Collaboration 2.0:
Updating 3D Trade Coordination Processes for the Cloud

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VDC Manager – Skanska USB

CONNECT & CONSTRUCT SUMMIT
Matt Emond is the Northeast VDC Manager at Skanska US Building in Boston, Massachusetts. While working on a variety of unique projects, he constantly pushes the limits of Project Information Management & Model integration. Past projects include, The Novartis Institute for Biomedical Research, The Autodesk HQ & BUILD Space, and the Boston College Student Rec Center.

Prior to his VDC/BIM work, Matthew was a project manager at a residential architecture firm, where he introduced many contractors to the power of the BIM database. Emond holds an M.Arch from the University of Massachusetts-Amherst, and an Architectural Studies degree from Brown University.
Presentation Agenda

- Construction Cloud Adoption, Risks, & Opportunities
- Construction Cloud Evolution
- VDC Adoption
- VDC Workflow: Plan-Do-Share-Track
- Design Collaboration: Past - Current - Ideal
- Trade Coordination: Past - Current - Ideal
- Field Operations: Past - Current - Ideal
- Collaboration 3.0
- Cloud @ UVA Hospital Expansion
- Q&A
Construction Cloud Adoption, Risks, & Opportunities

- AWS Launched First Cloud Computing Solution (EC2) in 2006
- Construction Industry Adoption Spiked since 2010, but not fully embraced:
  - Opportunities: Easy Sharing, Connected Job-Sites, Powerful Processing
  - Risks: Data Security, Migrating Existing Data, Internet Access
Construction Cloud Evolution

• Internet Computing
  o Server Database Accessed via Internet Login
  o Upload/Download/Share etc.

• Grid Computing
  o Multiple Independent Cloud Programs
  o Specific Operations Performed in Each
  o May or may not transfer Data Between

• Cloud Computing
  o Unified Project Cloud Database
  o Linked Programs for Easy Data Exchange
  o One Stop Tracking, Reporting, & Analytics
VDC Adoption: Why Us?

HEAVY LIFTING

INTERSECTION OF DATA TRAFFIC

A/E Models

Trade Models

RFI's

Field

FREQUENT TRANSFERS

HEALTHY MODEL = HEALTHY PROJECT
VDC Workflow: Plan/Do/Share/Track

**DESIGN**
- Deliverables Established (P)
- Models Authored (D)
- Models Shared (S)
- Updates Communicated (T)

**COORDINATE**
- Coordination Zones (P)
- Backgrounds Extracted (D)
- Backgrounds Shared (S)
- Trade Models Authored (D)
- Model Issues Identified (D)
- Issue Distribution/Resolution (S/T)
- Final State Overlay (D)
- Final State Signoff (S/T)

**FIELD**
- Documentation Plan (P)
- Progress Documentation (D)
- Document Database (S)
- Deficiency Tagging (D)
- Deficiency Distribution (S)
- Deficiency Resolution (T)
- Progress Updates (T)
<table>
<thead>
<tr>
<th></th>
<th>Design</th>
<th>Plan</th>
<th>Do</th>
<th>Share</th>
<th>Track</th>
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<tbody>
<tr>
<td><strong>Past</strong></td>
<td>● Establish Deliverables</td>
<td>● Model Authoring on Internal Network</td>
<td>● Exchange Entire Models Periodically</td>
<td>● Cloud &amp; Review</td>
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<tr>
<td><strong>Current</strong></td>
<td>● Establish Model</td>
<td>● Live Models Linked (C4R)</td>
<td>● Strip Models &amp; Exchange Often</td>
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<td>● 3rd Party Compare</td>
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<td>Revision Rules</td>
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<td><strong>Ideal</strong></td>
<td>● Insert Model Controls</td>
<td>● Live Models Linked and Controlled</td>
<td>● Model Updates Only Released in Real Time</td>
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<td>● Auto-Compare</td>
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<td></td>
<td></td>
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<td>● Auto-Clouding</td>
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<td>● Auto-Integrate</td>
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**Revit - Workflow**

- **BM 300 Team Hub Published Documents**
  - V1
  - Automatically updated
  - Initiate Collaboration
  - Sync With Center SWC
  - SWC
  - SWC
  - Publish latest

- **Users in Revit**
  - A
  - B
  - A
  - C
  - A

- **Assemble**
  - Collaboration for Real Storage
  - V1
  - V2
  - V3
  - V4
  - V5

- **Time**
  - A
  - B
  - C
  - A
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<th>Coordinate</th>
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<tr>
<td>Past</td>
<td>• Establish Standards</td>
<td>• Extract Backgrounds</td>
<td>• Post Backgrounds</td>
<td>• Paper Review</td>
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<tr>
<td>Current</td>
<td>• Integrate &amp; Automate</td>
<td>• Bkd. Template w/ Live Link</td>
<td>• Bkd. Auto-Extract</td>
<td>• Bkd. Auto Uploads</td>
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<tr>
<td>Ideal</td>
<td>• Automate &amp; Connect</td>
<td>• Live Link w/ Auto-Extract</td>
<td>• Bkd. Auto-Link</td>
<td>• Auto-Compare</td>
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<td>• Bkd. Auto-Clash AI</td>
<td>• Auto-Link to Author Soft.</td>
<td>• Auto-Closeout</td>
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<td>• Auto-Overlay</td>
<td>• Controlled Release</td>
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360 Model Coordination

![Model Coordination](image)
Cloud Coordination Tips & Tricks

- Standardize Folder Structures
  - Cloud Folders to be used by all
  - Naming Conventions must be followed

- Avoid Oversharing
  - Single files doing many jobs (dwg Vs nwc)

- Single Source of Truth
  - Keep models, issues, and reports linked & on the cloud at all costs.
<table>
<thead>
<tr>
<th>Field</th>
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<th>Do</th>
<th>Share</th>
<th>Track</th>
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<tbody>
<tr>
<td>Current</td>
<td>Doc: Team Doc. Req’s</td>
<td>Field to Model Coord.</td>
<td>Auto-Sort &amp; Synced Files</td>
<td>Smart Search &amp; Compare</td>
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<tr>
<td>Ideal</td>
<td>Doc: Model Generated Doc. Formula</td>
<td>Auto-Progress Scan</td>
<td>Real-Time Upload</td>
<td>Auto-Compare &amp; Overlay</td>
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<td>QA/QC: Model Generated QA/QC Formula</td>
<td>Automated Inspections</td>
<td>Auto-Tag &amp; Distribution</td>
<td>Auto-Review &amp; Auto-Close</td>
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Cloud Collaboration @ UVA
Seth Shaver – VDC Engineer, Skanska
"Coming together is a beginning, staying together is progress, and working together is success."

Henry Ford