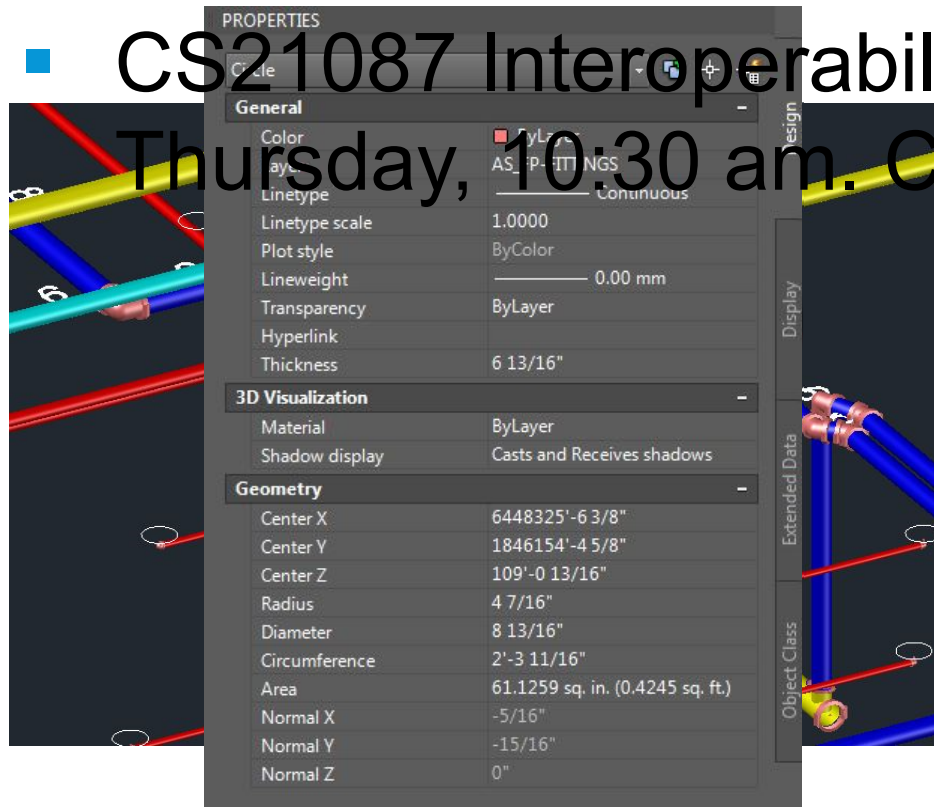


AUTODESK UNIVERSITY 2016



AutoSPRINK Integration

- CS21087 Interoperability... Regional connector Thursday, 10:30 am. Conversion procedure



Interoperability

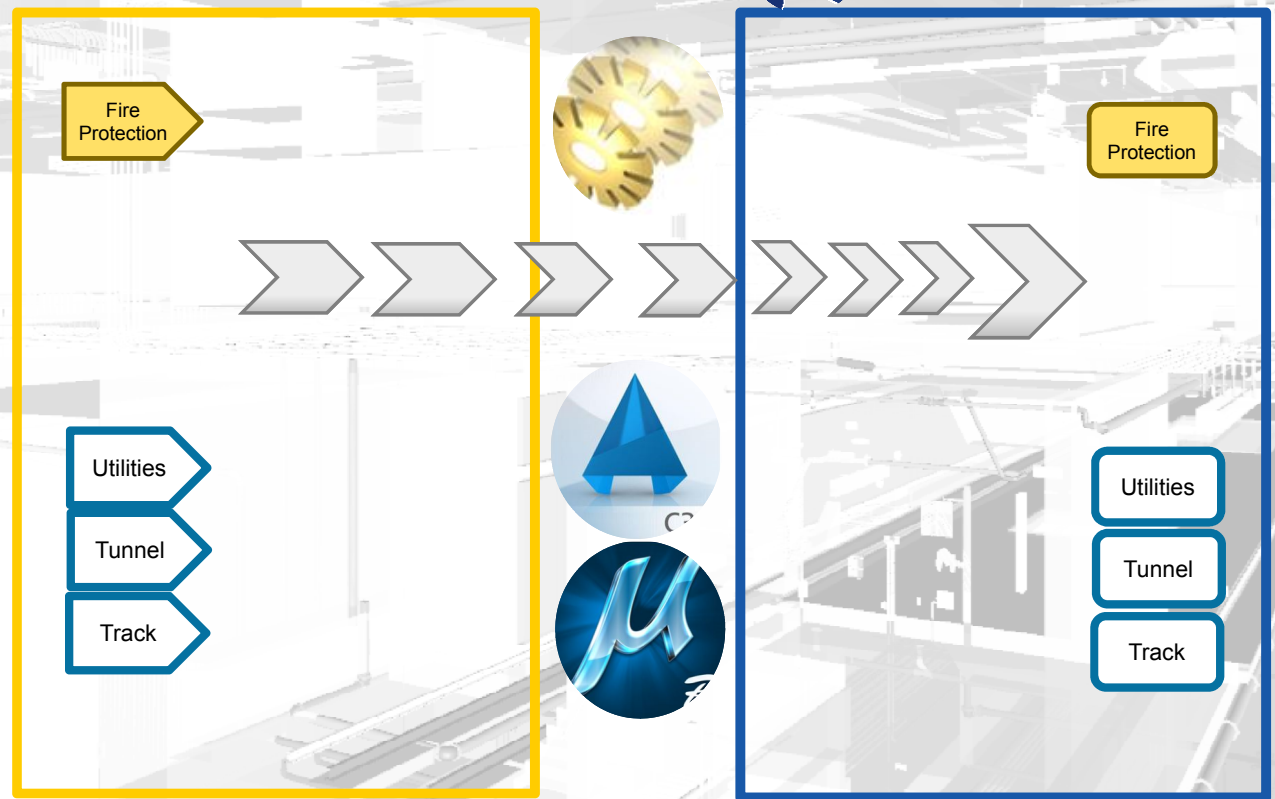
- AutoSprink
- Civil 3d and Microstation



ProjectWise



Revit Server

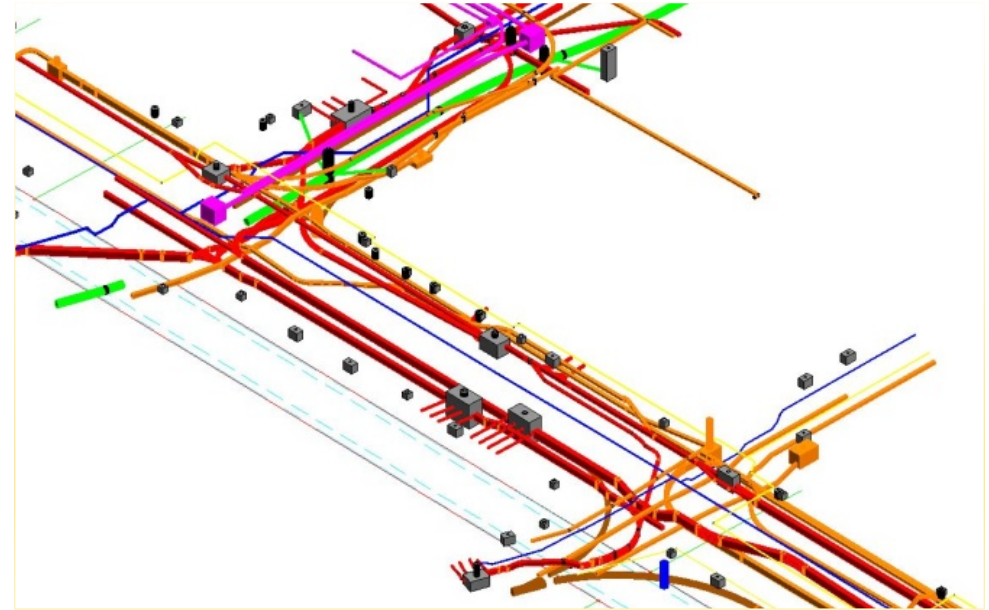
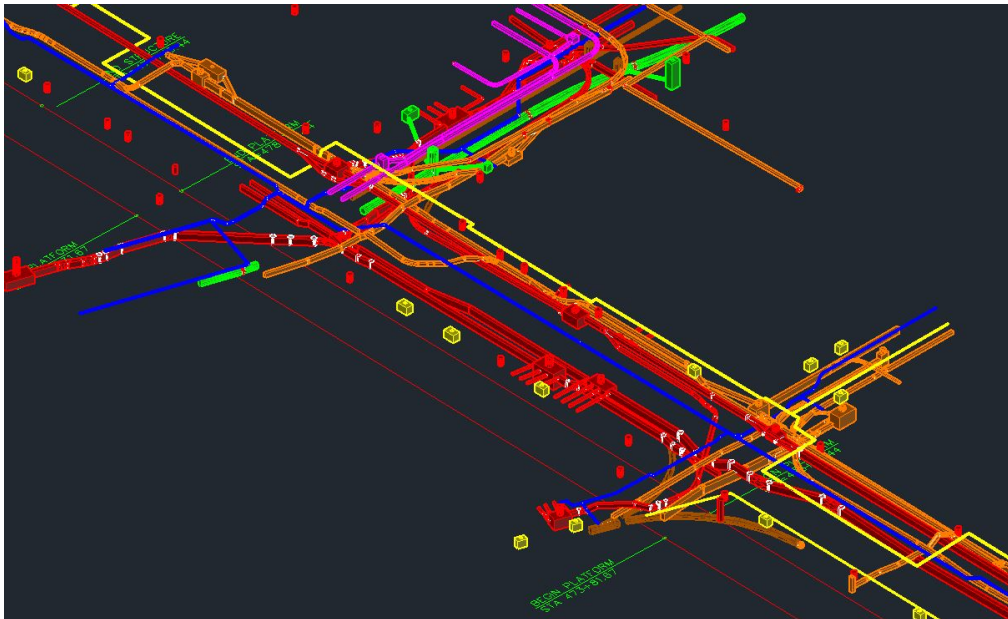


AUTODESK UNIVERSITY 2016



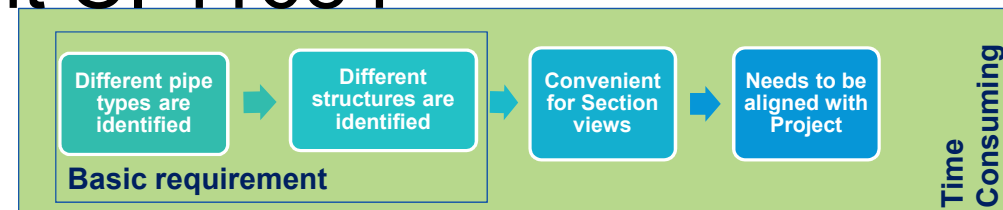
AUTODESK.

C3d File Integration

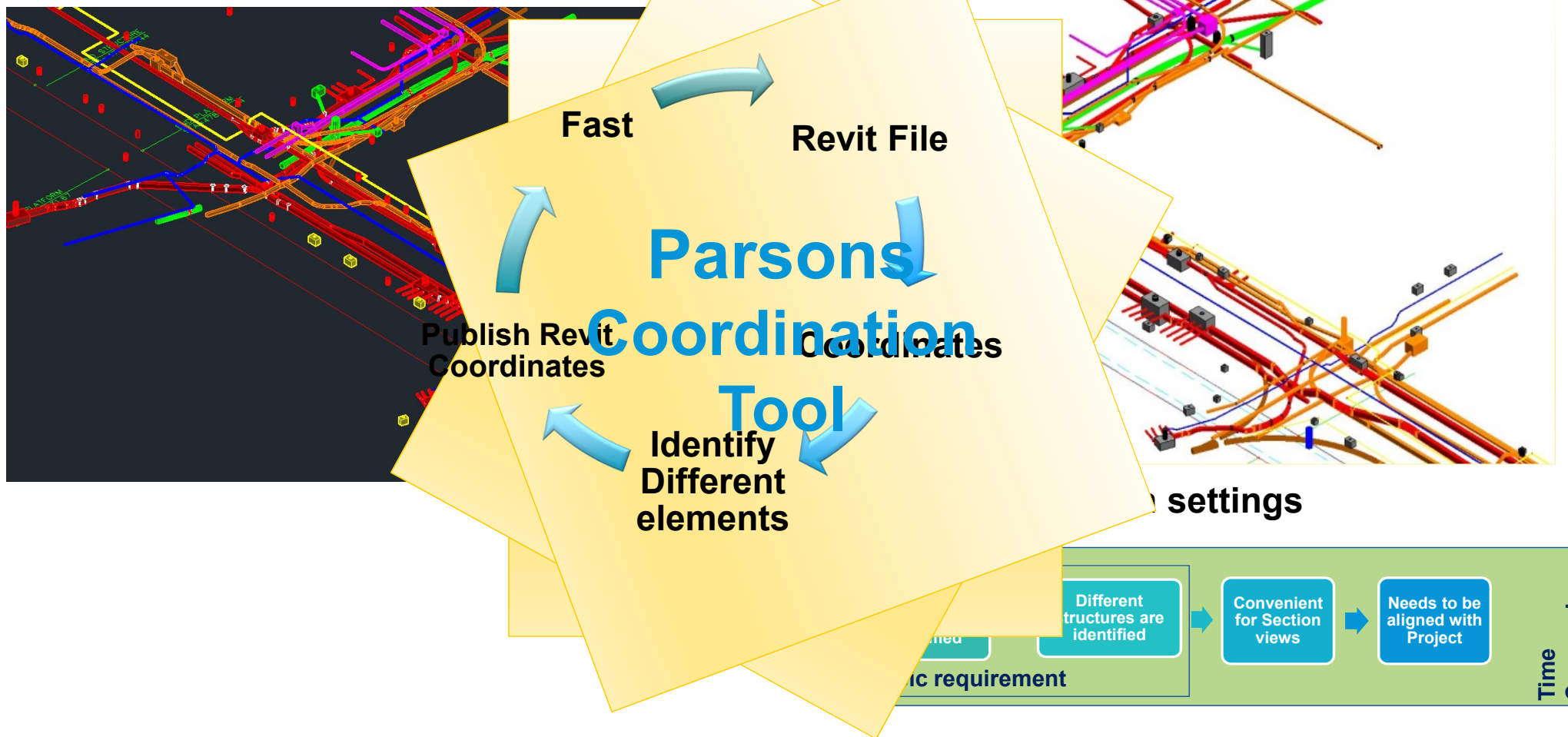


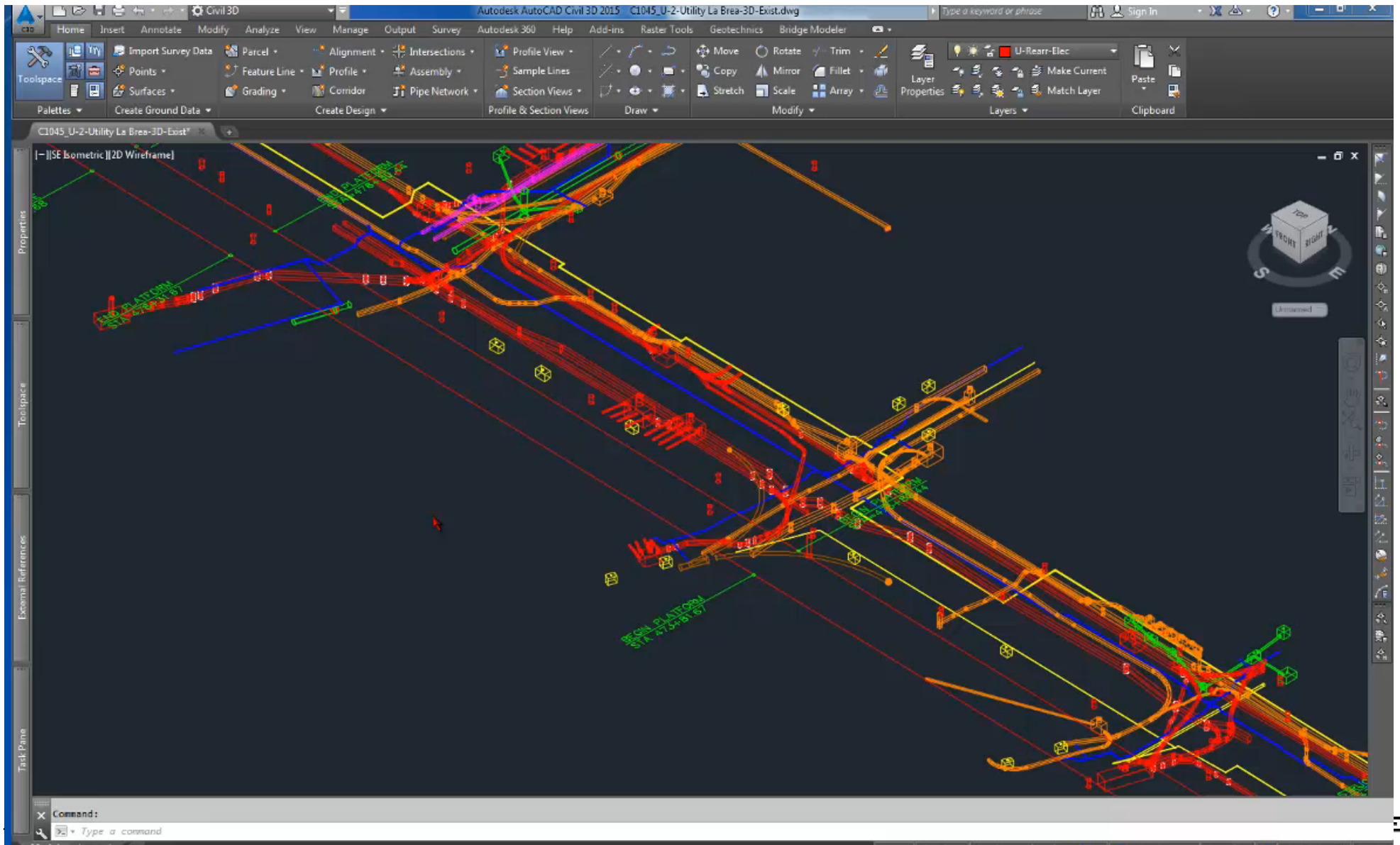
- Key Element class document CI 11684 for set @B print ed family

Adjusted mesh settings



C3d File Integration



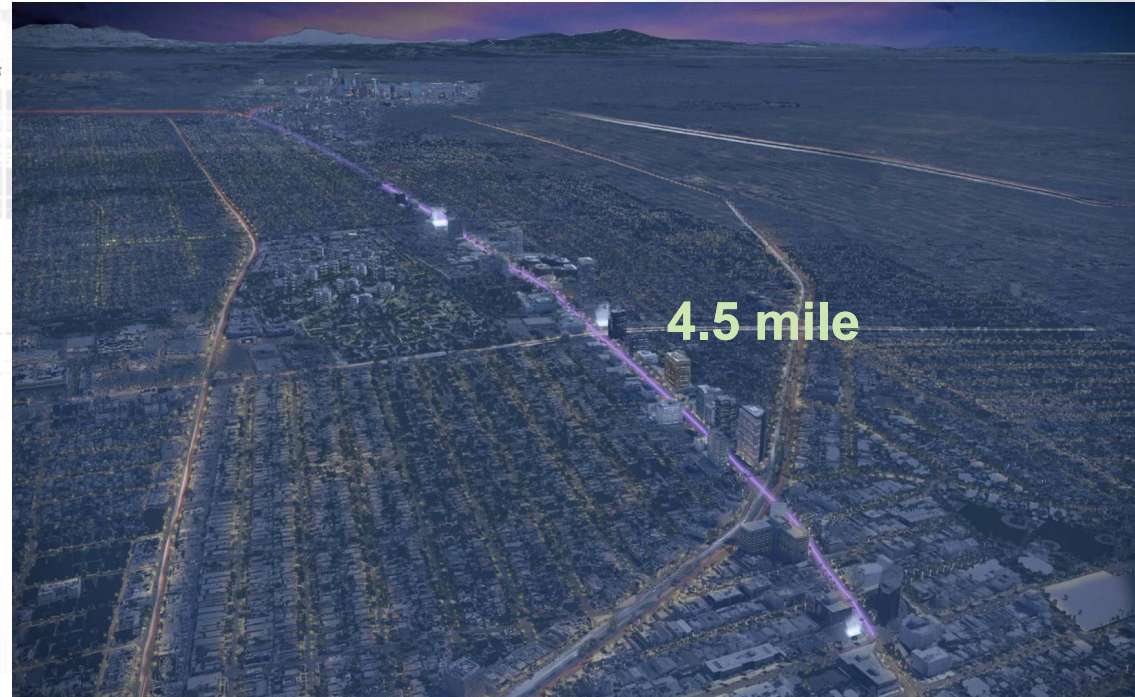
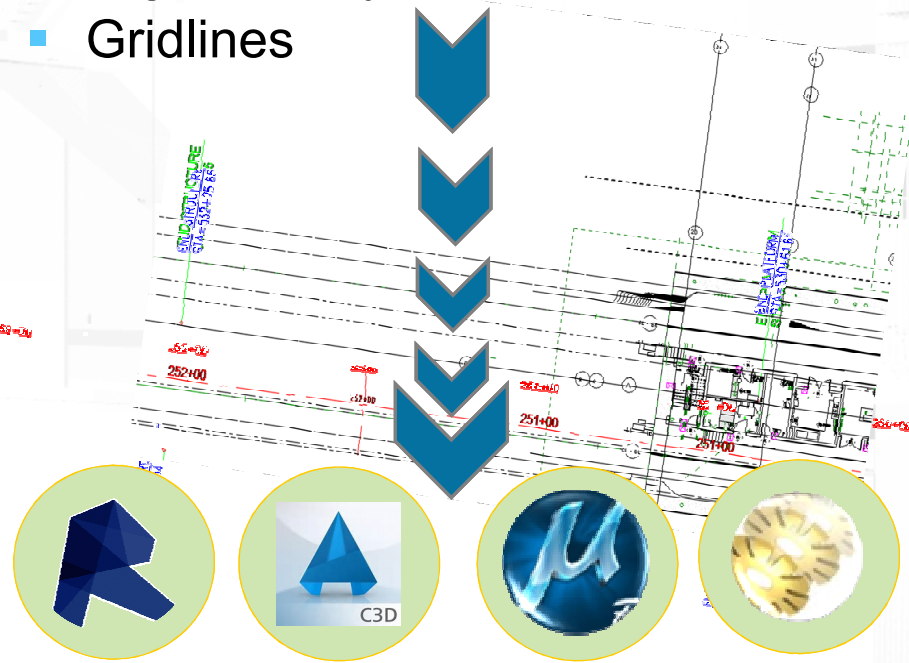


How Was it Done



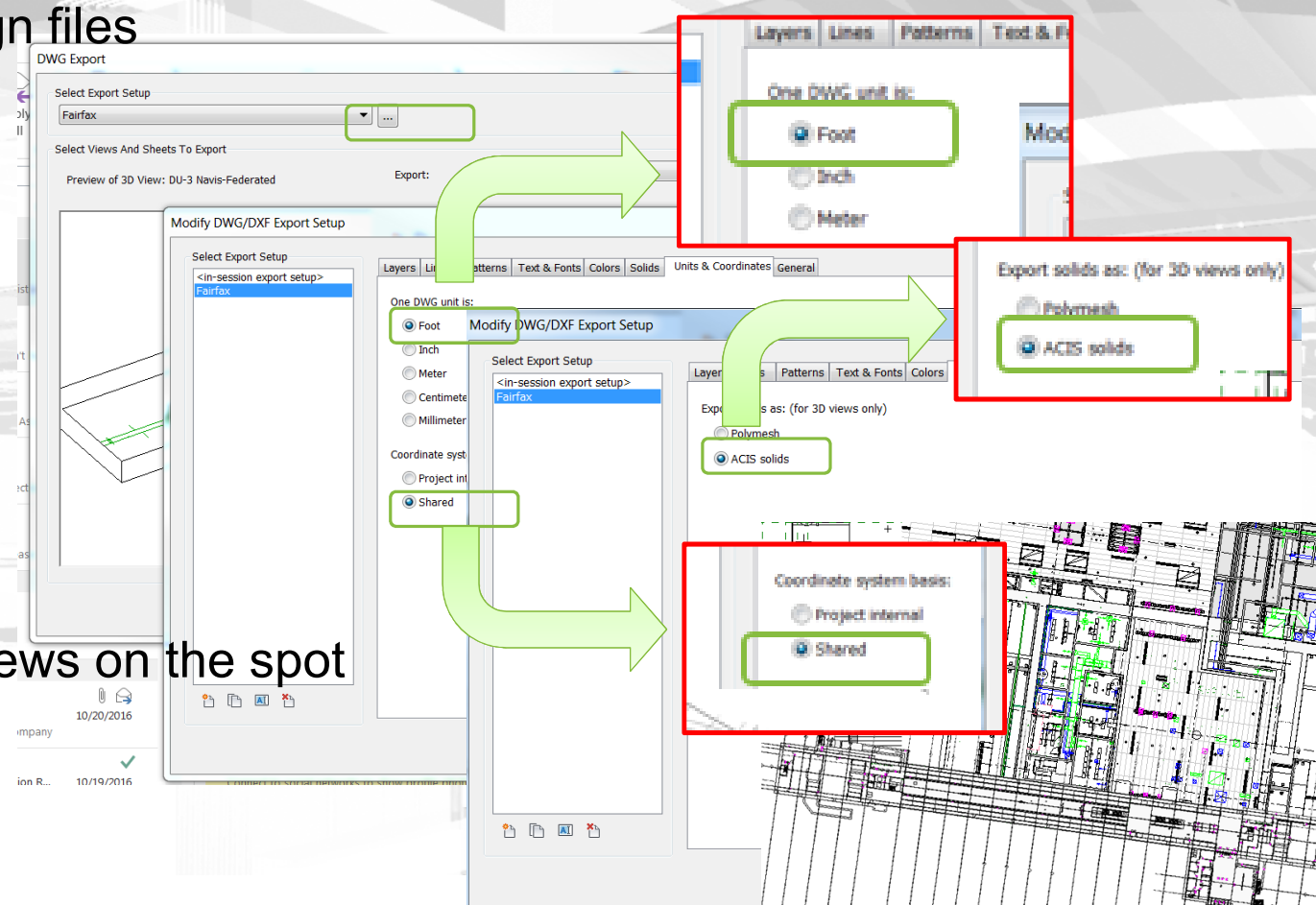
Unified Coordinate System

- Project Base Points & Orientation
- Alignment references – Stationing/Track Lining
- Right of Way
- Gridlines



Export from Revit to CAD

- Export file with linked design files
 - latest version of all files
- Weekly exports:
 - Predefine and Setup Views (60 views)
 - Per Level for each discipline
 - RCP
 - 3d view
 - Cross Sections
- Ad hoc exports:
 - Create and Export Views on the spot
 - To resolve a specific issue
 - For a specific presentation
 -



Export to Navisworks

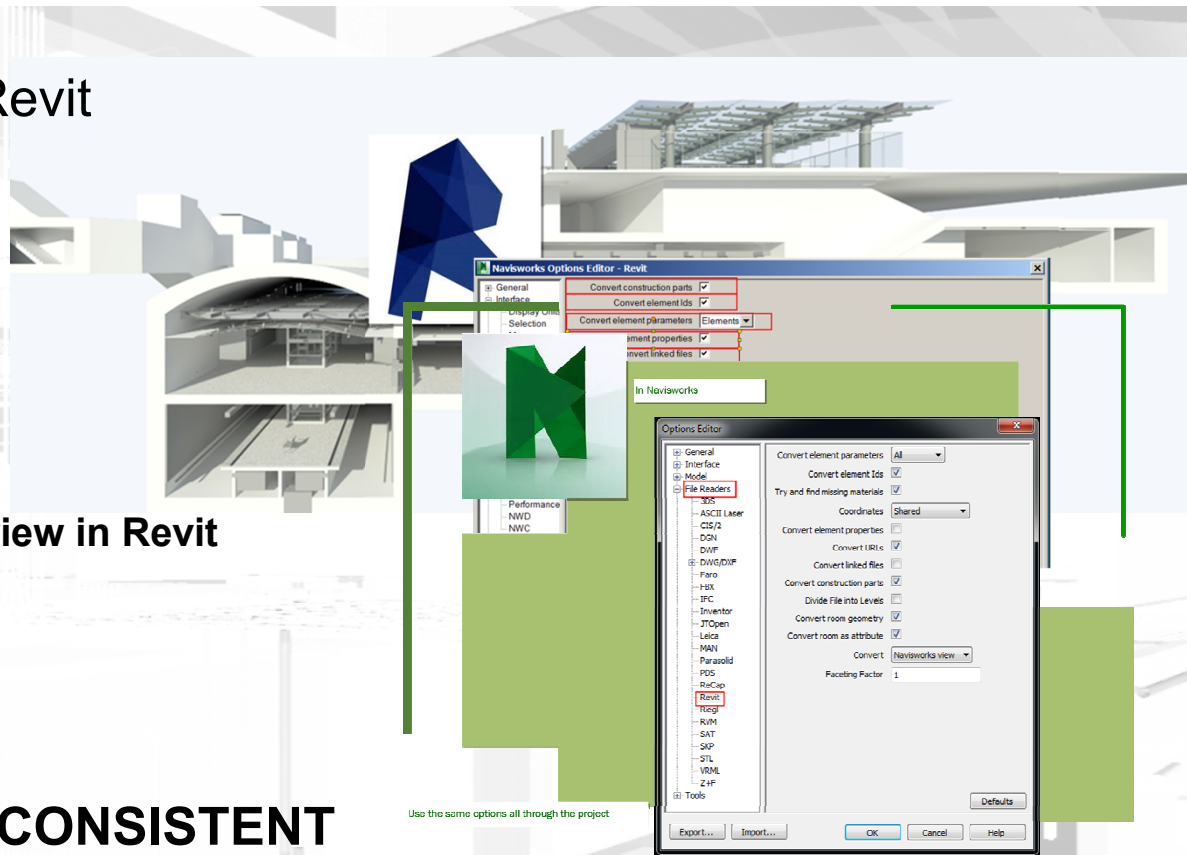
- Define the export environment in Revit

- Naming convention
- Export Settings
 - Division of file
 - Elements properties
 - Elements Ids,.....
- File Location

- **Remove clipping from the exported view in Revit**
- **Turn off Section Boxes in Revit**
 - Detail level set to “fine”
 - Export from 3D view

- **BE CONSISTENT**

- Use the same NW export settings exporting from Revit and importing to NW – xml -



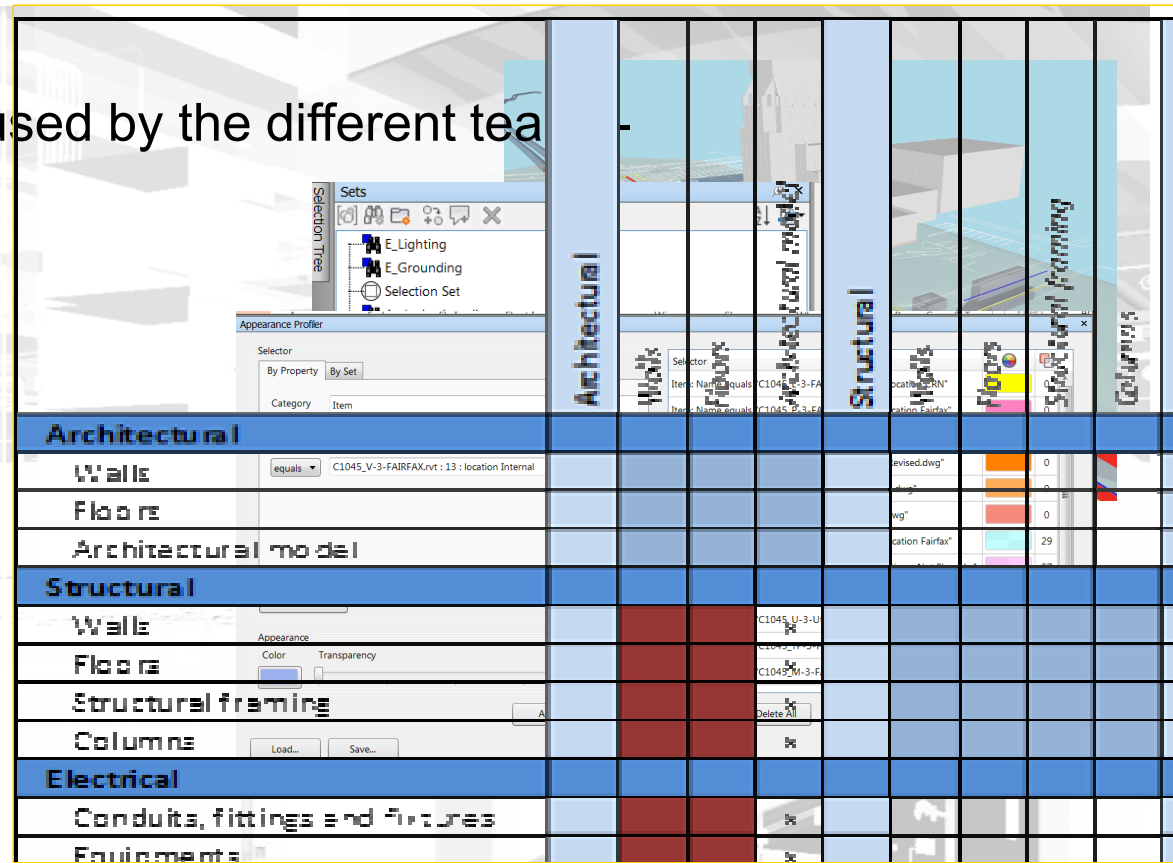
Navisworks

- Meet your team-
- Get acquainted with the Platforms used by the different teams
- Use the same Project Template – *all through the project*

- Consistency in naming:
 - Search sets
 - Appearance Profiler
 - Clash Sets
- “Append” files – update all” clashes

■ Be Consistent!

- Basic training course to all teams: how to navigate and explore a Navisworks model



The screenshot displays the Navisworks software interface. On the left, a 3D model of a building is visible. On the right, a 'Clash Detection' table is shown, detailing conflicts between different building systems. The table has columns for 'Category', 'Item', 'Clash Count', and 'Clash Details'. The rows are organized by system type: Architectural, Structural, and Electrical.

| Category | Item | Clash Count | Clash Details |
|----------------------|---------------------------------|-------------|---------------|
| Architectural | Walls | 0 | |
| | Floors | 0 | |
| | Architectural model | 29 | |
| Structural | Walls | 0 | |
| | Floors | 0 | |
| | Structural framing | 0 | |
| | Columns | 0 | |
| Electrical | Conduits, fittings and fixtures | 0 | |
| | Equipments | 0 | |

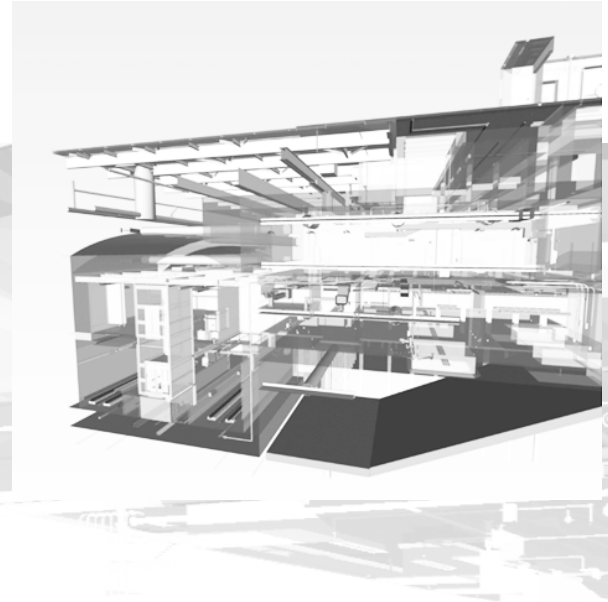
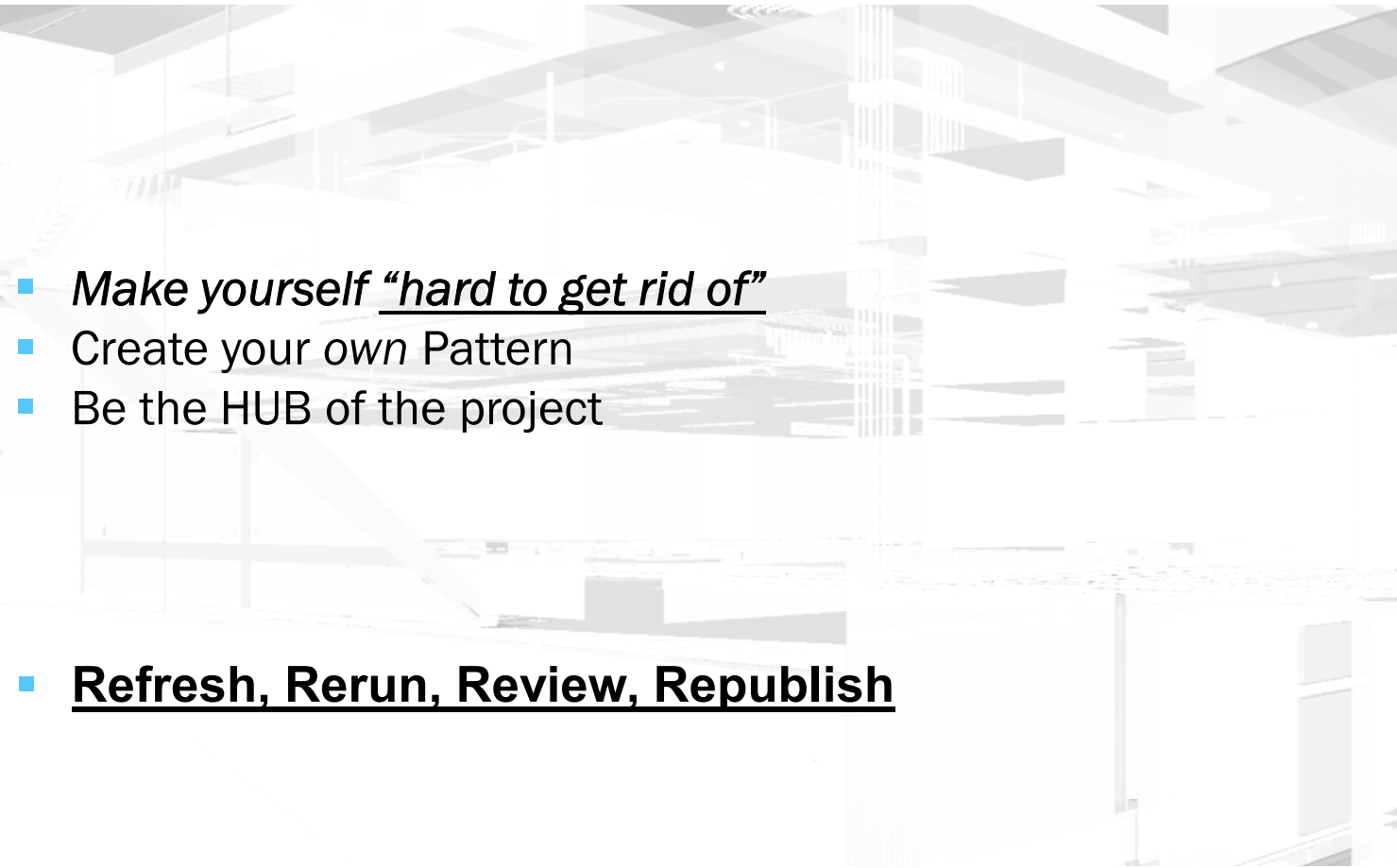


Walk with the Project

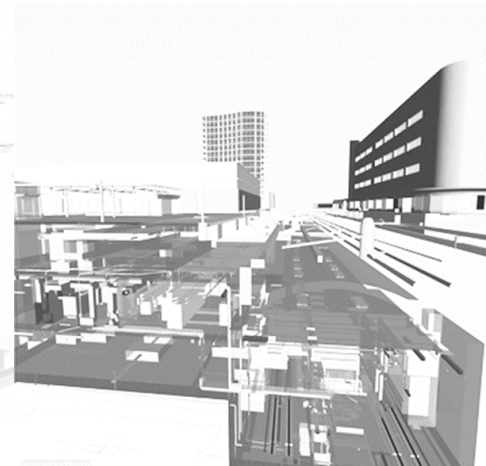
- BIM reporting for Internal Design Review
- Learn to speak the language of your teams
- Make your teams know **when** and **where** to find the clash reports
 - Include previous clash results with classifications for comparison
- Run clashes, Group clashes, Classify Name clashes

| CLASH RESULTS SUMMARY | | | | | | |
|-----------------------|-----------------------|----------|----------|----------|--------|----------|
| Discipline | Discipline | 20161104 | Approved | Reviewed | Active | Resolved |
| Architectural | Architecture | | | | | |
| | Mechanical | 321 | 321 | | 1 | 31 |
| | Plumbing | 95 | 93 | 1 | 1 | 94 |
| | Structural | 507 | 507 | | 27 | 53 |
| | Fire Protection | 744 | 721 | | 23 | 74 |
| | Electrical | | | | | |
| | lighting | 228 | 145 | 25 | 58 | 22 |
| | Power | 252 | 231 | 8 | 13 | 24 |
| | Grounding | | | | | |
| | Utilities | 1 | | 1 | | 1 |
| | WaterProofing | | | | | |
| | Track | 9 | | 9 | | 9 |
| | Tunnel | | | | | |
| | Emergency ventilation | 55 | 55 | | | 31 |
| | Ductbank | 48 | 44 | | 4 | 48 |
| | Communication Devices | 168 | 155 | 12 | 1 | 15 |
| | Traction Power | 37 | 35 | | 2 | 37 |
| Mechanical | Mechanical | | | | | |
| | Plumbing | 26 | | | 26 | 25 |
| | Structural | 193 | 187 | | 6 | 19 |
| | Fire Protection | 59 | 59 | | | 60 |
| | Electrical | | | | | |
| | lighting | 15 | | | 15 | 13 |
| | Power | 63 | 18 | | 45 | 72 |
| | Grounding | | | | | |
| | Utilities | | | | | |

Walk with the Project



- *Make yourself “hard to get rid of”*
 - Create your own Pattern
 - Be the HUB of the project
-
- **Refresh, Rerun, Review, Republish**



Summary





Autodesk is a registered trademark of Autodesk, Inc., and/or its subsidiaries and/or affiliates in the USA and/or other countries. All other brand names, product names, or trademarks belong to their respective holders. Autodesk reserves the right to alter product and services offerings, and specifications and pricing at any time without notice, and is not responsible for typographical or graphical errors that may appear in this document. © 2016 Autodesk, Inc. All rights reserved.

