Introduction To Project Reviews Using Navisworks

Michael Boyd
BIM Manager - WSP
@_MichaelBoyd
Bio

Michael Boyd
BIM Manager (WSP UK)

- WSP UK Project Technology Team
- Previously BIM Manager within Structural Discipline
- Background in Large Healthcare Projects
WE ARE GLOBAL

31,500
EMPLOYEES

500
OFFICES

39
COUNTRIES

* Not taking travel and other workremote office locations into account

AUTODESK
UNIVERSITY 2014
This class will help attendees understand how Navisworks and BIM 360 Glue can be used as tools to effectively manage teams and review projects.
At the end of this class, you will be able to:

- Set up tests with the clash detective
- Implement effective clash grouping and filtering techniques
- Run effective model coordination meetings
- Use Navisworks efficiently (tips and tricks)
## Class Analysis

<table>
<thead>
<tr>
<th>Roll Call</th>
<th>Company</th>
<th>Title</th>
<th>Location</th>
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<tbody>
<tr>
<td>38665</td>
<td>API Construction</td>
<td>Corporate Quality/Design Director</td>
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<td>52348</td>
<td>Filippon Engenharia</td>
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</table>
“Navisworks does not coordinate construction projects…

… People do”
What is Navisworks?

- Project review software. Allows us to federate and analyse models to improve coordination and communication of designs.
- Models analysed for construction programming, logistic planning and cost surety.
- Navisworks does have the ability to link the 3D geometry objects with databases, providing a starting point for asset management.
What Navisworks is Not

- Navisworks is not a model authoring tool such as Revit, AECOsim or ArchiCAD
- Navisworks cannot modify original authored model files
- Photorealistic immersion navigation tool
Navisworks Options

- Manage (Fully Functional)
- Simulate (Limited)
- Freedom (Free Viewer)
Planning

“Plans are of little importance, but planning is essential.”
Employers Information Requirements

- Contains **WHAT** Information is Required
- Technical Requirements
- Management Requirements
- Commercial Requirements
BIM Execution Plan

- Contains **HOW** and **WHO**
- Overview
- Scope
- Methodology
## Model Element Ownership Matrix

<table>
<thead>
<tr>
<th>System</th>
<th>Included Attributes</th>
<th>Level of Development relative to RIBA (Pro 2013) Stages</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F1</th>
<th>F2</th>
<th>K</th>
<th>L</th>
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<tr>
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<td>ID</td>
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<td>LOD</td>
<td>MEA</td>
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</tbody>
</table>
Process
Project Setup – Appending Files
Project Setup - Views
Project Setup – Views - Setup

- Viewpoint Default Options
- Ensure checked to retain changes made to viewpoints
Project Setup – Views - Setup

- Set Views for
  - Home
  - Each Discipline/Supplier
  - Each Level
  - Key Areas (Plantrooms etc.)
Project Setup – Views – Setup - Video

https://screencast.autodesk.com/Main/Details/a33f0ce4-6b23-4335-919f-f584e2298d43
Project Setup - Set Grouping

- Search Sets or Selection Sets?
  - Selection Sets (Static)
  - Search Sets (Dynamic)
Project Setup - Set Grouping – Search Sets
Project Setup – Views – Setup - Video

https://screencast.autodesk.com/Main/Details/87d24d77-eb45-4252-b5cc-dfe9cd8a5867
Clash Detective

Test Name: Struc v Mechanical

Add test button highlighted.

Table showing clash information:

- **Name**: Arch v Struct, Arch v Structural Columns, Arch v Struc Floor, Arch v Struc Walls, Arch v Struc Framing
- **Status**: Old
- **Clashes**: 5999, 6, 8, 6, 10
- **New**: 0, 1, 7, 6, 10
- **Active**: 0, 3, 0, 0, 0
- **Reviewed**: 0, 2, 0, 0, 0
- **Approved**: 0, 1, 0, 0, 0
- **Resolved**: 0, 0, 0, 0, 0

Last Run: 20 October 2014 19:01:01
Clashes - Total: 8 | Open: 8 | Closed: 0
Removing False Positives
Setting Clash Test Parameters

Selection A
- Standard
- CST-IMT-00-XX-CR-Z-00001.mwd
- CST-PLP-00-XX-M3-A-00001.rvt
- CST-WSP-000XX-R3-S-20001M.rvt
- CST-MLE-00-XX-M3-M-00001.rvt

Selection B
- Set:
  - Struc
  - MEP
  - BWIC
  - Piping
  - Electrical
  - Mechanical
  - WALLS
  - 2.2m Drive Aisle

Settings
- Type: Hard
- Tolerance: 0.001 m
- Link: None
- Step (sec): 0.1
- Composite Object Clashing

Run Test
### Clash Results

#### Clash Detective

**Last Run:** 20 October 2014 19:00:23

**Clashes - Total:** 1188 (Open: 1188, Closed: 0)

<table>
<thead>
<tr>
<th>Name</th>
<th>Status</th>
<th>Clashes</th>
<th>New</th>
<th>Active</th>
<th>Reviewed</th>
<th>Approved</th>
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<td>1178</td>
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</table>
Clash Test - Video

https://screencast.autodesk.com/Main/Details/0fcf1794-d3f5-4c30-bbea-6f25003e9b47
Clash Grouping

- Step 1: Group all clashes into a single group.
Clash Grouping

- Step 2: Select element/s by system or proximity and change the ‘filter by selection’ setting to INCLUSIVE.

Select elements using selection tool or ‘Sets’
Clash Grouping

- Step 3:
  - Select the filtered clashes and re-group
  - Set the ‘filter by selection’ back to ‘None’
  - Repeat for all clashes in the test
Clash Grouping

- Step 4:
  - Rename groups, add a viewpoint, add comments

Navisworks 2014 is more functional using this method than 2015!
Clash Grouping – Video

https://screencast.autodesk.com/Main/Details/c9d0964f-c93c-4435-bf9f-9d84f76b5302
Clash Grouping – Other Uses

- Spatial coordination
Walkthrough Design Issues

- What about things that don’t physically clash?
Clash AVOIDANCE

- BIM 360 Glue
- Push models from Revit
- Does not replace Navisworks
- Used in-between meetings for clash avoidance
Reporting

“If it cannot be measured, it cannot be improved”
Clash Report Production

- Content
- Clash option
- Status to be included
- Select report type
- Select report format
- Write Report
Clash Report – Viewpoints

- Designers have no access to Navisworks Manage?
### Clash Trending

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<thead>
<tr>
<th>Federation</th>
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<td>20679</td>
<td>2757</td>
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<tr>
<td>2</td>
<td>31267</td>
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<td>4305</td>
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Meeting
Meeting Planning

- Kick-off Meetings
- BIM Strategy Meeting
- Model Coordination Meetings
<table>
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<tr>
<th>Week 1</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
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Meeting Agenda

1. Previous actions
2. Overview of model, stats
3. Model review findings (Major only)
4. Walkthrough coordination issues
5. Discipline specific issues
6. Clash coordination
Golden Rules

- Meetings should NEVER be longer than 2 hours
- Everyone should benefit from attending
- Attendees must have authority to make decisions on the spot
In Person vs Virtual
Meeting Prep

- Send an Outlook appointment for model upload
- Have latest drawings to hand
- Catch-up with disciplines beforehand
- Stats on model change since previous meeting
- Review models against validation sheet
Follow Up

- Send out minutes from the meeting with actions
- Issue clash report and federated model
- Start every meeting with the previous actions list
- Include previous action list on the outlook invite to the next meeting
Tips and Tricks

See the class handout for more
Short Cuts

- CTRL + 1  Turns on Select mode.
- CTRL + 2  Turns on Walk mode.
- CTRL + 3  Turns on Look Around mode.
- CTRL + 7  Turns on Orbit mode.
- CTRL + A  Displays the Append dialog box.
- CTRL + D  Toggles Collision mode.
- CTRL + F  Displays the Quick Find dialog box
- CTRL + H  Toggles Hidden mode for selected items.
- CTRL + F2 Launch Clash Detective
Holding Shift while using the ‘Walk’ navigation increases linear speed by 2x.
Hidden Elements Folder

- Hidden elements folder
Third Person For Space Checking

Avatar changes
Summary

- Navisworks is a tool, nothing more
- Plan your work then work your plan
- Filter, Group and Prioritise issues prior to the meeting
- The ultimate goal is clash avoidance
Session Feedback

- Via the Survey Stations, email or mobile device
- AU 2015 passes given out each day!
- Best to do it right after the session
- Instructors see results in real-time