Building the Death Star: The Autodesk® Way!

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LOTS OF STAR WARS SURPRISES ON THE DAY!!

Register for CR2165-P

About Me – Lee Mullin

- Autodesk support for over 7 years

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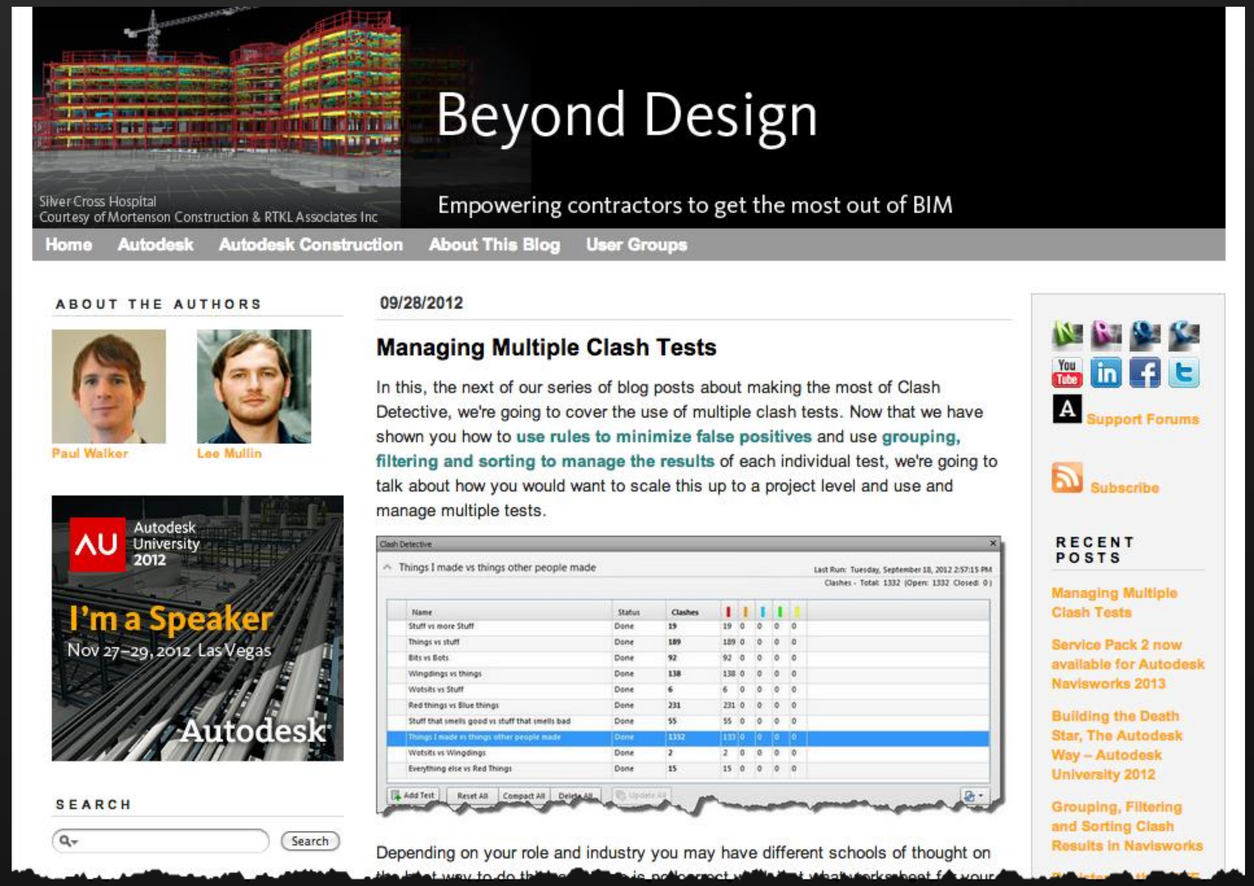
- Beyond Design blogger



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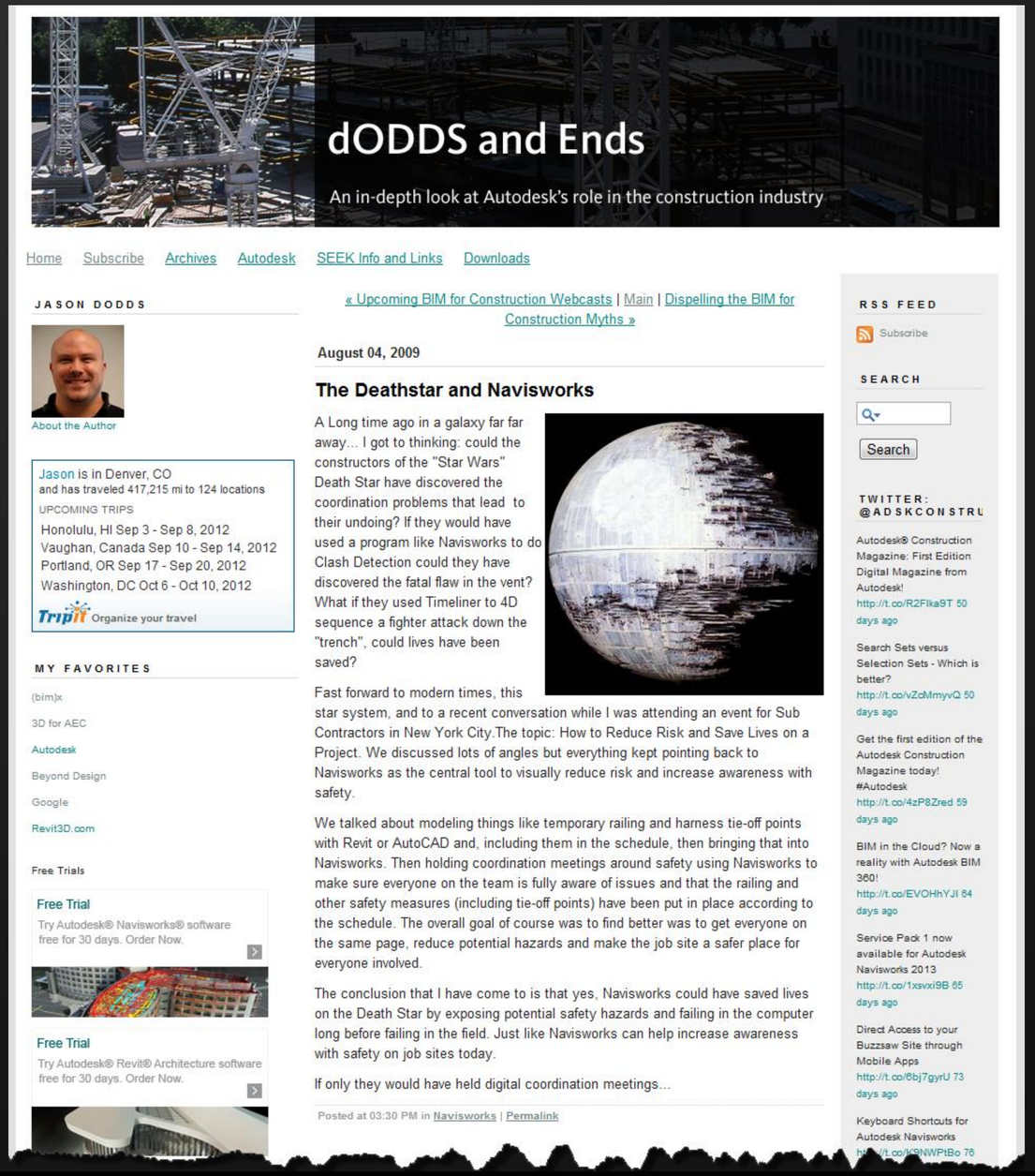
Learning Objectives

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

- Using Revit Construction Parts to build an accurate schedule
- Contingency plan using Navisworks and Microsoft Project
- Create Time Based Clashes for temporary works
- Link Animations to Timeliner for powerful presentations

The Project

- Inspired by Dodds and Ends blog
- http://doddsandends.typepad.com/blog/2009/08/the-deathstar-and-navisworks.html



The Project

- Death Star the original BIM model
- We all know what happened
- Didn’t have to be like that
- Suitable construction planning

Using Revit Construction Parts to build an accurate schedule

Using Revit Construction Parts to build an accurate schedule

Why?

- The Mustafar steel works plant doesn’t produce 10km girders
  - Never mind the problems transporting them on Star Destroyers
- Different suppliers for wall panels
- Taking advantage of smaller ships
- More realistic scheduling

Using Revit Construction Parts to build an accurate schedule

How?

- Export Navisworks file from Revit and create NWF
- Create a basic schedule
- Create Construction Parts
- Create Search Sets to find items on each level
- Create Timeliner Schedule based on Construction Parts

Contingency plan using Navisworks and Microsoft Project

Contingency plan using Navisworks and Microsoft Project

Why?

- Problems with cowboy builders
- Killed half the workforce
- Suppliers aren’t always reliable
- Unreliable deliveries
- Quickly build a schedule from the real model

Contingency plan using Navisworks and Microsoft Project

- Create Revit model
- AutoAdd Tasks
- Export Microsoft Project XML
- Add start end dates and dependencies
- Add link to MPP
- Use rules to link to levels
- Rebuild Task Hierarchy

Create Time Based Clashes for temporary works

Create Time Based Clashes for temporary works

- Why?

- Coordination is great, but these aren’t the clashes we’re looking for
- Site planning
- Decide on No-go areas
- Plant Machine selection

Create Time Based Clashes for temporary works

- Use Revit to create conceptual masses
- Use Inventor to create temporary works or zones
  - Or machinery
- Create an animation linked to machinery

Create Time Based Clashes for temporary works

- Create a path for the vehicle in Animator
- Clash detect path against surrounding building
- Create Task Types in Timeliner
- Create Tasks and attach selections
- Create a time based clash

Create Time Based Clashes for temporary works

- Why link to Timeliner?

- Add complicated scenarios, ship leaving, new one arriving
- Provides dates and times of problem

Link Animations to Timeliner for powerful presentations

Link Animations to Timeliner for powerful presentations

Why?

- At bid stage to win the project
- Client doesn’t need details, just an overview
- Can concentrate on detailed areas

Link Animations to Timeliner for powerful presentations

How?

- How long do you want your Timeline to be?
- Showing the full schedule? Or just a portion?
- Create a start keyframe and end keyframe
- Select key works to focus on
- Where are they in the schedule
- Add keyframes to smooth the animation
- Link to animation

Link Animations to Timeliner for powerful presentations

- How long will it take?
- Render a single image of the most complex part
- Multiply by FPS (frames per second)
- Multiply by number of seconds

- Reduce frames
- Reduce complexity (materials, shadows, reflectance)
- Export to images and then process to video
- Split into smaller parts

Other ways to improve project

- Do a simple design review
- Password on a published NWD
- Use BIM 360 Glue Mobile app on site to view the model
- Clash detection between multiple contractor
  - Everyone checks their work
- Use the models in FM

Could it happen?

- 140km in diameter
- $1.08x10^{15}$ tonnes of steel
- 833,315 years to produce enough steel (at 2012 Earth rates)
- Steel alone $852,000,000,000,000,000.
- Roughly 13,000 times the world's GDP
- http://www.centives.net/S/2012/how-much-would-it-cost-to-build-the-death-star/ *Lehigh University in Pennsylvania*

Thank you

- Darth Vader model used for the avatar - http://artist-3d.com/free_3d_models/dnm/model_disp.php?uid=814
- George Lucas and Twentieth Century Fox for lots of lovely screen grabs
- John Williams for his fantastic soundtracks
- You guys and gals!
- Everyone who helped build bits, advise and promote this session

Me!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