CS125462

Workflows in BIM 360 and Collaboration for Revit - a Central Source Of Truth for Contractors

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Learning Objectives

- Understand the workflows between Collaboration for Revit and BIM 360 Docs
- Understand the workflows between BIM 360 HQ, BIM 360 Docs, BIM 360 Plan, BIM 360 Glue, and BIM 360 Field
- Observe how a central source of truth enables you to perform
- Learn to use BIM 360 Docs and Collaboration for Revit in the fabrication and as-built phases

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Description

What does a day in the life of a contractor look like with and without BIM 360 software? How do Collaboration for Revit cloud service and BIM 360 Docs software work together? Why would we use BIM 360 or Collaboration for Revit? What are the benefits? What does this workflow between Collaboration for Revit and the various BIM 360 products look like? Let's demonstrate Collaboration for Revit and BIM 360 Docs, BIM 360 HQ software, BIM 360 Glue software, BIM 360 Plan software, and BIM 360 Field software. How does BIM 360 Docs empower you to fabricate and come full circle with as-builts?

Speaker(s)

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Let's understand the workflows between Collaboration for Revit and BIM 360 Docs

Many in our class audience will be from the construction industry and may or may not know Collaboration for Revit, or much about Revit for that matter. You may be here for the BIM 360 construction aspect. I want to start with Revit and Collaboration for Revit (AKA C4r) and describe in a nutshell what it does. I will be demonstrating in class to drive it home.

Revit

In a nutshell, Revit is a BIM modelling application. We build a 3D model of a building in Revit and pack it with design data. That model typically has multiple disciplines. The level of detail on the model evolves from the initial conceptual phase which is almost like an artist sketch which has minimal detail, thru to the construction and fabrication levels of detail. As the project matures, that BIM model is laden with data. It's a large file (200+ GB each discipline file) and can become a performance hog using local resources. Makes it difficult to share with 3rd parties that need access to those models.

Collaboration For Revit

So along comes "Collaboration for Revit" which stores the model in the cloud on Amazon Web Services (AWS). Collaboration for Revit allows multiple sites and companies to access and sync up to these large models, collaborating across the web. On Amazon Web Service (AWS), we ramp up as many server CPUs as needed to keep performance reasonable, and storage is plenty. Instead of dragging multiple 200+ GB files across the web, we sync only the changes using a Revit Accelerator.

Skyscraper

At the moment, Collaboration for Revit (C4r) stores the models on AWS in what we refer to as "Skyscraper" which was our internal codename for the cloud-side of the project as Collaboration for Revit was being developed. Skyscraper is where the model files are stored in the cloud, and only accessible from C4r on Revit.

BIM 360 Team

From C4r, we can "Publish" the model files. Skyscraper is actually BIM 360 Team. Prior to being "Published", the files on Skyscraper are private and inaccessible but from Revit C4r. After "Publish", the files are revealed on BIM 360 Team and accessible to project members from the BIM 360 Team web browser or mobile app.

Why? A typical Revit user has the need to work o their day-to-day modelling activities in Revit, and sync their changes to the central model. When that central model is on Skyscraper, only the design team has access which may span multiple office sites and even 3rd parties. For example, your Architectural model may come from Company A, and the Structural model from Company B. The building model is combination of all disciplines. So when the typical Revit user synchronizes their changes to central, the design team is kept up to date. For a design team, that skyscraper model is "the central source of truth" and never out of date.

BIM 360 Team

With that said, would you want your General Contractor to have access to the day-to-day design changes? Maybe! Or maybe you want the GC to operate off "officially" blessed and vetted (or stamped) 75%, 90%, 100% submittals. Which is why skyscraper is private, until "Published." Publish a 75%, a 90% or 100% "for construction" set to BIM 360 Team. The GC can then download the set and run with it (When the design team agrees it is ready for consumption, or an AHJ has approved). A side-note: BIM 360 Team used to be called A360 Team, and was just A360 before that. Users currently on Revit 2016 may still see A360 Team nomenclature. BIM 360 Team can also be used as a viewer, redline and markup tool. Use it to collaborate with an extended team (perhaps non-Revit users) to capture their feedback.

BIM 360 Docs

Wait, wait, wait… Josh says BIM 360 Docs in "Let's understand the workflows between Collaboration for Revit and BIM 360 Docs." What about BIM 360 Docs?

Skyscraper stored the central models (central source of truth) for the design team, during the design phase. BIM 360 Team is where the design team, does the hand off to the GC, and the project enters the pre-construction and construction phase. Essentially, it is a guided handover of information between project phases. BIM 360 Docs is where the GC places those files for consumption by the Construction team. It becomes their central source of truth.
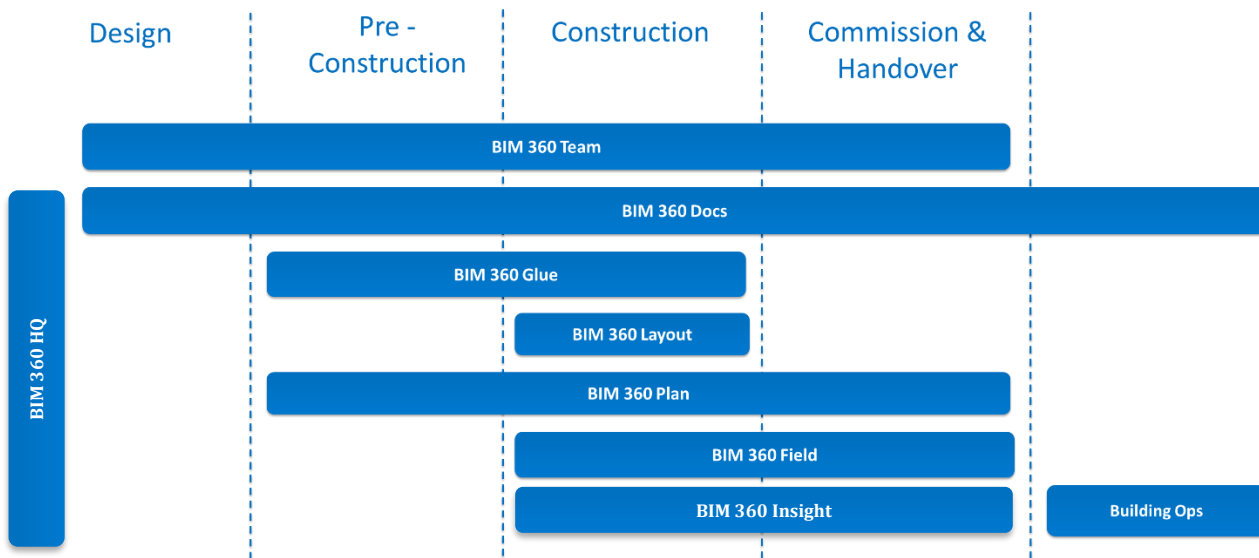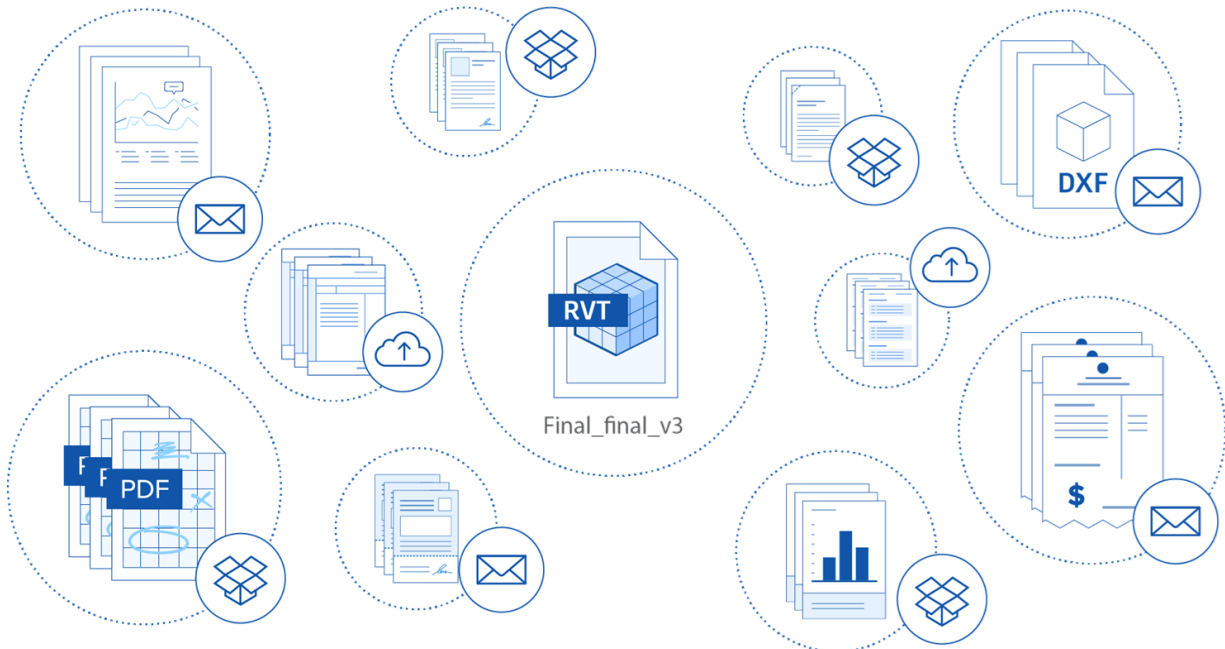
Understand the workflows between BIM 360 HQ, BIM 360 Docs, BIM 360 Plan, BIM 360 Glue, and BIM 360 Field

BIM 360

What is BIM 360? What problem are we solving with this ecosystem of products?

The Problem:

In a nutshell… Information Silos

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How many times a day, hour, do you run back and forth between the site trailer and site? What do you carry? Pad of paper, pens, camera, clipboard, journal, measuring tool?? Is that pad of paper or camera, an information silo? Do you get distracted on the way back to the trailer and forget a detail? How much information never gets entered and tracked by the end of the day?

The Solution:

What can we do with a mobile BIM ecosystem that stands as a "Central Source of Truth"

BIM 360 HQ

With a design team, your project members use Revit, typically in an office environment, and access is by invite to a project. We call that a high-trust environment. It's pretty secure; strangers don't typically walk in off the street, crack your workstation password and launch Revit, gaining access to project data.

Prior to Collaboration for Revit, we would typically store model files on a corporate server in a projects folder. Anyone could link two Revit models together provided the files were in the project folder or accessible resource (mapped drive, shared drive, flash drive). BIM 360 Team (skyscraper) replicates that high-trust environment, allowing any project member to link any two Revit models together.

However, on a Construction project, you are in a low-trust environment where there is need to tightly control the access to sensitive data. HQ is the central location to administer access. A GC may have multiple projects to manage, multiple companies, members, roles and services.

BIM 360 DOCs
This is the repository for ALL construction project documentation… not just Autodesk BIM model files, sheet sets, coordination models. Docs is your document management system, and supports all file types including Microsoft Office. You can see how having ALL construction project information in one location could be useful. A when mobile, take it with you anywhere. And hence the need for HQ and access control. With version control, it truly is the central source of truth. No more information Silos!!

Features:
Single project repository
- Unlimited storage
- Support for all file types
- Project activity log

Document control
- Project- and folder-level access rights
- Define access by role, company, user
- Assign five permission levels
- Check-In/Check-Out, File Lock/UnLock

Navigation
- List and thumbnail views
- **Version control and rollback**
- Single viewer for 2D and 3D files

Document modification
- Create, view, assign and track project issues and RFIs
- 2D & 3D markups with thumbnail views, notifications and open/close workflows
- Assign custom attributes and properties

Publishing
- Extract document sets from design files
- OCR title block data for automated naming
- Separate multi-page PDF files

Viewing
- Online and offline access on Web, phone & tablet
- PDF and model viewer, optimized for Apple iOS
- Navigate between documents without closing viewer

More info:
https://knowledge.autodesk.com/support/bim-360-docs/learn-explore/caas/CloudHelp/cloudhelp/ENU/BIM-360-Docs/files/GUID-2B44BC5A-0E6A-46C8-BEB1-148DC74F208A-htm.html

http://learnbim360.autodesk.com/autodesk-bim-360-docs

https://info.bim360.autodesk.com/bim-360-docs

BIM 360 Glue

Think Navisworks in the Cloud. Ditch the workstation and be mobile. Imagine walking your model into a conference room on an iPad and mirroring it up to the conference room screen. Would that improve collaboration? What if that conference room were away from your home office, perhaps in front of other project stakeholders, disciplines, building owners? It is a coordination model viewer, and much more. It is the service to do clash detection on your BIM models from each discipline. Speed up multi-disciplinary BIM collaboration and coordination review cycles. Conduct constructability reviews on the jobsite or in the office. Identify costly issues in the preconstruction phase. Improve VDC & BIM collaboration while accelerating clash detection.

Features:

Constructability Review Tools
- Review and annotate models
- Send notifications to project team
- Respond to markups

Simply Navigate Models
- Gesture-based pan, zoom and orbit
- Gravity-assisted walk through navigation
- Select, hide and reveal model components

Measure
- Point-to-Point tools
- Object snapping
- Automatic calculations

Navisworks Integration
- One-click publish to Glue
- Perform more detailed clash detection
- Send links and notifications to reviewers

Authoring Tool Integration (Revit)
- Upload directly to Glue
- Automatically manage model versions
- Access and isolate clashing elements

BIM 360 Field

Remember my questions from earlier: How many times a day, hour, do you run back and forth between the site trailer and site? What do you carry? Pad of paper, pens, camera, clipboard, journal, measuring tool?? Is that pad of paper or camera, an information silo? Do you get distracted on the way back to the trailer and forget a detail? How much information never gets entered and tracked by the end of the day? Field is your solution.

Field is cloud-based checklists, safety, RFIs, tasks, issues, daily reports, submittals and equipment tracking. Improve construction quality control and reduce rework. Use construction checklists to monitor jobsite safety and streamline inspections. Track construction equipment and collect asset data from mobile devices. Optimize field performance with construction daily reports. Eliminate that paperwork. Enter data on the spot at the site, not having to carry it back to the trailer for later entry. Monitor and improve field performance by turning jobsite data into powerful information that helps you minimize project risk.

Features:

Quality Control Programs
- Create and assign issues
- Track work with checklists
- Communicate project status

Daily Reporting
- Dashboards and custom reports
- Export data to Excel for analysis
- View cross-project trends

Jobsite Safety Management
- Inspection templates
- Pre-configured checklists
- Safety metrics reporting

Collaboration
- Access to project data online or offline
- Schedule work for team members
- Automate report distribution

Commissioning & Handover
- Track equipment and assets
- Update asset information on iPad
- Attach documentation to equipment

BIM 360 Plan & Layout

Plan is a project management tool. Think MS Project in the cloud. Create project work plans, sequences, schedules, resourcing. Eliminate waste and task rework. Track and analyze performance while keeping teams on schedule. Be accountable with metrics. As for Point Layout, this service leverages the BIM coordination model to literally prepare and transfer point coordinate detail to field survey devices (robotic total station). Verify points and installed components directly in the field and add notes or issues directly to the model when finished.

Plan Features:

Create Work Sequences
- Quickly enter activities
- Copy repetitive work sequences
- Import master schedule milestones

Mobile App
- Anytime, anywhere access
- Sync offline changes
- Download and work plan snapshot

Access Control
- Role-based logins
- Manage work independent of others
- Control access to work plans

Project Views
- List, Gantt and Swimlane views
- Filter by location, trade or scope of work
- Visualize handoffs between trades

Track Performance
- View failed commitments
- Identify root causes
- Highlight KPI trends

Reports
- View Project Percent Complete (PPC)
- Export plan and custom reports
- Project status reports

Point Layout Features:

Office-to-Field Workflows
- Upload models with layout points
- Sync models with BIM 360 Glue
- Communicate issues in the field to VDC team

Robotic Total Station Control
- Remote control
- Guide and point-turn functionality
- Visual and sonic distance cues

QA & Verification
- Verify point locations on the job site
- As-Built collection

- Analyze layout productivity data

BIM 360 Ops

After construction ends and the building is turned over, facilities has operations and maintenance to do. They occupy the building and it needs to be maintained. We have all this data in one central location. Wouldn't it be nice to leverage the BIM model and Field equipment serial number data for O&M?? Many firms are now offering Maad (Modelling As A Deliverable) service.

Features:

Building
- Building dashboards provide focused and relevant role-based information to your technicians, managers and occupants.

Assets
- Give your teams the ability to immediately access and update asset information right from their mobile devices. Import your building's assets and associated data from Autodesk Revit®, Autodesk BIM 360 Field, or a spreadsheet to jumpstart the process.

Reactive Tickets
- Create and update tickets on your phone or tablet. Attach photos and videos. You will receive notifications whenever a ticket is assigned or updated. Speed up data entry with voice-to-text conversion.
- Ticket descriptions are streamlined and can include photos and videos
- "Nearby" tickets are highlighted on the iOS dashboard
- Detailed asset data, including 3D models and PDFs, are viewable on smartphones or tablets
- Technicians can use voice-to-text for faster data entry
- Occupants are automatically notified and can give a "thumbs up" for good work

Preventive Maintenance
- Schedule asset inspections
- Include mobile checklists to drive standards-based procedures
- Assign assets to specific vendors or technicians
- Monitor compliance with reports

Summary:

Eliminate Information Silos… in the Design phase… in the Pre and Construction phase… in the Occupancy phase

Be Mobile, less to carry, less exercise walking back-n-forth, happier superintendents ;-)

Maad: Setting your building owners up for success… Happier building owners!