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## Seamless Cloud Collaboration with BIM 360 Design

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### Learning Objectives

- Learn how to navigate and manage projects on BIM 360.
- Discover the differences between traditional collaboration offerings and BIM 360 Design.
- Learn how to set up and work within a cloud-hosted project.
- Assess the potential impact of BIM 360 Design on your firm.

### Description

Have you made the move to BIM 360 Design? Not yet? This class is for you! We will take a look at the needs served by this cloud-hosted software, discuss the value that it brings to the table, and then dive into a live project. We'll start in Revit software, where we'll send our design data to BIM 360, and then we'll move over to BIM 360 to receive that data. We'll explore the Design Collaboration module, where design teams can create, share, and consume work packages with each other. Finally, we'll visit the Document Management module, where all project stakeholders have a role to play. In one fast-paced hour, you should gain the knowledge needed to make the decision to adopt BIM 360 Design and extend BIM workflows within your own firm. This session features Revit and BIM 360 Design.

## Speakers



**Aaron Vorwerk** is a registered architect, EIT, LEED AP BD+C, and AEC industry technologist. He advises customers across North America on AEC project lifecycle strategy and workflows, frequently speaking on AEC-related topics. He holds graduate degrees in architecture and engineering (M.Arch, MSCE, BSCE); has acquired 15+ years' worth of industry experience; and has led BIM transitions in two design firms.



As a designer with a passion for technology, training in architecture, and experience in construction, **Cara Wilczynski** applies her skills and experience to the challenges the AEC industry is presently facing. As a Subject Matter Expert in Construction at Autodesk, she works to address workflow challenges and improve collaboration across the project delivery team. Cara's experience includes mixed-use/residential high-rise, corporate headquarters and renovations ranging from \$500,000 to \$120M.

## Industry Trends: Project Delivery

There are several trends driving the need for a better project delivery solution in the AEC space. Let's consider a few examples:

- **Urbanization** is leading to a massive migration to cities resulting in a huge increase in demand for development which is leading the industry to new and innovative ways to deal with this complexity.
  - As teams embrace new trends such as machine learning and generative design to meet this demand, this only increases the need to manage projects more effectively using technology.
  - The construction industry will need to build [13,000 buildings per day through 2050](#) to meet this demand.
- Owners are realizing the benefits of BIM and the associated project savings, leading to more **BIM mandates** and the advancement of new standards supporting BIM maturity (like [PAS 1192](#)), the [National BIM Standard](#) and new ISO requirements across the world.
- Teams are increasingly more **geographically dispersed** increasing their need to connect with each other and access critical project information in real time.



FIGURE 1: INDUSTRY TRENDS FOR PROJECT DELIVERY

These trends are leading to a massive explosion of data that is being created at a higher rate and higher fidelity than ever before.

As a result, project teams are left with the problem of having to manage this massive amount of ever-changing data across teams, deliverables and project phases as they work their way through the project delivery process.

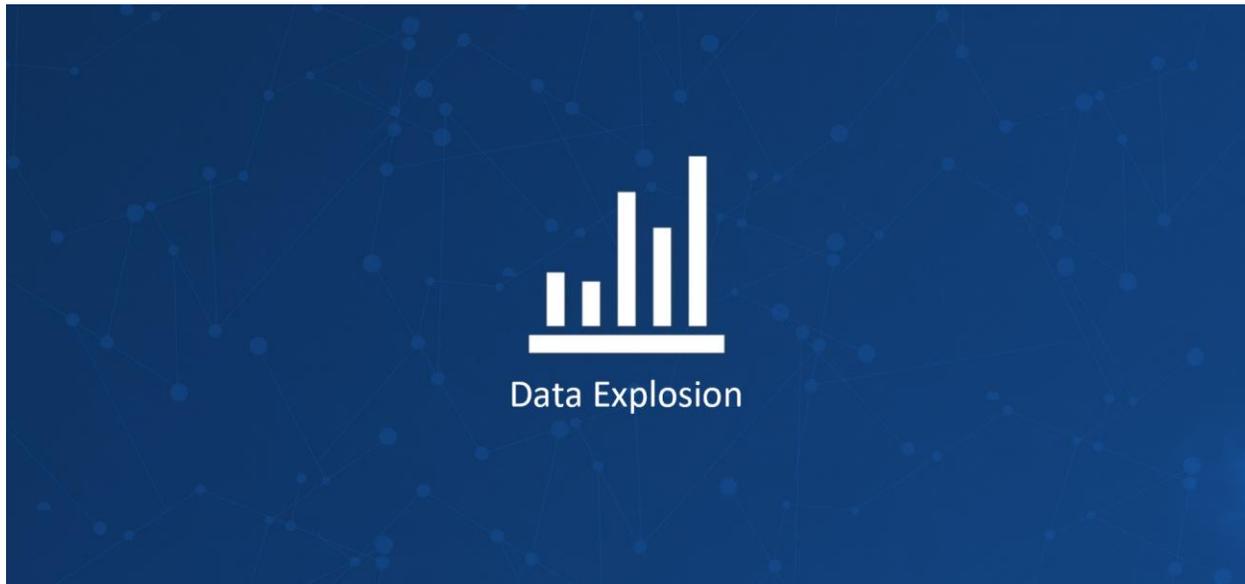


FIGURE 2: DATA EXPLOSION

These trends are making it even more difficult to collaborate on AEC projects. As stated above, AEC projects already produce an incredible amount of data. And as projects continue to grow in complexity, the frequency of data being iterated only increases.

Historically, syncing and utilizing all this data was impossible—and has been one of the biggest challenges in the AEC industry. Workflows and data have been disconnected, resulting in proliferation of bad information and data silos across companies and functional groups.

These inefficient processes, among other factors, contribute to the [lack of construction productivity versus nearly every other industry](#). One common and tangible example is the lost time that is incurred when project information is not readily available (i.e. requires searching) and/or when communication is asynchronous, preventing immediate action; the consequences of these delays are exacerbated across project teams that are geographically-distributed and/or comprise multiple firms. Simply put, effective project collaboration is challenging and yet critical to improve project team efficiency and productivity.

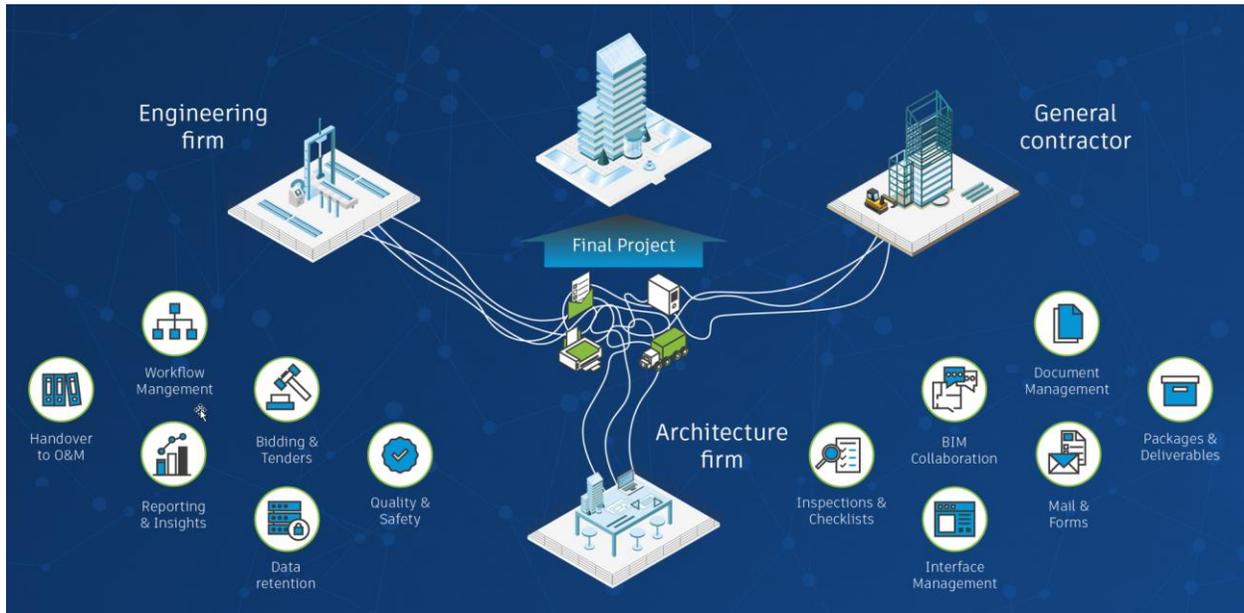


FIGURE 3: COLLABORATION IS STILL A CHALLENGE

Perhaps the biggest issue behind the collaboration challenge is that none of the tools commonly leveraged for this purpose fully solve the problem for designers, because they simply weren't built for design-based collaboration:

- Traditional tools such as **FTP sites** can be expensive and complex to implement—and design files still need to be downloaded and saved to local drives to become usable.
- **Network drives** serve the need for sharing internally, but as soon as files need to be accessed remotely or by an external team member, these tools fall short.
- We're seeing project participants adopt more modern tools such as cloud storage; however, **basic cloud storage** tools are not built to manage design data. CAD files or BIM models are not viewable or usable natively in such cloud storage applications, and users must resort to the “download and open” model to get any value out of the files themselves.
- Lastly, we see some architects or engineers try **point solutions** to address some of their needs. And while these solutions are more tailored to the way AEC projects work, and they may serve a particular function very well, they have several drawbacks: they typically only address a niche workflow, are difficult to integrate with other solutions, and do not support project lifecycle collaboration.

Again, all of these tools offer value. But none of them are effective in addressing the ‘big issue’ of project-wide collaboration.

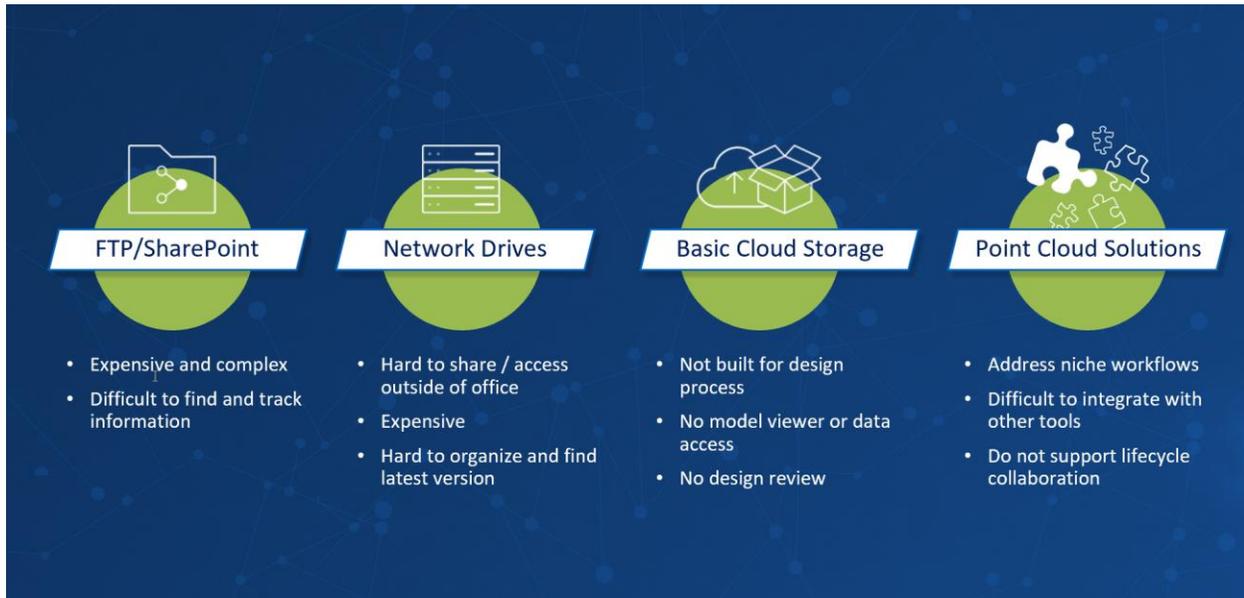


FIGURE 4: CURRENT TOOLS ARE NOT BUILT FOR DESIGN DATA

Furthermore, we are seeing a shift in the industry when it comes to project execution. You will see the change happening across the project delivery process:

- More detailed design engineering is taking place up front;
- Multi-disciplinary collaboration is now mainstream; and
- Owner requirements are evolving as they see the benefits of BIM for downstream use.

As a result, traditional drawing-based methods (and traditional file sharing mechanisms) are no longer adequate or acceptable.

Naturally, this change won't be an easy task, especially when working across disparate teams based in different locations and delivering on different scopes of work. Challenges include coordination of project milestones, juggling of data handover, and meeting contractual requirements.

But the change is necessary. Every single time a handover occurs between teams, or across phases, a data loss occurs leading to inefficiency and risk. This is unacceptable. Meanwhile, the technology necessary to improve project clarity and collaboration is rapidly improving.

## Our Strategy: Connecting the AEC Project Lifecycle

Autodesk is interested in addressing this larger problem of data connection across the AEC project lifecycle. Let's look at our strategy, as defined in the words of our customers:

*“If you came up with **really simple tools** that integrated information **seamlessly** and worked really well and you treat it like a **platform...**”*

+

*“When you think about looking at **data** as it moves from the **procurement, design and construction** operations processes, that's...**the holy grail...**”*

### Why Autodesk?

We believe we are well-equipped to address this broader issue of project delivery. Here are just a few reasons why:

- **BIM Leadership**
  - A large portion of AEC projects around the world are completed using Autodesk technology.
  - Our cloud technology understands BIM data (from Autodesk or third parties) better than anyone else.
- **Purpose-built, Cloud-native Technology**
  - The backbone of our cloud technology is a world-class infrastructure that is scalable, secure and resilient.
  - Access project data anytime, anywhere, and on any device.
- **Experience**
  - We understand the global AEC industry and what it takes to meet strict regulatory requirements for BIM project delivery.
- **Scalability and Depth**
  - Our cloud is operating at scale. For example, we have delivered more than 50M cloud renderings.
  - We have a broad cloud portfolio, ranging from cloud-based rendering to reality capture, AR/VR, analysis, and more.
- **Extensibility**
  - Our cloud technology is open for enhancement and integration by our customer and developer ecosystem.



FIGURE 5: WHY AUTODESK?

The bottom line is that Autodesk is leading the way with our cloud-based project delivery offerings.

You might rightly ask: ***How have we been delivering this value to our customers?***

## **Autodesk BIM 360: A Connected Platform for Project Delivery**

Autodesk has brought together several key themes into a single brand, [Autodesk BIM 360](#), to support the entire project lifecycle (design, build, and operate):

- Controlled (Revit) worksharing
- Deliverable coordination
- Design review
- BIM coordination
- Change visualization
- Quality management
- Construction safety
- Issue management
- RFIs and submittals

BIM 360 is our new AEC cloud brand and project delivery platform. This next-generation platform removes the need for single point applications and unifies your project data. The unified BIM 360 solution aggregates the data and provides transparency to project stakeholders making everyone more accountable and improving visibility in real time.

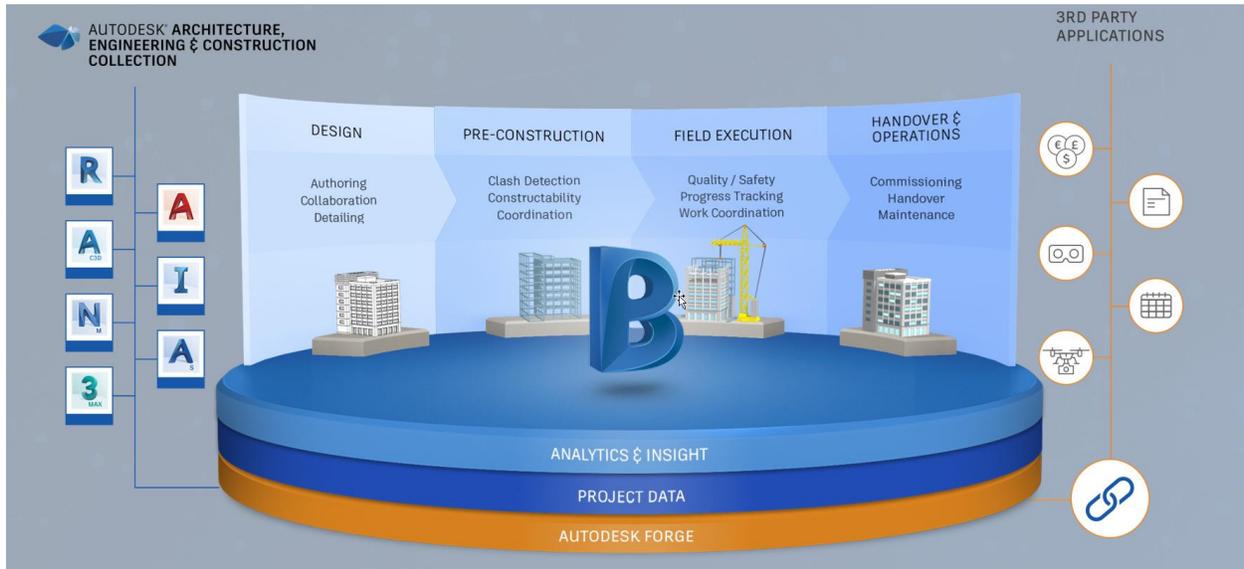


FIGURE 6: AUTODESK BIM 360

The next-generation BIM 360 portfolio currently comprises four product offerings, all of which are simply feature sets of this single, connected platform. The focus of this class is, of course, BIM 360 Design, highlighted below:

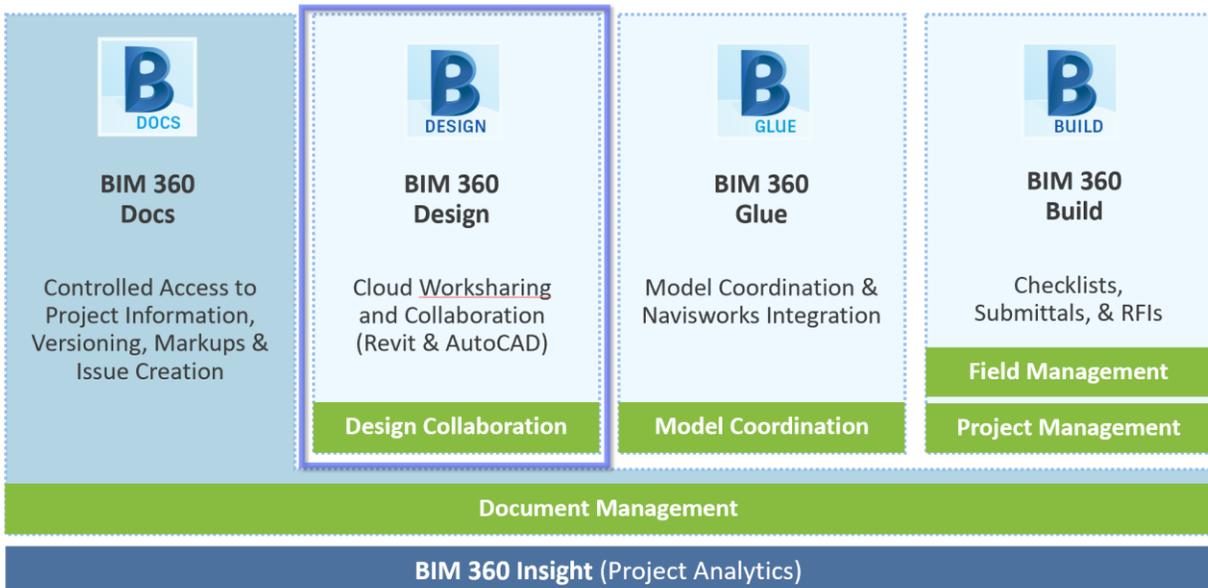


FIGURE 7: BIM 360 PLATFORM MODULES

## BIM 360 Design

Autodesk [BIM 360 Design](#) is a cloud worksharing, design collaboration, and data management product for improved project delivery, built on the new BIM 360 platform. BIM 360 Design comprises the Revit cloud worksharing capabilities that you may be familiar with from [Collaboration for Revit](#), as well as two new BIM 360 platform modules: **Document Management** and **Design Collaboration**.

With BIM 360 Design, you can co-author multidisciplinary Revit models and access data management and collaboration functionality, e.g. 2D and 3D file viewing with markup and issue creation tools, accessible from your web browser or mobile app. Additional features include:

- **Single Project Repository** (*Document Management*)
  - Unlimited storage
  - Support for all file types
  - Project activity log
- **Access Controls** (*Document Management*)
  - Project- and folder-level access rights
  - Define access by role, company, or user
  - Assign five permission levels
- **Navigation** (*Document Management*)
  - List and thumbnail views
  - Version control and rollback
  - Single viewer for 2D and 3D files
- **Document Modification** (*Document Management*)
  - Create, view, assign and track project issues
  - Add markups with thumbnail views, notifications and open/close workflows
  - Assign custom attributes and properties
- **Publishing** (*Document Management*)
  - Extract document sets from design files
  - OCR title block data for automated naming
  - Separate multi-page PDF files automatically
- **Change Visualization** (*Design Collaboration*)
  - View added, removed, or modified elements
  - Understand changes in context between aggregated models in a single space
  - Navigate change visualization by team, phase, building level and more
- **Deliverable Coordination** (*Design Collaboration*)
  - Reduce rework with trackable project activity
  - Facilitate model exchange and deliverable coordination
  - Curate sets to separate in-progress files from shareable files
- **Viewing** (*Document Management*)
  - Online and offline access on web, phone, and tablet
  - PDF and model viewers optimized for Apple iOS
  - Navigate between documents without closing viewer

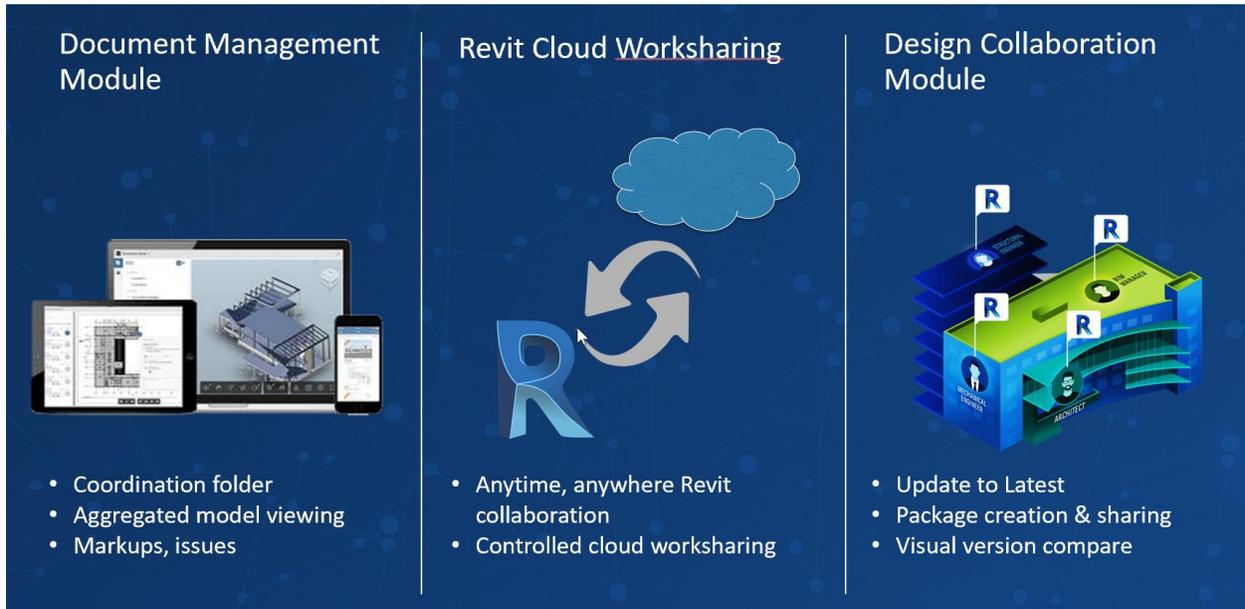


FIGURE 8: BIM 360 DESIGN

### Key Issues Addressed by BIM 360 Design

The same key issues resonate with most designers when surveyed on their opinions about the challenges to effective project collaboration: **Complexity, Communication, and Security.** Let's take a closer look.

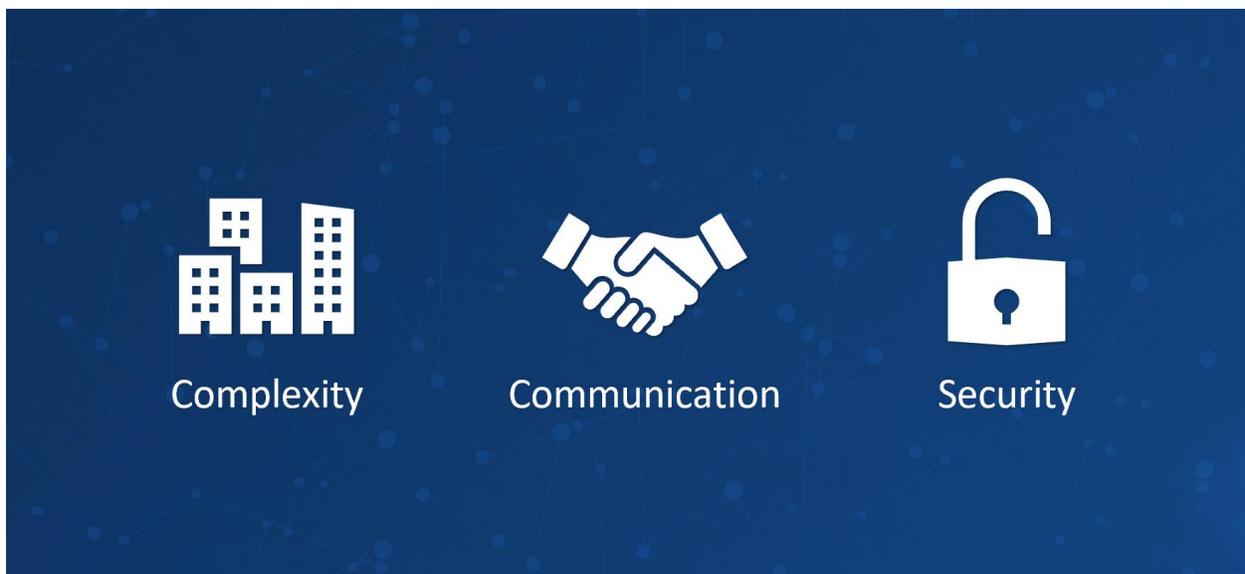


FIGURE 9: KEY ISSUES AFFECTING PROJECT COLLABORATION

## Complexity: Worksharing

BIM 360 Design helps you **reduce project complexity related to collaboration**, giving you the ability to:

- Extend Revit worksharing to virtually any location;
- Enable secure, concurrent authoring by internal and external project teams; and
- Easily allocate resources, assigning team members as appropriate (e.g. those with relevant skill sets) to each project.

Best of all, this requires no costly IT setup or maintenance!

- Extend worksharing to virtually anywhere
- Enable easy and secure multi-firm concurrent authoring

Connects project teams with centralized access to BIM project data in the cloud, with no need for costly IT setup

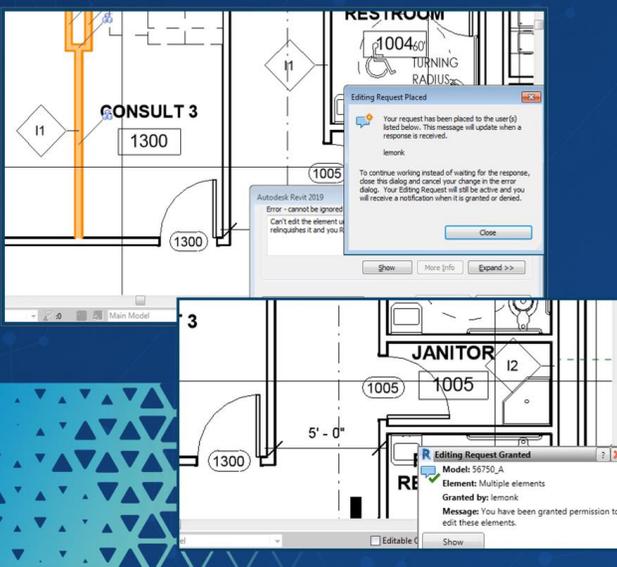


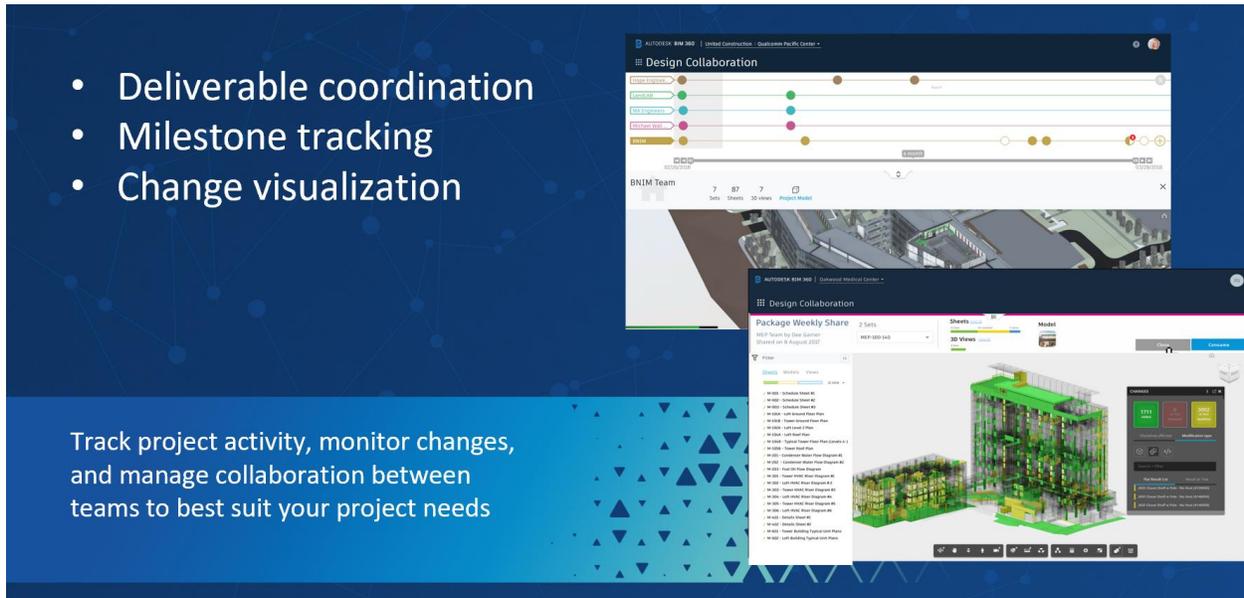
FIGURE 10: REDUCING COMPLEXITY VIA WORKSHARING

## Communication: Design Collaboration

BIM 360 Design promotes **efficient team communication**, giving you the ability to:

- Reduce rework with trackable project activity;
- Facilitate model exchange and deliverable coordination;
- Understand changes in context between aggregated models in a single space; and
- Navigate change visualization by team, phase, building level and more.

It is powerful indeed to share and consume native design data in a meaningful way, reducing or even eliminating the need to upload, download, import, or export your work. The “managed” collaboration features of BIM 360 Design directly address the most-requested feature of its predecessor, Collaboration for Revit.



- Deliverable coordination
- Milestone tracking
- Change visualization

Track project activity, monitor changes, and manage collaboration between teams to best suit your project needs

FIGURE 11: IMPROVING COMMUNICATION VIA DESIGN COLLABORATION

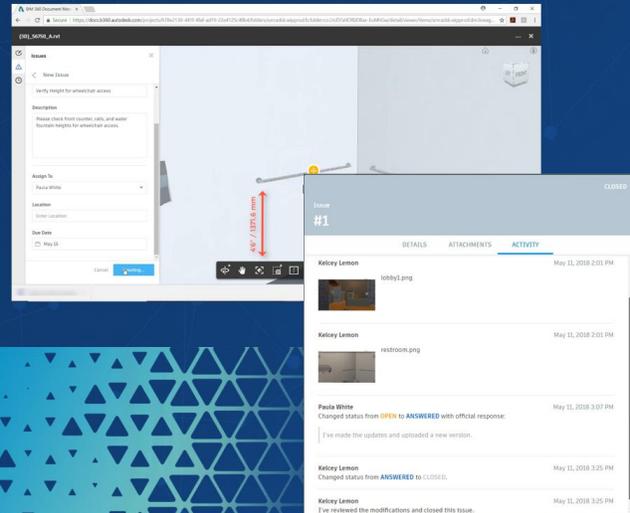
## Communication: Design Review

BIM 360 Design helps you **maintain accountability** and ensure project participants stay on track with features to:

- Create private and public (published) markups on 2D or 3D documents for review, including dimensions and text;
- Create issues in context by pinning them to any 2D or 3D design location;
- Add photos, assign work with automated notifications, and track resolution to closure.

It is both useful and logical to add and manage markups and issues directly on the native files that have been published to BIM 360, rather than exporting to formats that are unable to display BIM information.

- Place issues on 2D & 3D views and sheets
- Assign and track issues
- Add private or shared markups



Keep your team on the same page and ensure accountability with assignable, version-aware issues and markups

FIGURE 12: IMPROVING COMMUNICATION VIA DESIGN REVIEW

## Security: Sharing, Viewing, and Access

BIM 360 Design offers **powerful security** features, giving you the ability to:

- Share design data easily and flexibly with all project stakeholders;
- Restrict user access to certain folders and/or limit access according to user, role or company; and
- Maintain backups of every version of every file that is synced and/or published, with the ability to rollback or recover any data.

- 5 levels of permissions per folder
- Control access by user, role or company

Control worksharing and design deliverable exchange with the assurance that the right information is in the right hands

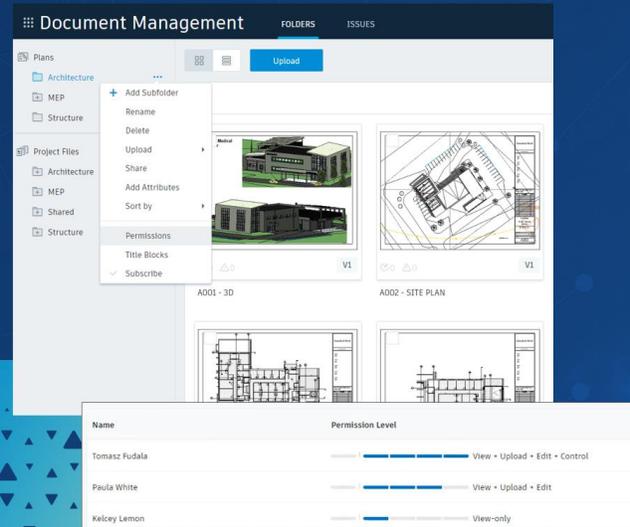


FIGURE 13: PROVING SECURITY THROUGH PERMISSIONS, ROLES, AND VERSIONING

## Summary

Effective project collaboration is challenging and yet critical to improve project team efficiency and productivity. Autodesk [BIM 360 Design](#) is a cloud worksharing, design collaboration, and data management product for improved project delivery, built on the new BIM 360 platform.

BIM 360 Design comprises the Revit cloud worksharing capabilities that you may be familiar with from [Collaboration for Revit](#), as well as two new BIM 360 platform modules: Document Management and Design Collaboration.

With BIM 360 Design, you can co-author multidisciplinary Revit models and access data management and collaboration functionality, e.g. 2D and 3D file viewing with markup and issue creation tools, accessible from your web browser or mobile app.

BIM 360 Design also directly addresses the challenges most commonly cited by design teams by (1) reducing project complexity, (2) improving project communication, and (3) providing data security.

In short, BIM 360 Design enables you to control worksharing and design deliverable exchange with the assurance that the **right information** is in the **right hands** at the **right time** throughout the project lifecycle.