



BIM 360 Glue: A Transit to Seamless Collaboration, Coordination and Project Delivery

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BIM & Construction Specialists



A little bit about us...



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- BIM & Construction Specialist
- Masters in Construction Engineering Management - Purdue University



Ushik Shah

- BIM & Construction Specialist
- Masters in Building Construction Management - Purdue University



Class Summary

A primary challenge faced by the construction industry has been an **iterative coordination process** due to **inefficient sharing** of latest information between project stakeholders. This could lead to delays in schedules and cost overruns. BIM 360 Glue software has revolutionized collaboration between all project stakeholders by providing seamless data and information exchange.

In this session, we will present a case study of the **Transbay Transit Center project** in downtown San Francisco, the largest approved public-transportation project in the United States. We will discuss how BIM 360 Glue software was capitalized on to implement workflows for **effective and efficient management and coordination**.

We will also cover some of the core features of BIM 360 Glue software that could help attendees unravel its potential on other projects for streamlined Building Information Modeling (BIM) execution.

Learning Objectives

Learn how to develop and implement workflows using BIM 360 Glue

Discover essential features of BIM 360 Glue that helped with effective clash detection, coordination and collaboration

Discover and leverage the interoperability between BIM 360 and Navisworks Manage

Learn how BIM 360 Glue acts as seamless BIM File Management system during the construction phase



SANVEO

BUILDING A SMART
FUTURE, TOGETHER

About Sanveo

- Rank 5 on the Silicon Valley Business Journal's Fast Private List
- 4 Offices Worldwide
- 120+ Employees
- 125+ Projects since 2008
- 85% Repeat Clients



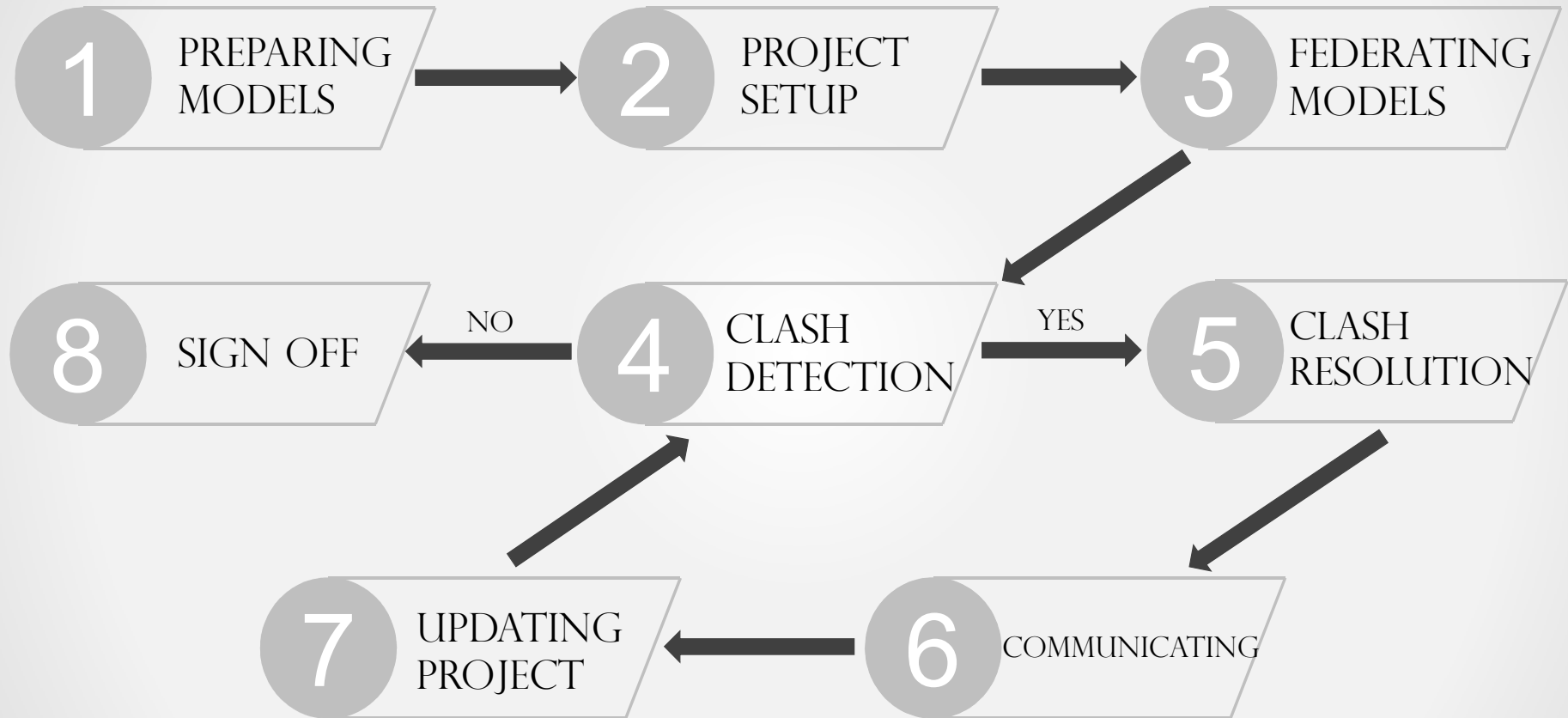
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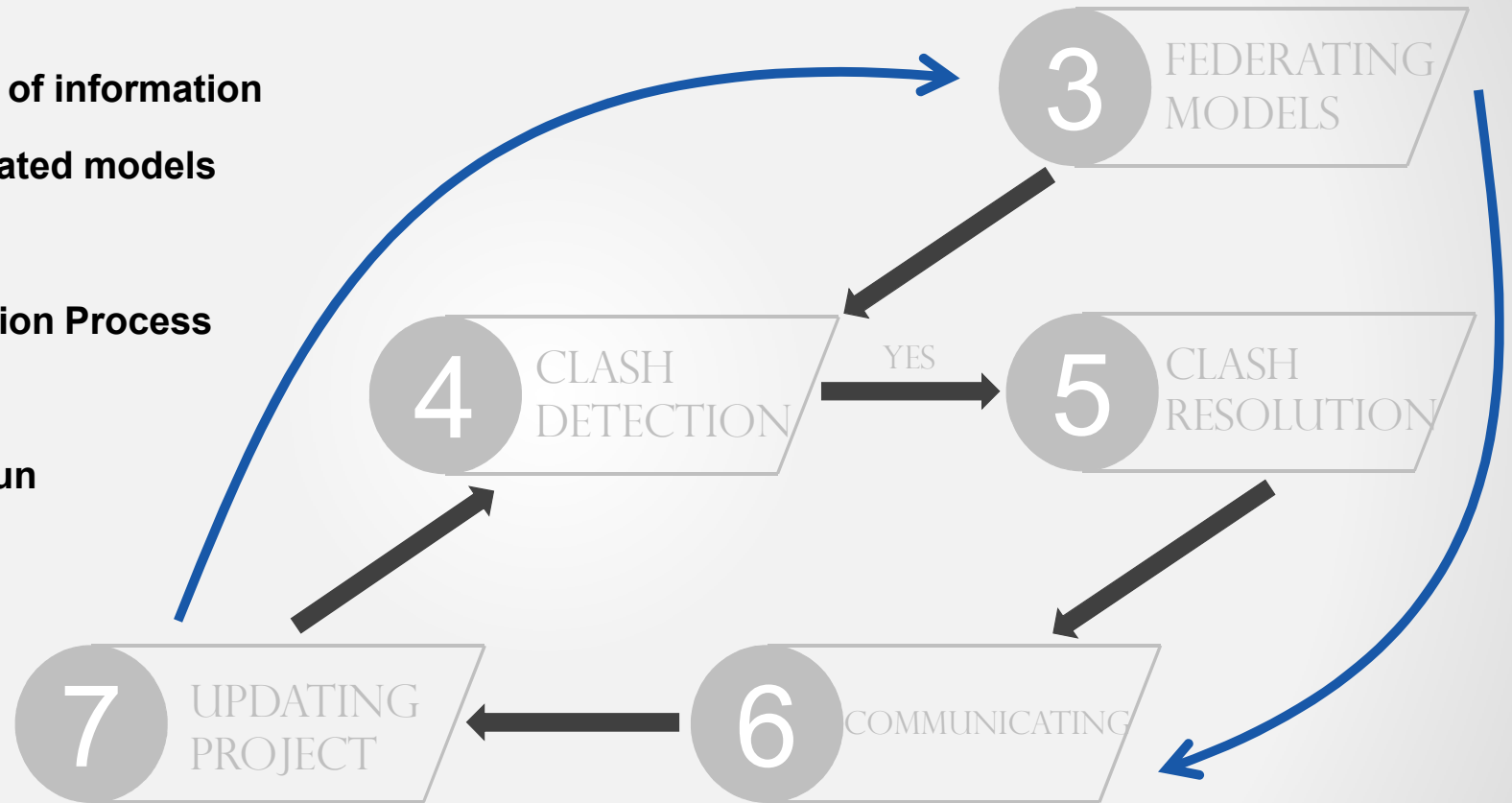
CURRENT BIM PROCESS AND CHALLENGES

The current BIM coordination process...



The Challenges

- Ineffective sharing of information
- Incorrect and outdated models
- Design Changes
- Iterative Coordination Process
- Delay in schedule
- Project cost Overrun



REWORK REWORK

EVERYWHERE



The Challenges

- Ineffective sharing of information
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The Solutions

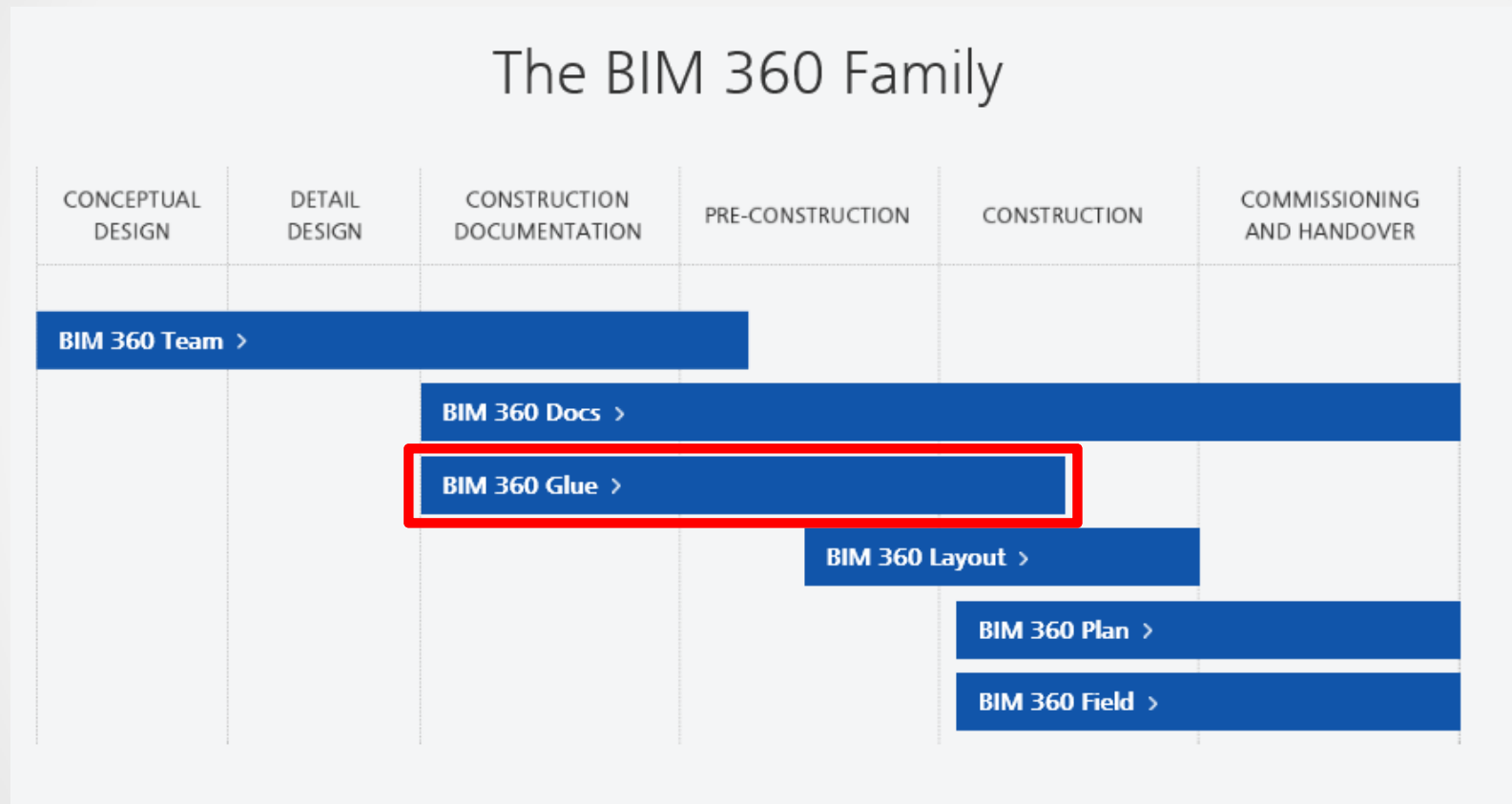
Common platform for everyone to share
Everyone can access a common real-time model
Easy Visualization to explain the impact to owner
Clear Markup/Viewpoint, capability of a quick fix
Reduce rework for trades by improving efficiency
Access to all model versions to compare and evaluate change orders/litigations

ONE Platform

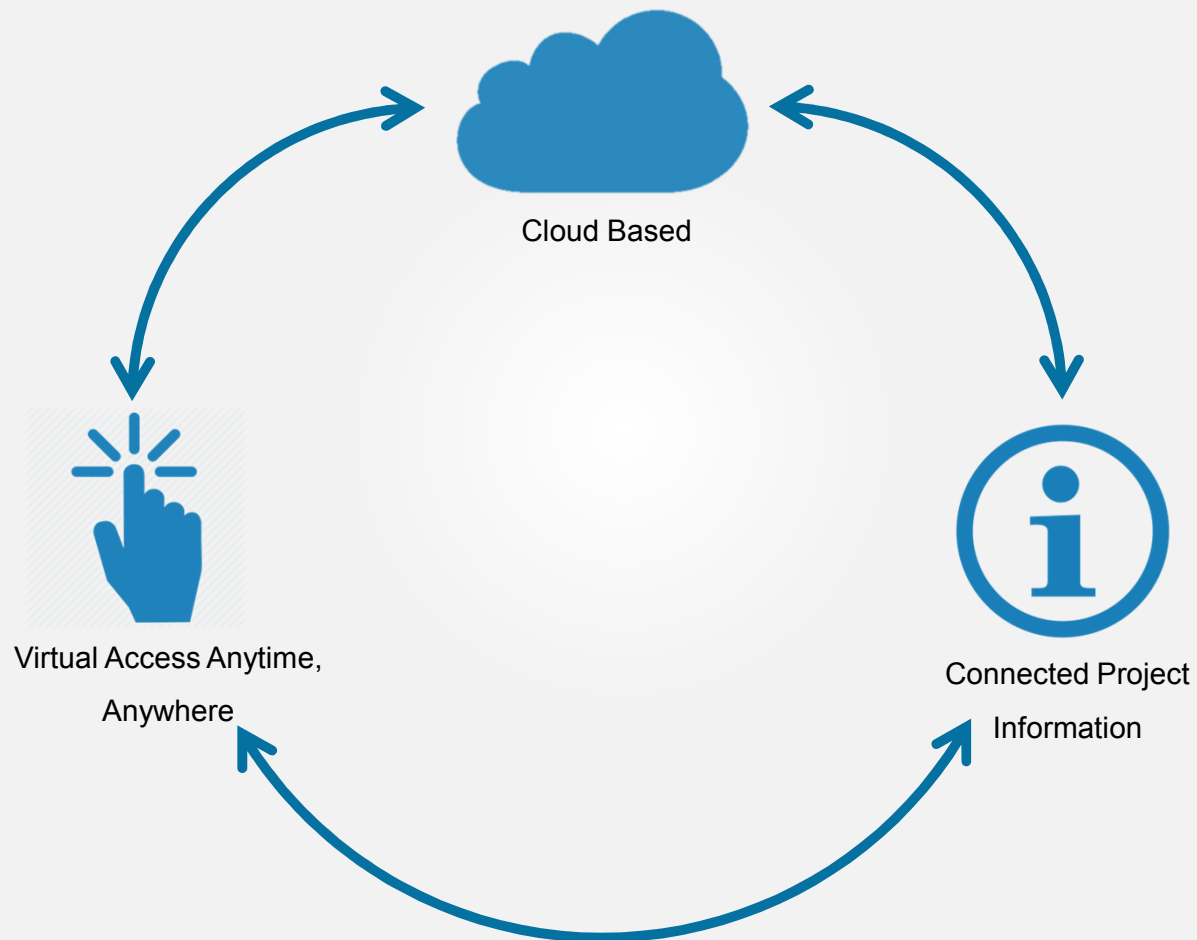




What is BIM 360?

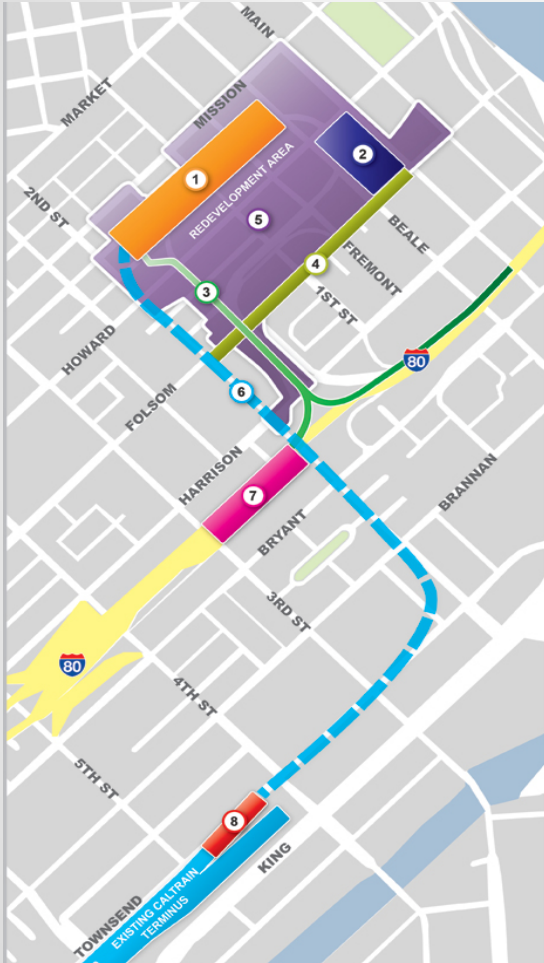


What is BIM 360 *glue*?



TRANSBAY TRANSIT CENTER

Transbay Transit Center

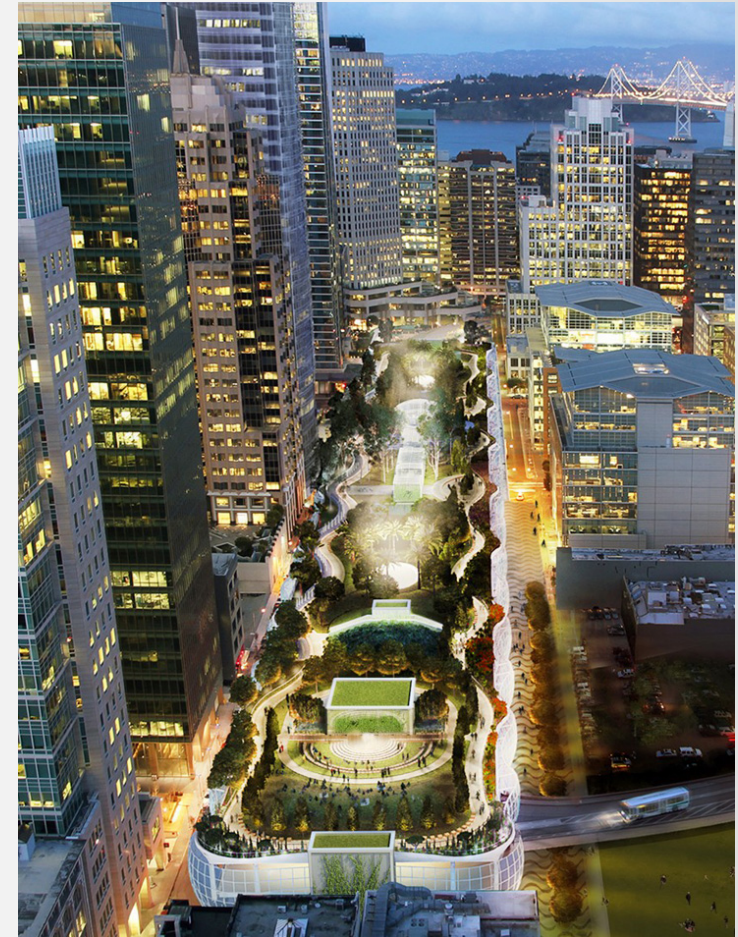


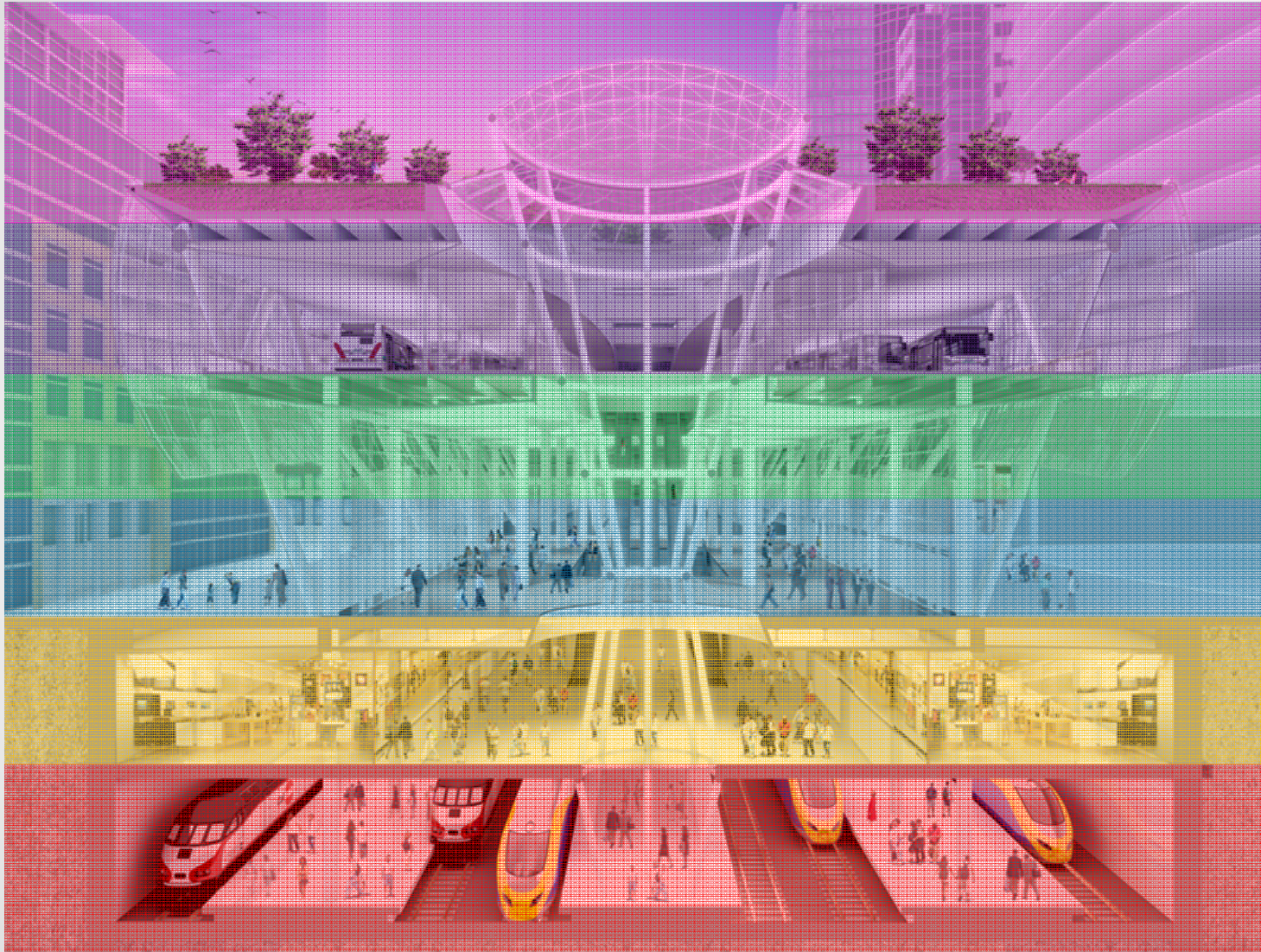
- Architect: Pelli Clarke Pelli
- General Contractor: Webcor Obayashi Joint Ventures
- Largest Public Transportation project in the US.
- Location: Downtown San Francisco.
- 4 City Blocks Wide



Transbay Transit Center

- 11 Transportation systems served
- 2 Phase Construction
- 1 Million Square Feet Area
- LEED Gold Certification





Roof Park

Bus Deck

Level 02

Level 01

Lower Concourse

Train Platform



Sanveo's Role on the Project

- BIM Modeling, Project Submittals, Shop Drawings, Quantity Take offs for the Electrical trade
- Provided support with complete MEPF coordination, detailed Clash reports for weekly coordination meetings

KEY LEARNING OBJECTIVES

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BIM DOCUMENT DIVISION

Proper Division of areas

- 6 Levels



Roof Park

Bus Deck

Level 02

Level 01

Lower Concourse

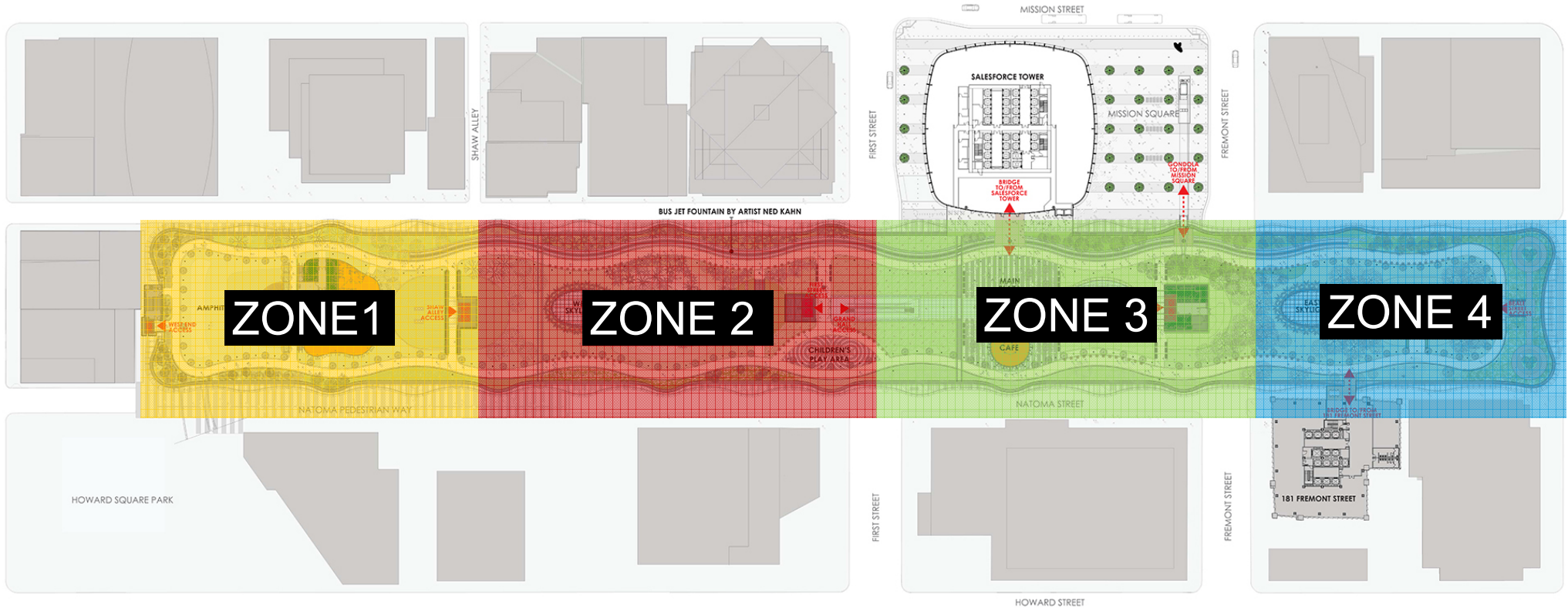
Train Platform



BIM DOCUMENT DIVISION

Proper Division of areas

- 6 Levels
- 4 Zones



BIM DOCUMENT DIVISION

Proper Division of areas

- 4 Zones
- 6 Levels
- Shop Drawings per pour schedule

	ZONE 1				ZONE 2				ZONE 3				ZONE 4			
	Grids 1-5				Grids 5-10				Grids 10-15				Grids 15-20			
Roof Level																
Bus Level RCP									SD # 5 & # 8				SD # 5 & # 8			
Bus Level Deck																
Level 2 RCP	SD # 16				SD # 14				SD # 3 & 6							
Level 2 Deck																
Ground Level RCP									SD # 3 & 6				SD # 5 & # 8			
Ground Level Deck								SD # 2								
Lower Concourse RCP	SD # 16				SD # 14				& # 6							
Lower Concourse Deck																
Train Platform RCP									SD # 9				SD # 10		SD # 12	
Train Platform SOG																
Equipment Pads																

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BIM EXECUTION PLAN

BIM Execution Plan

- Naming convention and color
- Applicable software
- LOD and Scope clarity
- Information sharing platform
- Project coordinates
- Clash Avoidance



BIM Project Execution Plan

Transbay Transit Center



CLASH AVOIDANCE



CLASH AVOIDANCE

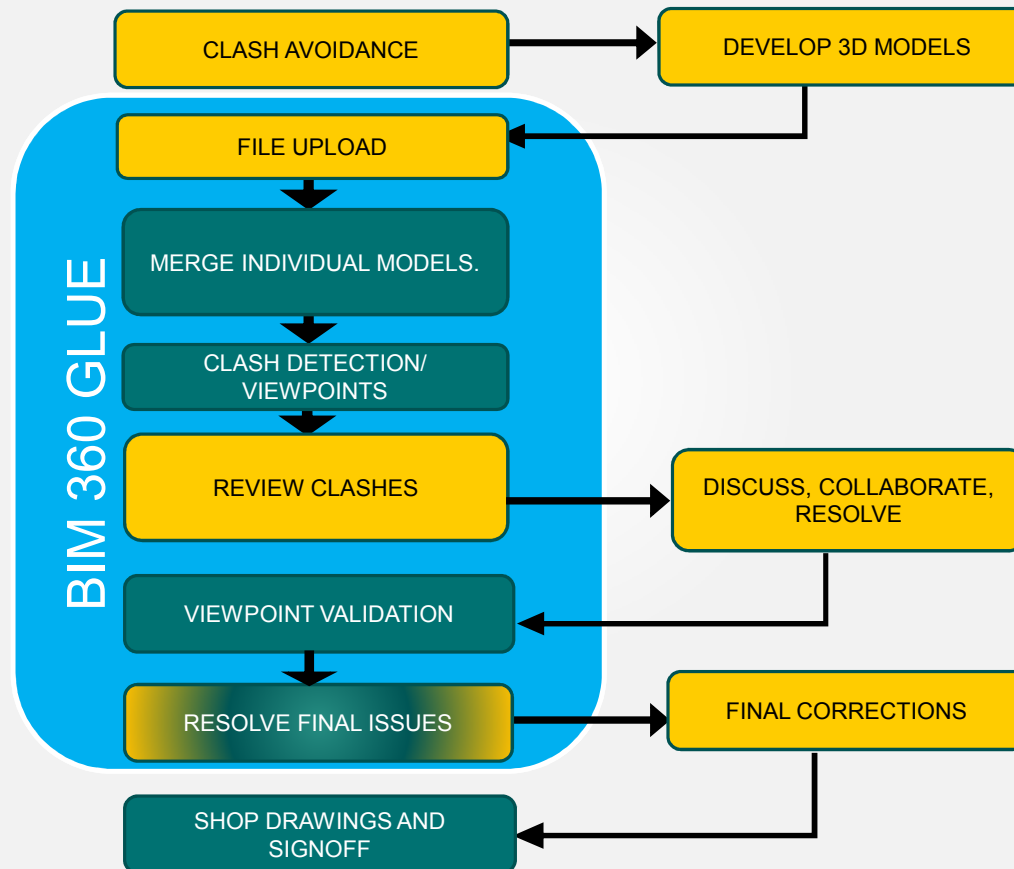
- Modelling Priorities
- Clash coordination priorities
- First step in the BIM Process

Coordination Priority

If two or more building systems clash, trades will resolve the issue following priorities shown below:

1. Systems shown on the architectural and structural plans
2. Equipment shown on the mechanical or electrical plans which cannot be relocated
3. Equipment or devices requiring access for maintenance
4. Plumbing and HVAC gravity lines
5. Ductwork, rigid
6. Plumbing and HVAC piping 4" or larger
7. Fire sprinkler mains
8. Electrical conduit 2-1/2" or larger
9. Plumbing and HVAC piping 3-1/2" and smaller
10. Fire sprinkler piping other than mains
11. Electrical conduit 2" or smaller
12. Ductwork, flex

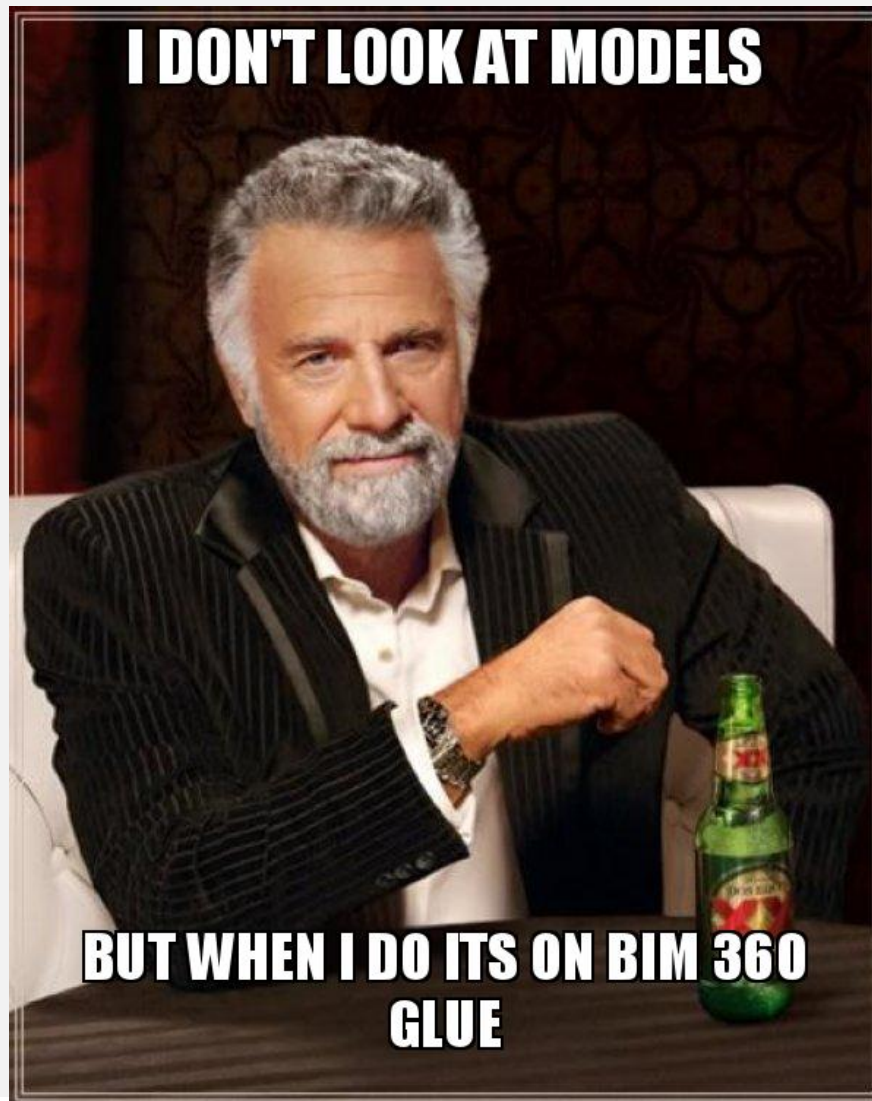
BIM PROCESS ON THE PROJECT



SUB-CONTRACTORS

GENERAL CONTRACTORS

GC+SUBS



#Owners

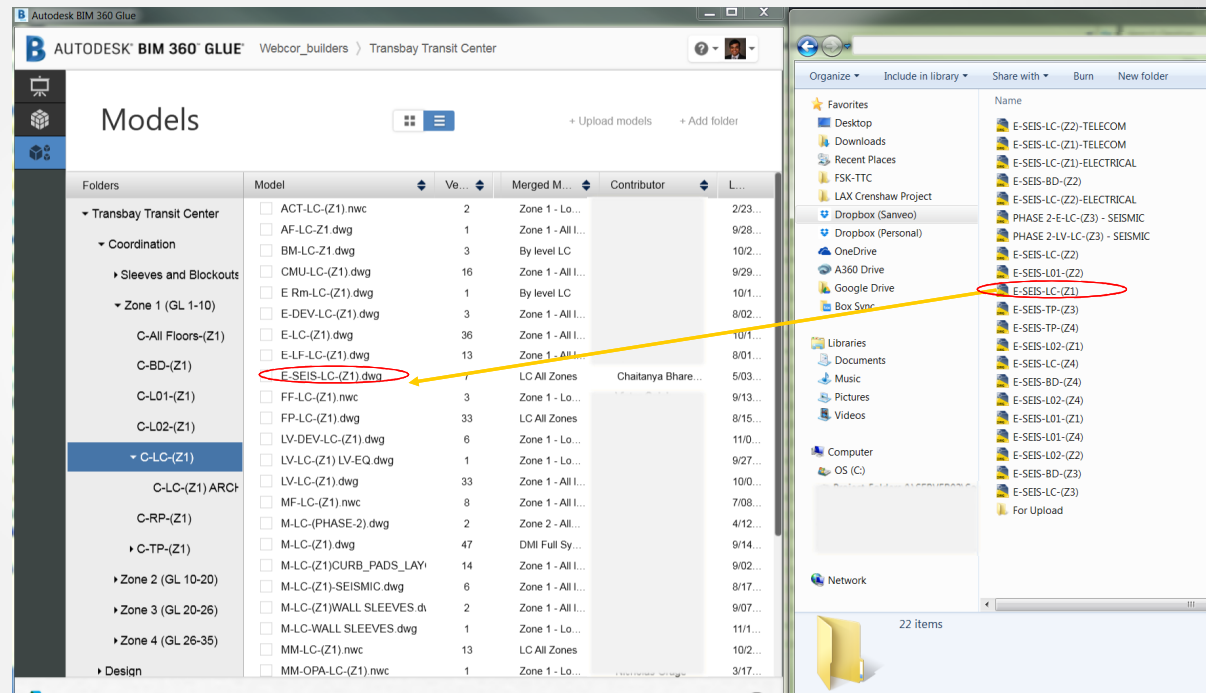
HOW TO GET STARTED??

- Project Setup on Glue
- Stakeholders representatives
- Grant Access
- Level of Access-TBD
- Introduce BIM Glue Interface
- Workflow Description
- And Begin!!



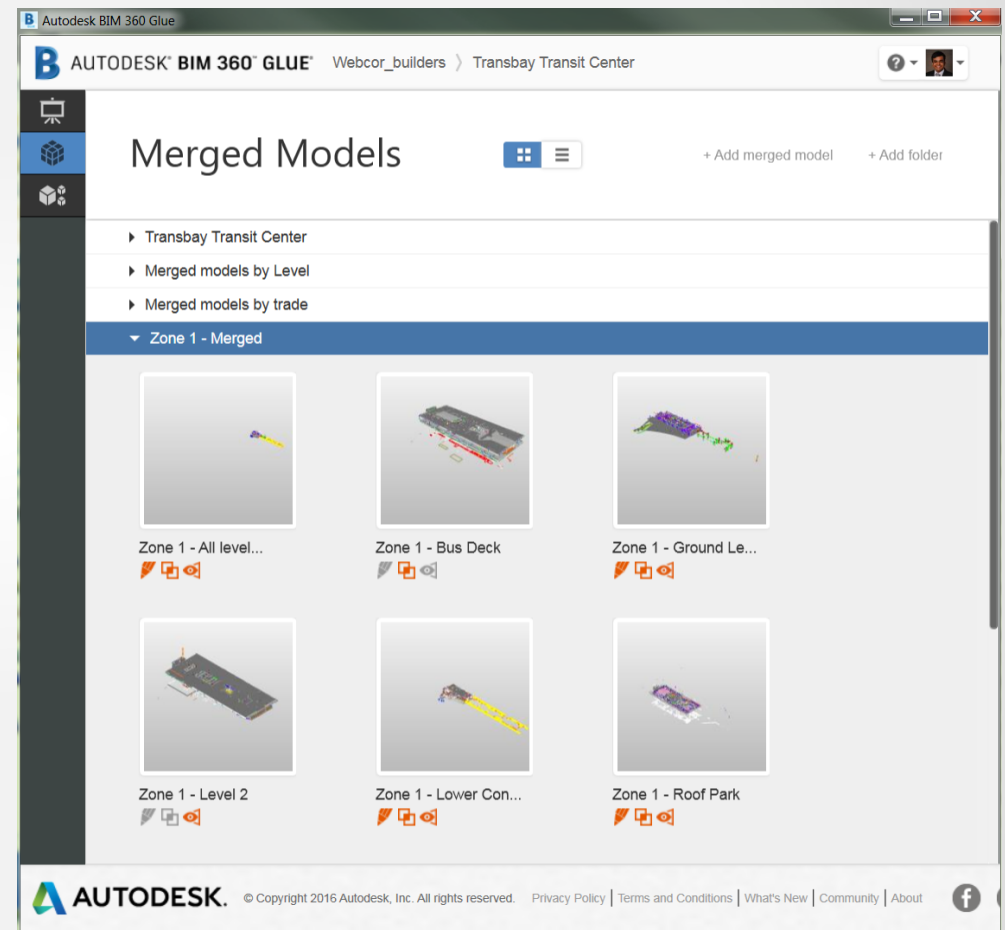
UPLOADING A FILE TO GLUE

- Correct name
- Should match existing file
- New files to be merged
- Drag and Drop at correct location



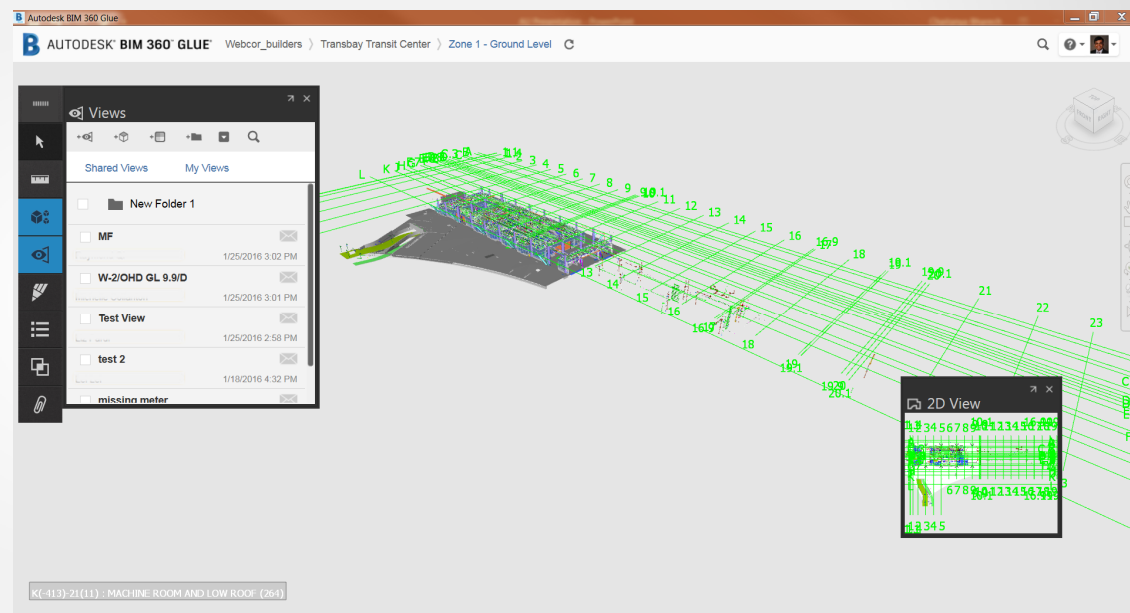
CREATE MERGE MODELS

- One time process
- Add relevant models
- Include any new models later



COORDINATION

- Clash Detection
- Markups/Viewpoints

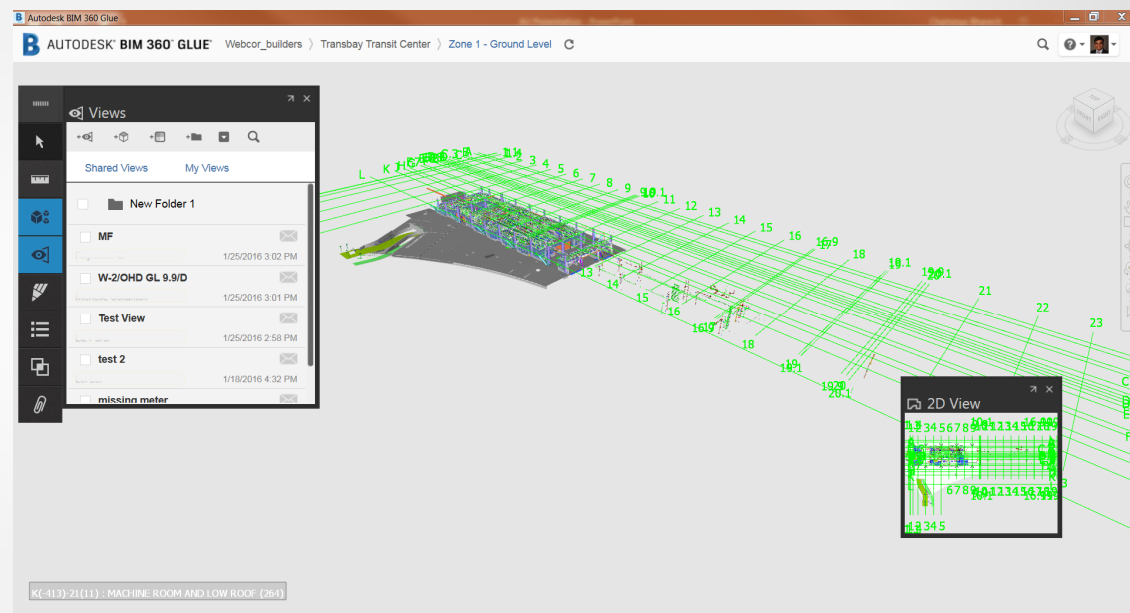




MEP
Coordinators

COORDINATION

- Clash Detection
- Markups/Viewpoints
- Share
- Collaborate
- Resolve
- Signoff



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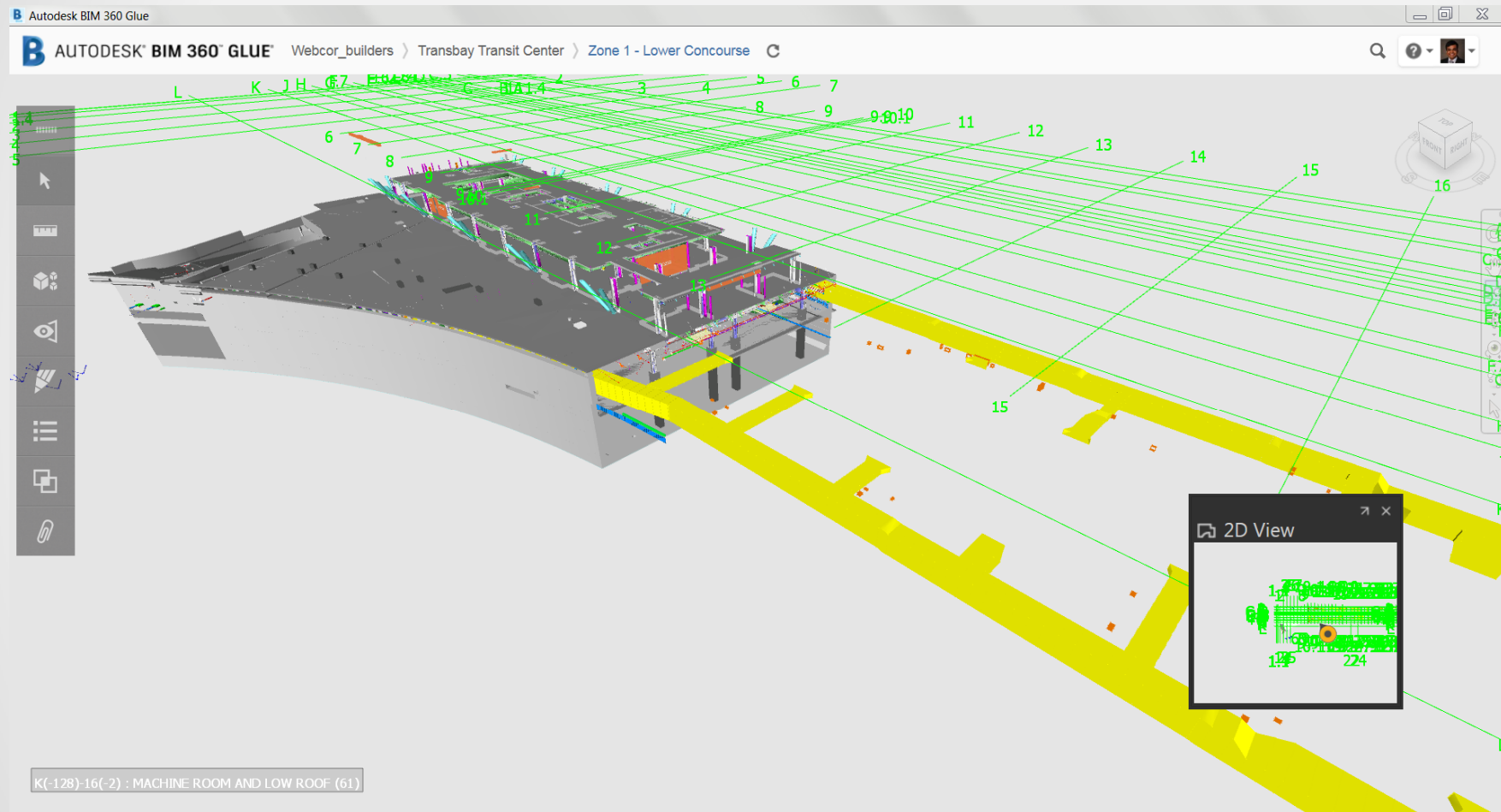
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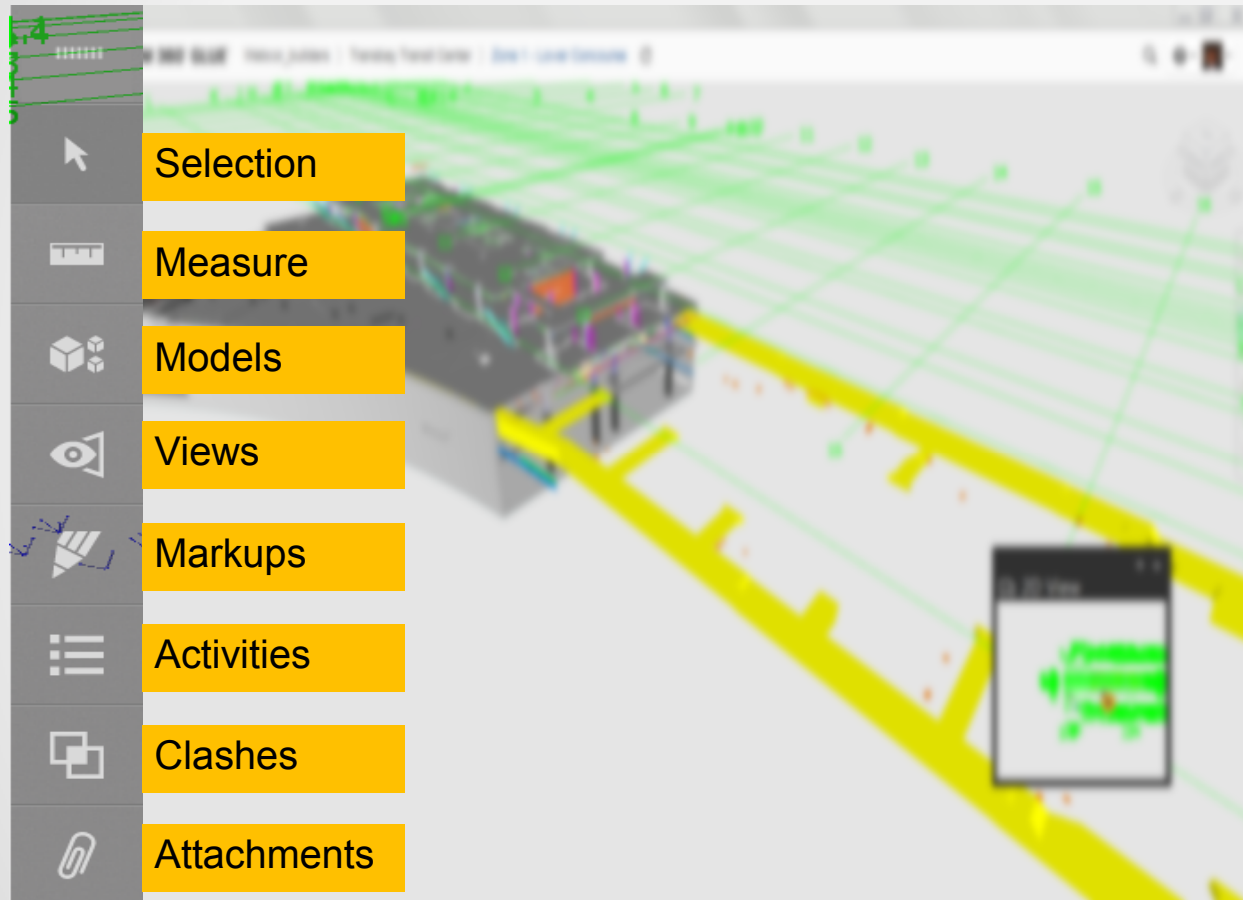
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BIM Glue Interface



BIM Glue Tools



BIM Glue Features and Benefits



Connected BIM Teams

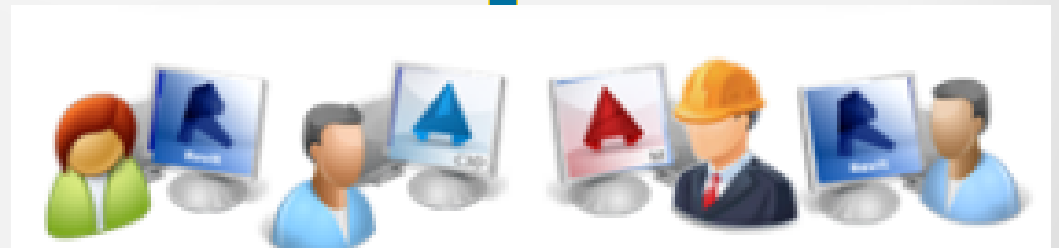


BIM Glue Benefits on TTC



Project
Review Tools

50+ Formats
Compatible



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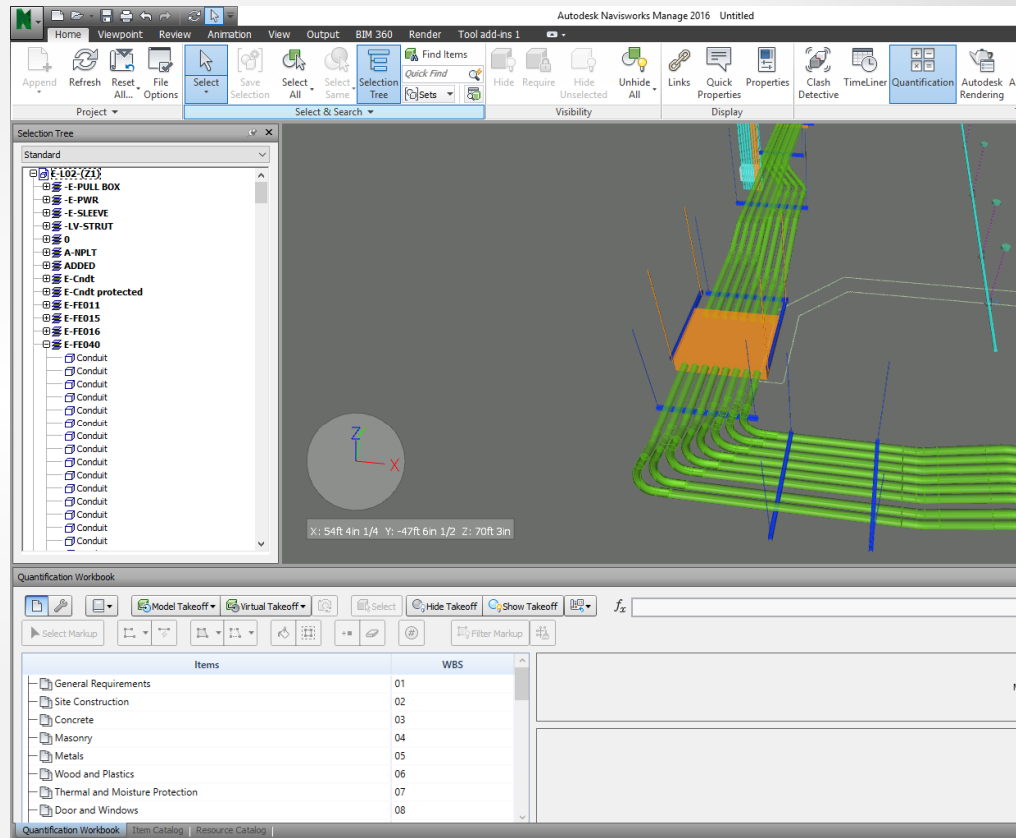
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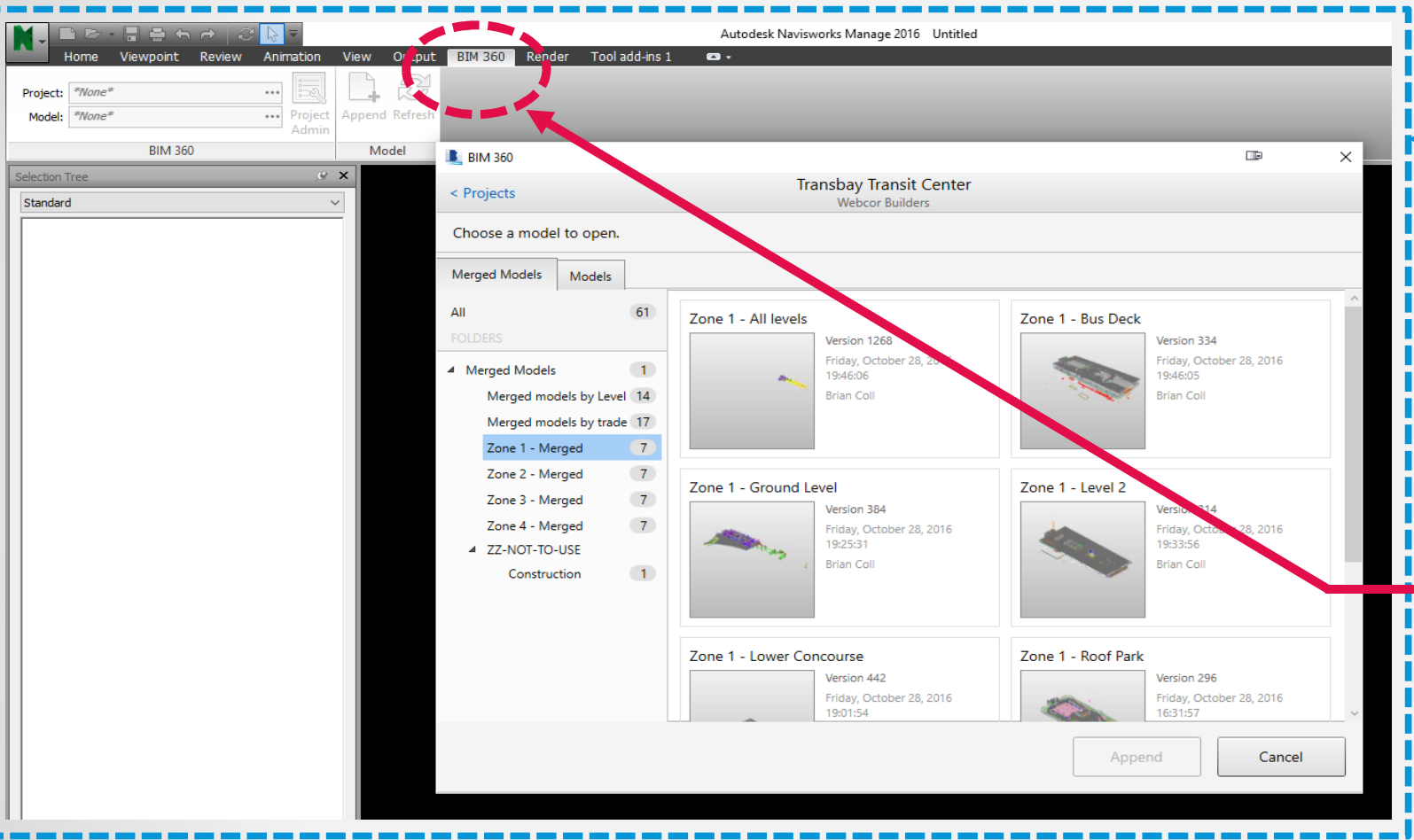
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Interoperability between BIM 360 & Navisworks Manage – Why Navisworks Manage?

- Desktop level detailed analysis in Navisworks Manage
- Familiar and powerful features of Navisworks Manage
- To use advanced analysis tools such as enhanced quantification features in Navisworks Manage



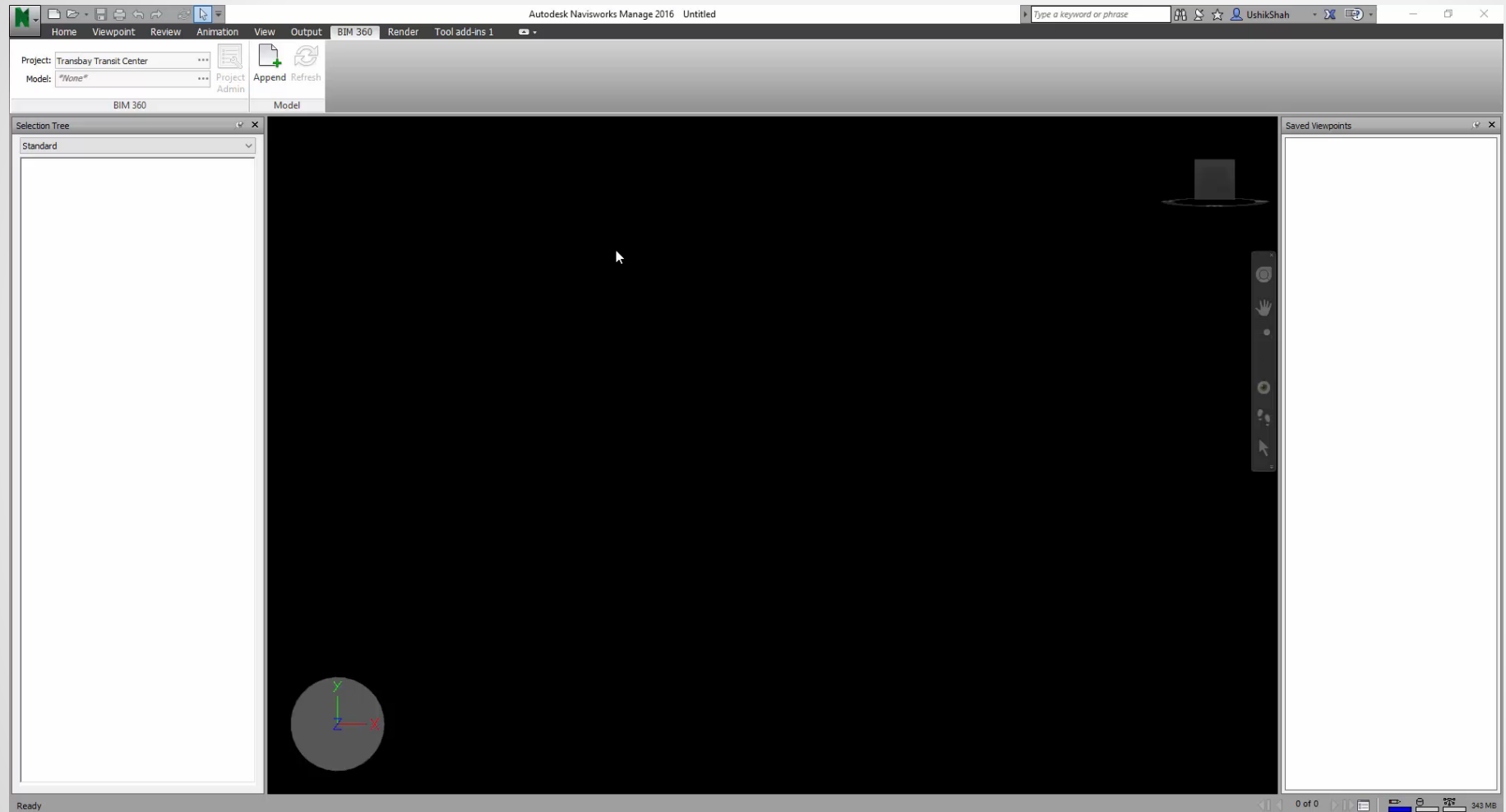
Interoperability between BIM 360 & Navisworks Manage



Desktop Level detail analysis in Navisworks Manage

BIM 360 Glue Add-in for direct Merging

Interoperability between BIM 360 & Navisworks Manage





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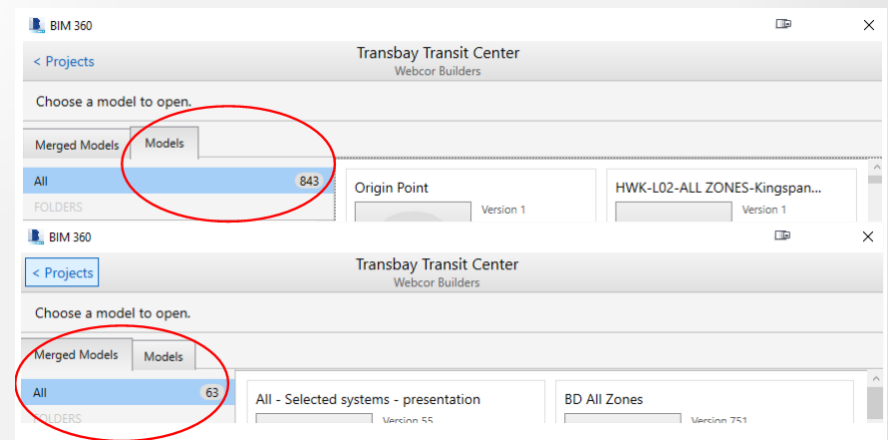
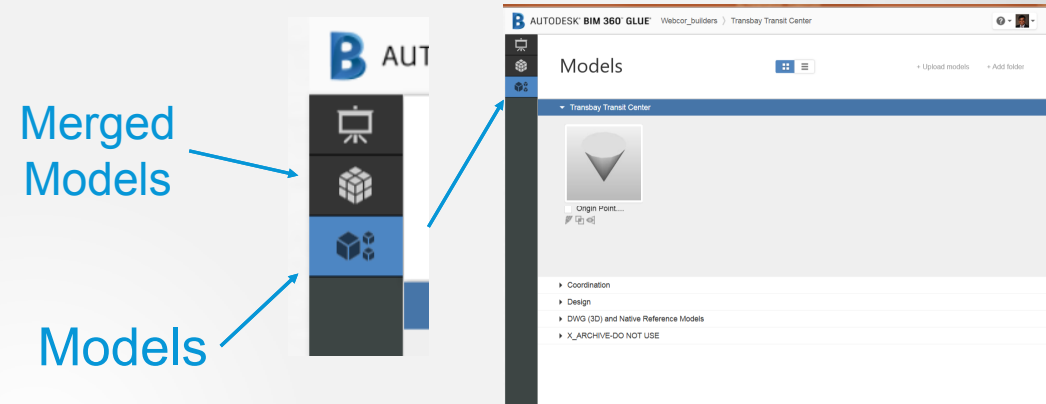
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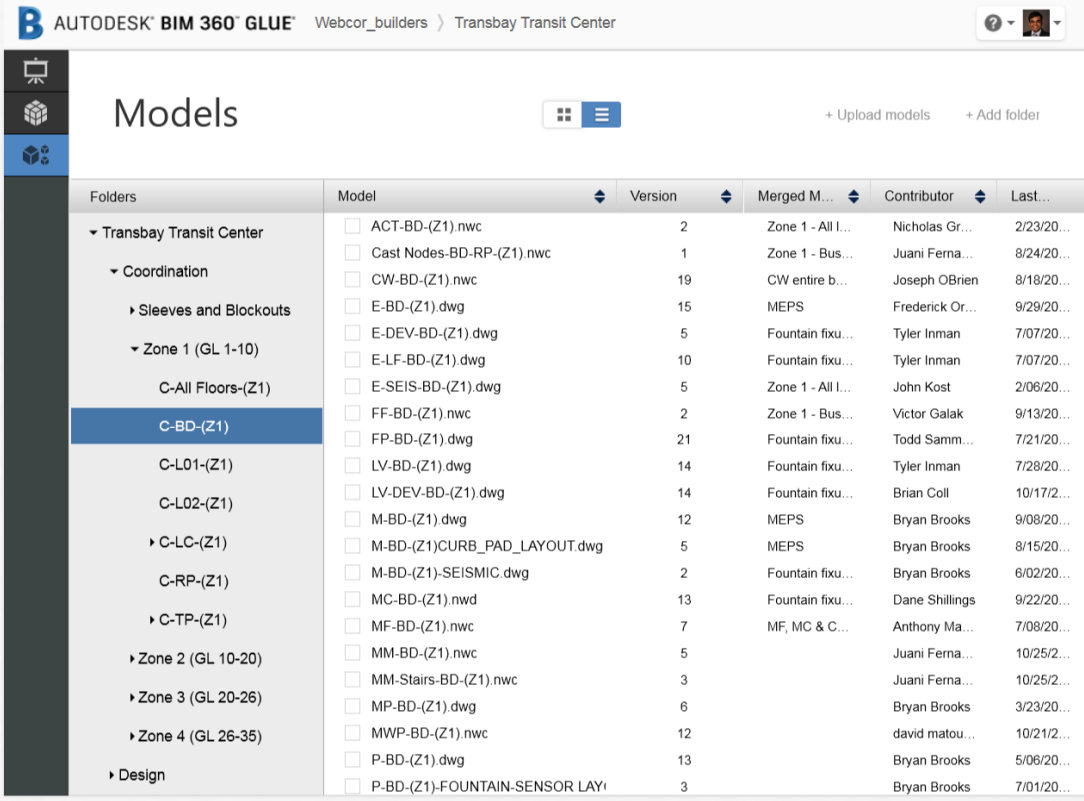
BIM FILE MANAGEMENT

- Models & Merged Models
- Large project = Massive number of files
- Zones & Levels
- Improved performance on Tablets & Mobile Devices



BIM FILE MANAGEMENT

- Models & Merged Models
- Large project = Massive number of files
- Zones & Levels
- Improved performance on Tablets & Mobile Devices
- File naming conventions are critical



AUTODESK® BIM 360® GLUE™ Webcor_builders > Transbay Transit Center

Models

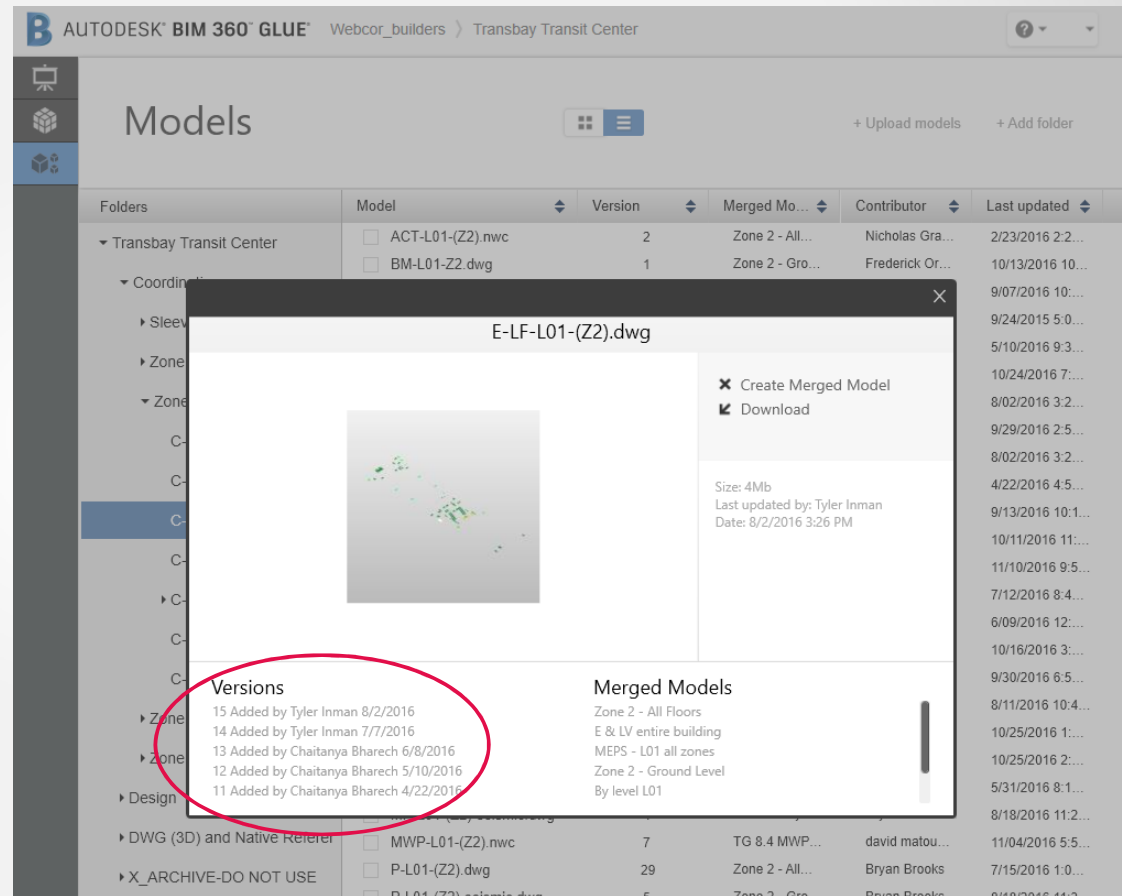
+ Upload models + Add folder

Folders	Model	Version	Merged M...	Contributor	Last...
▼ Transbay Transit Center					
▼ Coordination					
▶ Sleeves and Blockouts					
▼ Zone 1 (GL 1-10)					
C-All Floors-(Z1)					
C-BD-(Z1)	☐ ACT-BD-(Z1).nwc	2	Zone 1 - All I...	Nicholas Gr...	2/23/20...
	☐ Cast Nodes-BD-RP-(Z1).nwc	1	Zone 1 - Bus...	Juani Ferna...	8/24/20...
	☐ CW-BD-(Z1).nwc	19	CW entire b...	Joseph OBrien	8/18/20...
	☐ E-BD-(Z1).dwg	15	MEPS	Frederick Or...	9/29/20...
	☐ E-DEV-BD-(Z1).dwg	5	Fountain fixu...	Tyler Inman	7/07/20...
	☐ E-LF-BD-(Z1).dwg	10	Fountain fixu...	Tyler Inman	7/07/20...
	☐ E-SEIS-BD-(Z1).dwg	5	Zone 1 - All I...	John Kost	2/06/20...
	☐ FF-BD-(Z1).nwc	2	Zone 1 - Bus...	Victor Galak	9/13/20...
	☐ FP-BD-(Z1).dwg	21	Fountain fixu...	Todd Samm...	7/21/20...
	☐ LV-BD-(Z1).dwg	14	Fountain fixu...	Tyler Inman	7/28/20...
	☐ LV-DEV-BD-(Z1).dwg	14	Fountain fixu...	Brian Coll	10/17/2...
	☐ M-BD-(Z1).dwg	12	MEPS	Bryan Brooks	9/08/20...
	☐ M-BD-(Z1)CURB_PAD_LAYOUT.dwg	5	MEPS	Bryan Brooks	8/15/20...
	☐ M-BD-(Z1)-SEISMIC.dwg	2	Fountain fixu...	Bryan Brooks	6/02/20...
	☐ MC-BD-(Z1).nwd	13	Fountain fixu...	Dane Shillings	9/22/20...
	☐ MF-BD-(Z1).nwc	7	MF, MC & C...	Anthony Ma...	7/08/20...
	☐ MM-BD-(Z1).nwc	5		Juani Ferna...	10/25/2...
	☐ MM-Stairs-BD-(Z1).nwc	3		Juani Ferna...	10/25/2...
	☐ MP-BD-(Z1).dwg	6		Bryan Brooks	3/23/20...
	☐ MWP-BD-(Z1).nwc	12		david matou...	10/21/2...
	☐ P-BD-(Z1).dwg	13		Bryan Brooks	5/06/20...
▶ Design	☐ P-BD-(Z1)-FOUNTAIN-SENSOR LAYO	3		Bryan Brooks	7/01/20...

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BIM FILE MANAGEMENT

- Models & Merged Models
- Large project = Massive number of files
- Zones & Levels
- Improved performance on Tablets & Mobile Devices
- File naming conventions are critical
- Older Versions are always available



CONCLUSION

Benefits to Everyone



1. Reduced RFIs
2. Better Visualization
3. No separate software



1. Single federated model
2. Saves older versions.
3. Easy to provide markups



1. Access to latest models from all trades
2. Clear markups from GC
3. Swift upload/download



SUCCESS





