



Working During a Pandemic: Mobilizing using BIM 360 Design

Andrea Allas

Digital Design Specialist



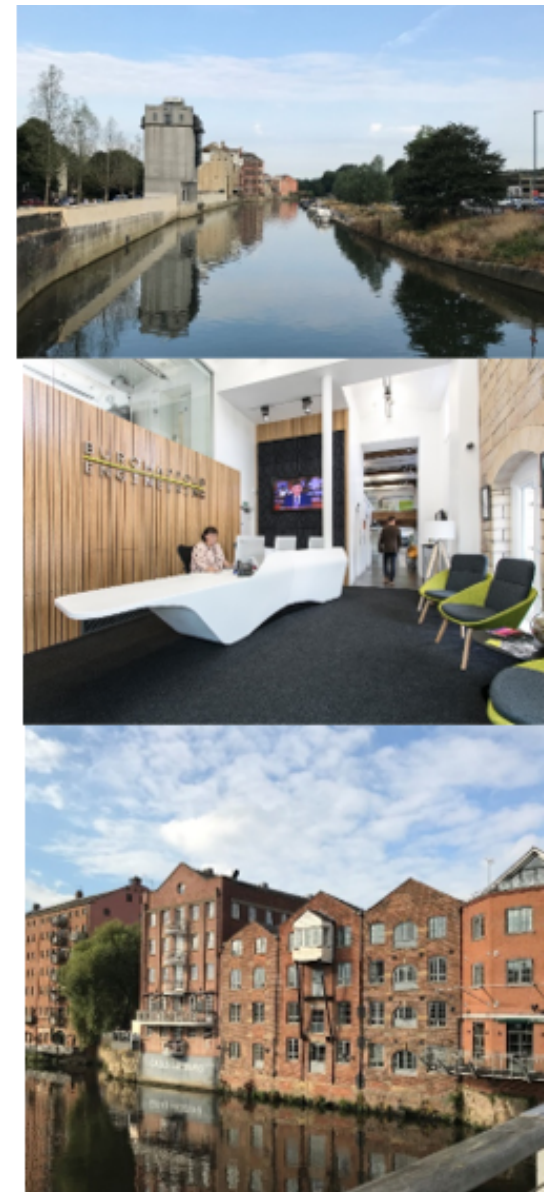
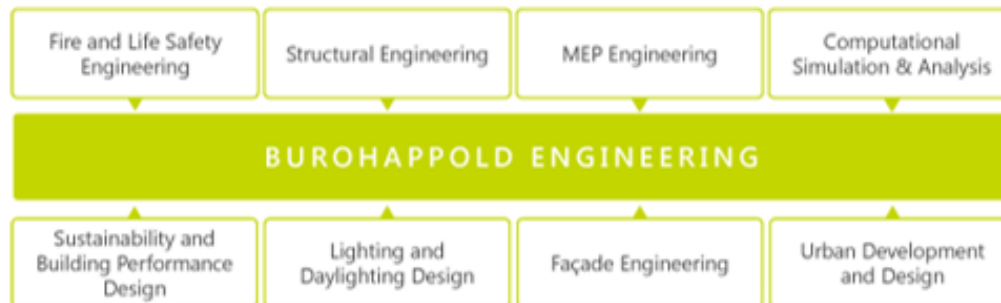
About the speaker

Andrea Allas – Digital Design Specialist

Andrea Allas is a born and raised New Yorker. Since graduating with an architectural degree from Pratt Institute, she has used the global reach of New York City to develop a multinational understanding of the AEC industry. As an early adopter of Revit, her natural drive for communication, organization and innovation drew her to fulfill the growing need for BIM managers within the industry. Today she leads projects across multiple sectors and cities as a Digital Design Specialist where she puts her expertise in BIM Management to work.



BUROHAPPOLD ENGINEERING



We are a diverse, one-firm culture. When we get it right, it sings. Internal barriers are always to be overcome through inclusivity.

A Buro Happold Guiding Principle

Learning Objectives

Leveraging our knowledge of BIM 360 Design cloud services, shifting to a completely cloud based platform was not only possible but achievable.

Learning Objectives

Leveraging our knowledge of BIM 360 Design cloud services, shifting to a completely cloud based platform was not only possible but achievable.

- **Manage** a large-scale rollout of BIM 360 Design

Learning Objectives

Leveraging our knowledge of BIM 360 Design cloud services, shifting to a completely cloud based platform was not only possible but achievable.

- **Manage** a large-scale rollout of BIM 360 Design
- **Utilize** BIM 360 Design collaborative tools to enhance team workflows.

Learning Objectives

Leveraging our knowledge of BIM 360 Design cloud services, shifting to a completely cloud based platform was not only possible but achievable.

- **Manage** a large-scale rollout of BIM 360 Design
- **Utilize** BIM 360 Design collaborative tools to enhance team workflows.
- **Create** effective model management processes through organization and permissions.

Learning Objectives

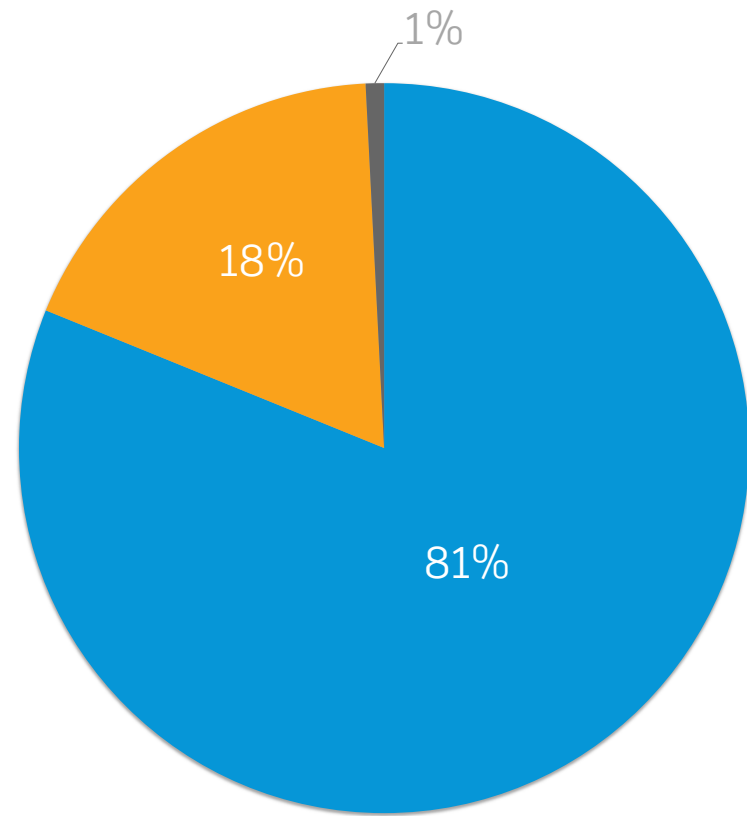
Leveraging our knowledge of BIM 360 Design cloud services, shifting to a completely cloud based platform was not only possible but achievable.

- **Manage** a large-scale rollout of BIM 360 Design
- **Utilize** BIM 360 Design collaborative tools to enhance team workflows.
- **Create** effective model management processes through organization and permissions.
- **Support** a team working within the cloud as a BIM manager.

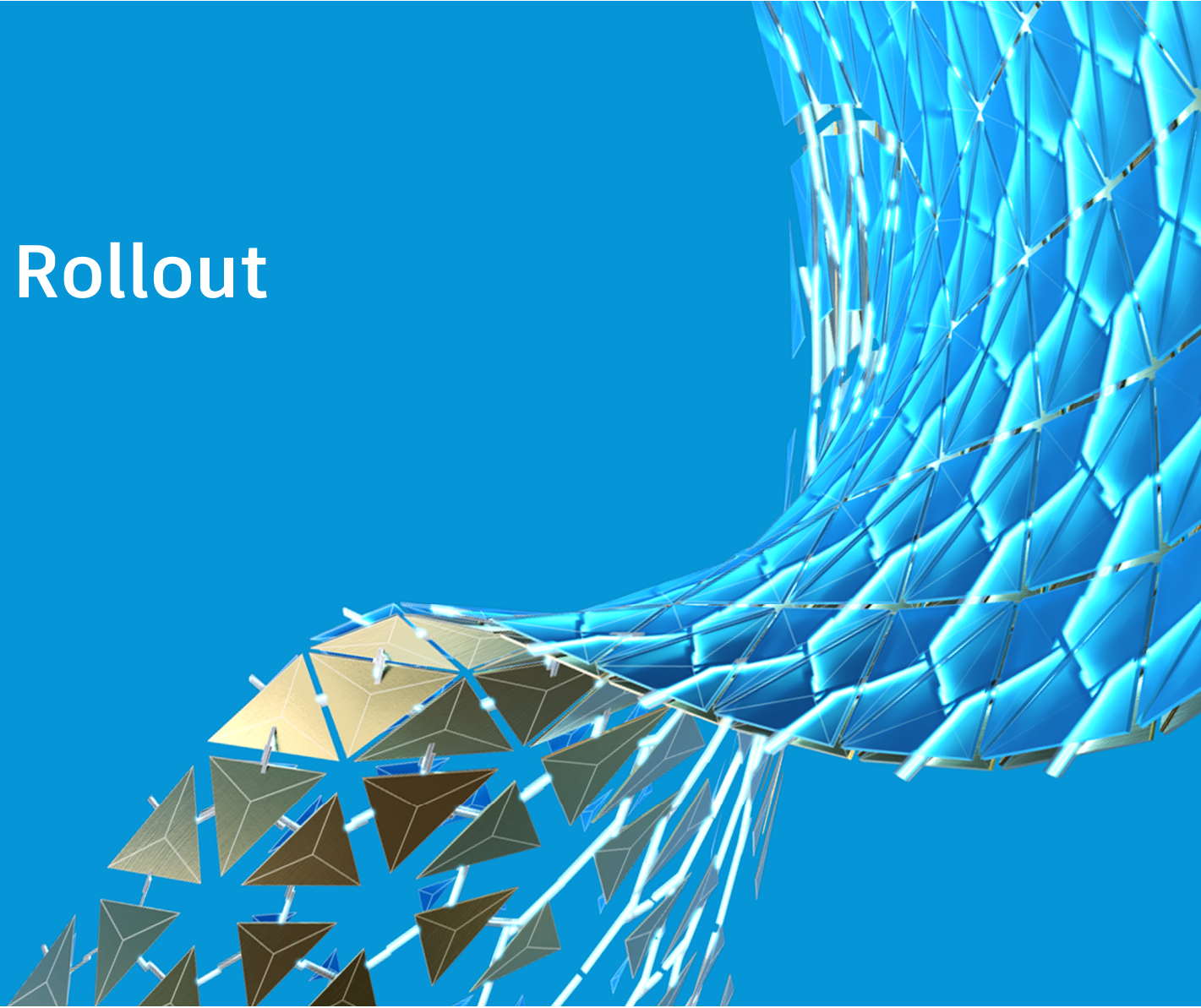
Employee Survey – Question 1

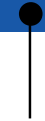
Has BIM 360 helped with your performance and productivity accessing BIM models while WFH, in comparison to access via VPN remote access or Citrix?

■ Has Improved
■ The same
■ More Difficult



Managing the Rollout





February 7, 2020

Where we started

In early February, it was still business as usual except for an early warning email from the company describing their monitoring of the spread of Covid-19.

US Region: Early 2020

85

PROJECTS

In March 2020, there were 85 active projects.

250

USERS

On a daily basis, over 250 users would be active in Revit projects.

7

OFFICES

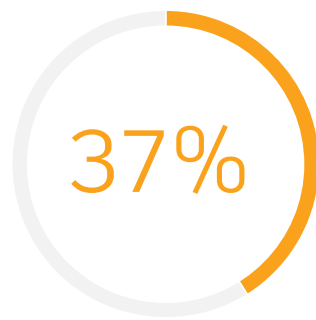
Design teams spanned 7 cities across the US

3

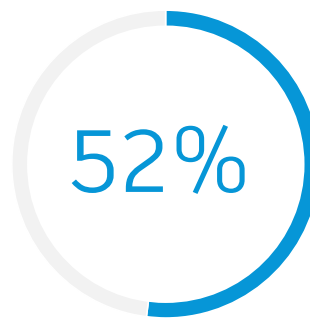
NETWORKS

Revit central model locations were spread across BIM 360, Revit server & local servers.

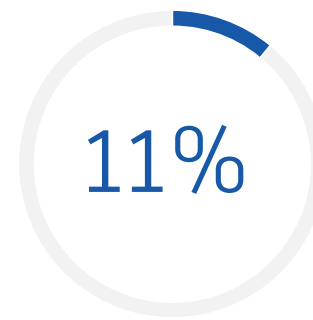
Revit Model Central Locations



BIM 360

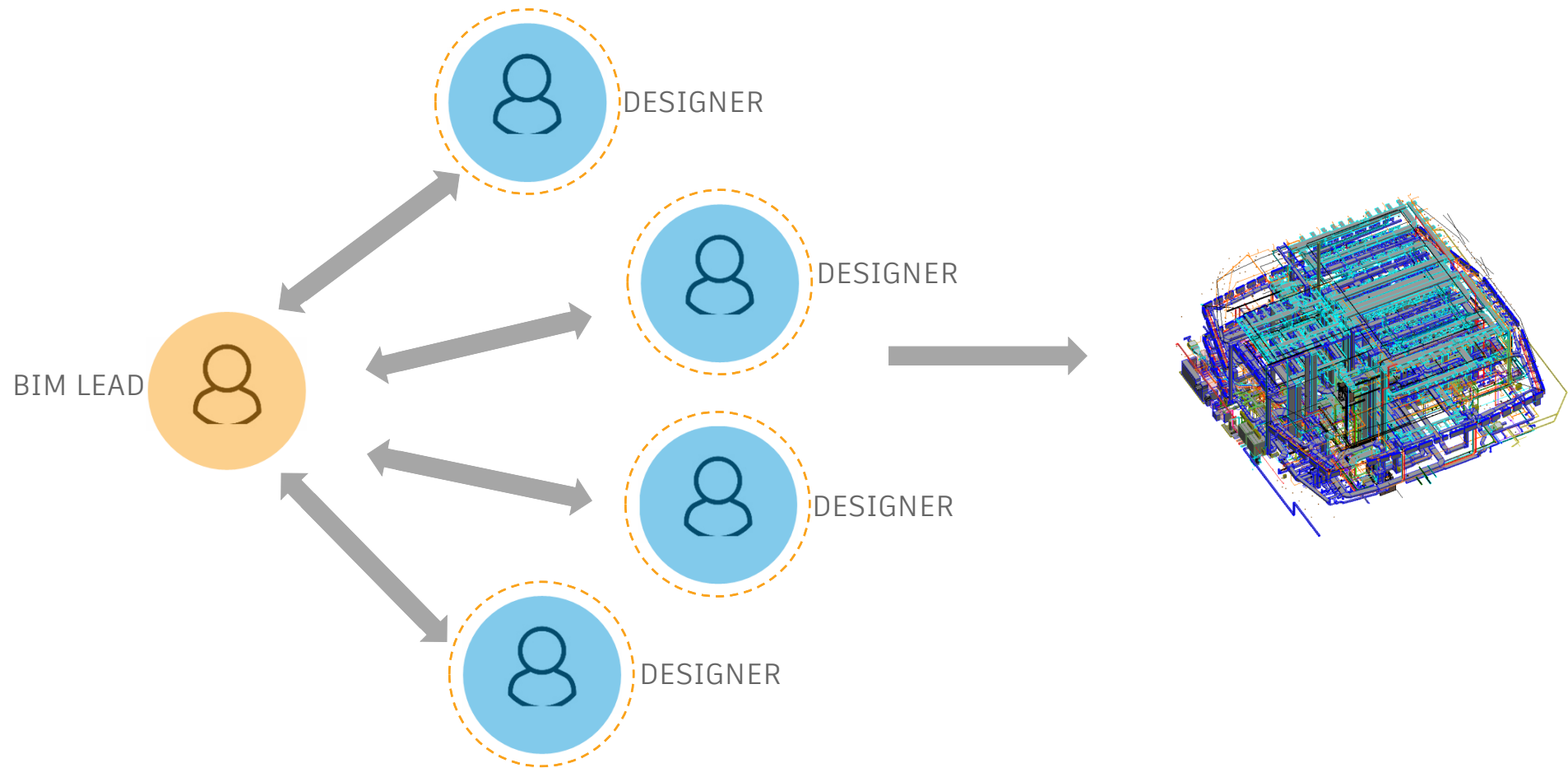


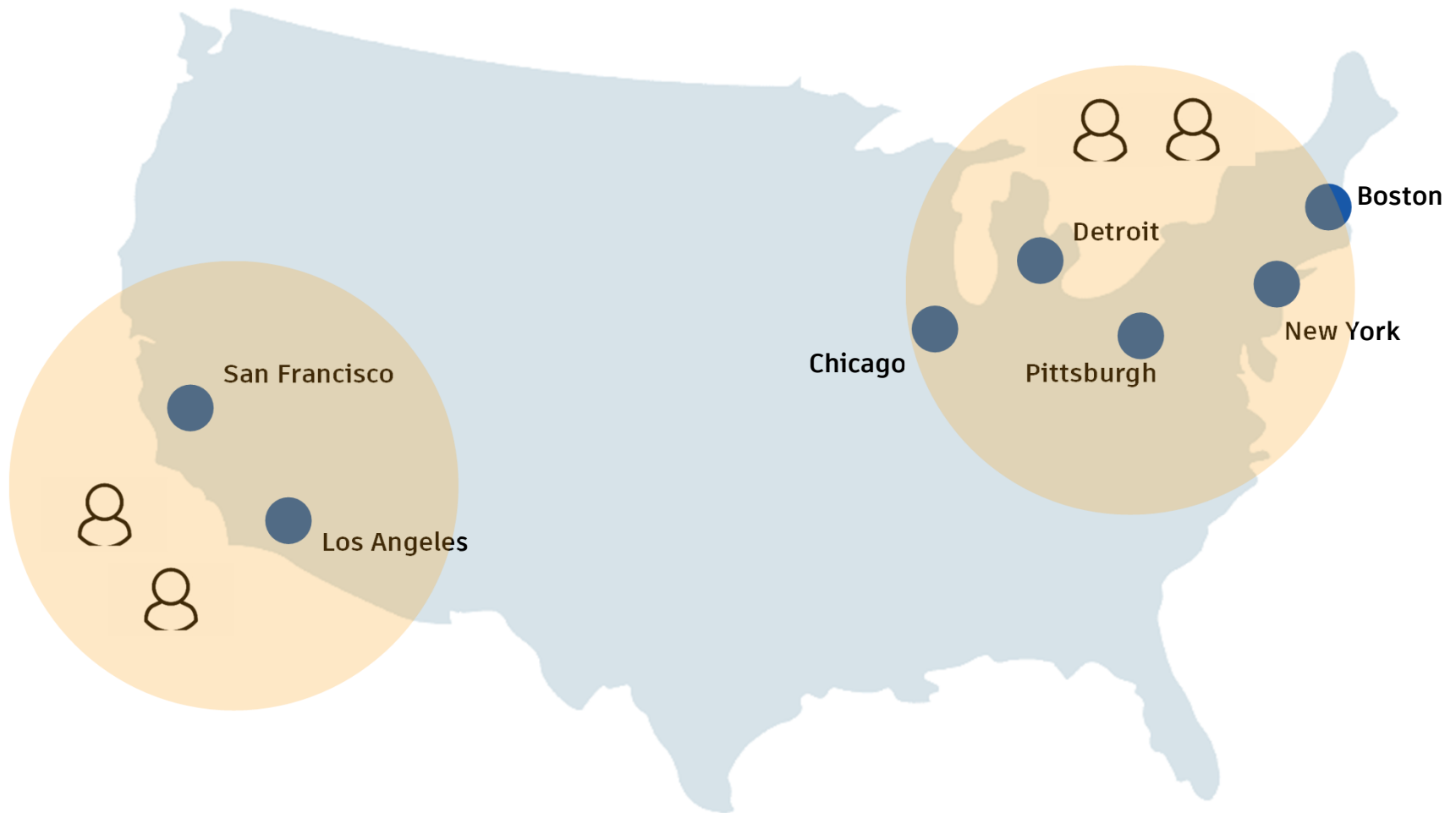
Revit Server

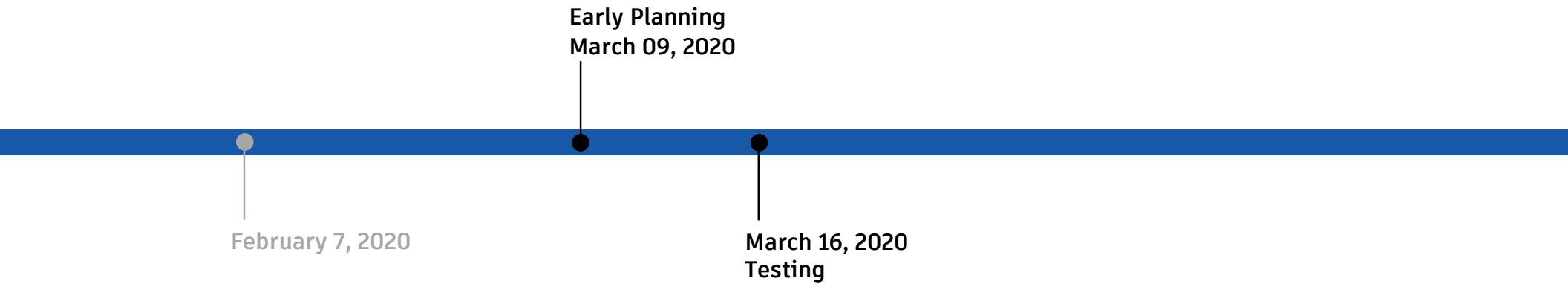


Local City Server

Buro Happold Team Structure







Gathering Data & Mobilizing

As the reality of the impact that the spread of Covid-19 would have on businesses was becoming imminent, it became critical to come up with a plan to switch to remote working. An assessment of the tools available made it clear that switching to a completely cloud based workflow was the best way forward. Once decided, the team had to work quickly and efficiently to migrate project BIM models around active project timelines.

Working from Home Challenges

Working from Home Challenges

PROJECT DELIVERABLES

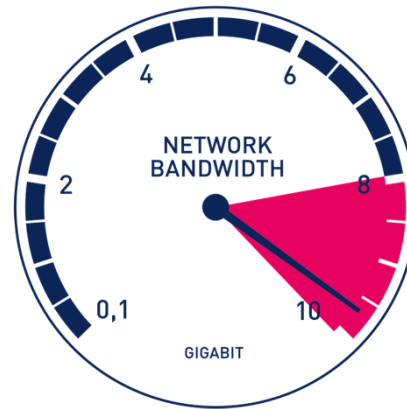


Working from Home Challenges

PROJECT DELIVERABLES



INTERNET BANDWIDTH

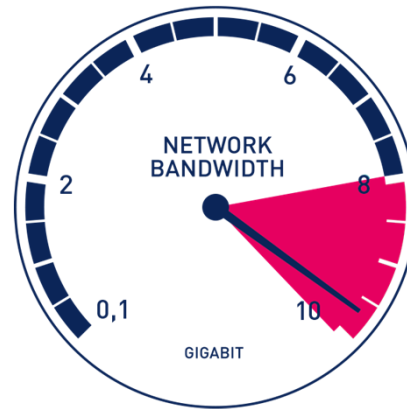


Working from Home Challenges

PROJECT DELIVERABLES



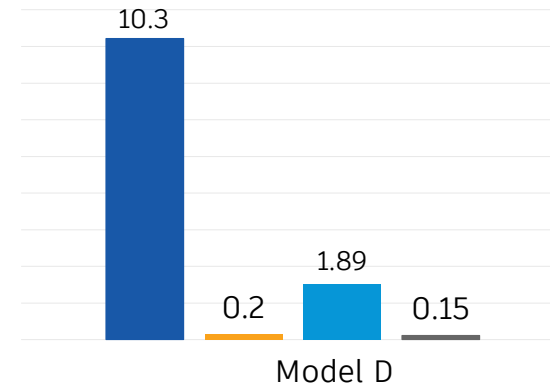
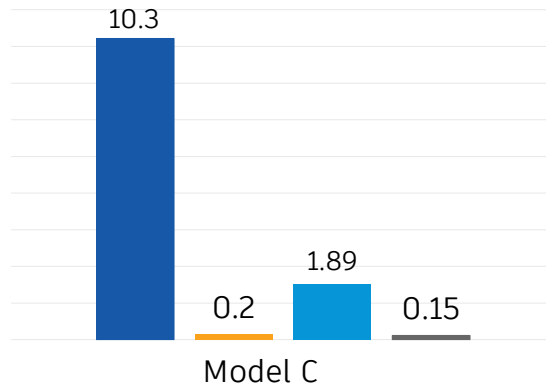
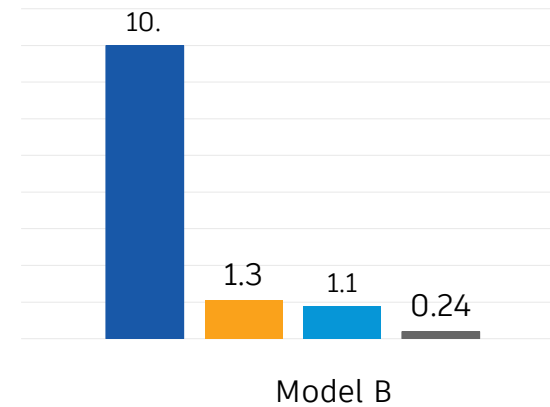
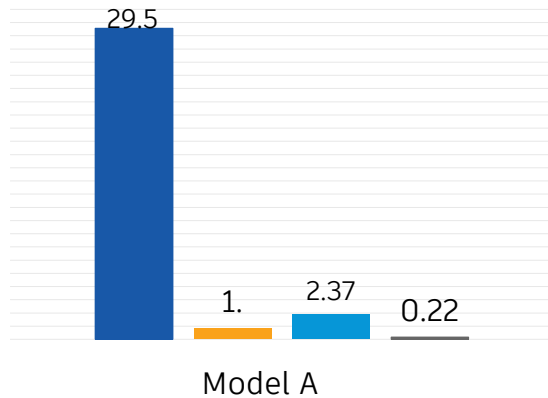
INTERNET BANDWIDTH



COLLABORATING



VPN to Server vs BIM 360 Hosting



VPN Opening Speed
(min.sec)

BIM 360 Opening
Speed (min.sec)

VPN Sync Speed
(min.sec)

BIM 360 Sync
Speed (min.sec)

Advantages to Cloud Collaboration

DECENTRALIZED MODEL HOSTING

Any user can access a Revit project as long as there is an internet connection and are invited to the project hub.

REVIEW TOOLS

Markup and view model information including sheets through the web portal.

FILE HOSTING

With all models and project files easily stored on the cloud, teams no longer have to spend time on regular uploading and downloading of information.

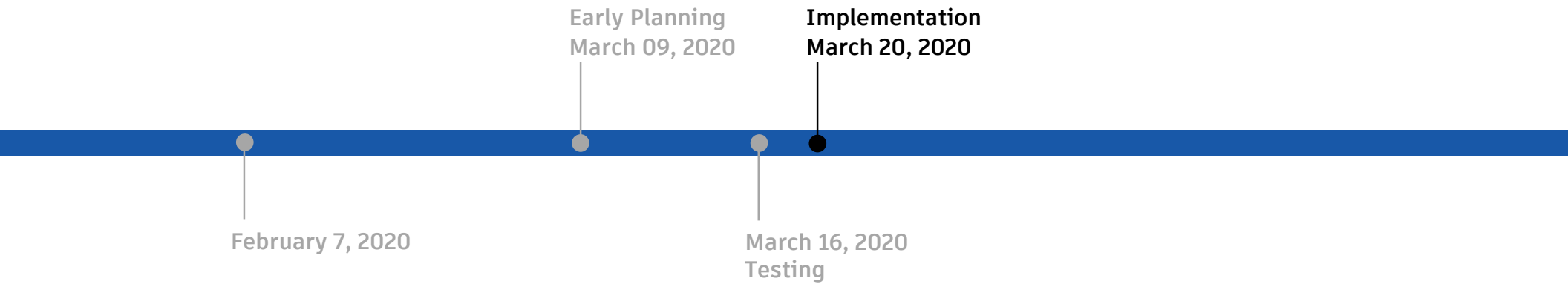
CONTROL OVER USERS

Ease of management of multiple teams and team members to an individual level.

By the time it became clear that we were in a pandemic, we were already working in the cloud environment, so it was business as usual

Paul McGilly

Buro Happold US Region Digital Design Manager



Committing to BIM 360

Having reviewed our resources and test data, fully migrating our projects to BIM 360 was the clear path forward.

Getting to Full BIM 360

COST

IT SUPPORT

LOGISTICS

TRAINING

Cost

Autodesk Account

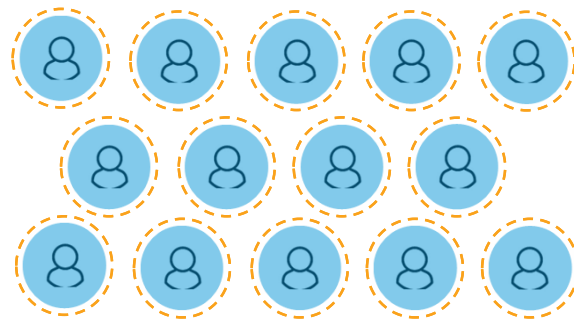
+

Revit Licenses

=

+

BIM 360 Licenses



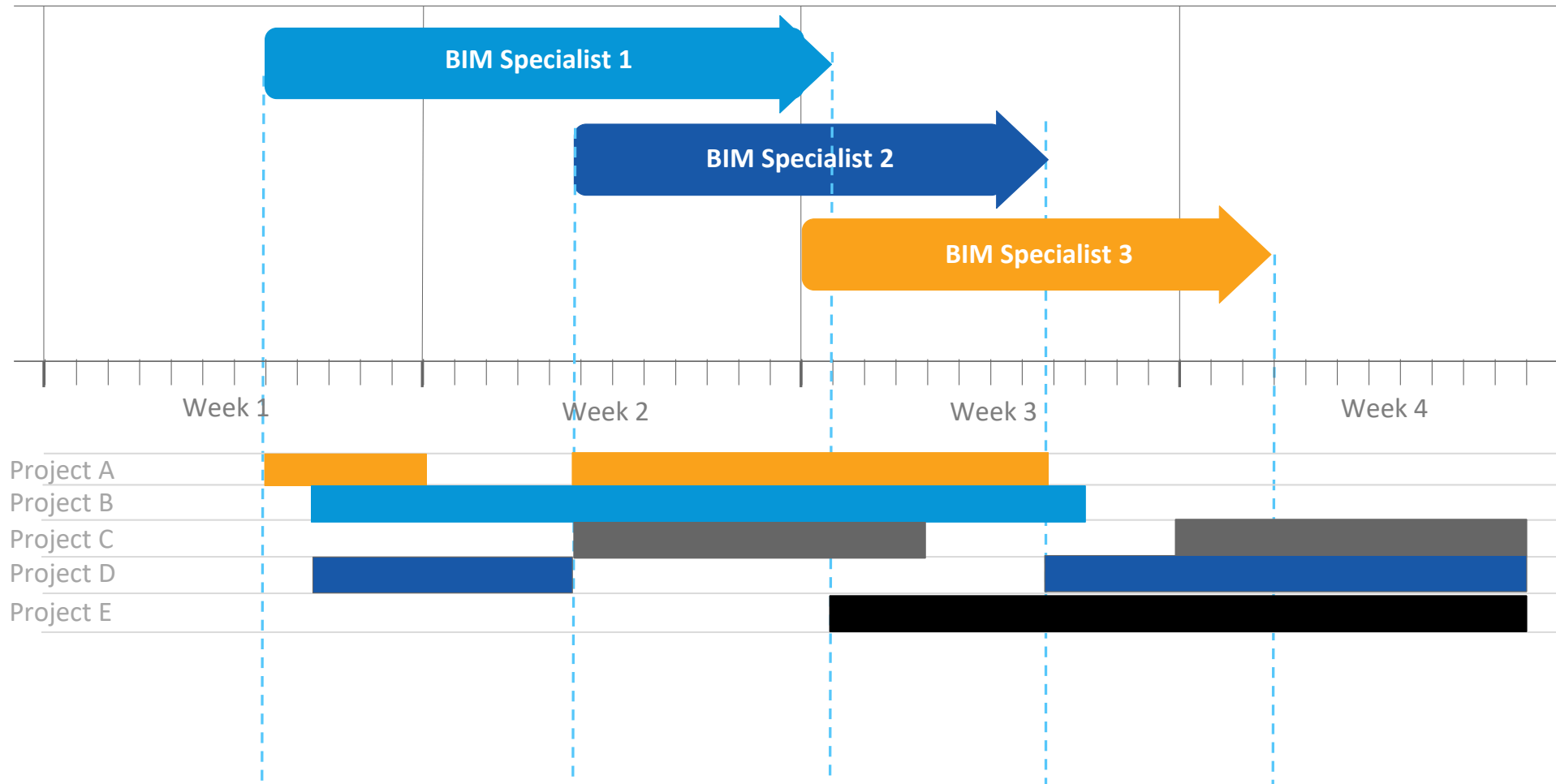
IT Support

An additional software called Desktop Connector was required. IT support was needed to ensure all users had the latest version installed.

Desktop Connector creates a windows desktop that allows not Revit files to be hosted and viewed on BIM 360.

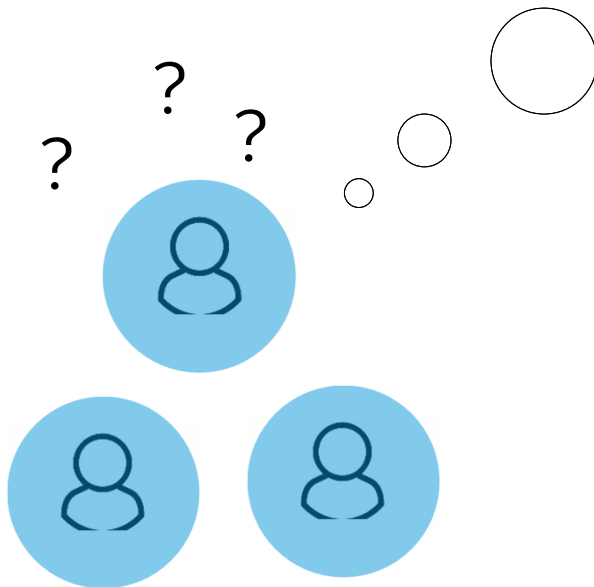


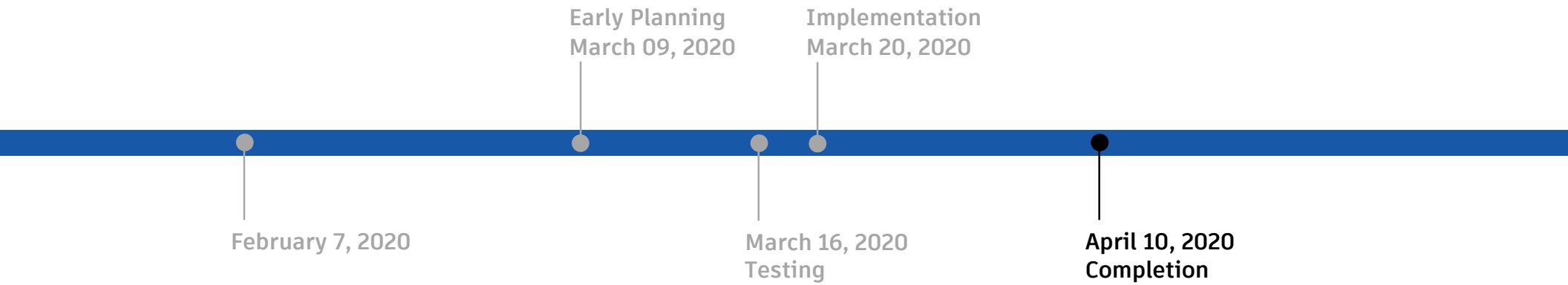
Logistics



Training

Upskilling the Teams



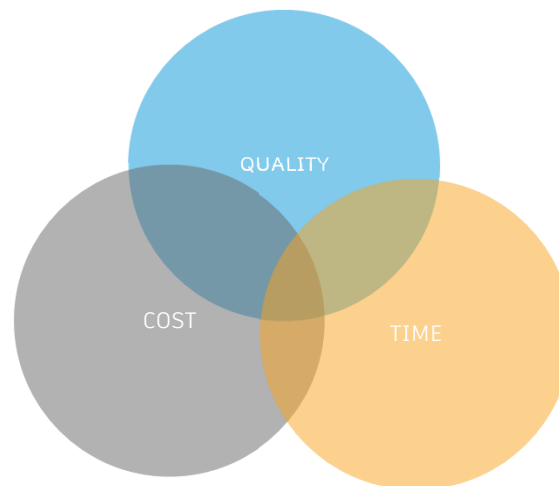


Completion

Why the Switch?

TIME: Remotely accessing server based projects through VPN resulted in slower performance speeds for users. Time which could have been spent on design was being lost to model latency and lag issues.

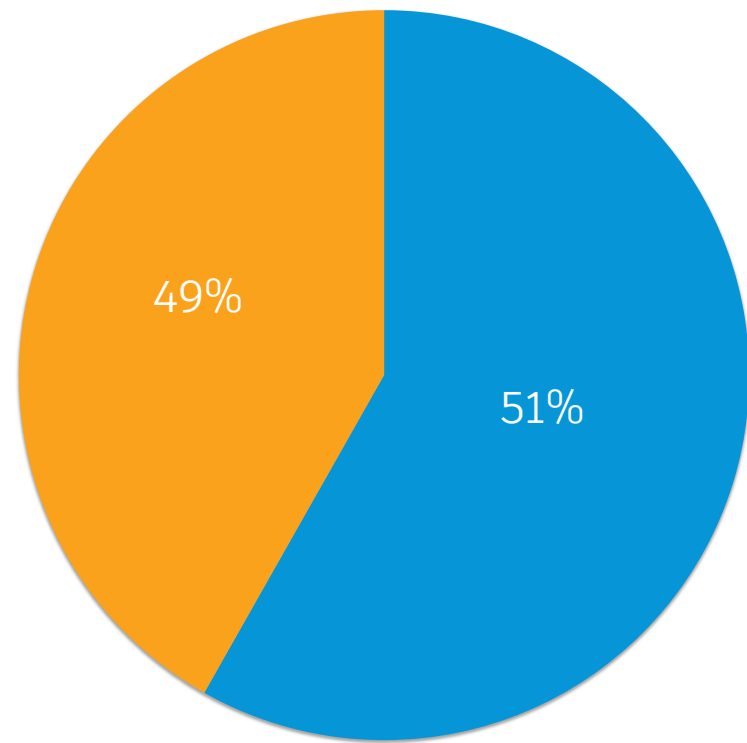
MONEY: Time is money! The more time spent waiting for models to open or sync was time wasted. New services offered with cloud collaboration opened the possibility for faster, more efficient team collaboration.



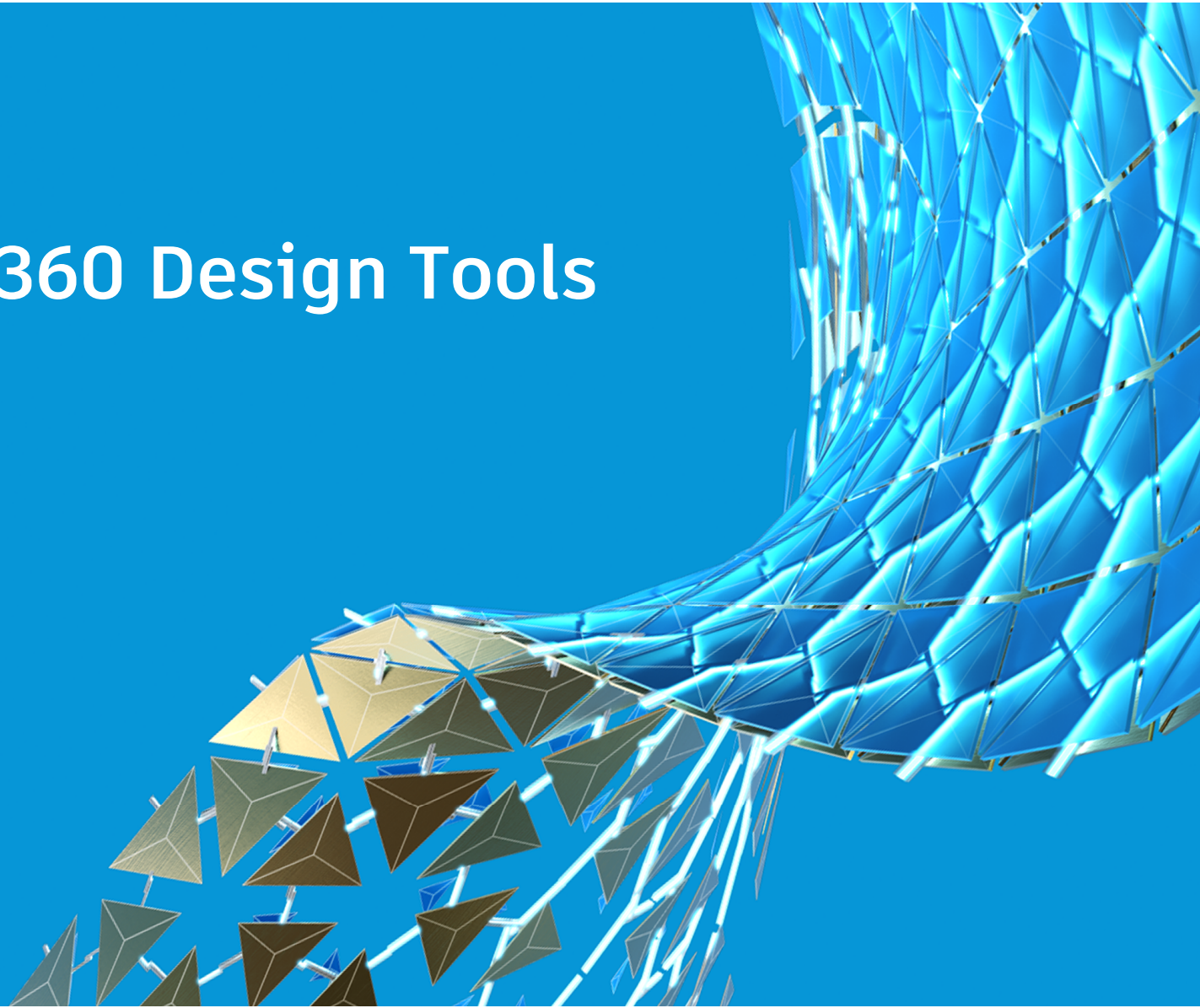
Employee Survey - Question 2

How has model performance in terms of speed of access and synchronization using BIM 360 WFH been so far?

■ Faster
■ The same



Utilizing BIM 360 Design Tools



Desktop Connector

Desktop Connector creates a windows desktop that allows not Revit files to be hosted and viewed on BIM 360.

It allows us to:

- Connect Desktop to the BIM 360 Cloud
- Upload and download non-native Revit files to your project hub
- Link non-Revit files into Revit model
- Edit and delete files



Document Management

Document Management

FOLDERSREVIEWSTRANSMITTALSISSUES

View by

FoldersSets

Plans

Project Files

01 - Buro Happold Engineering

02- Architecture (COMPANY NAME)

03 - Other Consultant (RENAME AS ...)

Upload files

Showing 6 items

Search for documents

☐	Name ^	Description	Version	Size	Last updated	Updated by	Markup	Issue	Approval status	Set	
☐	F02 - External Ref-Links	--	--	--	1 Jun 2020 14:15		--	--	--	--	
☐	F04 - Structures	--	--	--	1 Jun 2020 14:15		--	--	--	--	
☐	F05 - MEP	--	--	--	1 Jun 2020 14:15		--	--	--	--	
☐	F08 - E+I	--	--	--	1 Jun 2020 14:15		--	--	--	--	
☐	F15 - Facades	--	--	--	1 Jun 2020 14:15		--	--	--	--	
☐	F19 - Fire Engineering - Life Safety	--	--	--	1 Jun 2020 14:15		--	--	--	--	

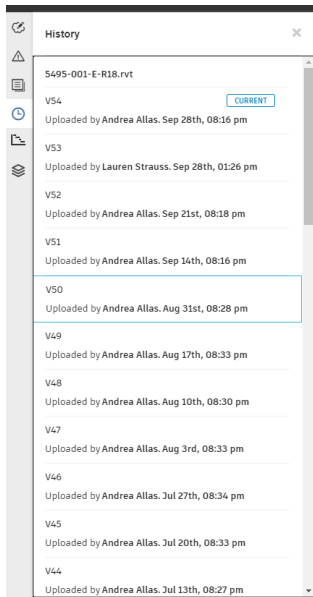
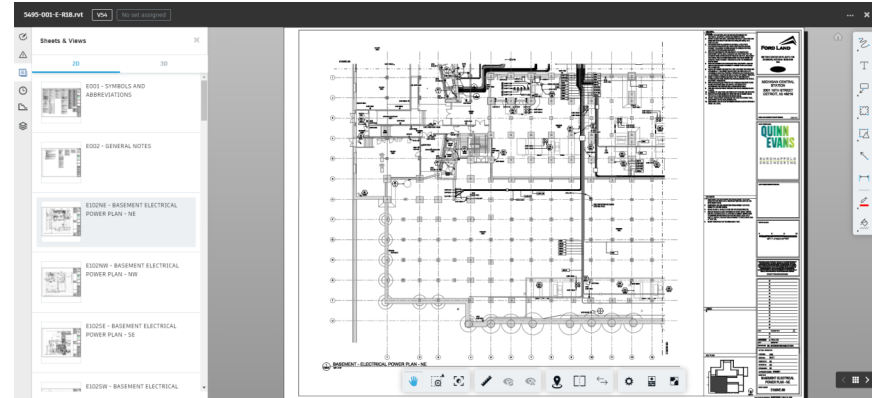
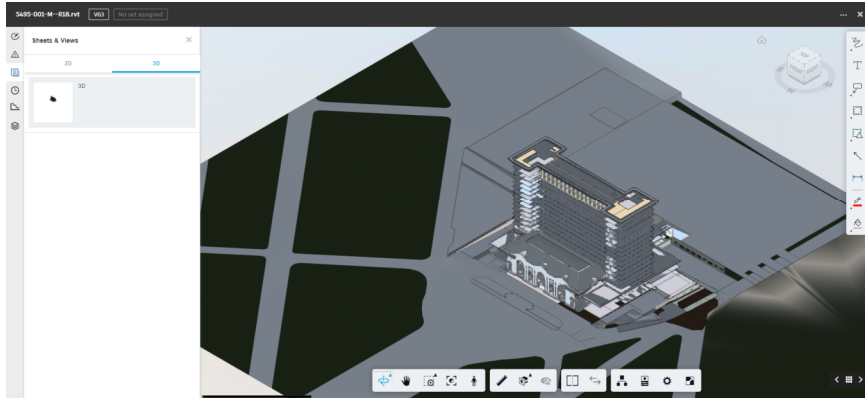
- **Powerful Collaborative Service**
 - Access project folders
 - Control permissions
 - View & edit model information

Document Management – Model History

- **Model is NOT the central model**
 - The file you interact with is not the central model
- **Can revert to older models**
- **Models are published**
 - ‘Publishing’ creates a model version
 - This model version is visible

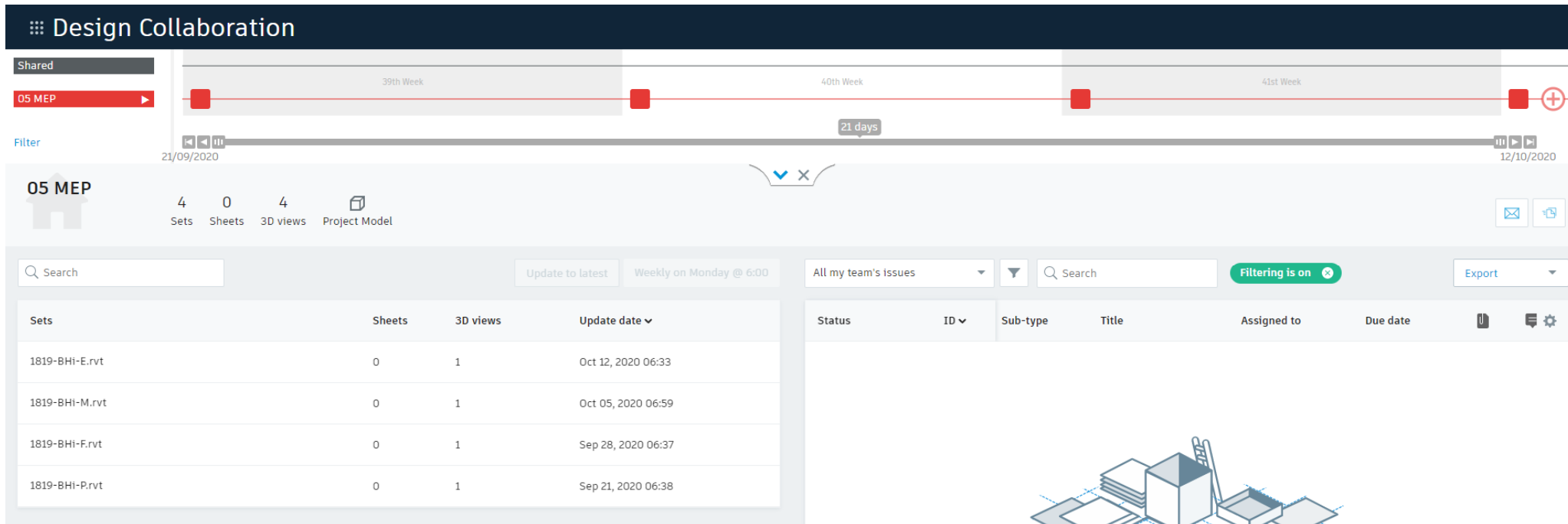
☐ Name ^	Description	Version	Size	Last updated	Updated by	Markup	Issue
☐  Consumed	--	--	--	26 Jun 2019 14:21	Robert Fink	--	--
☐  Project Files	--	--	--	10 Feb 2020 13:20	Adam Kushniarevich	--	--
☐  5495-001-E-R18.rvt		V54	5.7 GB	28 Sep 2020 22:01	Andrea Allas		
☐  5495-001-M--R18.rvt		V63	5.6 GB	13 Oct 2020 01:37	Andrea Allas		
☐  5495-001-P-R18.rvt		V50	5.6 GB	19 Oct 2020 21:50	Andrea Allas		

Document Management – Model Viewer



- Can see a visualization of the current 3D model version
 - Able to pan, zoom, select objects & crop view
- Able to view model history
 - Can compare changes of any two model versions & get summary
- View & markup
 - Can review sheets associated with a model version & add comments
 - Can review 3D preset views & add comments
 - Comments can be tracked

Design Collaboration

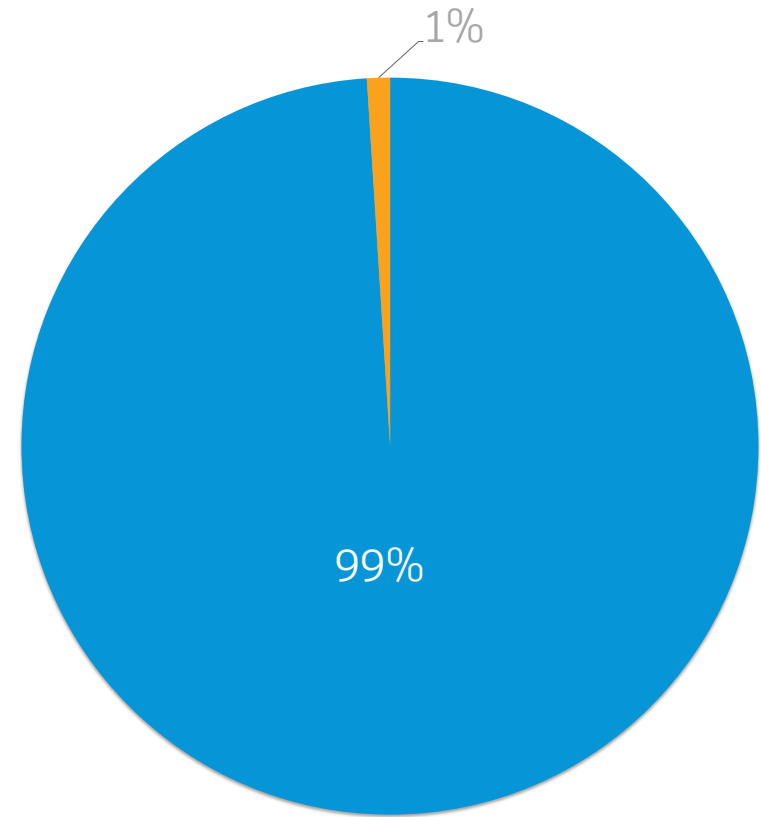


- Replacement for uploading/downloading Revit files
- Can automate publishing
- Best for multi-consultant teams

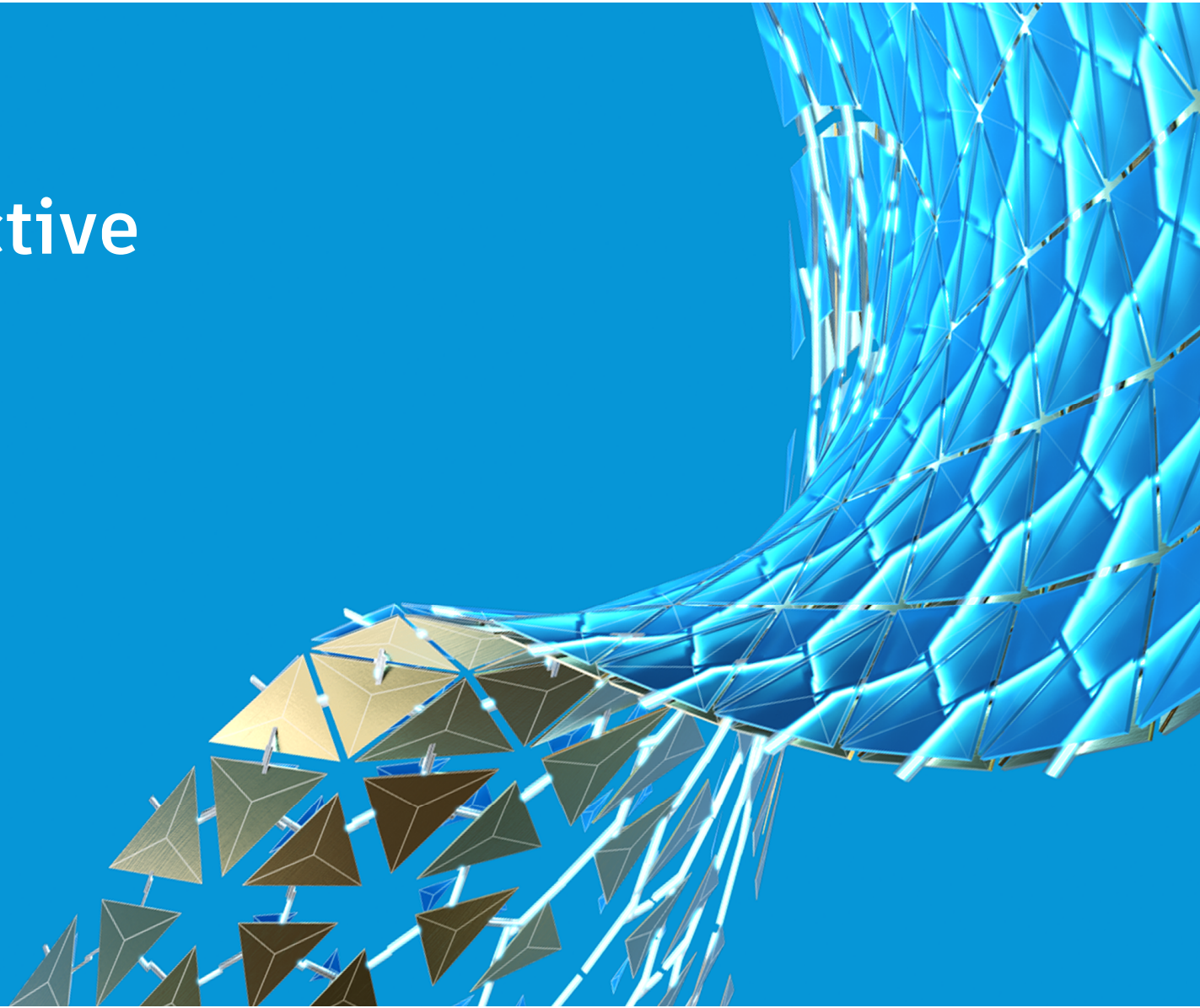
Employee Survey - Question 3

Would you like to see projects continue to be hosted on BIM 360 in the future?

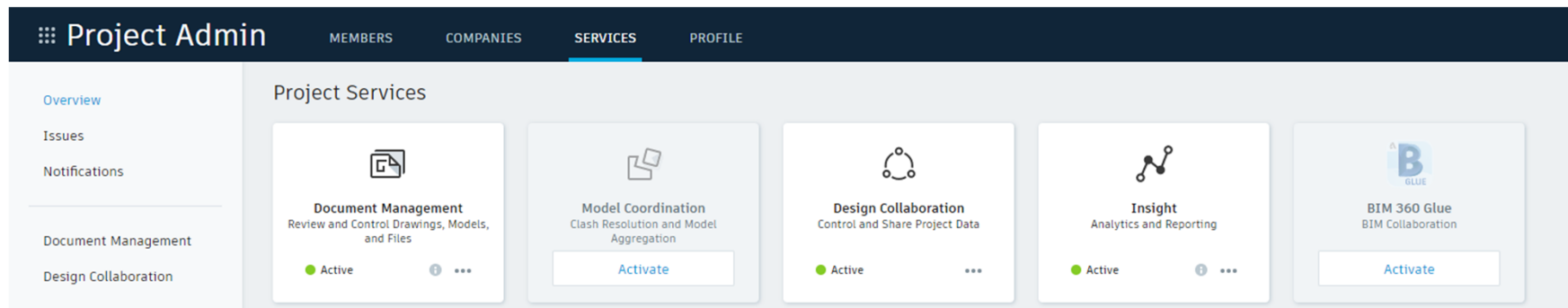
■ Yes
■ No



Creating Effective Organization



Template Settings



- **Easily Copied**
 - Preset settings allows for new project hubs to be quickly generated with standard settings
- **Activate Common Services**
 - Best to have most common used services activated (Document Manager, Design Collaboration, Insight)
- **Low Access**
 - To keep integrity of template, should only be accessible by a few key members

Useful Home Page

Project Home



Buro Happold
Template
Project Dates: Invalid date - Invalid date



[Customize](#)

Project Address

No location defined.
Please update in Project Administration.

Weather

35°
Partly Cloudy
Sun 35°  Mon 29°  Tue 38°  Wed 40° 
Powered by Dark Sky

Project Design Issues ▾

No Design Issues
[Go to Document Management](#)

Project Issues ▾

No Issues
[Go to Issues](#)

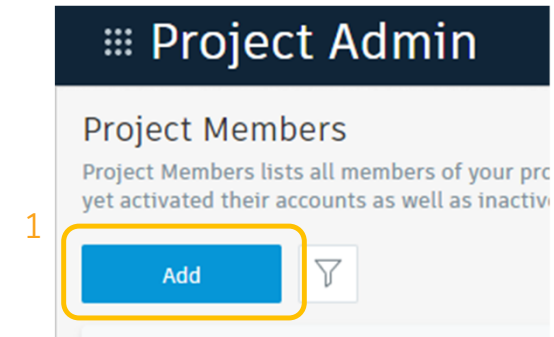
Design Packages

No Packages
[Go to Design Collaboration](#)

- Information should be useful to entire design team

Adding Team Members

1. Must be a Project Admin
2. Add members by entering email address
3. Enter in Company & Role information
 - Helps to apply permissions more easily
 - Can control member access to services
 - Control member admin privileges



The screenshot shows the 'Add Project Members' form. At the top, there is a search bar labeled 'Enter Names or Email Addresses' with a 'Select' button to its right. Below the search bar is a table with columns for 'Name' and 'Email'. The 'Email' column contains the text 'example@xyz.com'. To the right of the table is a section for 'Company' and 'Roles'. The 'Company' field contains 'BuroHappold' and the 'Roles' field contains 'Engineer'. This section is labeled with the number 3. The search bar is labeled with the number 2. The form also includes 'Cancel' and 'Add to Project' buttons at the top right.

Permissions

The screenshot displays the Autodesk BIM 360 Document Management interface. The top navigation bar includes the Autodesk BIM 360 logo, the project name 'Buro Happold > BH US Object Standards', and tabs for 'Document Management', 'FOLDERS', 'REVIEWS', 'TRANSMITTALS', and 'ISSUES'. The 'Document Management' tab is active, showing a 'View by' section with 'Folders' and 'Sets' options. A sidebar on the left shows a folder tree with 'Project Files' expanded, containing 'Revit Template' and 'Typical Details'. A context menu is open over the 'Typical Details' folder, listing actions such as 'Add subfolder', 'Rename', 'Upload', 'Share', 'Add attributes', 'Sort by', 'Permissions' (highlighted with an orange box), 'PDF Viewer', 'Subscribe', 'Submit for review', and 'Create transmittal'. The main content area shows a table of items with columns: Name, Description, Version, Shared, Size, and Last updated. The 'Permissions - Project Files' panel is open on the right, showing a search bar and a table of users and their permissions.

Permissions - Project Files
Users: 8 Companies: 1 Roles: 0

Name	Permission Level	Type	
Paul McGilly	Folder Control	User	Project Ad...
Linghai Cen	Folder Control	User	Project Ad...
Philip Skellorn	Folder Control	User	Project Ad...
Kayleigh Houde	Folder Control	User	Project Ad...
Andrea Allas	Folder Control	User	Project Ad...
Lucas Lieberman	Folder Control	User	Project Ad...
Miroslaw Szulawski	Folder Control	User	Project Ad...
Jesse Young	Folder Control	User	Project Ad...
► Buro Happold	View+Download	Company	Remove

- Control over Folder Access
- Applied by Company, Role, or Individual

Permissions

- **Can be controlled per folder level**
 - Subfolder permissions can be different from parent folder
- **Different roles**
 - Should grant access according to role in overall design team

The screenshot shows a 'Add Permissions' dialog box with a close button (X) in the top right corner. Below the title bar, there is a section labeled 'Add New' with a red asterisk, followed by a text input field with the placeholder text 'Enter names, email addresses, roles, or companies'. Below this is a section labeled 'Permission Level' with a red asterisk, followed by a dropdown menu labeled 'Select a permission level'. The dropdown menu is open, showing five options, each with a progress bar icon to its left. The options are: 'View Only' (1 bar), 'View+Download' (2 bars), 'Upload Only' (1 bar), 'View+Download+Upload' (3 bars), and 'View+Download+Upload+Edit' (4 bars). The 'View+Download+Upload' option is currently selected and highlighted.

Permission Level	Description
View Only	Can view documents and can add markups/issues, but cannot upload or download content.
View+Download	Can view and download documents and can add markups/issues, but cannot upload content.
Upload Only	Can upload content, but cannot view folder contents.
View+Download+Upload	Can upload, download and view content, and add markups/issues.
View+Download+Upload+Edit	Can review and publish content, as well as edit and delete

Folder Structure

The diagram illustrates a project folder structure. On the left, a detailed view shows the hierarchy:

- Plans
- Project Files
 - 01 - Buro Happold
 - F02 - External Ref-Links
 - F04 - Structures
 - F05 - MEP
 - F08 - E+I
 - F15 - Facades
 - F19 - Fire Engineering - Life Safety
 - 02- Architecture (COMPANY NAME)
 - 03 - Other Consultant (RENAME AS APPROPRIATE)

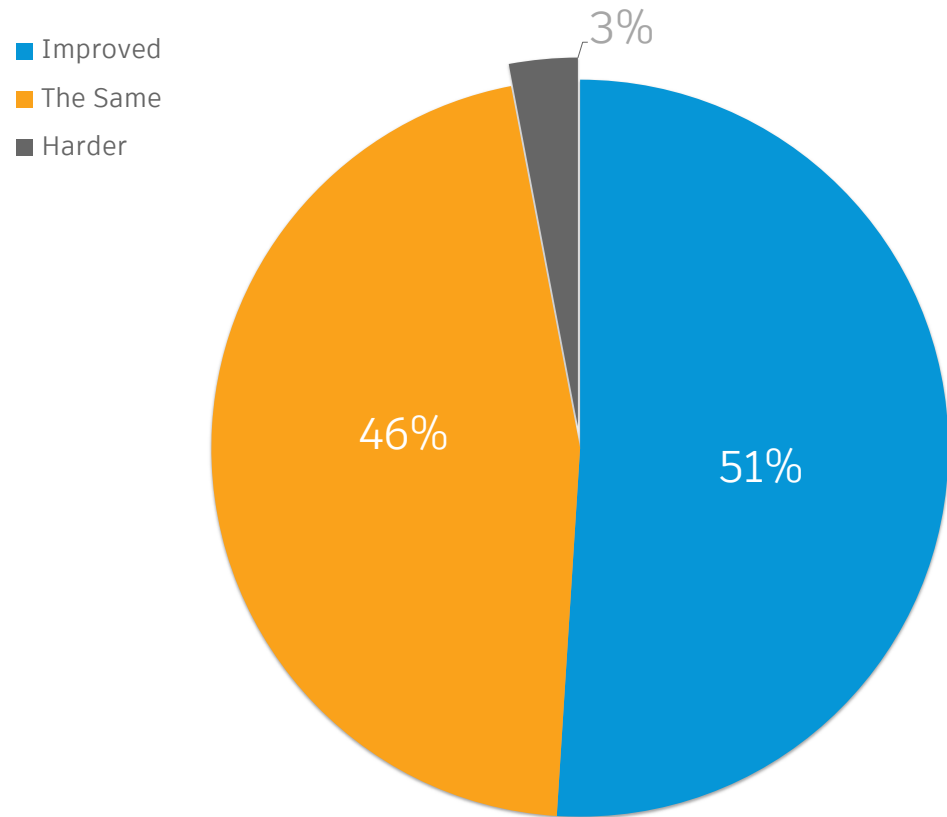
On the right, the Autodesk BIM 360 Document Management interface shows the same structure. The 'Project Files' folder is expanded, and the '01 - Buro Happold' sub-folder is highlighted with a dashed orange border. The interface also displays a table of documents:

Name	Description	Version	Size	Last updated	Updated by	Markup	Issue	Approval status	Set
01 - Buro Happold		--	--	26 Aug 2020 17:16	Jesse Young	--	--	--	--
02- Architecture (COMPANY NAME)		--	--	8 Jan 2020 10:03	Jesse Young	--	--	--	--
03 - Other Consultant (RENAME AS APPROPRIATE)		--	--	8 Jan 2020 10:08	Jesse Young	--	--	--	--

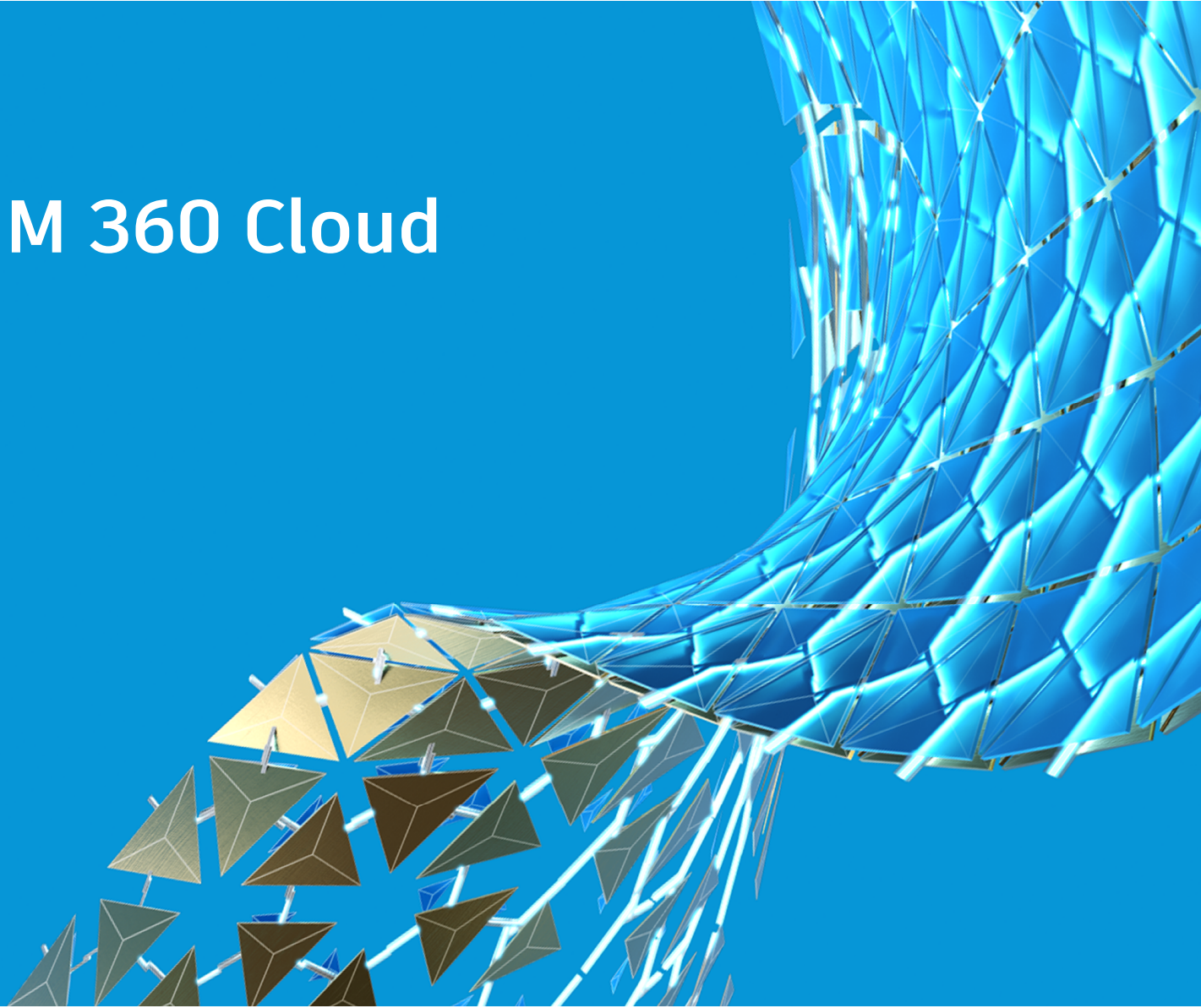
- **Clear Hierarchy**
 - Easily understood & updated as project needs grow
- **Disciplines Separated**
 - Each discipline is kept separate, better for managing projects with consultants that have multiple trades

Employee Survey - Question 4

Has BIM 360 helped you collaborate better with outside teams including architects?



Supporting BIM 360 Cloud Teams



Training Documents

- Easily Accessible
 - Copied into every project folder



Training Sessions

Foundation for Success

- **Targeted**
 - Best for smaller groups, helps keep focus
- **Organized**
 - Keep tabs on who has and has not trained
- **Frequent**
 - Do not let too much time pass between training sessions

USER	OFFICE	REVIEW	Session I Fundamental	Session II Mechanical	Session III Electrical	Session IV Lighting	Session V Plumbing & Fire	Session VI Families & Schedules	Session VII Documentation	Session VIII Coordination	Session IX BIM Coordination	Session X Real time Manager
Christian	Leipzig											
Leo	Chomay											
Jason	Rubinsky											
Michael	Pang											
Michael	Vucichone											
Ryan	Futaba											
John	Swift											
Benjamin	Ferdman											
James	Linton											
Jeff	Con											
Scott	Brigante											
Oliver	Mavroudis											
Natali	Chomay											
Emir	Pekdemir											
Tommy	Zakwinski											
Ryan	Peterson											
Kyleen	Hoover											
Kathleen	Danning											
Matt	Herron											
Ana	Serra											
Andrew	Whitman											
Alanna												
Brian	McKinney											
Chad	Korrad											
Chris	Coulter											
Chris	Duall											
Christopher	Wark											
Daniel	Bersuden											
Daniel	Zuffante											
Danielle	Salmon											
David	Quinlan											
Erin	Carlesimo											
Eric	Hoover											
Galie	Gulliams											
Howard	Shapiro											
Jack	Rogan											
James	Hanley											
James	Cosparck											
Jason	Lam											
Jeff	Gasper											
Jeremy	Warhol											
Jeremy	Snyder											
Jerad	Turkin											
Jignesh	Patel											
Josh	Southerland											
Jule	Janski											
Kayleigh	Hause											
Kenneth "Q"	Linbermann											
Kurtis	Huddleston											
Matthew	Huang											
Michael	Marvin											
Michael	Ridmiller											
Michael	Singer											
Nicholas	Azadian											
Nick	Morris											
Nick	Mykoluk											
Oliver	Meade											
Orson	Rendon											
Paul	McGilly											
Pier-Chun	Yang											
Rachel	Mudica											
Remyaldo	Lopez											
Robert	Esteban											
Sal	Rachiele											
Sarah	Sachs											
Sean	O'Hanlon											
Simon	Loai											
Stuart	Bridgett											
Suha	Slim											
Thomas	Keeling											
Timothy	Kean											
Wei (Shihwei)	Liu											
Younglin	Xi											
Yusi	Jin											
Kathleen	Baker											
Samantha	Bernstein											
Donal	Gallagher											
Michael	McGough											
Niall	Cooper											
Patrick	Rogan											

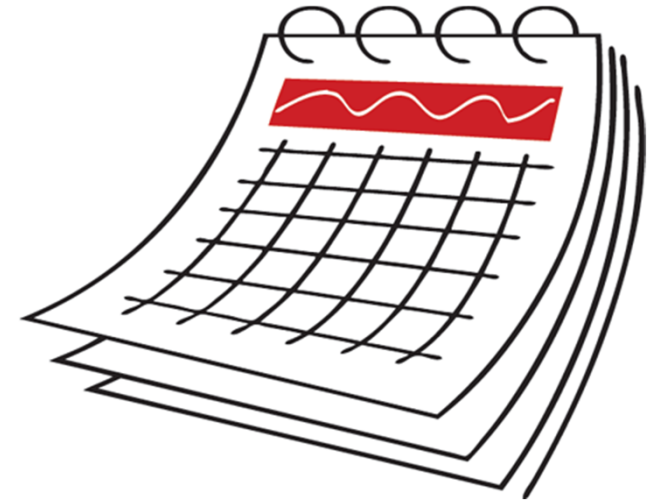
COMPLETED

REQUIRED

Informal Training

Regular informal webinars

- **Recorded sessions**
 - Easy for users to review at a later date
- **Picked topic**
 - Highlight new tools available, how to use them, good tips and tricks to know
- **Must be regularly scheduled**
 - Having a known regular schedule makes it easier to keep on users' radar





How it Started

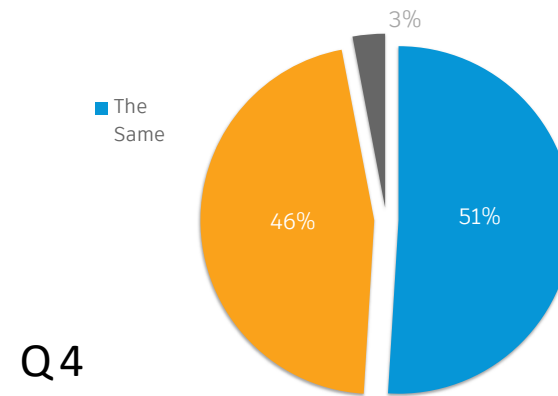
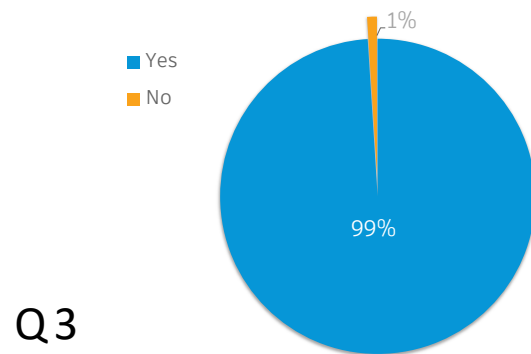
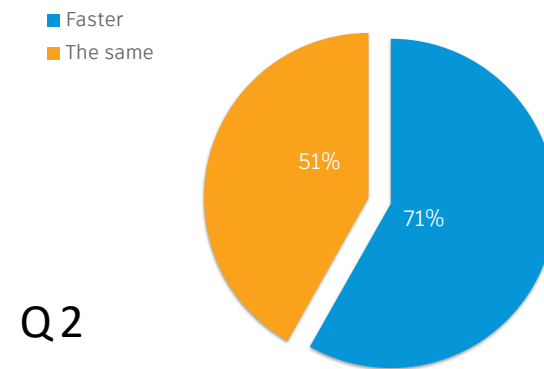
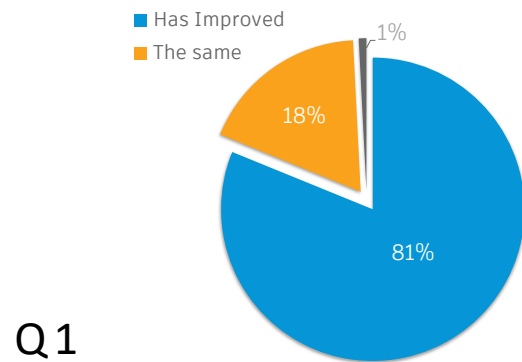
In 2014, the New York office joined the “Skyscraper” Beta test.



How it's Going

In 2020, the US region set an example for the rest of the company that BIM 360 was a reliable resource and an example of how to adopt.

Survey Results





Autodesk and the Autodesk logo are registered trademarks or trademarks of Autodesk, Inc., and/or its subsidiaries and/or affiliates in the USA and/or other countries. All other brand names, product names, or trademarks belong to their respective holders. Autodesk reserves the right to alter product and services offerings, and specifications and pricing at any time without notice, and is not responsible for typographical or graphical errors that may appear in this document.

© 2020 Autodesk. All rights reserved.

