Tag and Track Building Components Through the Utilization of BIM 360 Field

Steve Rudge
Excitech – Head of Construction
About the Speaker

Steve Rudge - Excitech
Head of Construction

• 9 years with Excitech
• 23 years with Main Contractor – Design Manager
End to End Lean Thinking in Construction
This definition is a reflection of the famous triangle of tradeoffs between Time/Cost/Quality. A long running joke in the industry has been that you can only get two out of the three attributes.
Examples Of Waste

- Poor Design
- Poor Constructability
- Poor Layout
- Excessive Staff
- Poor Procurement
- Lack of Flow of Work
- Lack of Co-ordination
- Poor Planning
- Inefficient processes

- Inefficiency in Machinery working
- Wastages of Materials
- Overrun in Time
- Overrun in Cost
- Disputes
- Arbitration
- And so on......
Lean Construction

- Monitoring defects
- Waiting around for parts
- Tracking Progress
- Time management
- Transport Management
- Reduce movement of resource
- Reduce information processing
- Early warnings
Solution!!!

AUTODESK®
BIM 360™ FIELD
Reduce Re-work
Reduce Processing
Tracking
Questions?

• Do you know where your components are
• When will a component be delivered to site
• Will your components be delivered late to the site
• What do you do if a component has an issue when delivered to the site?
• Is a component ready for sign off
• Can it be released for handover?
## Our Toolkit

<table>
<thead>
<tr>
<th>ideate BIMLink</th>
<th>REVIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIMOne</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BIM 360™ GLUE</td>
</tr>
<tr>
<td>Excel</td>
<td></td>
</tr>
<tr>
<td>BIM 360™ FIELD</td>
<td></td>
</tr>
<tr>
<td>Project</td>
<td></td>
</tr>
<tr>
<td>Oracle P6</td>
<td></td>
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<td>Asta Powerproject®</td>
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</tr>
<tr>
<td>Power BI</td>
<td></td>
</tr>
<tr>
<td>Navisworks</td>
<td></td>
</tr>
</tbody>
</table>
Stage 1 – The Process (Status)
Any process has at least three versions

What you *THINK* it is

What it *ACTUALLY* is

What it *SHOULD* be
Need a tracking process

1. Place Order
2. Kick off
3. Manufacture complete
4. Transport dates
5. Date of delivery to site/lifting
6. Installation date
7. Sub-Contractor sign off
8. Main Contractor sign
9. Client acceptance
Status

• Order
• Manufacturing
• Shipping
• Delivered
• Installed
• Sign off
• Hand over
Stage 2 – Timing
Planning - Critical Path

**Project Summary Task:** Special task identifying entire project.

**Summary Task:** Any with lower-level subtasks.

**Recurring Task:** Task or event that recurs with regular timing (e.g., status meeting).

**Split Task:** Task with planned pause for specific period of time.

**Work Task or Work Package:** Lowest task in the hierarchy (where the work actually gets done).

**Milestone Task:** Event occurrence at a specific point in time.
Stage 3 – The Assets
<table>
<thead>
<tr>
<th>What do we need to track</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel Frame</td>
</tr>
<tr>
<td>Walls</td>
</tr>
<tr>
<td>Curtain walls</td>
</tr>
<tr>
<td>Mechanical Plant</td>
</tr>
<tr>
<td>Electrical Boards</td>
</tr>
<tr>
<td>Doors</td>
</tr>
<tr>
<td>Windows</td>
</tr>
<tr>
<td>Etc Etc…….</td>
</tr>
</tbody>
</table>
Our Door
Stage 4 – The Asset Data
What data is key?

- Asset Number
- Complete Manufacturing
- Delivery to site
- Ready for Contractor sign off
- Ready for Client sign off
- Asset Handed over
- Etc Etc…….
Revit Parameters

Project Parameters

Parameters available to elements in this project:

- Asset Handover
- Asset Number
- Complete Manufacturing
- Delivery to Site
- Ready for Client Sign Off
- Ready for Contractor Sign Off

Parameter Properties

Parameter Type

- Project parameter
  - Can appear in schedules but not in tags
- Shared parameter
  - Can be shared by multiple projects and families, exported to ODBC, and appear in schedules and tags

Parameter Data

- Name: Asset Number
- Discipline: Common
- Type of Parameter: Text
- Values can vary by group instance

Categories

- Doors
- Curtain Mullions
- Duct Accessories
- Ducts
- Curtain Panels
- Duct Systems
- Curtain Rails
- Curtain Slat
- Window Mullions
- Ranges
- Ceiling
- Columns
- Lighting
- Doorway
- Door Frames
- Conduit Fittings
- Conduits
- Conduit Runs
- Studs
- Steel Studs
- Plumbing
- Electrical
- Vents
- Hvac
- Firestop
- Steel Joists
- Concrete
- Finish Floors
- Concrete Elements
- Cross Sections
- Steel Sections
- Frames
- Slab
- Steel
- Interior Rights
- Exterior Rights
- Windows

Check All
Check None
Add to all elements in the selected categories

OK Cancel Help
Revit Parameters
Stage 5 – Populate the Key Dates & Asset Numbers
The workflow
Key Dates
<table>
<thead>
<tr>
<th>Family and Type</th>
<th>Description</th>
<th>Asset Number</th>
<th>Complete Manufacturing</th>
<th>Delivery to Site</th>
<th>Ready for Contractor Sign Off</th>
<th>Ready for Client Sign Off</th>
</tr>
</thead>
<tbody>
<tr>
<td>DTC Double Door CW Panel</td>
<td>Glazed</td>
<td>AUdoor01</td>
<td>29/10/2018</td>
<td>04/11/2018</td>
<td>23/14/2018</td>
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</tr>
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<td>Glazed</td>
<td>AUdoor03</td>
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</tr>
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<td>AUdoor04</td>
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</tr>
<tr>
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<td>AUdoor05</td>
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</tr>
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<tr>
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<tr>
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<td>Glazed</td>
<td>AUdoor10</td>
<td>12/11/2018</td>
<td>22/11/2018</td>
<td>30/12/2018</td>
<td>27/08/2017</td>
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<tr>
<td>Internal Double Door (3) 1810 x 2110 mm</td>
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</tr>
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<td>AUdoor14</td>
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<td>24/11/2018</td>
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</tr>
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<td>24/11/2018</td>
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<td>30/04/2017</td>
</tr>
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<td>AUdoor18</td>
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<td>24/11/2018</td>
<td>30/12/2018</td>
<td>30/04/2017</td>
</tr>
<tr>
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<td>AUdoor19</td>
<td>31/03/2018</td>
<td>30/12/2018</td>
<td>30/12/2018</td>
<td>30/04/2017</td>
</tr>
<tr>
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<td>Glazed</td>
<td>AUdoor20</td>
<td>31/03/2018</td>
<td>30/12/2018</td>
<td>30/12/2018</td>
<td>30/04/2017</td>
</tr>
<tr>
<td>Internal Single Door (2) 2710 x 1210 mm</td>
<td>Glazed</td>
<td>AUdoor21</td>
<td>31/03/2018</td>
<td>30/12/2018</td>
<td>30/12/2018</td>
<td>30/04/2017</td>
</tr>
<tr>
<td>Internal Single Door (2) 2710 x 1210 mm</td>
<td>Glazed</td>
<td>AUdoor22</td>
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<td>30/12/2018</td>
<td>30/12/2018</td>
<td>30/04/2017</td>
</tr>
<tr>
<td>Internal Single Door (2) 810 x 2110 mm</td>
<td>Glazed</td>
<td>AUdoor23</td>
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<td>24/11/2018</td>
<td>30/12/2018</td>
<td>26/03/2018</td>
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<tr>
<td>Internal Single Door (3) 810 x 2110 mm</td>
<td>Glazed</td>
<td>AUdoor24</td>
<td>24/03/2018</td>
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<td>30/12/2018</td>
<td>26/03/2018</td>
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<tr>
<td>Internal Single Door (2) 810 x 2110 mm</td>
<td>Glazed</td>
<td>AUdoor25</td>
<td>24/03/2018</td>
<td>24/11/2018</td>
<td>30/12/2018</td>
<td>26/03/2018</td>
</tr>
<tr>
<td>Internal Single Door (3) 810 x 2110 mm</td>
<td>Glazed</td>
<td>AUdoor26</td>
<td>24/03/2018</td>
<td>24/11/2018</td>
<td>30/12/2018</td>
<td>26/03/2018</td>
</tr>
</tbody>
</table>
Stage 6 – Prepare the model for BIM 360 Field
The workflow
Create a view in Revit
Stage 7 – Mapping in BIM 360 Field
Project Overview

Issue Tracker - Open v. Closed

- Issues
- 1 week ago
- Total, Open, Closed, Completed

Companies with Most Unresolved Issues

- Would show companies with most unresolved issues, updated in real-time.
- You may have no issues, or all issues may be Closed.
- To see your data on this graph, add issues and assign to companies.

Average Time to Close Issues

- Would show companies with highest time to close issues, updated in real-time.
- You may have no issues, or all issues may be Closed.
- To see your data on this graph, add issues and assign to companies.

Root Cause

- Would show the most common root causes for issues on your project, updated in real-time.
- Tracking Root Causes can help you find patterns in why issues occur.
- To see your data on this graph, fill in Root Cause on your issues.
Stage 8 – BIM 360 Field - Barcode
Barcode Label Printer - Free Online Barcode Generator
Over 600 Million Barcodes Generated

Use the CGI form below to generate a printable and scan-able barcode in Interleaved 2 of 5, Code 39, Code 128 A, B, or C symbologies. This free service can be used to generate individual barcodes or called via URL's to include in-line PNG or JPEG images directly into your documents.

For the ability to design and print your own barcodes, check out our barcode generator software from Seagull Scientific, Teklynx, and Niceware. We also have a wide selection of barcode labels to choose from, or fill out our custom label form to have one of our experts provide you a quote and lead time on your very own custom labels.

Technical support is not available for the barcode generator. However, please contact us regarding your project or product questions. We're happy to be of service.

You might also be interested in:
- QR Code Generator
- Pre-printed Barcode Labels
- Barcodes Software
- UPC/EAN Barcode Generator
- Barcode Label Designer
- Barcode Hardware

Have Generator Questions? Read the FAQ.
Stage 9 – BIM 360 Field – In Action
Stage 10 – Using the data - Status
The Workflow
# The Status

## Equipment

<table>
<thead>
<tr>
<th>Name</th>
<th>Barcode</th>
<th>Type</th>
<th>Description</th>
<th>Location Path</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUDoor001</td>
<td>AUDoor001</td>
<td>External Double Doors</td>
<td></td>
<td></td>
<td>Shipping</td>
</tr>
<tr>
<td>AUDoor002</td>
<td>AUDoor002</td>
<td>External Double Doors</td>
<td></td>
<td></td>
<td>Delivery</td>
</tr>
<tr>
<td>AUDoor003</td>
<td>AUDoor003</td>
<td>External Double Doors</td>
<td></td>
<td></td>
<td>Installed</td>
</tr>
<tr>
<td>AUDoor004</td>
<td>AUDoor004</td>
<td>External Double Doors</td>
<td></td>
<td></td>
<td>Installed</td>
</tr>
<tr>
<td>AUDoor005</td>
<td>AUDoor005</td>
<td>External Double Doors</td>
<td></td>
<td></td>
<td>Manufacturing</td>
</tr>
<tr>
<td>AUDoor006</td>
<td>AUDoor006</td>
<td>External Double Doors</td>
<td></td>
<td></td>
<td>Sign off</td>
</tr>
<tr>
<td>AUDoor009</td>
<td>AUDoor009</td>
<td>External Double Doors</td>
<td></td>
<td></td>
<td>HandOver</td>
</tr>
</tbody>
</table>
Stage 11 – Using the data - Revit
The Workflow
Downloads in Glue

Add-ins

BIM 360 Add-in for Revit

The BIM 360 add-in app for Autodesk Revit supports round-trip BIM workflows between Revit and BIM 360. Use the "Glue it" feature to publish Revit models – including multiple 3D views at one time – directly to BIM 360 Glue. Use the " Clash Pinpoint" feature to isolate clashing elements from BIM 360 Glue in Revit. Update Revit models with commissioning data from BIM 360 Field to support handover, operations, and maintenance workflows.
Stage 12 – Analytics
# Excel Reporting

## Schedule Properties

**Fields**
- Select available fields from:
  - Doors

**Available fields:**
- Assembly Code
- Assembly Description
- Assembly Name
- Asset Handover
- Asset Number
- Comments
- Construction Type
- Cost
- Count
- Description (BIM 360)
- Door Panel Height
- Door Panel Thickness
- Door Panel Width
- Expected Life (BIM 360)

## Scheduled fields (in order):

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family and Type</td>
<td>Barcode (BIM 360)</td>
<td>Status (BIM 360)</td>
<td>Delivery to Site</td>
<td>Actual Site delivery</td>
<td>Complete Manufacture</td>
<td>Actual Manufacture</td>
<td>Client sign off (BIM)</td>
<td>Ready for Client Sign</td>
<td>Ready for Delivery</td>
</tr>
<tr>
<td>DTC Double Door C</td>
<td>A</td>
<td>Door001</td>
<td>Shipping</td>
<td>11/04/2018 00:00:09</td>
<td>2018-11-04</td>
<td>10/25/2018 00:00:09</td>
<td>2018-10-25</td>
<td>12/10/2018 00:00:09</td>
<td>2018-12-10</td>
</tr>
<tr>
<td>DTC Double Door C</td>
<td>A</td>
<td>Door002</td>
<td>Delivery</td>
<td>11/06/2018 00:00:09</td>
<td>2018-11-06</td>
<td>10/27/2018 00:00:09</td>
<td>2018-10-27</td>
<td>12/12/2018 00:00:09</td>
<td>2018-12-12</td>
</tr>
<tr>
<td>DTC Double Door C</td>
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<td>Door003</td>
<td>Installed</td>
<td>11/08/2018 00:00:09</td>
<td>2018-11-08</td>
<td>10/29/2018 00:00:09</td>
<td>2018-10-29</td>
<td>12/14/2018 00:00:09</td>
<td>2018-12-14</td>
</tr>
<tr>
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<td>Door004</td>
<td>Installed</td>
<td>11/10/2018 00:00:09</td>
<td>2018-11-10</td>
<td>10/31/2018 00:00:09</td>
<td>2018-10-31</td>
<td>12/16/2018 00:00:09</td>
<td>2018-12-16</td>
</tr>
<tr>
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<td>A</td>
<td>Door005</td>
<td>Installed</td>
<td>11/12/2018 00:00:09</td>
<td>2018-11-12</td>
<td>11/02/2018 00:00:09</td>
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<td>12/18/2018 00:00:09</td>
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</tr>
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<td>A</td>
<td>Door006</td>
<td>Sign off</td>
<td>11/14/2018 00:00:09</td>
<td>2018-11-14</td>
<td>11/04/2018 00:00:09</td>
<td>2018-11-04</td>
<td>12/20/2018 00:00:09</td>
<td>2018-12-20</td>
</tr>
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<td>Door007</td>
<td>HandOver</td>
<td>11/20/2018 00:00:09</td>
<td>2018-11-20</td>
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<td>2018-11-10</td>
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<td>SignedBy</td>
<td>11/22/2018 00:00:09</td>
<td>2018-11-22</td>
<td>11/12/2018 00:00:09</td>
<td>2018-11-12</td>
<td>12/27/2018 00:00:09</td>
<td>2018-12-27</td>
</tr>
</tbody>
</table>

### Notes:
- **DTC Double Door C**: DTC Double Door C
- **A Door001**: A Door001
- **Barcode (BIM 360)**: 04.02.2017 00:00:00
- **Status (BIM 360)**: 04.02.2017 00:00:00
- **Delivery to Site**: 04.02.2017 00:00:00
- **Actual Site delivery**: 1 Delivered
- **Complete Manufacture**: External Double Doors
- **Actual Manufacture**: External Double Doors
- **Client sign off (BIM)**: 0
- **Ready for Client Sign**: 0
- **Ready for Delivery**: 0
Example Fit-Out Matrix

<table>
<thead>
<tr>
<th>Installation</th>
<th>Room 1</th>
<th>Room 2</th>
<th>Room 3</th>
<th>Room 4</th>
<th>Room 5</th>
<th>Room 6</th>
<th>Room 7</th>
<th>Room 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation 1 complete</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Installation 2 complete</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Installation 3 complete</td>
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<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Installation 4 complete</td>
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<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
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</tr>
<tr>
<td>Installation 5 complete</td>
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<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
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% Complete

<table>
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<tr>
<th>Room</th>
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<th>20.00%</th>
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Stage 13 – Take small steps
Options are Endless

- Inventory min/max for consumables
- Service maintenance schedules
- Rental equipment return dates
- Employee trainings & certifications
- Track safety equipment
- Track commodities
- Jobsite cost allocation
The future will soon be here
BIM 360 Platform & Subscriptions

For all project stakeholders who need controlled access to information

For teams who need to collaborate in real-time on Revit models & track deliverables

For teams who need to coordinate multi-discipline designs across trades

For teams who need to collaborate on work performed during construction