

Models, Models, Models. Now What?



Models, Models, Models. Now What?

- We have models from a variety of sources
- All authored with a variety of applications
- Authored by a variety of designers
- Authored by a variety of design firms
- Bottom line, project contents come from a number of disparate resources
- So how can we review the content?
- Let's take a discuss and take a look...



Business Trends

- It's all about project delivery
- Design-Build and Design-Build-Maintain
- Subcontracting is the norm today
- Multi-location teams engaged in project phases
- Find it in the office, not the field!
- Machine Control
- Shrinking timeframe for building new infrastructure
- Aging infrastructure can't be ignored





Technology Trends

- Inevitable shift to Machine Control and Construction
 Automation
- Traditional Design-Bid-Build linear paper-based workflows are quickly being superseded by dynamic, real-time digitally-based best practices
- Interoperability among technology platforms





Traditional Project Workflow



Survey Design Survey Construct



Challenges

- Federated Information workflows
- Finding and merging project data from multiple sources in disparate formats
- Managing project revisions in real-time
- Communicating just-in-time decisions to project stakeholders
- Supplying project deliverables to diverse stakeholder personas
- Judging the constructability and long-term sustainability of the infrastructure



Tools to help...

• Let's look at a couple items available today within MicroStation that can help us with our issues



Items Browser

- Provides access to "real" **3D engineering data**
 - produced by Roadway Designer, Storm & Sanitary
 - and others...
- Ability to Isolate/Locate/Highlight/Search

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Items Browser

• Example: Locate P1 and highlight it in the model

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Items Browser and Searches

- Search Items
- Ability to search for specific Engineering items in DGN
 - Example: Search for all 15" RCP Pipes

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• How many conflicts are here?





- The real power of ProjectWise Navigator / MicroStation
- The clash detection tool allows you to identify sets of 3D graphical elements and to detect clashes between these 3D object element sets.
- Ability to interactively and graphically review these clashes, annotate or markup particular clashes, and assign them for follow-up.



 Clash Detection works by examining 2 separate groups of 3D data (i.e. Set A and Set B) to be used for the detection of physical clashes and <u>clearance</u> problems between the elements.

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- Each Clash analysis must be created as its own unique job.
- Each job will have a Set A group of elements and Set B group of elements

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Clash Detection – Criteria Tab

- The Criteria tab is used to select Levels, References or Named Groups to be included in the clash detection job.
- Elements in Set A and Set B can be specified by dragging and dropping Levels, References or Named Groups into the appropriate set

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Clash Detection – Criteria Tab

- Soft Clearance specifies a "clearance window" around the 3D elements in Set A or Set B
- Example, if the elements in Set B get closer than the 1' soft clearance value set for Set A then a clash will be reported, this is considered a "clearance clash"
- If elements in Set B physically touch elements in Set A the clash is considered a "hard clash"



Clash Detection – Rules

- Tolerance -Sets the allowable distance used to eliminate interferences between components that only touch.
- Suppress Clashes between elements that are touching If on, ignores elements that are within the tolerance, such as when a bolt is connected to nut.

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Clash Detection – Rules

 Suppression Rules -Used when a high number of clashes are found and more sophisticated analysis is needed to reduce the number of clashes.

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Clash Detection - Results

- Any clash that is found is reported in the Results tab
- Each clash is named and classified by type, Clearance clash or Hard clash





Clash Detection - Results

- Detailed information for conflicting elements is shown in the bottom portion of the dialog
- Notice, in this case a 16" storm sewer pipe is clashing with an 12" water line

늘 Clash Detection - pipes (4 cla	shes)								• X
Job Results									
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EC

- Stands for Engineering Content
- You hear all sorts of buzzwords like ECObjects, ECFramework, ECRepository, ECSchemas, ECServices, ECClassEditor, etc...
- ECXAttributes
 - A mechanism to associate data to a DGN Element
 - The data is the necessary business data for the business objects
 - It's the holder of the intelligence in the DGN file



Models, Models, Models

• Let's take a look at several models to better explain...

This first model will shown how clash detection helps in reviewing the model





The Next Model...

- The next example contains design data from several Bentley applications
 - Building application for a firehouse
 - HVAC application
 - And Civil to layout the drainage network
- Let's take a look...





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The Next Model...

• This next example will show a variety of ways to "visualize" your model.

• Let's take a look...





The Final Model...

- This model was created using Roadway Designer
- Look for
 - the Engineering Content options
 - MicroStation Walk
 - Using 3D Warehouse





A last minute model...

- This one is interesting since it uses Google Earth
- Let's take a quick look





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Models, Models, Models – Now What?

- Well that's just a little peek into the power of the Engineering Content contained within the MicroStation design file and the power of MicroStation
- All the examples shown were only using the capabilities/functionality of MicroStation
- Give it a try.





Thanks!



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