

# Eian Stedford

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Crossrail - West Stations

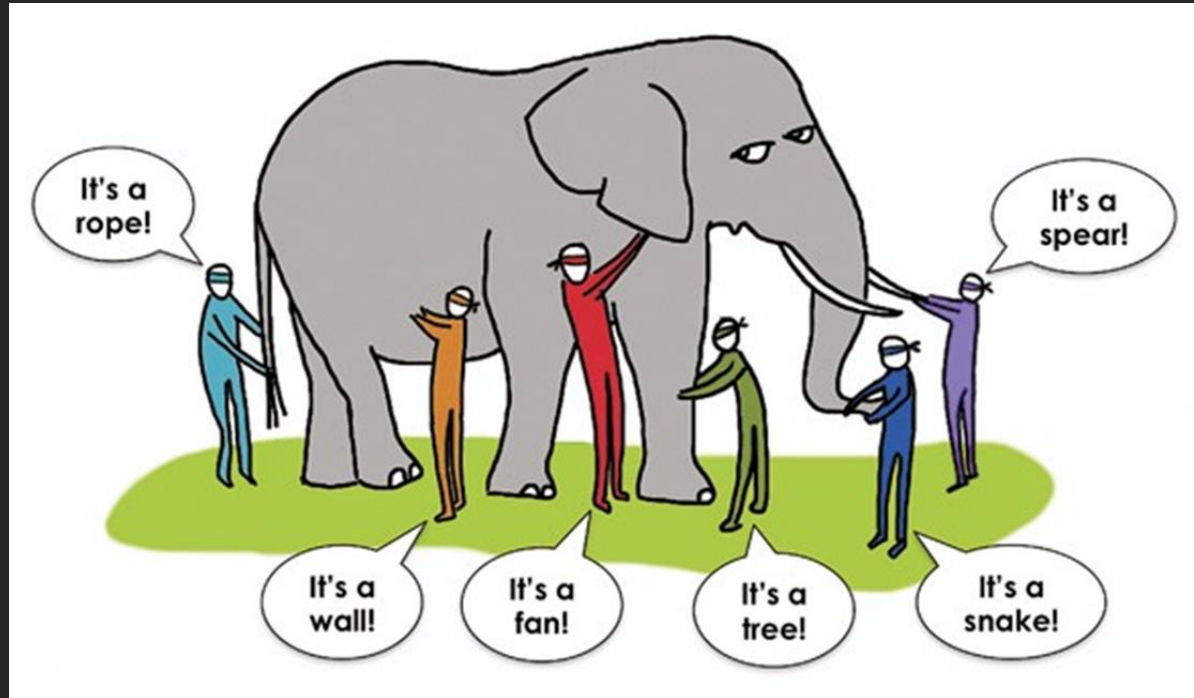


# BIM @ *Crossrail West Stations*



So what's it all about....

# BIM @ Crossrail West Stations



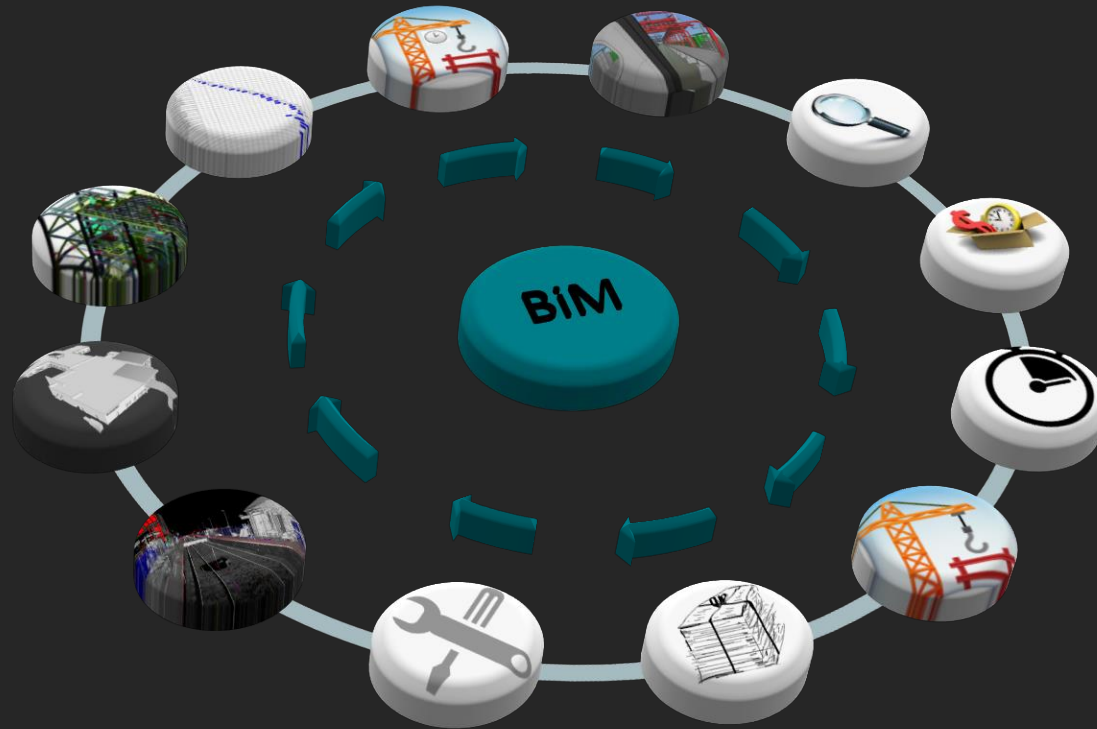
Old Indian Fable

# BIM @ Crossrail West Stations

**Crossrail defines BIM** as *“the **process** of generating, building and managing data through the life of the project by using model-based technologies linked to a database of project information. **BIM** incorporates data – physical, environmental, commercial – on every element”*

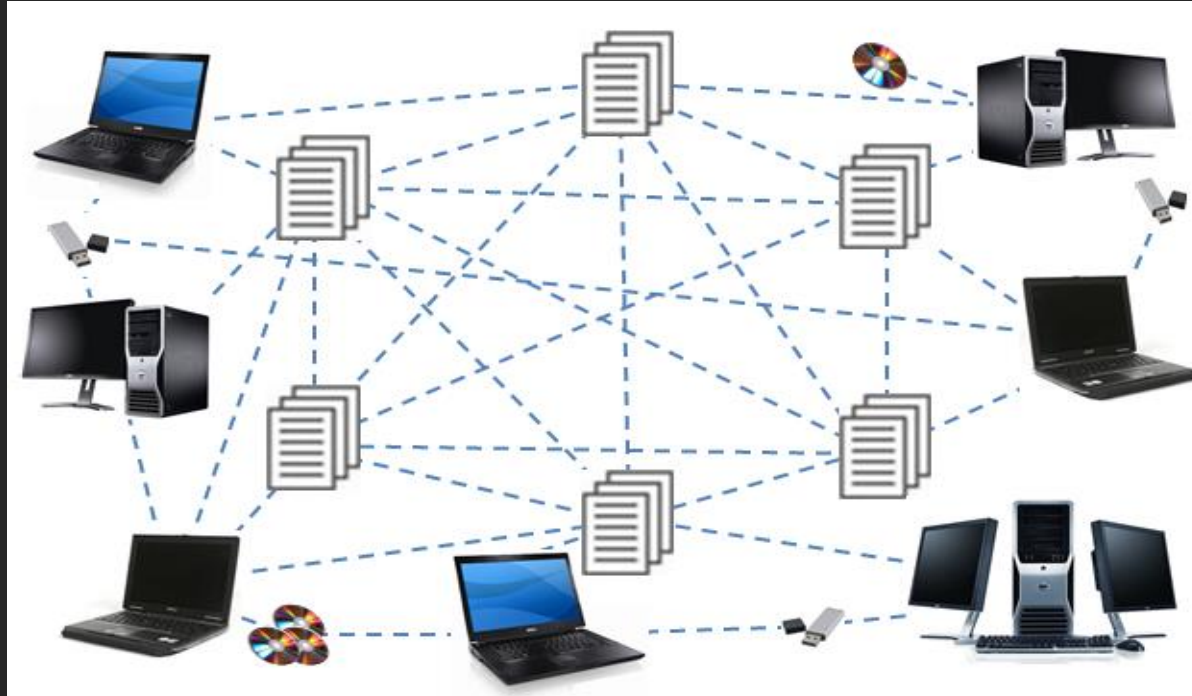
What does our major stakeholder states

# Characteristics of BiM



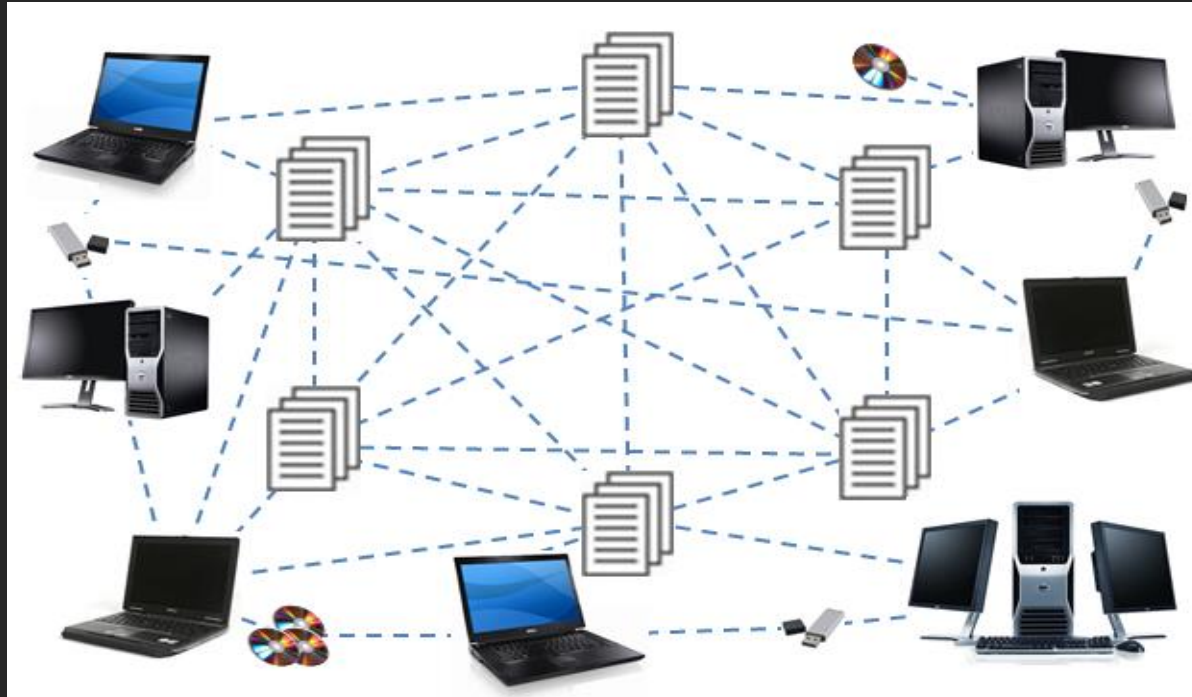
Many Hands Make Light Work

# COMPLÈTEMENT DÉSORDONNÉ

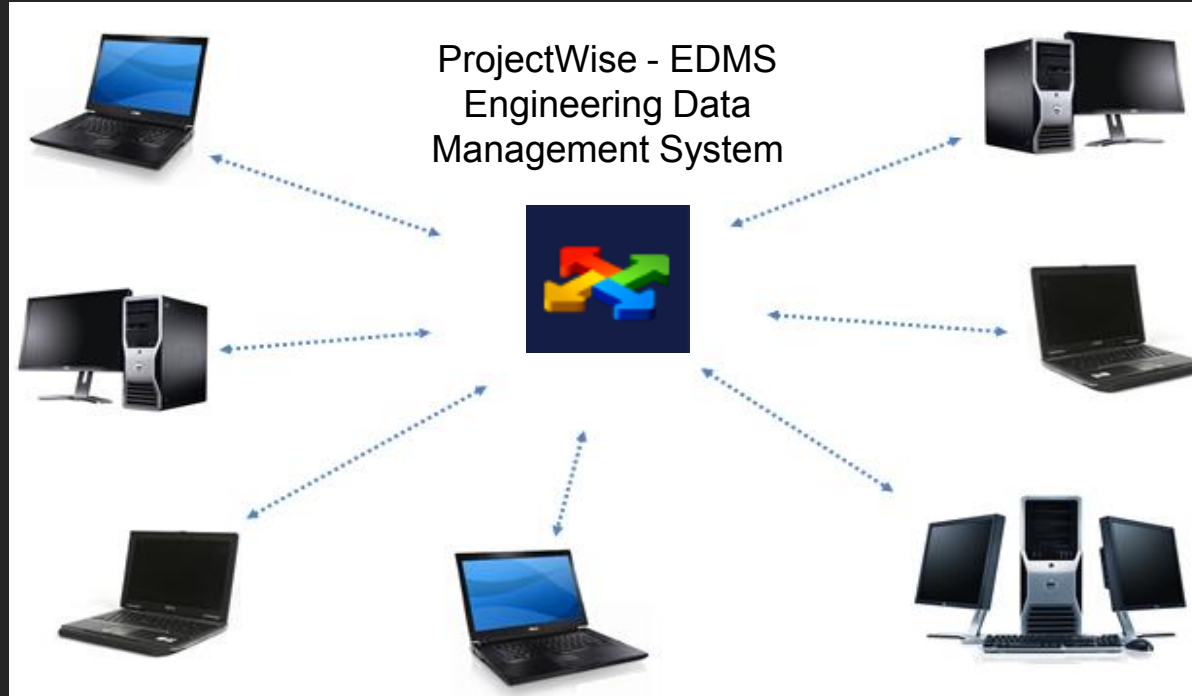


La folie et le chaos

# COMPLETELY DISORGANIZED



# Collaboration & Coordination in Action



Common Data Environment



# Project Milestones

## Design Development

S1 - Multidisciplinary Design Review (MDR)

S2 - Interdisciplinary Design Check Issue (IDCi)

S2 - Interdisciplinary Design Check (IDC)

S3 - Form B Submission

A - Approved for Construction (AFC)

AB - As Built Submission

# West Drayton - Before



West Drayton - Before

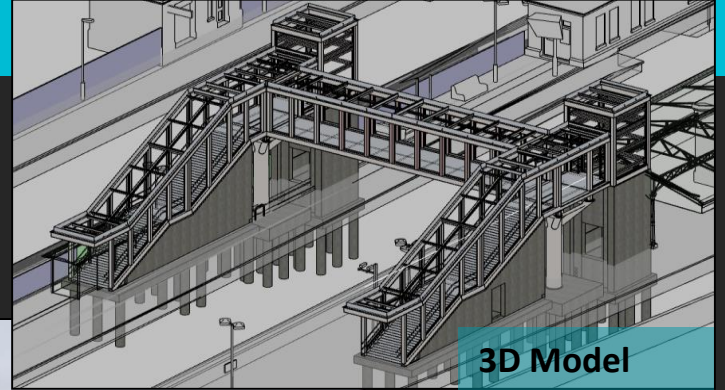
# Architectural - West Drayton - After



West Drayton - Complete

# West Drayton Footbridge

Artist Impression



3D Model



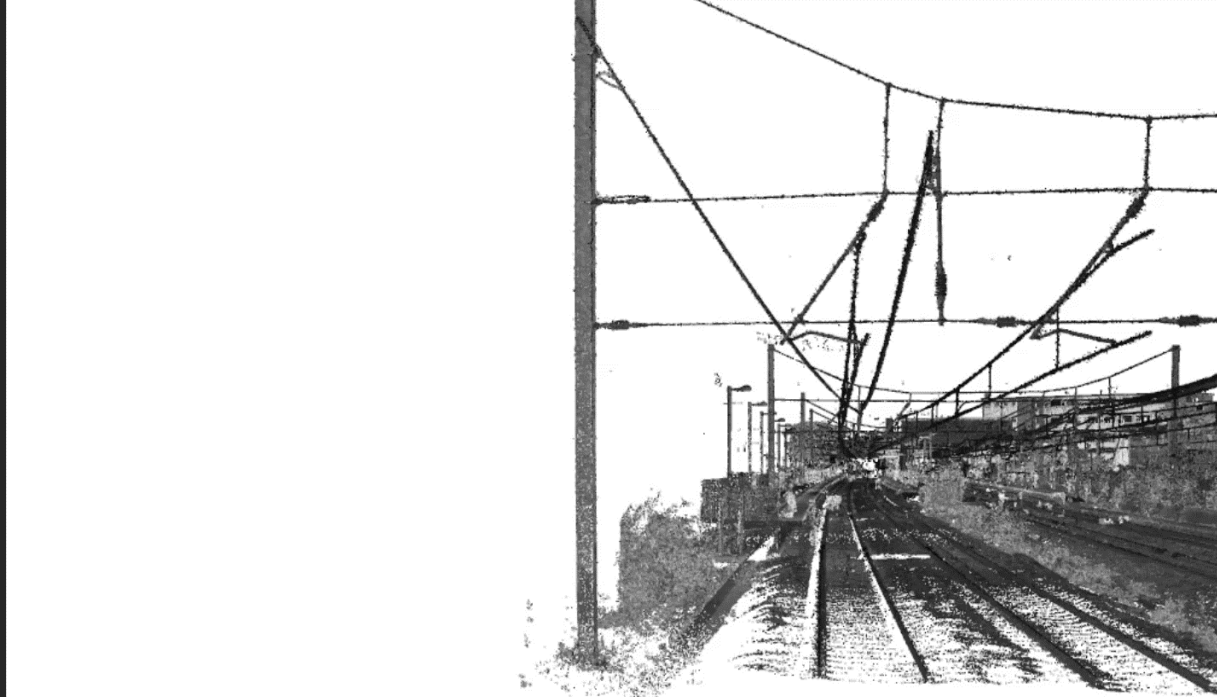
Progress Made

# Innovation from the start



PointCloud Laser Scanner

# The Journey.....



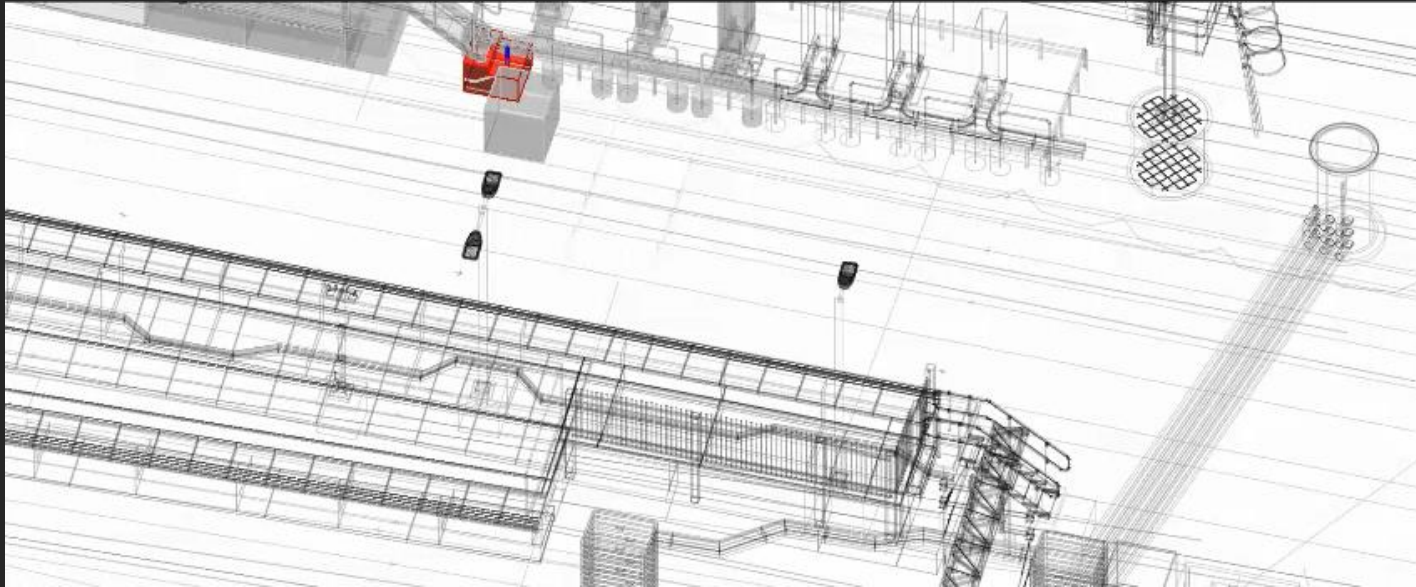
**Collaboration & Coordination**

# The Story so far...Clash Detection

Job Name	Status	Number of Clashes	Started At	Linked At
1	Unresolved	1	2010/02/23 17:27	2010/02/23 17:27
2	Resolved	1		
3	Resolved	1		
4	Resolved	1		
5	Resolved	1		
6	Resolved	1		
7	Resolved	1		
8	Resolved	1		
9	Resolved	1		
10	Resolved	1		
11	Resolved	1		
12	Resolved	1		
13	Resolved	1		
14	Resolved	1		
15	Resolved	1		
16	Resolved	1		
17	Resolved	1		
18	Resolved	1		
19	Resolved	1		
20	Resolved	1		
21	Resolved	1		
22	Resolved	1		
23	Resolved	1		
24	Resolved	1		
25	Resolved	1		
26	Resolved	1		
27	Resolved	1		
28	Resolved	1		
29	Resolved	1		
30	Resolved	1		
31	Resolved	1		
32	Resolved	1		
33	Resolved	1		
34	Resolved	1		
35	Resolved	1		

Coordination in Action

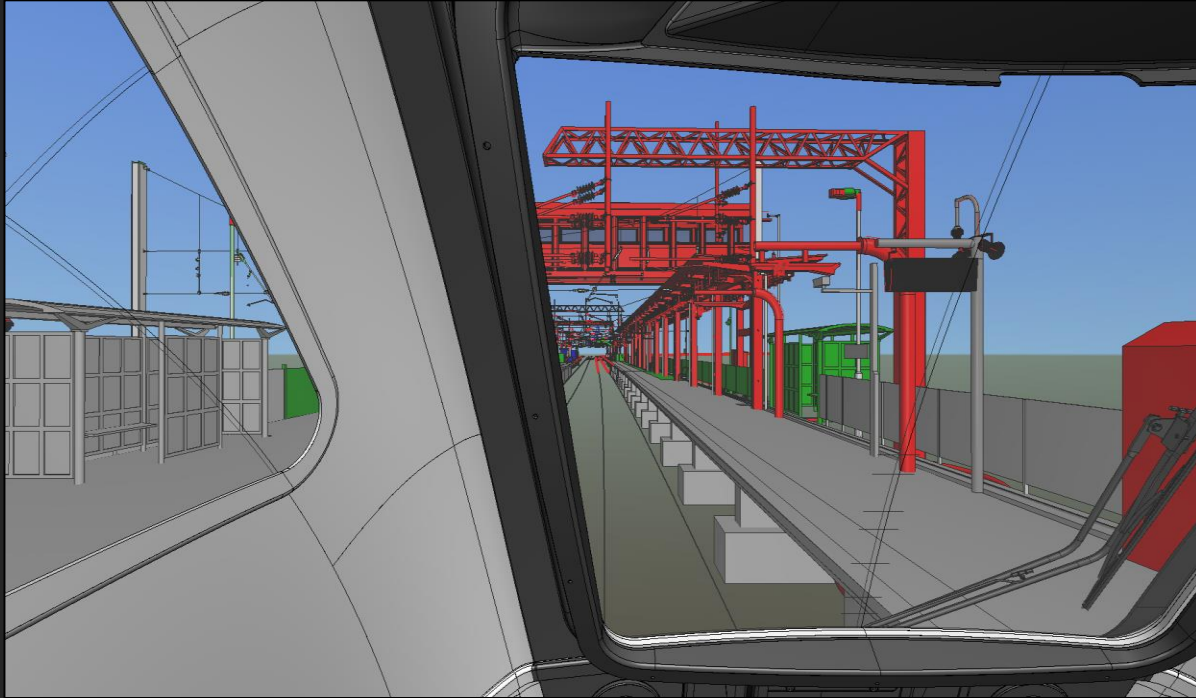
# The Story so far...Clash Detection



**Coordination in Action**

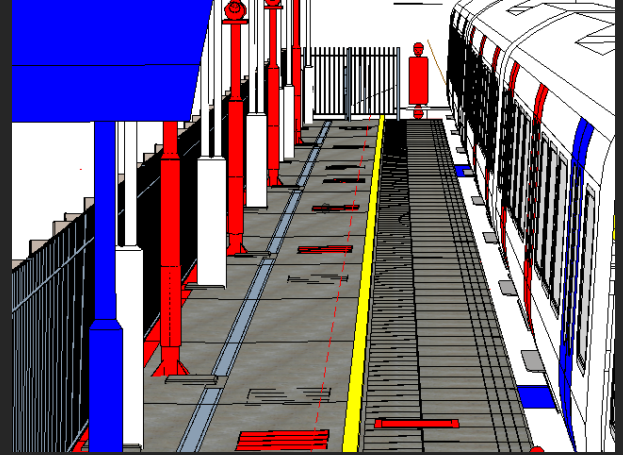


# The Story so far...Signal Sightline Validation



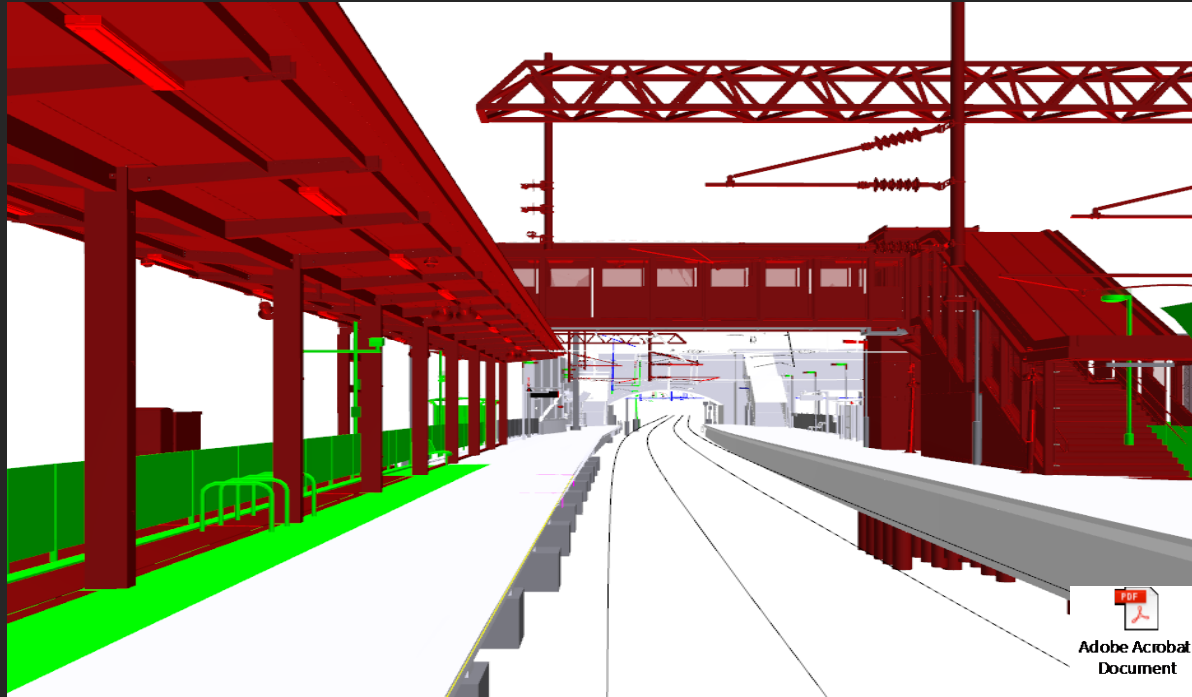
Simulation of "Drivers Eye" View

# The Story so far...Crossrail D00



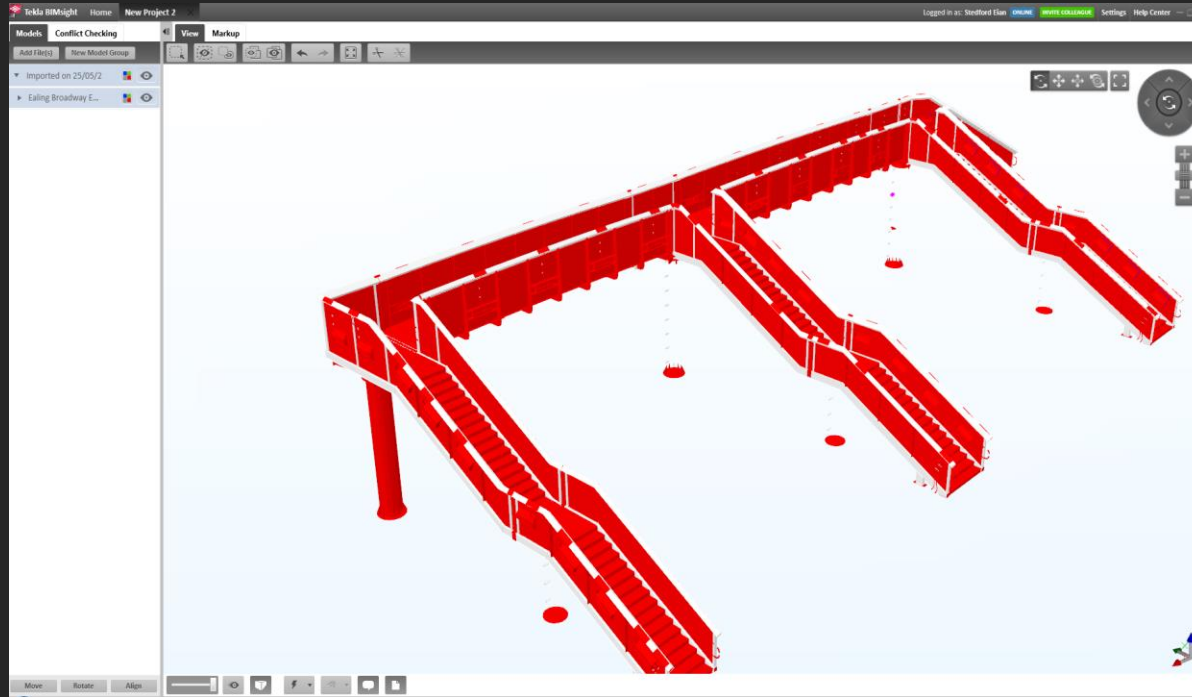
Simulation of Camera FOV

# The Story so far...Federated 3D PDF






# The Story so far...Data Exchange




Industry Foundation Classes (IFC)

# The Story so far...Information extraction



### Steel Report + Carbon Emissions



catalog ty	catalog item	Uncls	Discipln	Phasing	sectionname	structurality	Length	UnitWeight	MaterialDens	LengthXU	Carbon Emissions (kgCo2 e /t)
Steel Beam	S-G2613-BeamsSteel	G2613	Structural	New Construction	SHS150X150X10.0 Beam		0.1078	43.1	7850	4.845181	8.8
Steel Beam	S-G2613-BeamsSteel	G2613	Structural	New Construction	SHS150X150X10.0 Beam		0.2002	43.1	7850	8.629151	12.6
Steel Beam	S-G2613-BeamsSteel	G2613	Structural	New Construction	SHS150X150X10.0 Beam		1.4213	43.1	7850	61.256595	83.4
Steel Beam	S-G2613-BeamsSteel	G2613	Structural	New Construction	SHS150X150X10.0 Beam		1.4213	43.1	7850	61.2566	83.4
Steel Beam	S-G2613-BeamsSteel	G2613	Structural	New Construction	SHS150X150X10.0 Beam		1.4212	43.1	7850	61.253394	83.4
Steel Beam	S-G2613-BeamsSteel	G2613	Structural	New Construction	SHS150X150X10.0 Beam		1.4211	43.1	7850	61.25147	83.4
Steel Beam	S-G2613-BeamsSteel	G2613	Structural	New Construction	SHS150X150X10.0 Beam		1.4211	43.1	7850	61.25029	83.4
Steel Beam	S-G2613-BeamsSteel	G2613	Structural	New Construction	SHS150X150X10.0 Beam		1.4211	43.1	7850	61.25147	83.4
Steel Beam	S-G2613-BeamsSteel	G2613	Structural	New Construction	SHS150X150X10.0 Beam		1.4212	43.1	7850	61.253394	83.4
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Steel Beam	S-G2613-BeamsSteel	G2613	Structural	New Construction	SHS150X150X10.0 Beam		1.4213	43.1	7850	61.256595	83.4
Steel Beam	S-G2613-BeamsSteel	G2613	Structural	New Construction	SHS150X150X10.0 Beam		0.2002	43.1	7850	8.623064	12.6
Steel Beam	S-G2613-BeamsSteel	G2613	Structural	New Construction	SHS150X150X10.0 Beam		0.1078	43.1	7850	4.845294	8.8
Steel Beam	S-G2613-BeamsSteel	G2613	Structural	New Construction	SHS150X150X10.0 Beam		0.1074	43.1	7850	4.630655	6.8
Steel Beam	S-G2613-BeamsSteel	G2613	Structural	New Construction	SHS150X150X10.0 Beam		0.2003	43.1	7850	8.632076	12.6
Steel Beam	S-G2613-BeamsSteel	G2613	Structural	New Construction	SHS150X150X10.0 Beam		1.3807	43.1	7850	53.509019	86.3
Steel Beam	S-G2613-BeamsSteel	G2613	Structural	New Construction	SHS150X150X10.0 Beam		1.3807	43.1	7850	53.508565	86.3

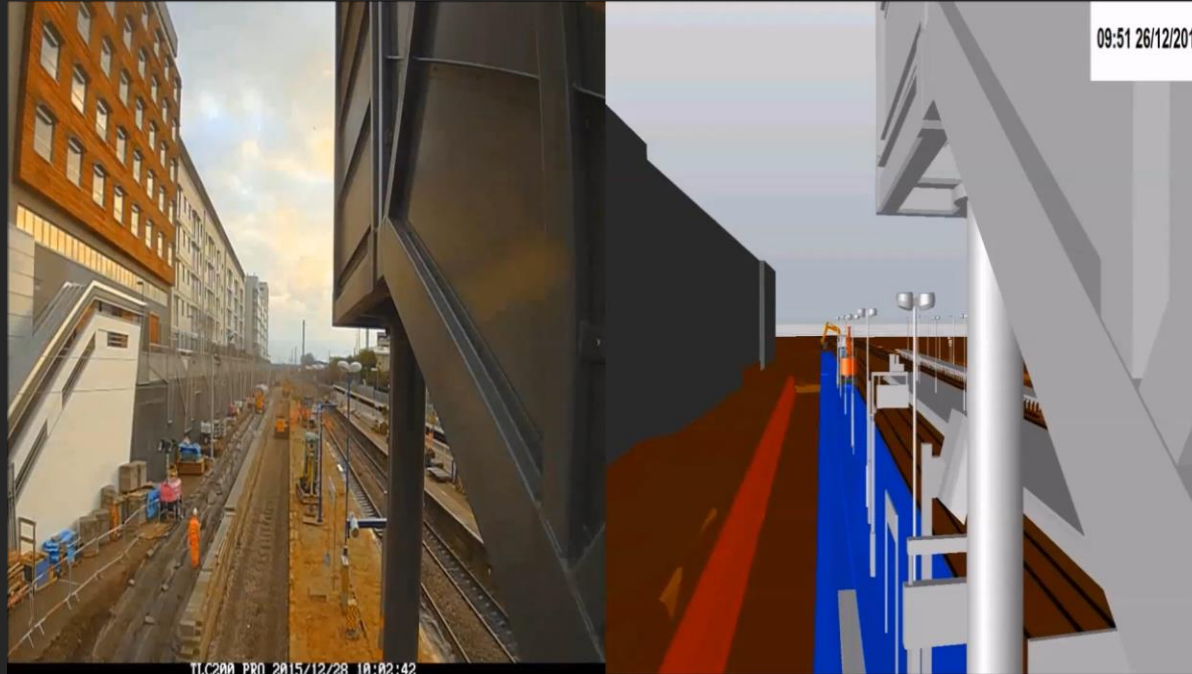
DOOR SCHEDULE						
DOOR NUMBER	DOOR TYPE	LEAF SIZE				
		WIDTH	HEIGHT	THICKNESS	UNDERCUT	TYPE
5	A-G322-Doors-Single-VisionPanels	0.8526m	1.9760m	0.0400m	0.0000m	L- Louver- Full
6	A-G322-Doors-Single-VisionPanels	0.8526m	1.9760m	0.0400m	0.0000m	L- Louver- Full
7						
8						
9						
10						







# The Story so far... 4D Planning - Time-lapse



# SCENE 3D View – Laser Scan



West Drayton Footbridge Pointcloud

# Panoramic View Online



## Acton

Last modified at 4/5/2016 3:38 PM by ■ Hinchliffe, Michael [Edit this page]

### Platform 2/3

<p>Scan 1</p> 	<p>Scan 2</p> 	<p>Scan 3</p> 
<p>Scan 4</p> 	<p>Scan 5</p> 	<p>Scan 6</p> 

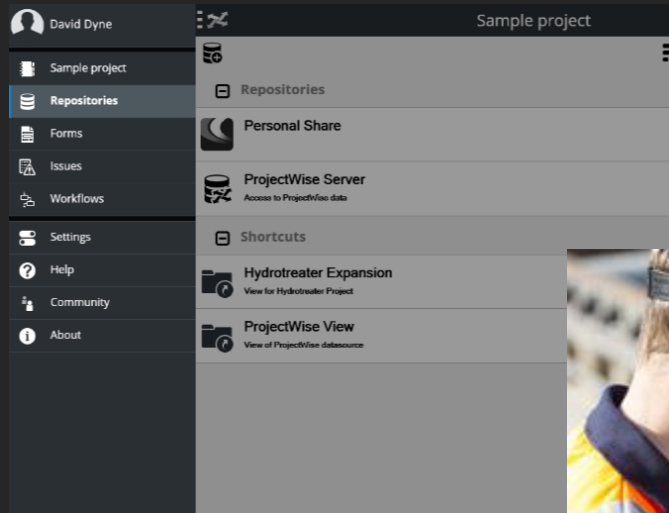
# Going forward.....3D Model Handback from Scan



PointCloud to 3D Model



# Going forward.....CDE wherever you are



# Going forward..... Customer Engagement



Google Cardboard



# Thank You

Questions?

