

# Enabling Optimal Workflows Using “AECC” in a BIM Dominated Industry

**Lee Barnett**

Digital Delivery Manager | @LP\_Barnett | @CurtinsConsult

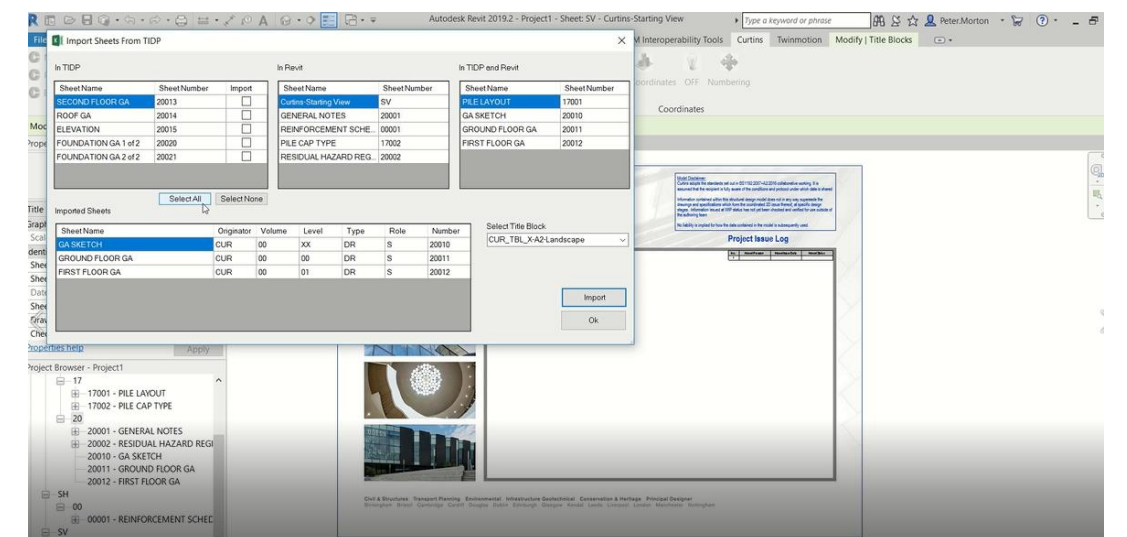
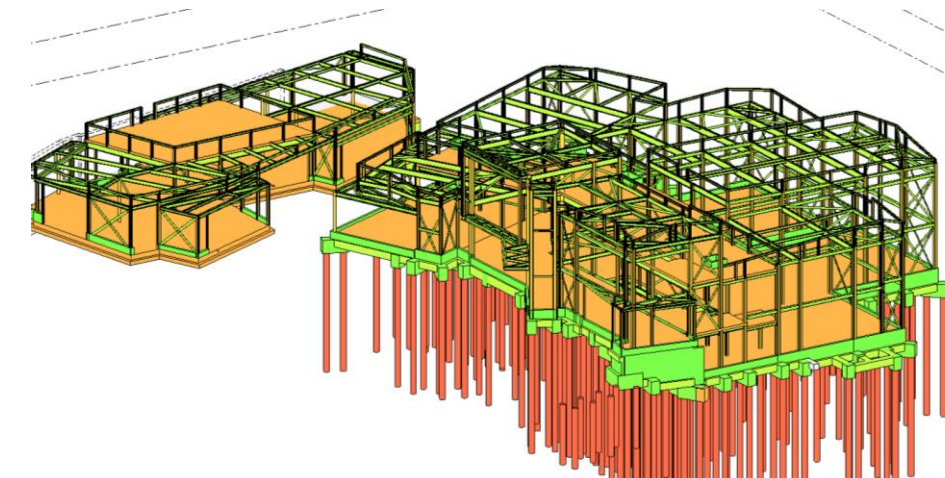
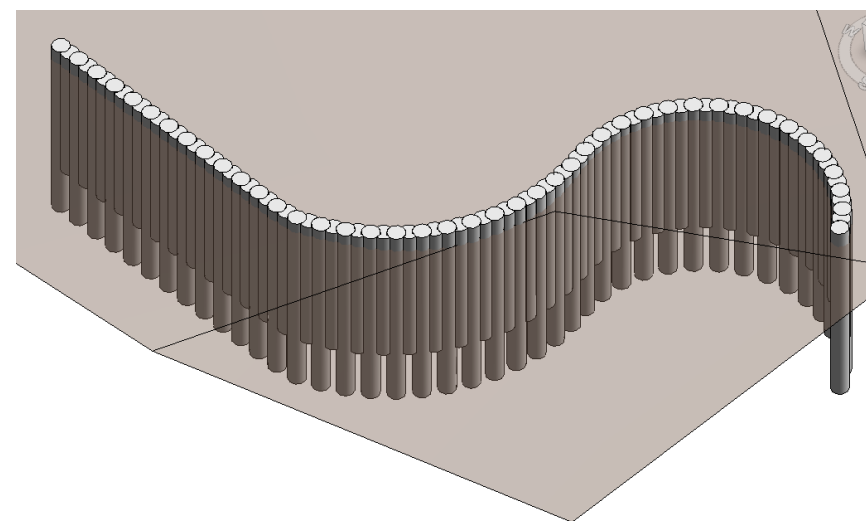
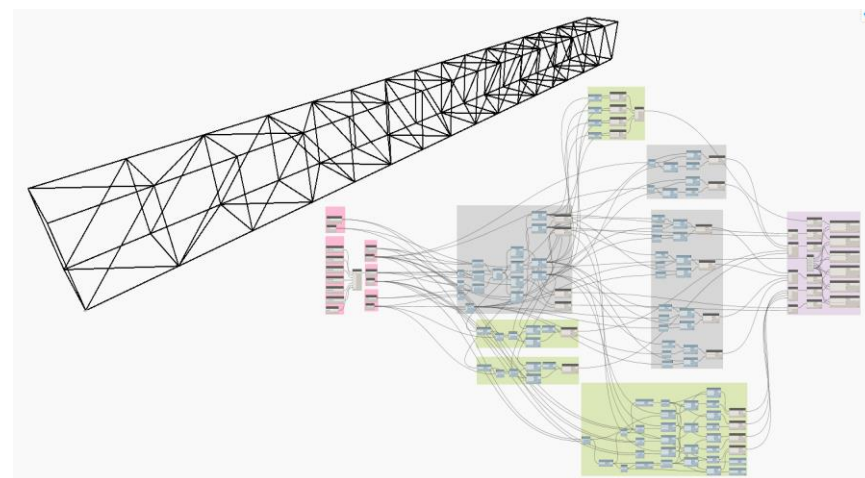
**Edward Heukers**

Project Engineer | @EdwardHeukers | @CurtinsConsult



# Presentation Summary

- Our approach for digital transformation
- Revit customisations
- Dynamo
- Aligning custom applications to industry standards
- Measuring carbon embodiment through Revit API





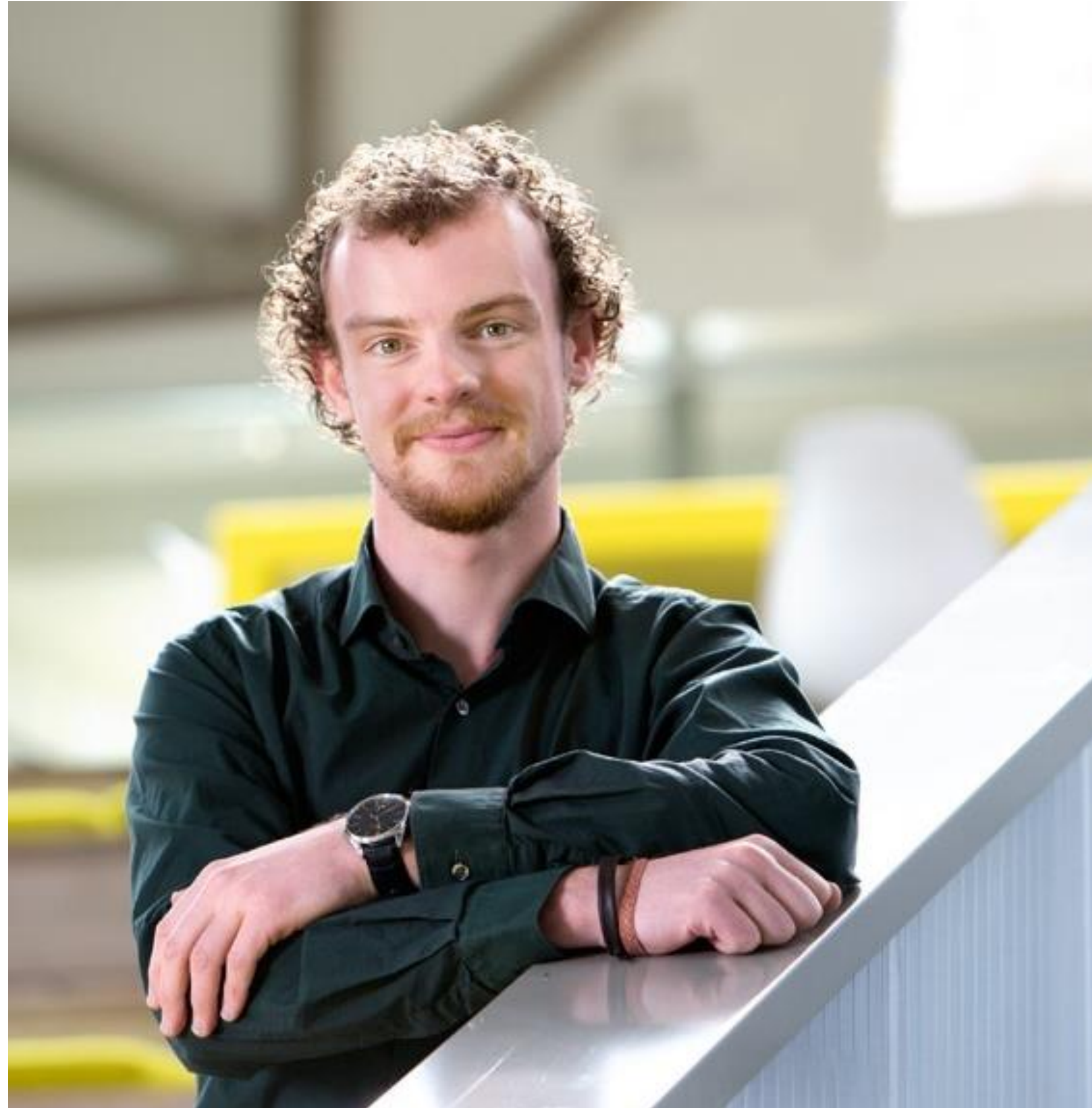


# Lee Barnett

## Digital Delivery Manager

- Worked for Curtins for over 5 years
- Curtins Digital Construction lead
- Previously a technician with structural and fabrication background
- Passionate about BIM and improving workflows





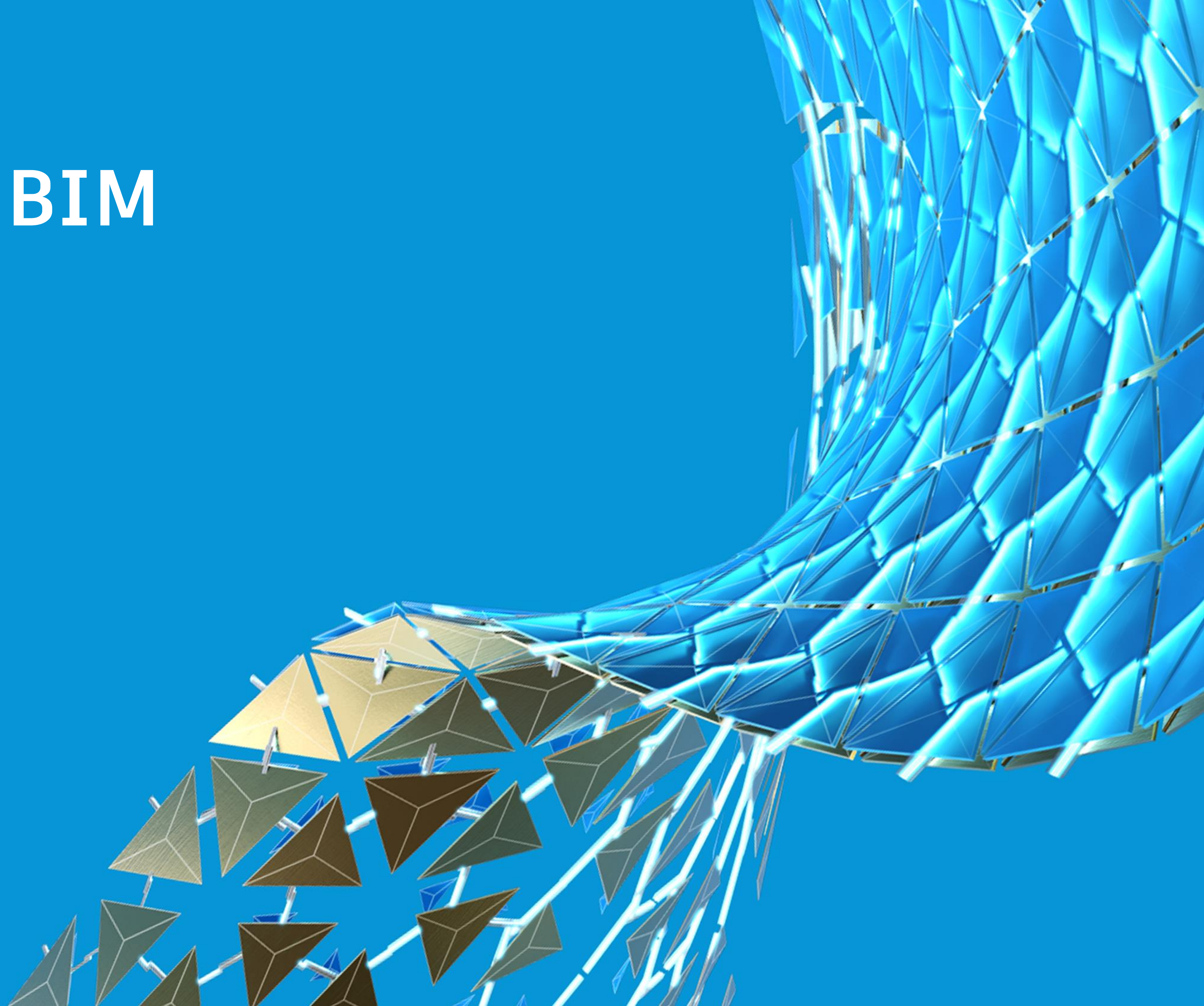
# Edward Heukers

## Project Engineer

- Dutch engineer with a technician background
- Dublin based for the last 2.5 years with Curtins
- Passionate for BIM development and implementation



# Curtins and BIM





# Introduction to Curtins

**60**

Years

Established  
in 1960 by Bill Curtin

**14**

Locations

**Specialisms**

**7**

Civils & Structures  
Transport  
Planning  
Environmental  
Infrastructure  
Geotechnical  
Conservation &  
Heritage  
Principal Designer



Multi Award  
Winners



# Curtins and Autodesk

**1985**

**AUTOCAD**

Purchased first  
AutoCAD license

**2008**

**REVIT**

Purchased first  
Revit licence

**180+**

**AECC**

Standalone AECC  
licenses

**400+**

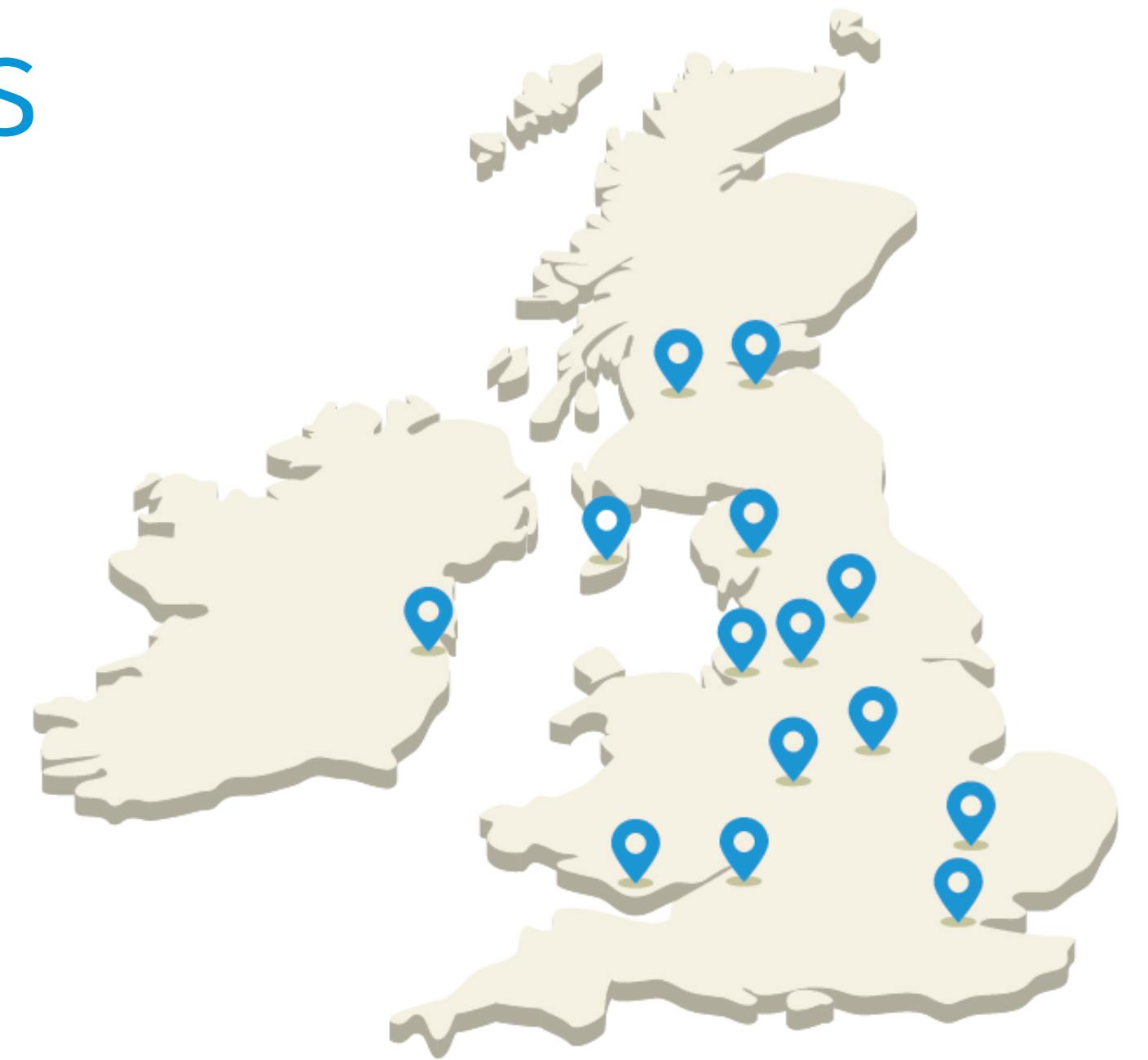
**BIM 360**

BIM 360  
licenses



# Inherited Legacy Issues

- Nationwide offices in the UK and Ireland
- Projects range from £1m to £33m
- Early adopters of BIM authoring software
- Historically, Curtins had no formal nationwide company CAD standards
- Individual offices to manage project content
- BIM implementation enables standardisation



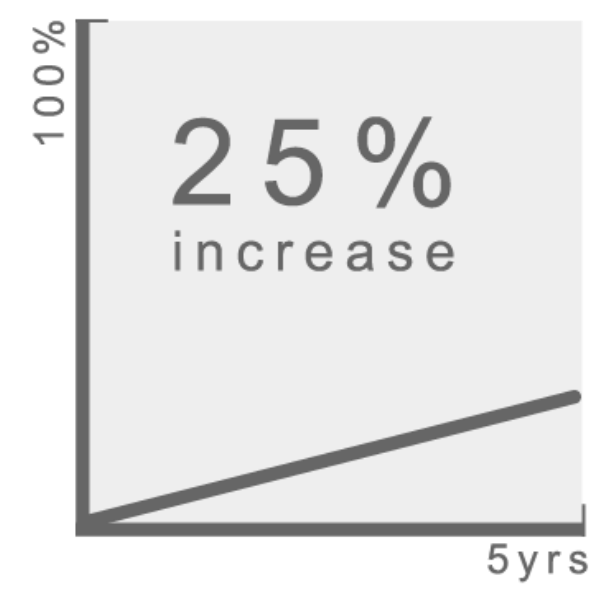
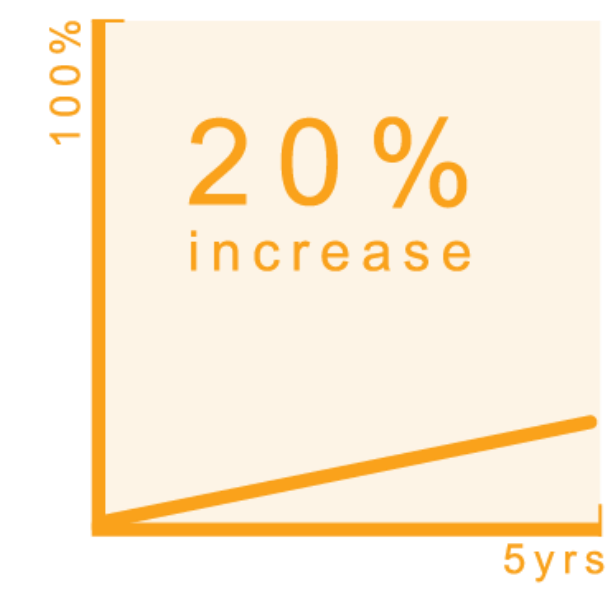
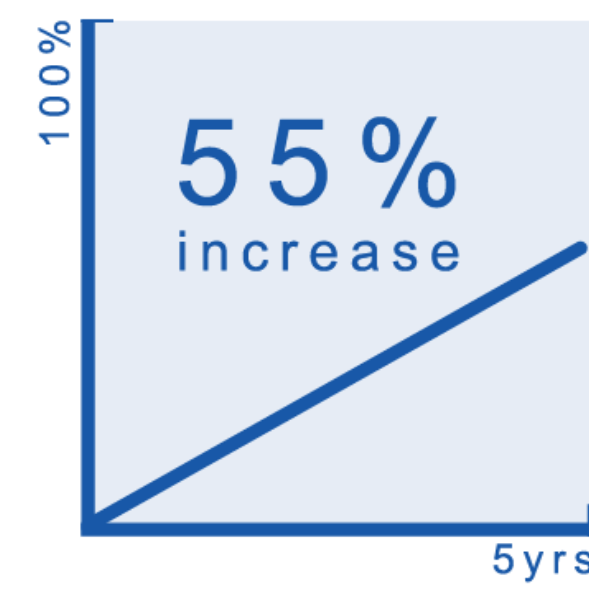
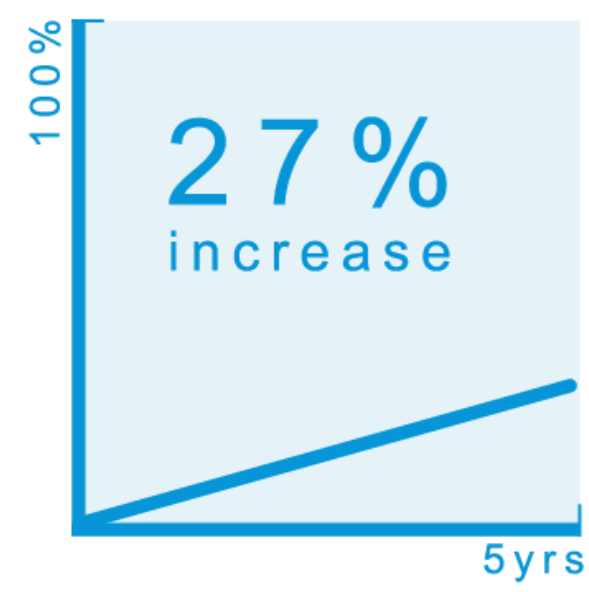
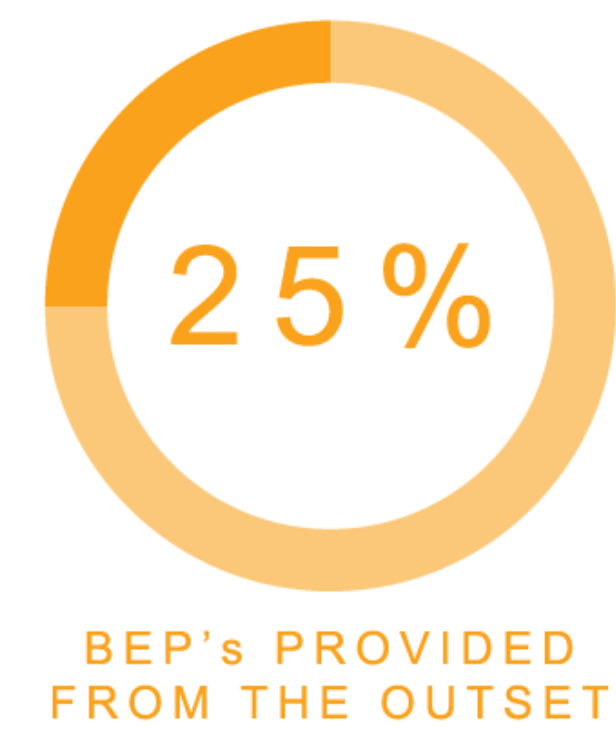
Early adoption of  
technology



Our founder, Bill Curtin with our early  
team



# Project Delivery Statistics 2019





# AUTODESK - AECC



Revit



Civil 3D



AutoCAD



Advance Steel



Insight



FormIt Pro



InfraWorks



Navisworks Manage



ReCap Pro



Dynamo Studio



Robot Structural Analysis Professional



3ds Max



**AUTODESK® ARCHITECTURE,  
ENGINEERING & CONSTRUCTION  
COLLECTION**



Autodesk Rendering



Vehicle Tracking



Fabrication CADmep



Structural Bridge Design



Autodesk Drive

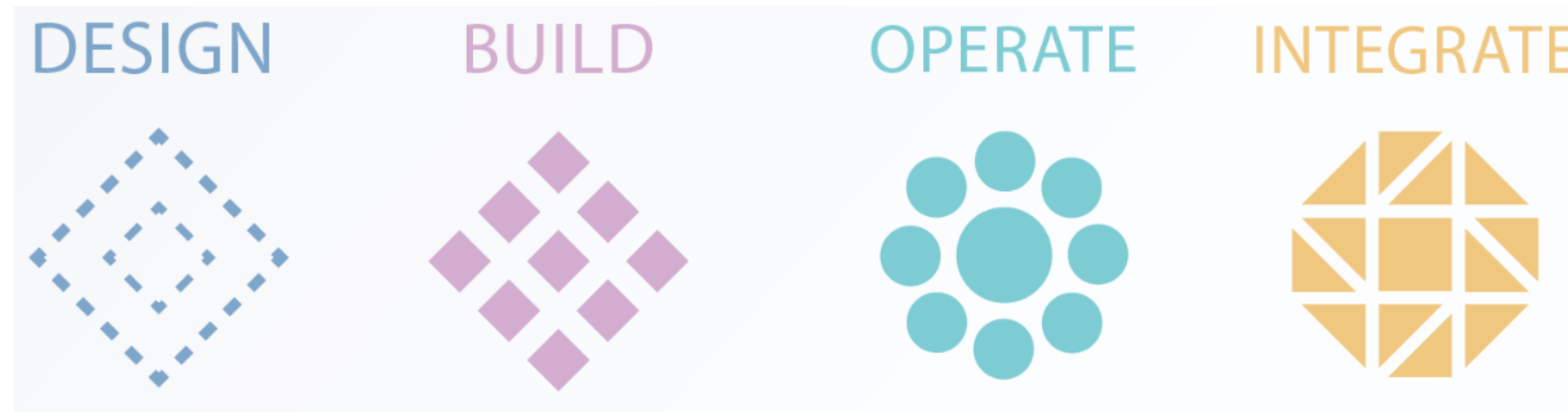


# UK BIM FRAMEWORK

## UK BIM Framework



- ISO 19650-1:2018
- ISO 19650-2:2018
- ISO 19650-5:2020
- BS 1192-4:2014
- PAS 1192-6:2018





# Curtins and BIM to Date

- First Engineering Consultant in the UK to achieve BSI BIM Kitemark
- Used the scheme as a driver to implement change
- Consistency of delivery across our offices
- Multi BIM Show Live award winners

**bsi.**

**Kitemark™ Certificate**

By Royal Charter

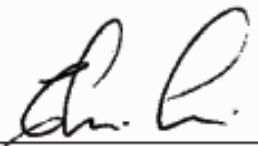
This is to certify that: Curtins Consulting Limited  
51-55 Tithebarn Street  
Liverpool  
L2 2SB  
United Kingdom

Holds Certificate Number: KM 688153

In respect of:  
**PAS 1192-2:2013**  
Information management for the capital/delivery phase of construction projects using building information modelling. Achieved BIM Level 2 in accordance with PAS 1192-2:2013, BS 1192:2007 and BS 1192-4:2014 following the assessment of project delivery which includes client satisfaction and collaborative engagement with the supply chain.

This issues the right and licence to use the Kitemark in accordance with the Kitemark Terms and Conditions governing the use of the Kitemark, as may be updated from time to time by BSI Assurance UK Ltd (the "Conditions"). All defined terms in this Certificate shall have the same meaning as in the Conditions.

The use of the Kitemark is authorized in respect of the Product(s) detailed on this Certificate provided at or from the above address.

For and on behalf of BSI:   
Chris Lewis - Certification Director, Product Certification

First Issued: 2018-10-11  
Latest Issue: 2018-10-11

Effective Date: 2018-10-11  
Expiry Date: 2021-10-10

Page: 1 of 2

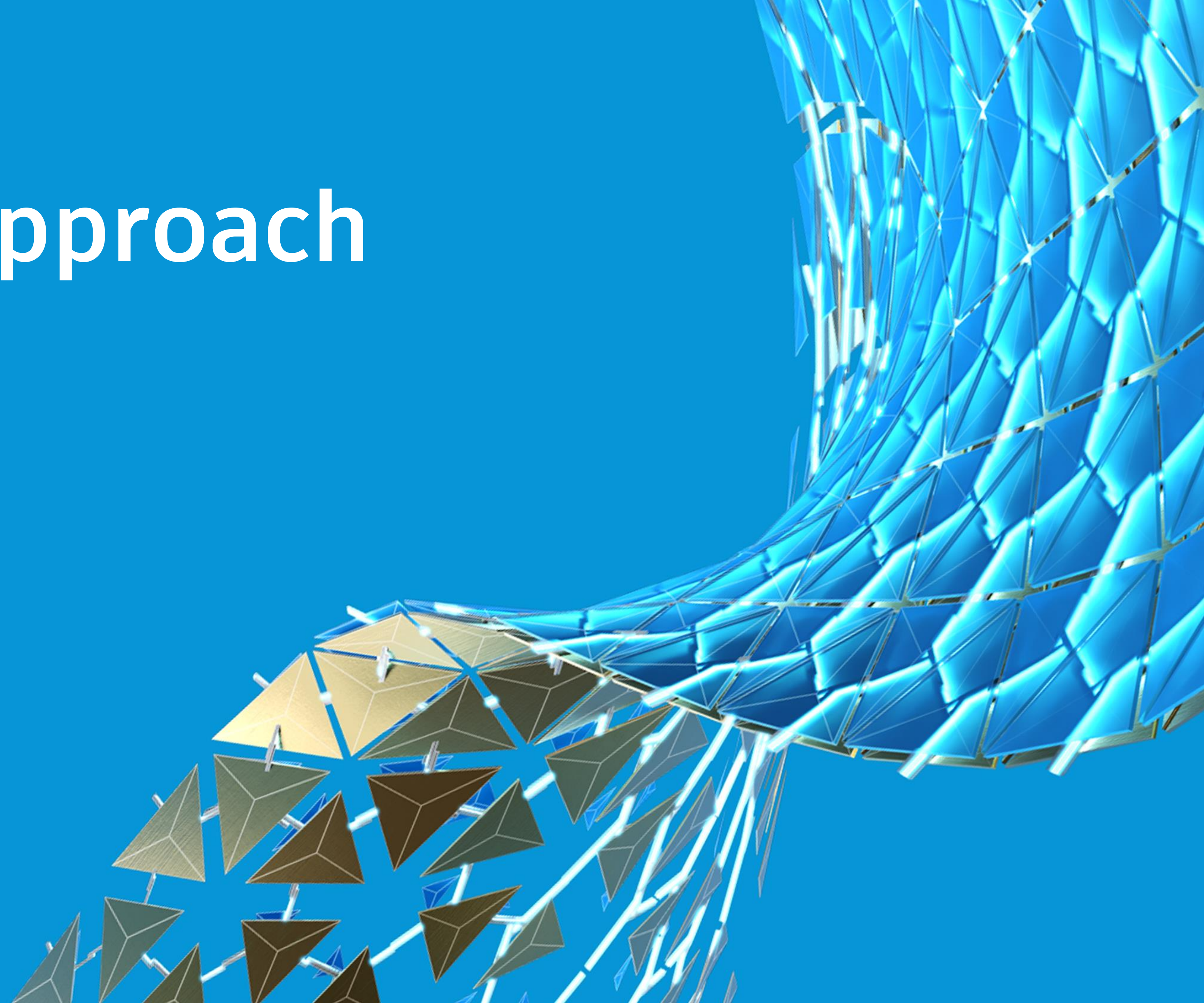
...making excellence a habit.™

This certificate has been issued by and remains the property of BSI Assurance UK Ltd, Kitemark Court, Davy Avenue, Knowlhill, Milton Keynes MK5 8PP, United Kingdom and should be returned immediately upon request.  
To check its validity telephone +44 (0) 345 080 9000. An electronic certificate can be authenticated [online](#).  
BSI Assurance UK Limited, registered in England under number 7805321 at 389 Chiswick High Road, London W4 4AL, UK.  
A member of BSI Group of Companies.





# Curtins' Approach





# BIM Approach

## Step 1 - In-house Improvement

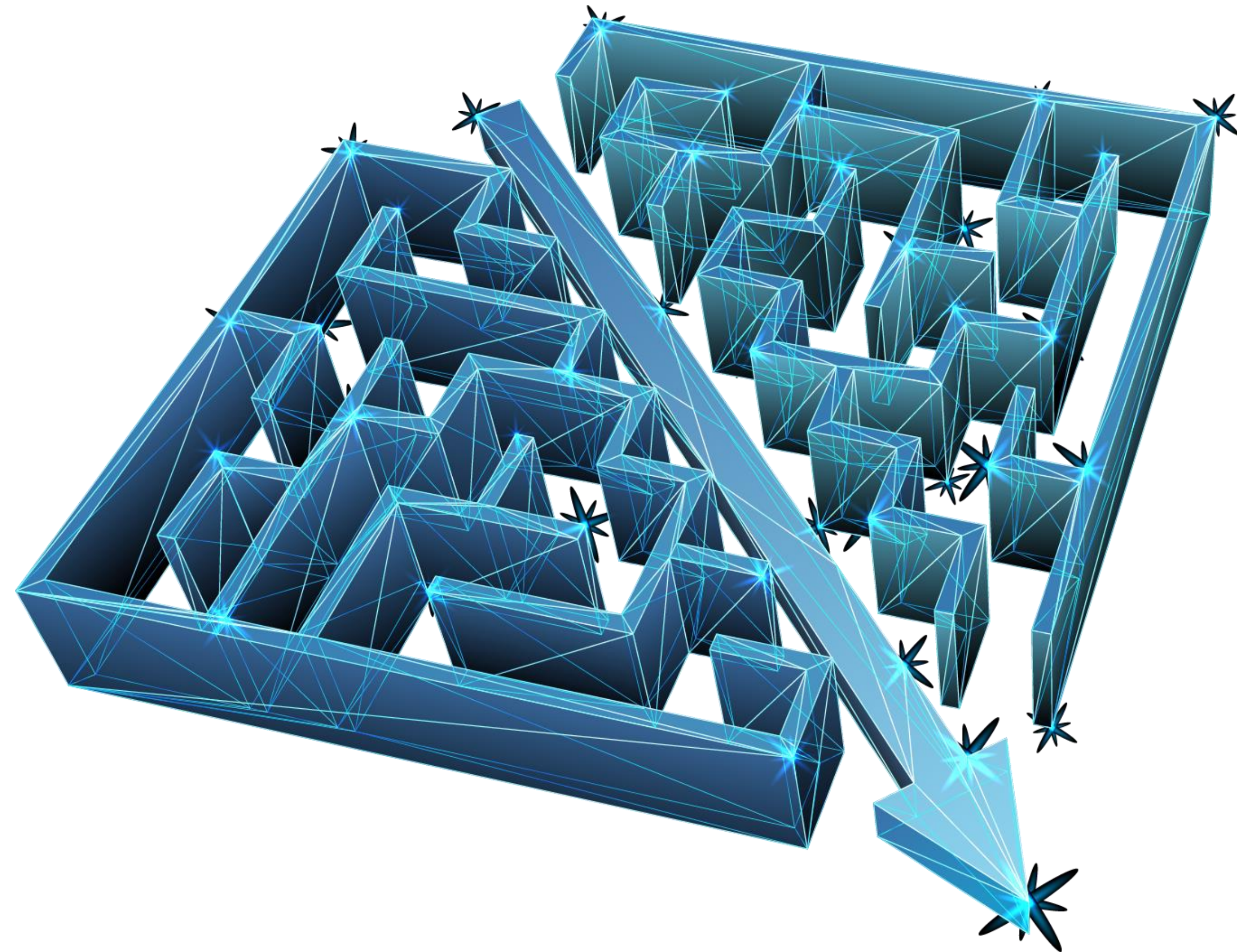
- Company adaptability
- Enabling staff

## Step 2 - Growth

- Uniformity
- Standards and templates
- Quality (QMS and output)

## Step 3 – Digital Transformation

- Digital delivery
- Software proficiency
- Automation
- Interoperability





# Curtins Academy

First step towards BIM starts from within the company.

- **Award-winning Curtins Academy**
  - Hands-on workshops
  - Digital skills
  - Lessons learned
  - Best practice
  - Social interaction and intercommunication skills
- **Personal Improvement creating a united strength**
  - Engineers
  - Technicians





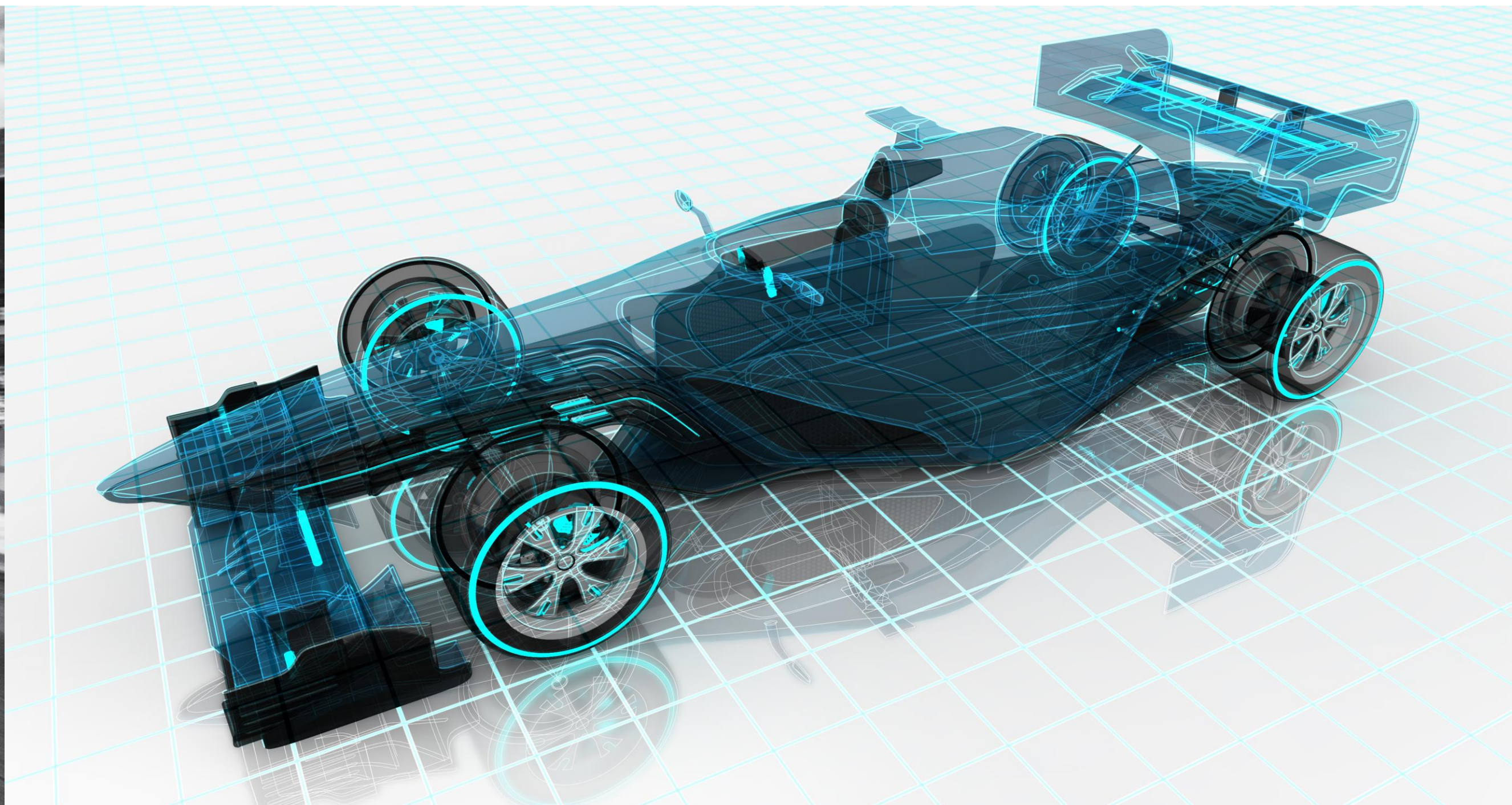




A conceptual image for digital transformation. It features a hand in a dark suit sleeve holding a glowing blue circuit board. The board is covered in white circuit traces and dots, some of which are illuminated. The background is a solid dark blue. The text 'Digital Transformation' is centered over the image in a white, sans-serif font.

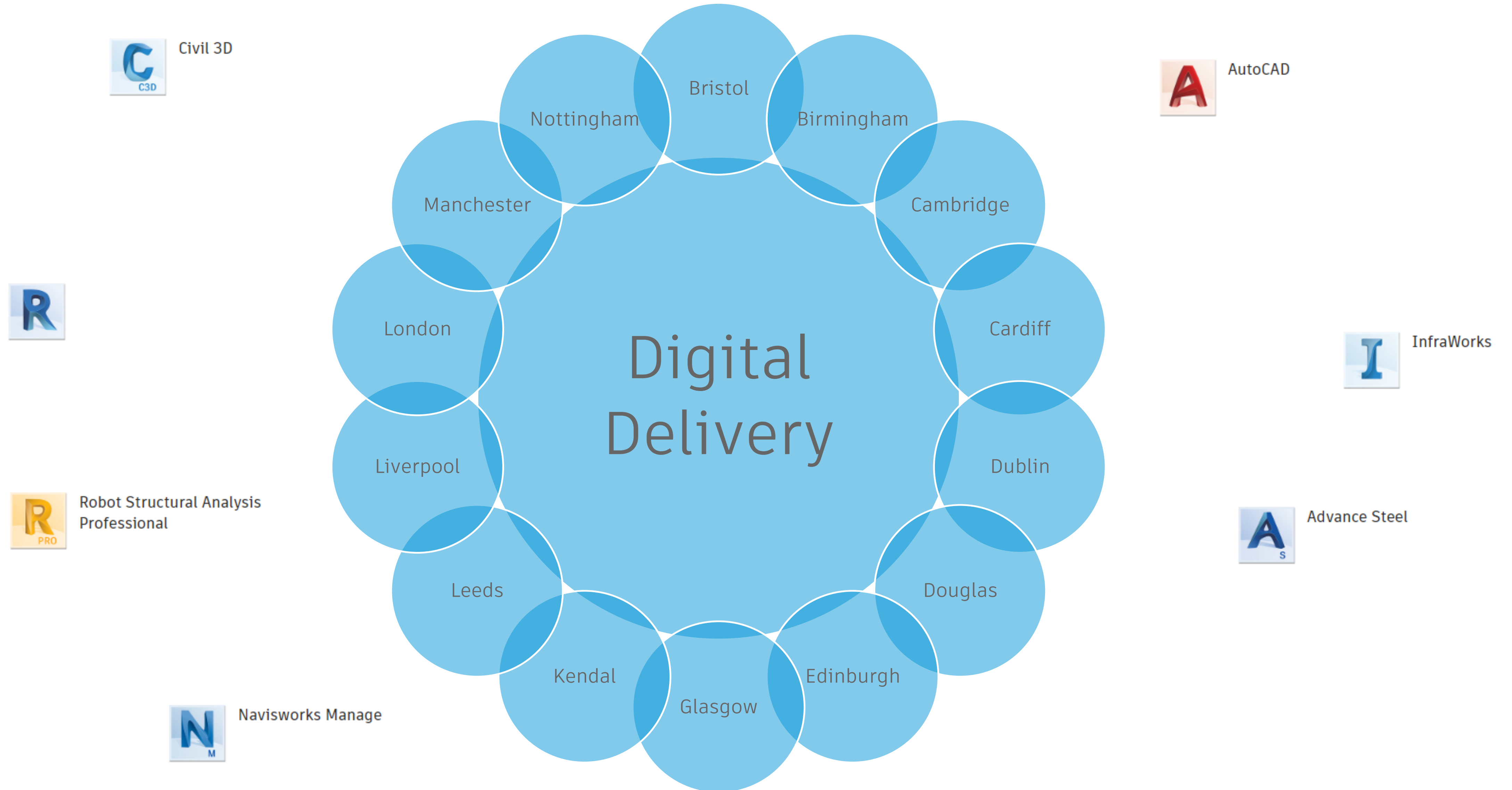
# Digital Transformation







# Central Project Delivery Repository



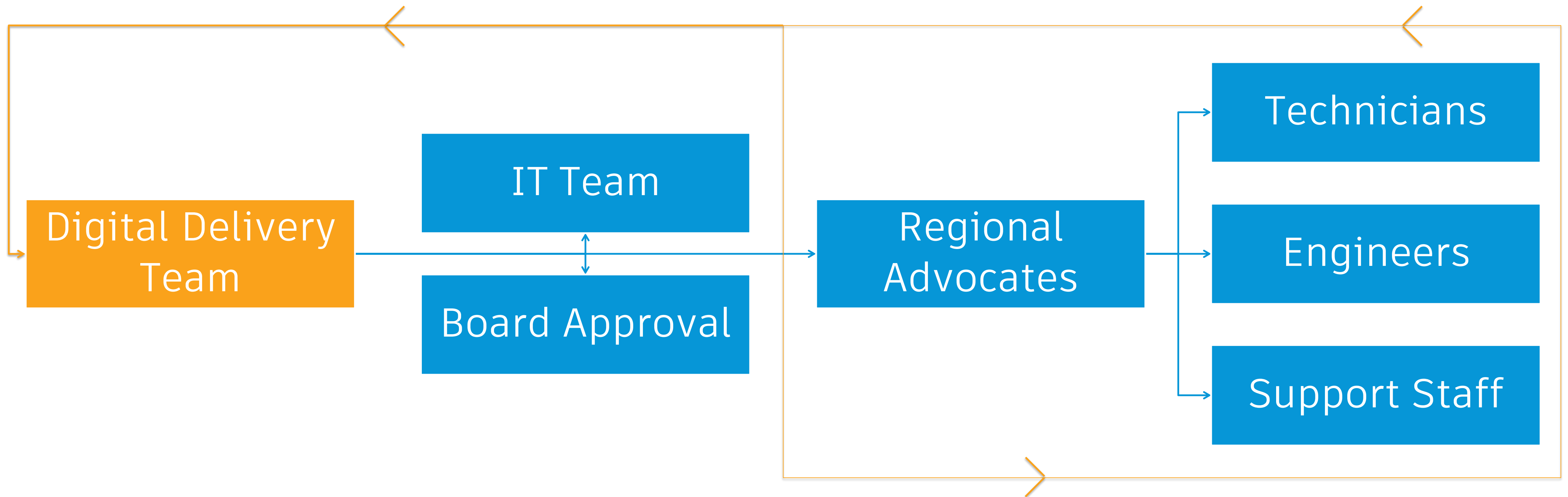




# Eco System



# Process for Digital Introductions



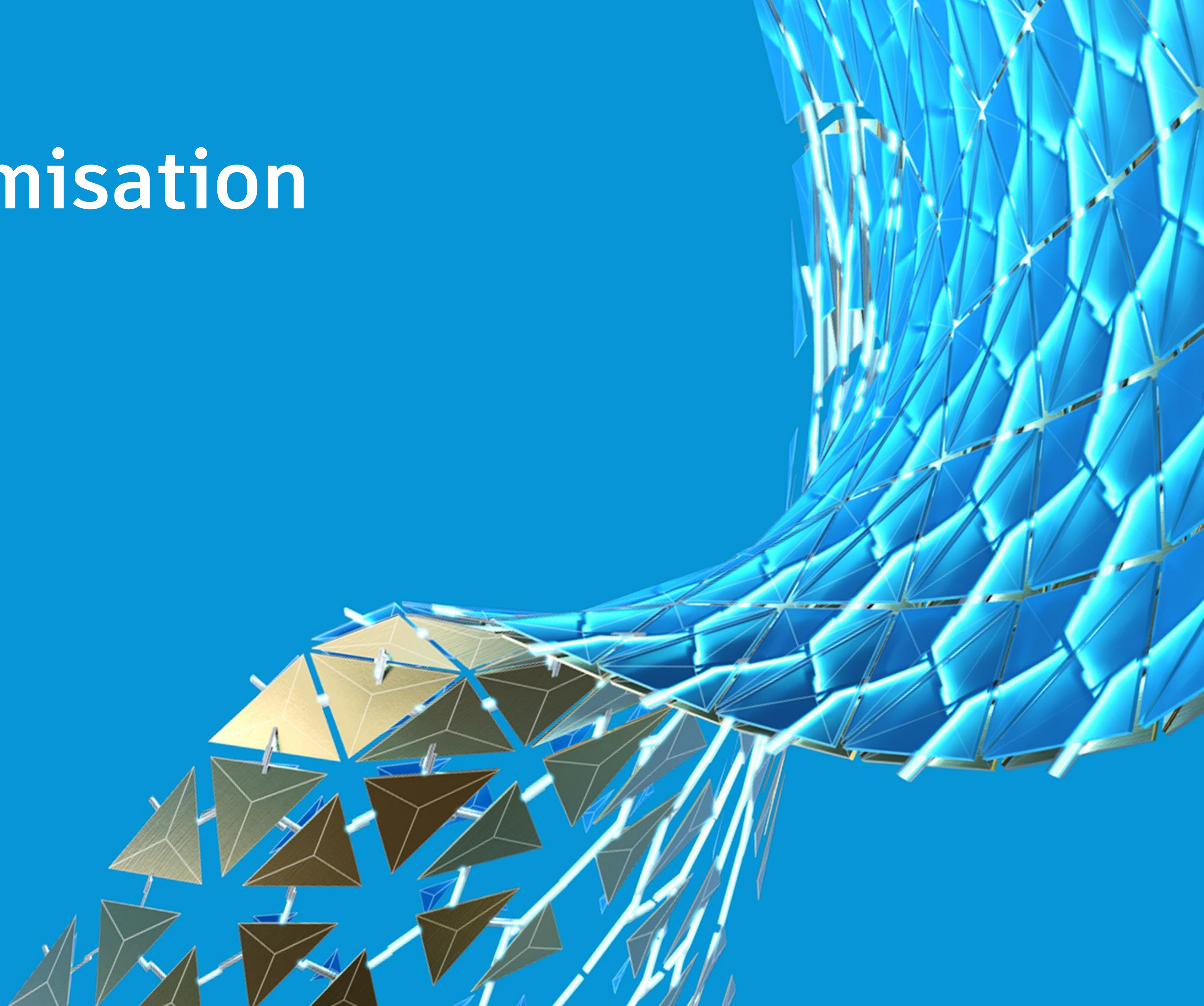


# Digital Delivery Advantage





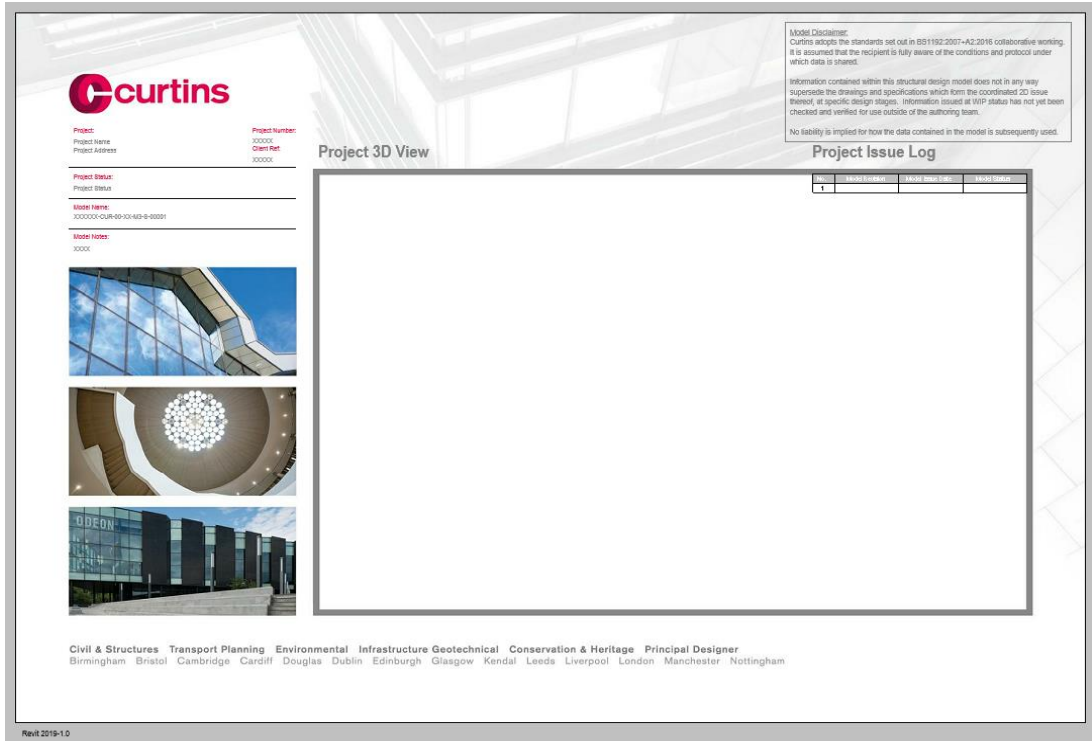
# Revit Customisation



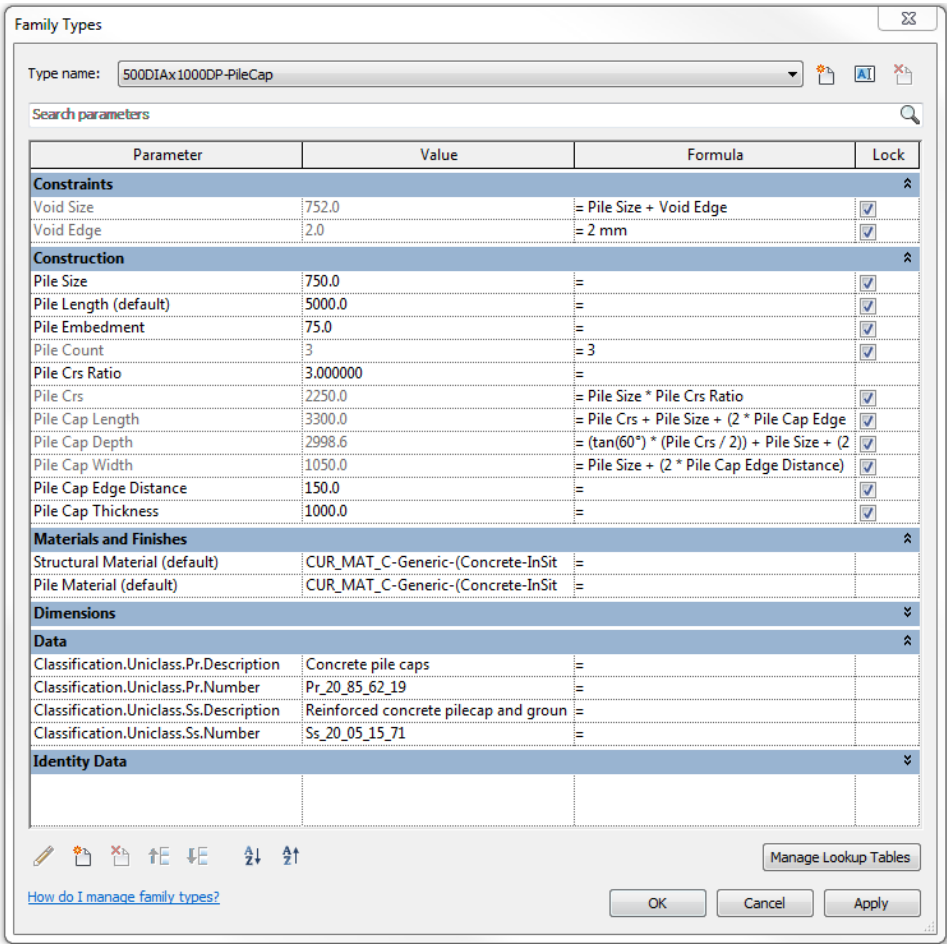


# Revit Customisation

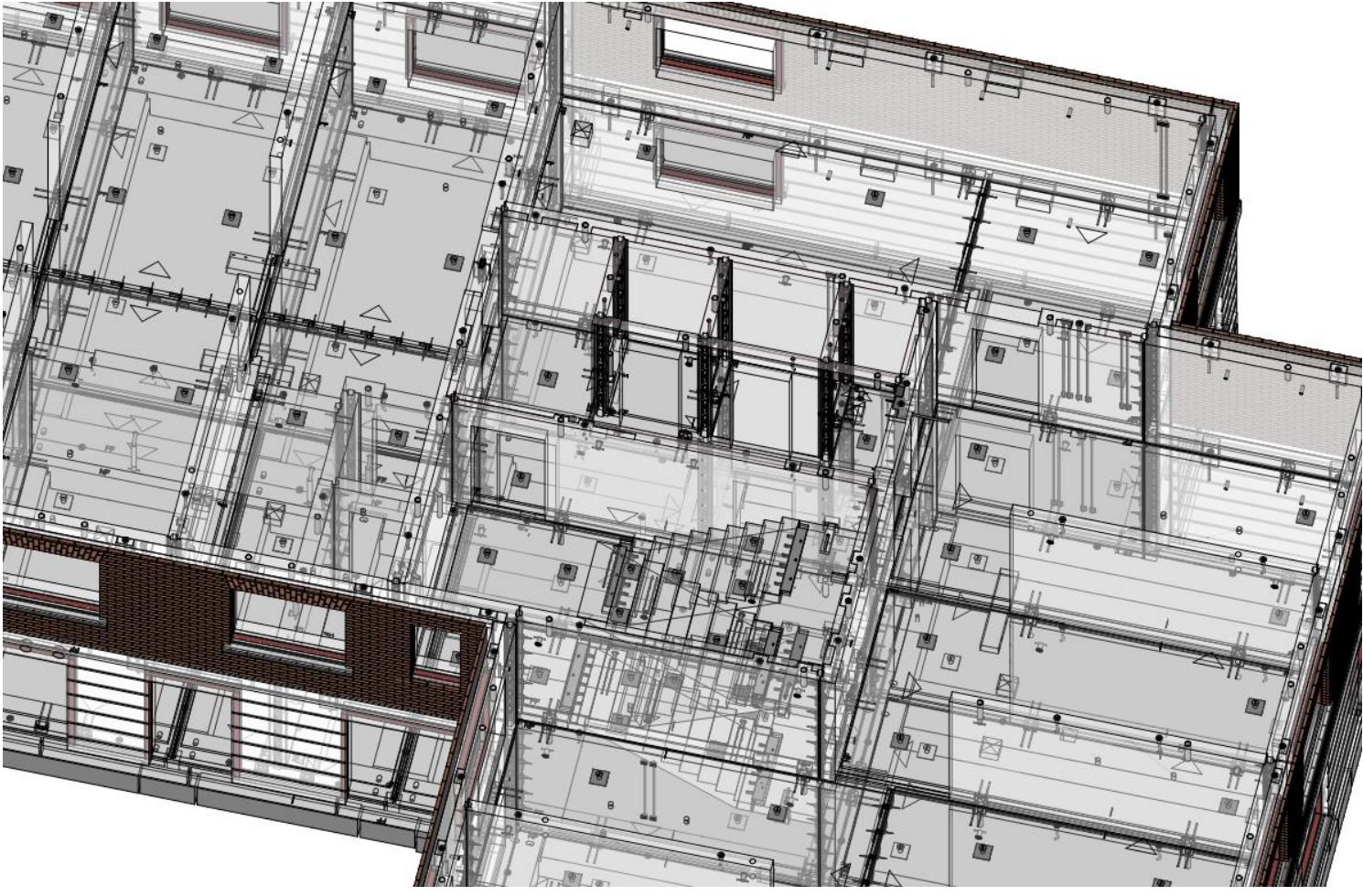
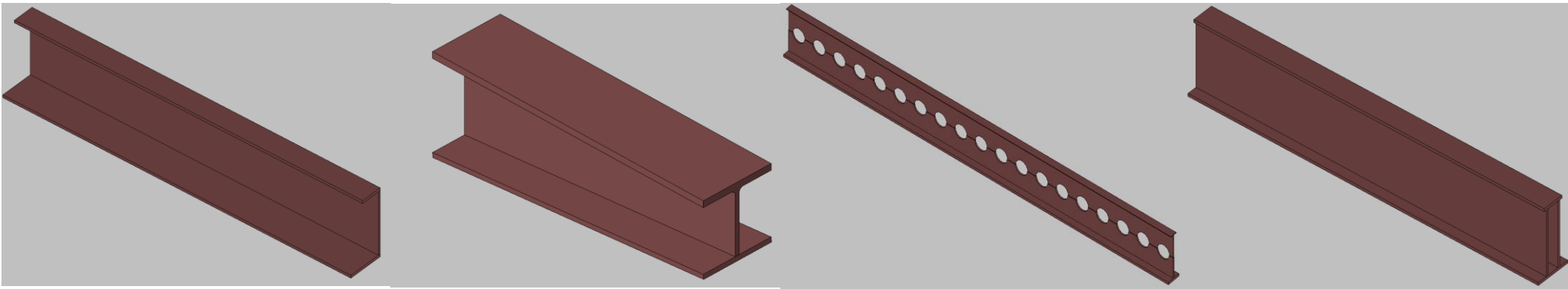
- Robust templates
- Abandoned OOTB families
- Consistent parameters, correct geometry and orientation
- Elements named to Industry standard BS 8541
- Embedded data



Classification.Uniclass.Ss.Number	Ss_25_11_16_65
Classification.Uniclass.Ss.Description	Precast concrete wall systems
Classification.Uniclass.Pr.Description	Precast concrete shaft units
Classification.Uniclass.Pr.Number	Pr_20_76_78_65



- CUR\_Beam-Light-Gauge-Kingspan-Multi...
- CUR\_Beam-Light-Gauge-Metsec-Eaves.rfa
- CUR\_Beam-Light-Gauge-Metsec-Z.rfa
- CUR\_Beam-PC-Rectangular.rfa
- CUR\_Beam-PC-Tee.rfa
- CUR\_Beam-RC-Rectangular.rfa
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- CUR\_Beam-Steel-Bar-Flat.rfa
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- CUR\_Beam-Steel-Bars-Round.rfa
- CUR\_Beam-Steel-Cellular-FPG.rfa
- CUR\_Beam-Steel-Cellular-UBC.rfa
- CUR\_Beam-Steel-CHS.rfa
- CUR\_Beam-Steel-FBB.rfa
- CUR\_Beam-Steel-FPG.rfa
- CUR\_Beam-Steel-L-Equal.rfa
- CUR\_Beam-Steel-L-Unequal.rfa





# IFC Class Mapping

- Modified OOTB IFC Class mapping file
- Not all elements are mapped from default
- Added IFC parameters and assigned them to all model elements

IFC Parameters		⌵
IfcExportAs	IfcBuildingElementPart	⌵
IfcExportType	PRECASTPANEL	⌵
Data		⌵

Browsing documentation by:

Go→

architecture diagram

Go→

alphabetical listing

Go→

hierarchy listing

Go→

property sets

Go→

change log

>> home

Alphabetical index

•

Defined Types

•

Enumerations

•

Select Types

•

Entities

IfcAlarmType

IfcAngularDimension

IfcAnnotation

IfcAnnotationCurveOccurrence

IfcAnnotationFillArea

IfcAnnotationFillAreaOccurrence

IfcAnnotationOccurrence

IfcAnnotationSurface

IfcAnnotationSurfaceOccurrence

IfcAnnotationSymbolOccurrence

IfcAnnotationTextOccurrence

IfcApplication

IfcAppliedValue

IfcAppliedValueRelationship

IfcApproval

IfcApprovalActorRelationship

IfcApprovalPropertyRelationship

IfcApprovalRelationship

IfcArbitraryClosedProfileDef

IfcArbitraryOpenProfileDef

IfcArbitraryProfileDefWithVoid

IfcAsset

buildingSMART

International Alliance for Interoperability

International Alliance for Interoperability

Industry Foundation Classes

IFC2x Edition 3

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IAI copyright notice

The series of IFC2x based specifications have been developed in 1999-2006  
by the Model Support Group (MSG) of the IAI  
Thomas Liebich (lead), Yoshinobu Adachi, James Forester, Juha Hyvarinen, Kari Karstila, Jeffrey Wix

Comments, issues or any other feedback should be sent to:  
[Thomas Liebich](#) - IAI Model Support Group Leader

File

Architecture

Structure

Steel

Precast

Systems

Insert

Annotate

Analyze

Massing

Creates exchange files and sets options.

ramlry to a text (.txt) file.

gbXML

Saves the model as a gbXML file.

IFC

Saves an IFC file.

ODBC Database

Saves model data to an ODBC database.

Images and Animations

Saves animations or image files.

Reports

Saves a schedule or Room/Area report.

Options

Sets export options for CAD and IFC.

Export Setsups DWG/DXF

Export Setsups DGN

IFC Options

Options

Exit Revit

odesk\RVT 2021\exportlayers-ifc-IAI.txt

IFC Class Name	IFC Type
xported	
xported	
xported	
xported	
b	IfcSlab
b	IfcSlab
b	IfcSlab
b	IfcSlab
Abutment Piles	IfcSlab
Abutment Walls	IfcSlab
Approach Slabs	IfcSlab
Air Terminals	IfcAirTerminal
Alignment Station Label Sets	IfcBuildingElementProxy
Alignment Station Labels	IfcBuildingElementProxy
Alignment Tags	IfcBuildingElementProxy
Alignments	IfcBuildingElementProxy
Analytical Beam Tags	Not Exported
Analytical Beams	Not Exported
Analytical Brace Tags	Not Exported
Analytical Braces	Not Exported
Analytical Column Tags	Not Exported
Analytical Columns	Not Exported
Analytical Floor Tags	Not Exported

Load...

Standard

Save As...

OK

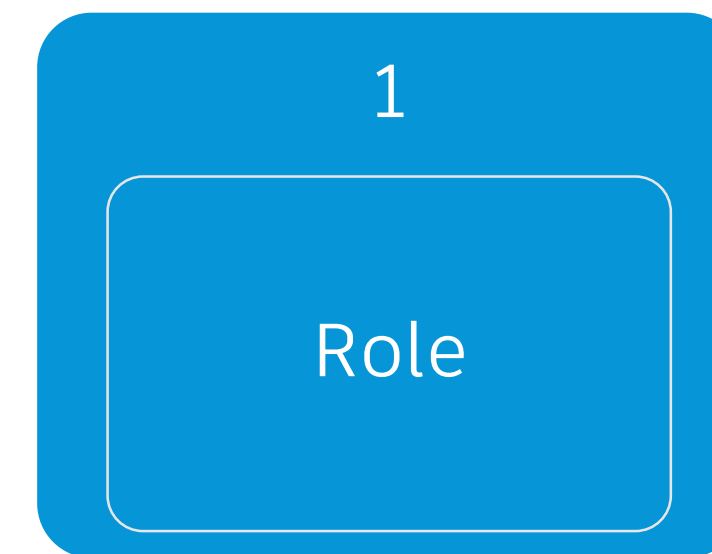
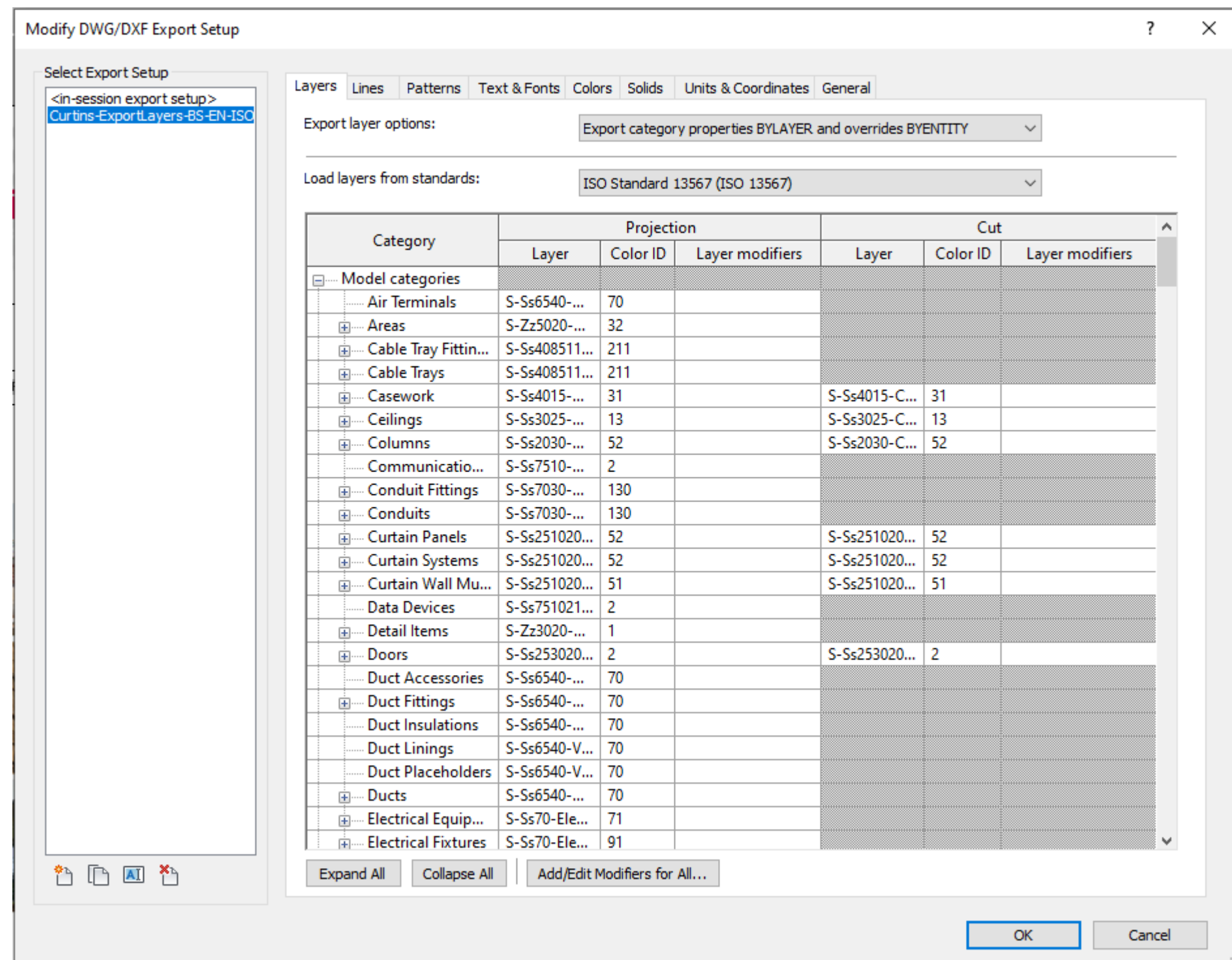
Cancel

Help



# DWG Layer Output

- Created a custom DWG output
- Aligned with industry standard ISO 12367





# Revit “Ini File”

- C:\ProgramData\Autodesk\RVT 20??\UserDataCache:

- Modified the Revit Ini File

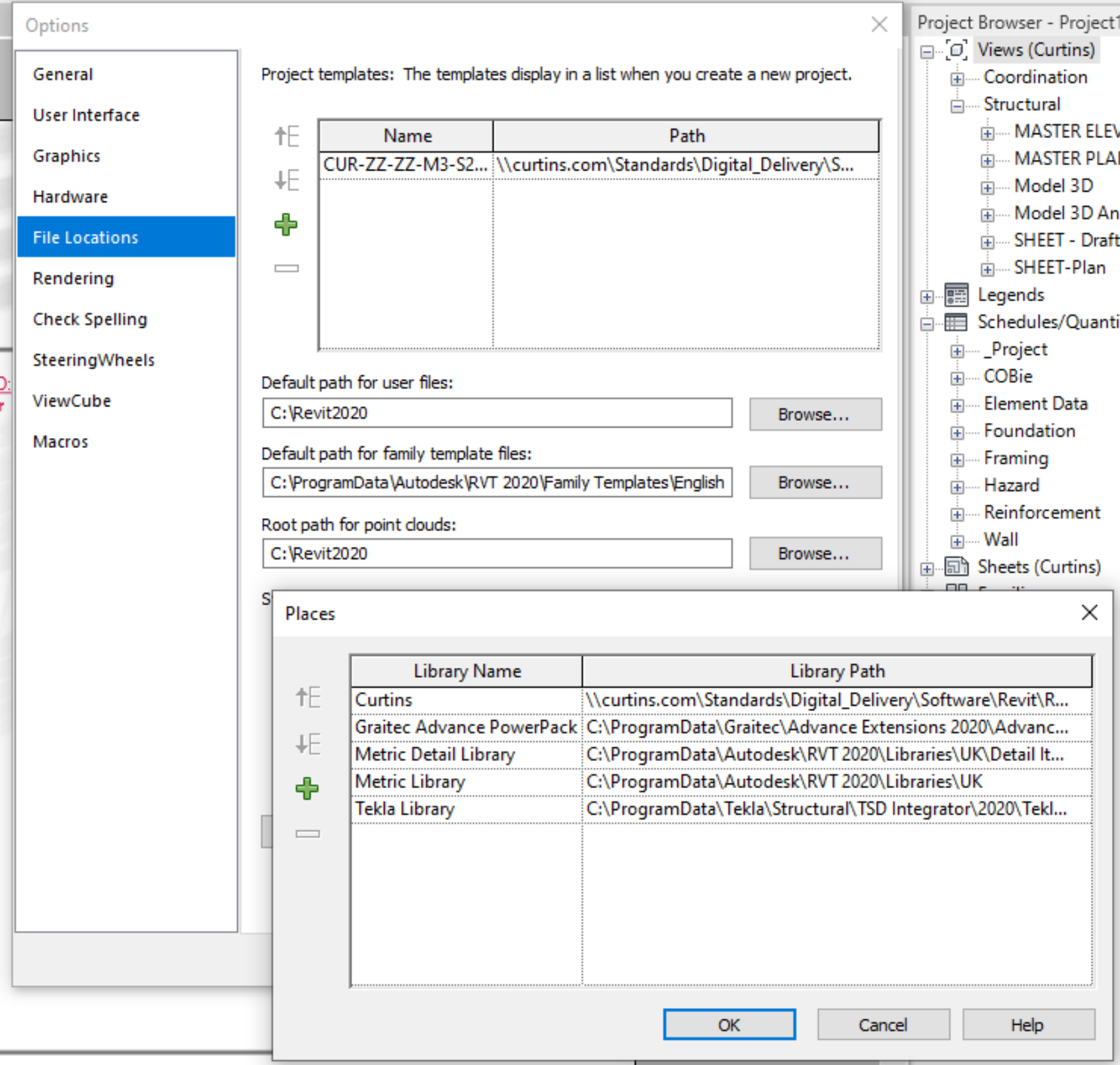
- Map Curtins’ templates and family content

- Mapped associated files

```
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[Colors]
[Directories]
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'importLineWeightsNameDWG=C:\Program Files\Autodesk\Revit 2020\Data\importlineweights-dwg-default.
aterialLibraryFiles=..\Data\Rendering
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ookupTableLocation=C:\ProgramData\Autodesk\RVT 2020\Lookup Tables\
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'atalLibraryLocations=Curtins=\\curtins.com\Standards\Digital_Delivery\Software\Revit\Revit-2020, Graitec Advance PowerPack=..\..\ProgramData\Graitec\Advance Extensions 2020\Advance PowerPack\Revit\Content\Libraries, Metric Detail Lib
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'SamplesDEU]
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[Applications]
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'lectrical=0
'rchitectural=1
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'atalLibraryLocations=Library=C:\ProgramData\Autodesk\RVT 2020\Libraries\Generic\
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'orksharingDisplayFrequency=5
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'hinLinesEnabled=1
'howMaterialEditor=1
[Recent File List]

[Recent Workset List]
'onfig1=All
'onfig10=All
'onfig11=All
'onfig12=All
```





# Vanilla Revit Limitations

- Third party software integration
- Manual repetitive tasks
- Tool set limitations for complex actions
- Not always suitable for bespoke components



# Dynamo

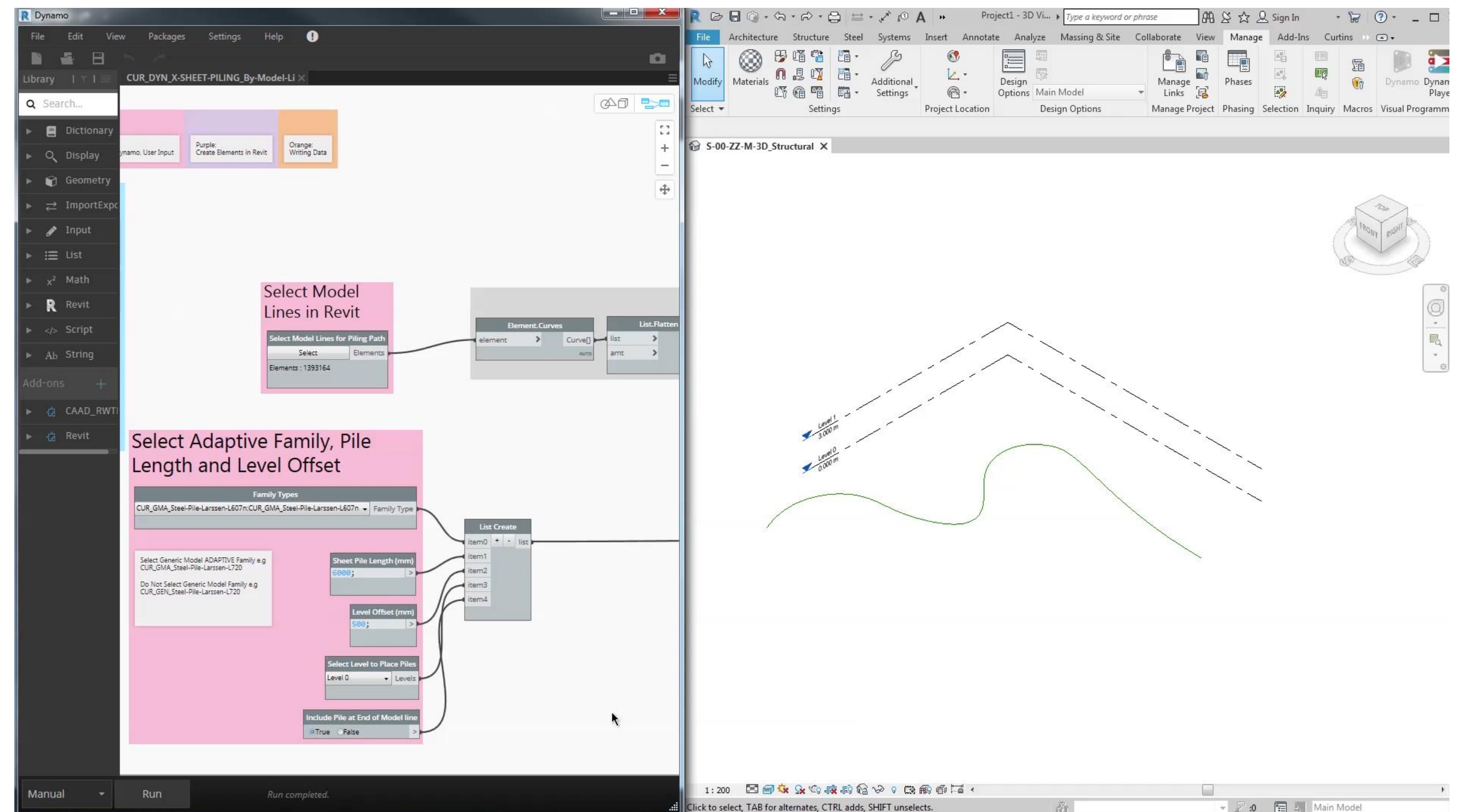






# Dynamo

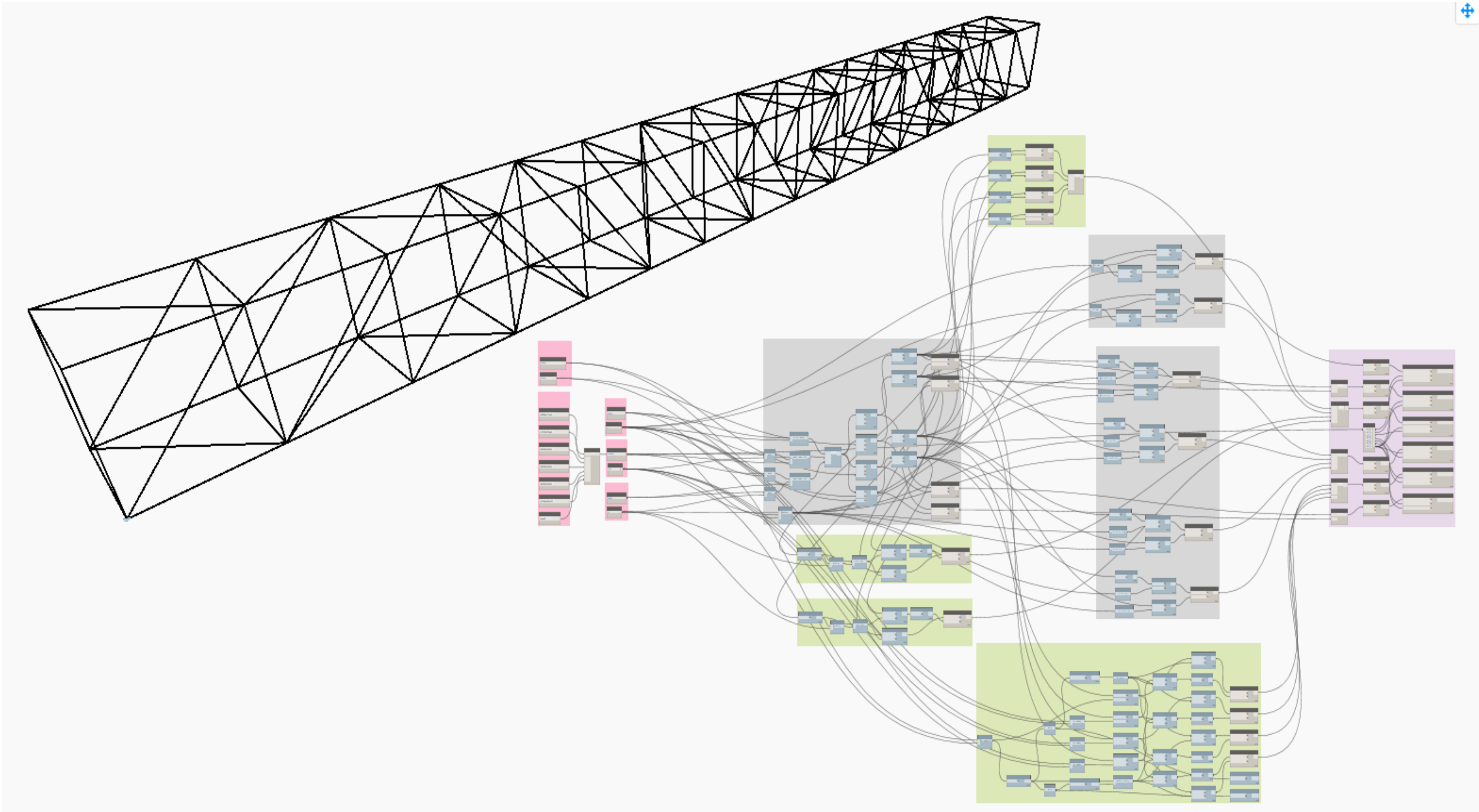
- Data Transfer
- Modify geometry
- Automate processes
- Build Custom tool sets





# Dynamo Graph Example

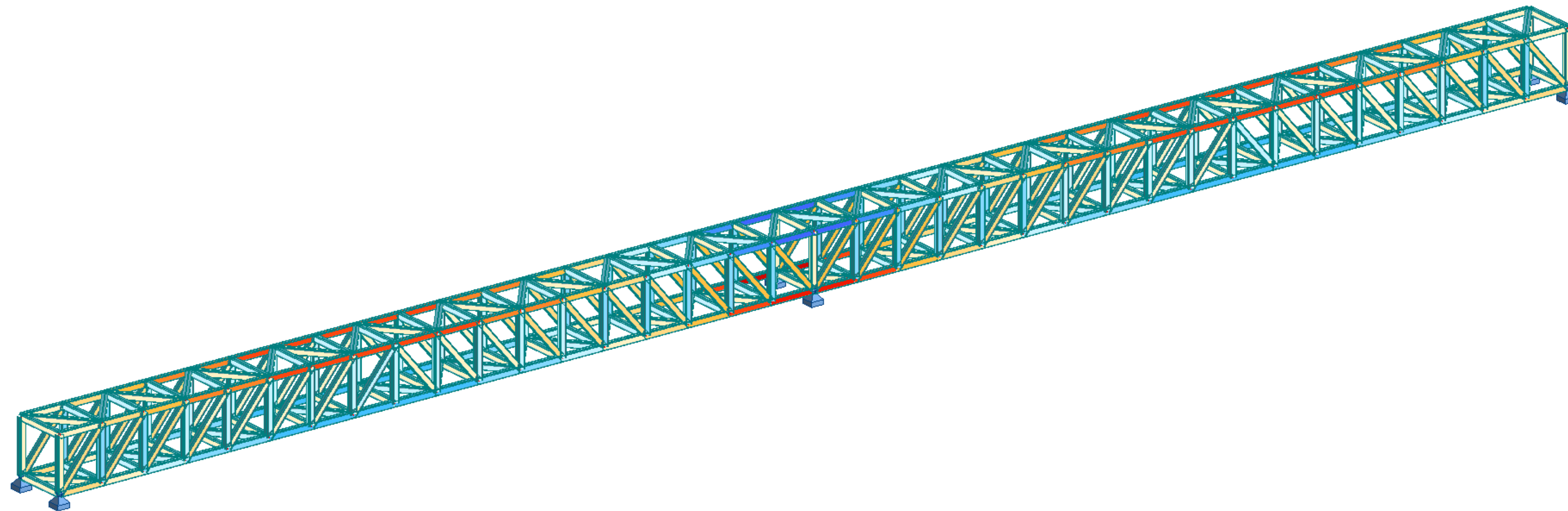
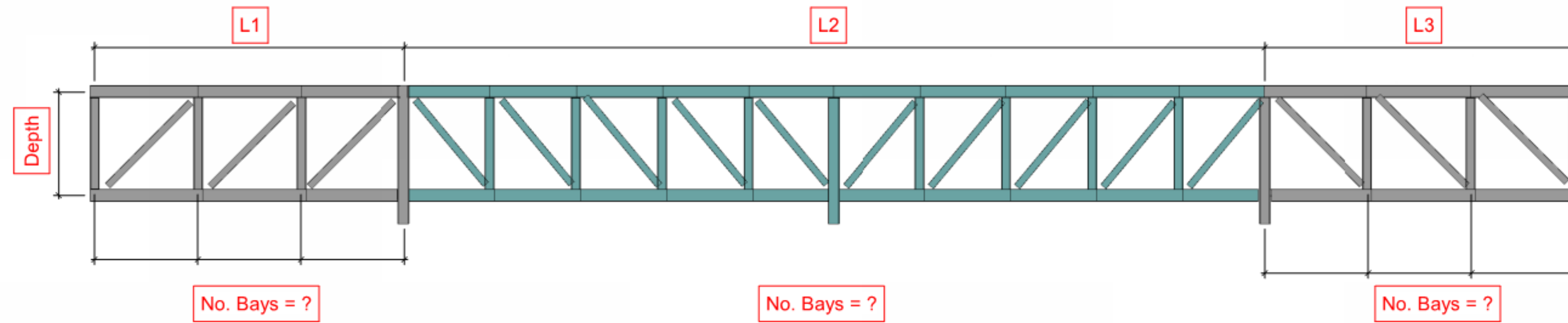
Creating the Truss in Dynamo



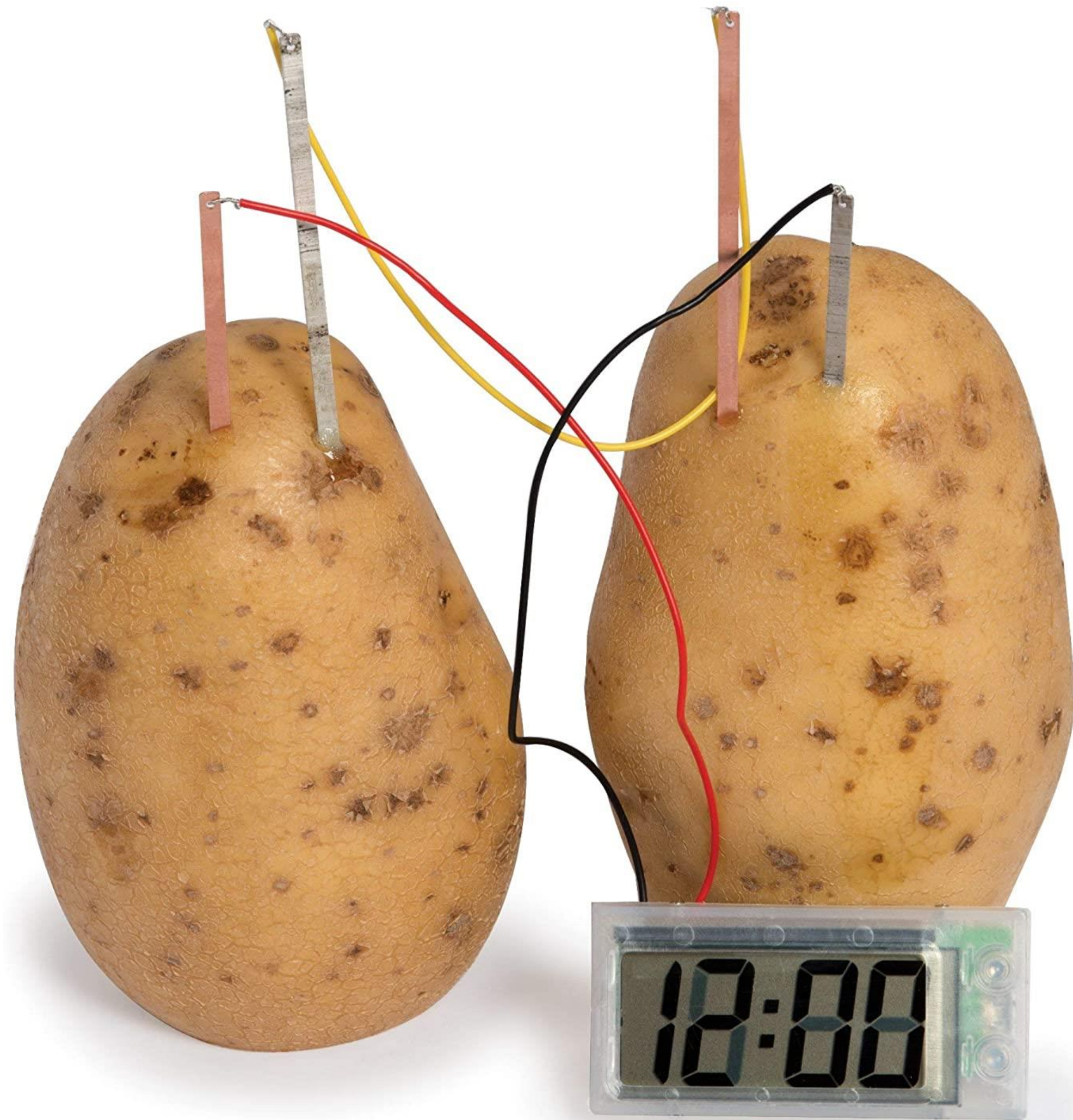


# Parametric Truss Modelling

Exploring Footbridge Design Options









# Revit API





APPLICATION

PROGRAMMING

INTERFACE



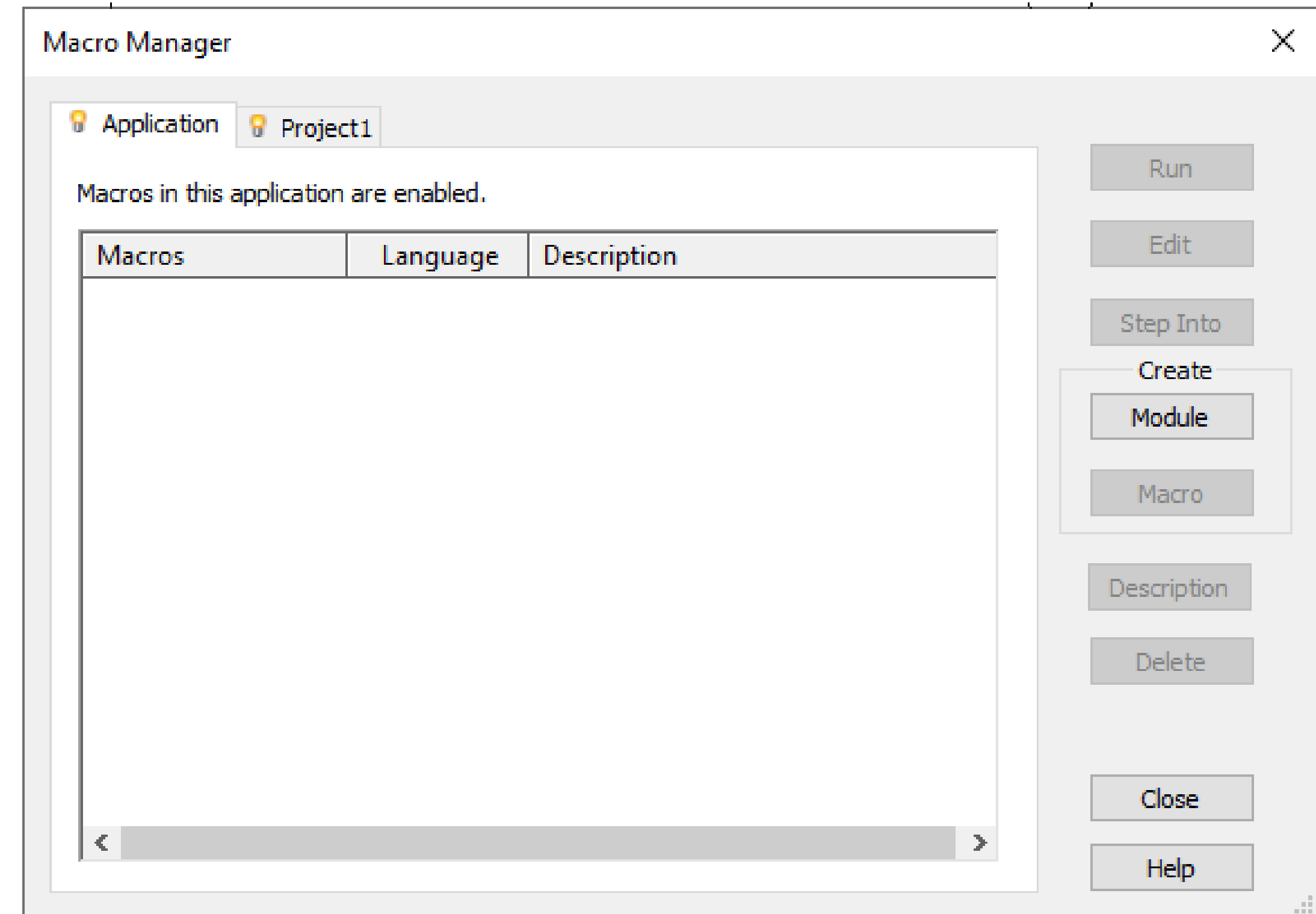
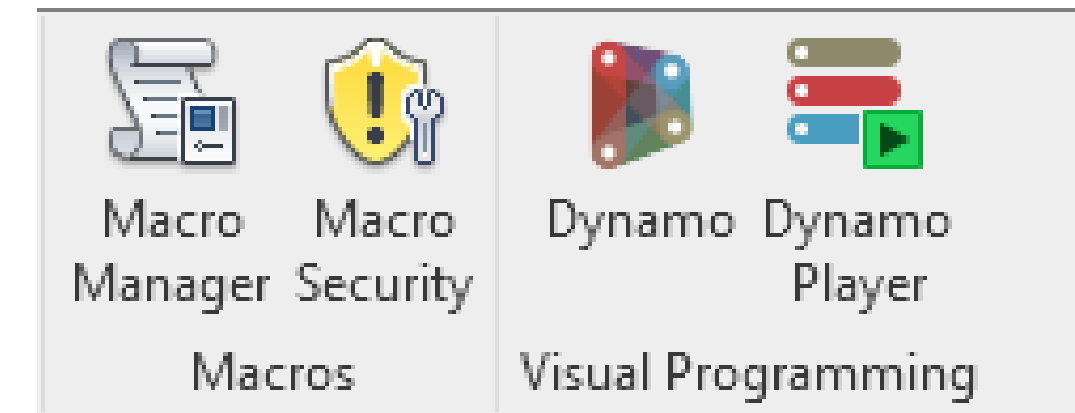
# Macro Manager

- First step into Revit customisation

- <https://boostyourbim.wordpress.com/>

- <https://thebuildingcoder.typepad.com/>

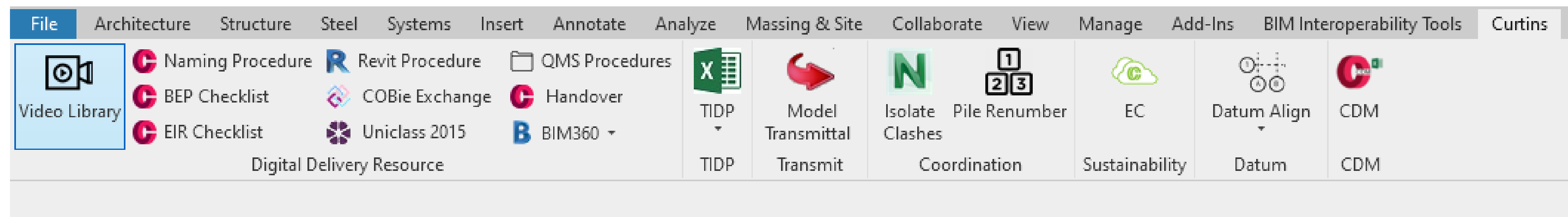
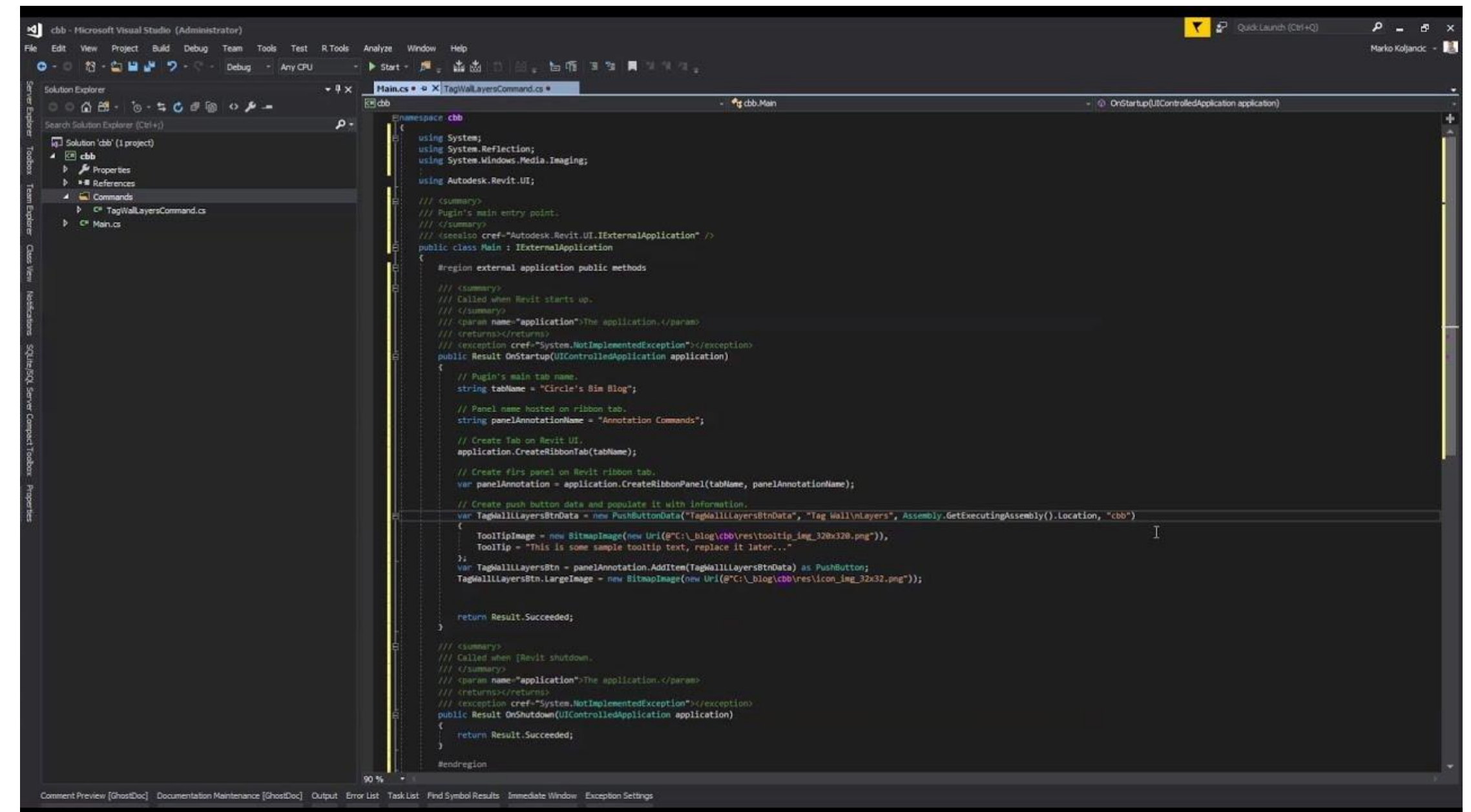
- Difficult to deploy to end users





# Revit Api

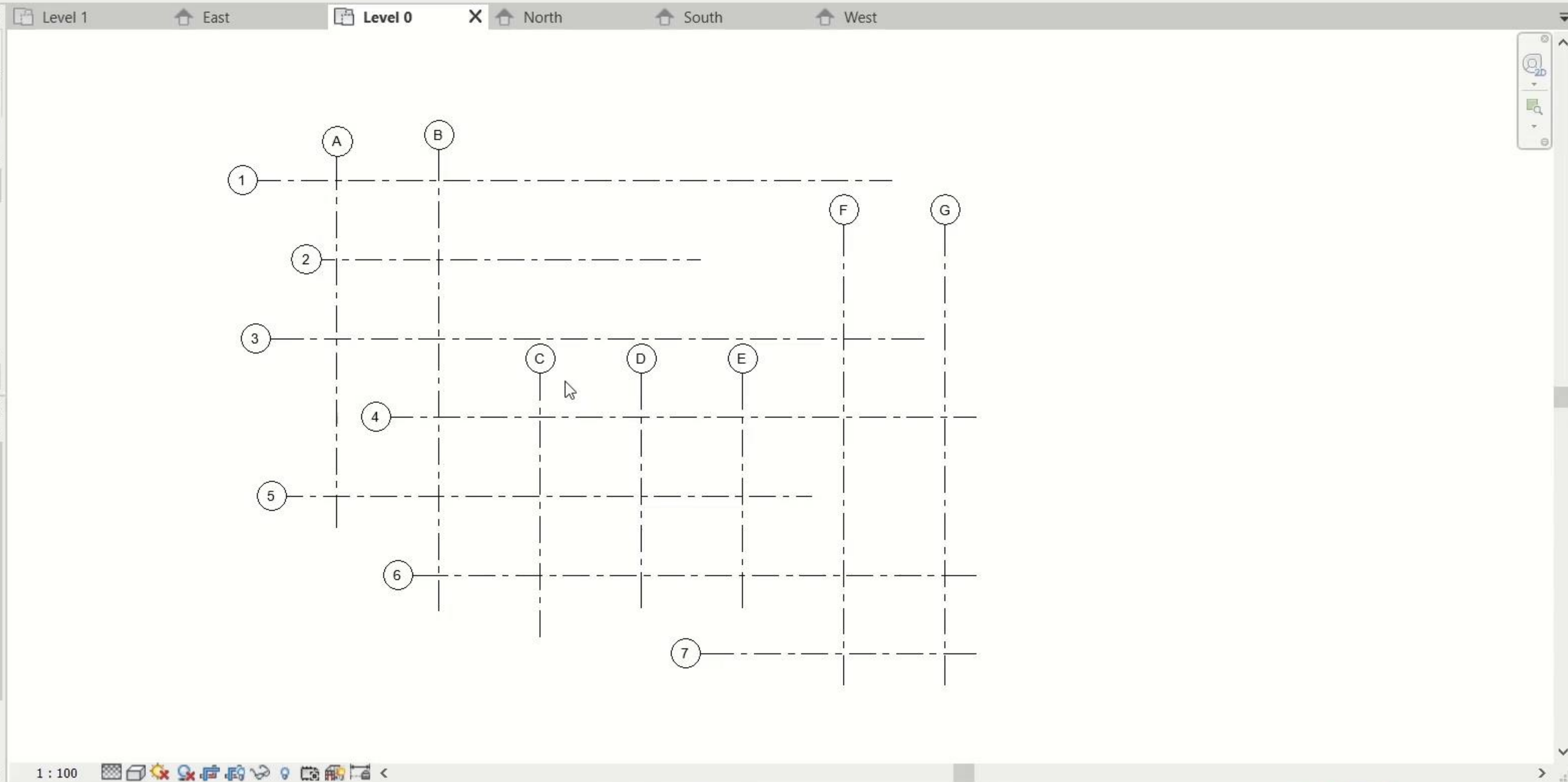
- Used C# (Pronounced C Sharp) language
- Used to host standards and procedures
- Internal workflow videos
- Developed Custom Toolsets





Autodesk Revit interface showing the ribbon tabs: File, Architecture, Structure, Steel, Systems, Insert, Annotate, Analyze, Massing & Site, Collaborate, View, Manage, Add-Ins, BIM Interoperability Tools, Curtains, and Modify. The ribbon is currently set to the 'Annotate' tab, showing tools for Naming Procedure, Process Terminology, BIM Process, Revit Procedure, COBie Exchange, Uniclass 2015, QMS Procedures, Handover, BIM360, TIDP, Model Transmittal, Isolate Clashes, Datum Align, CDM, Add Coordinates, OFF, and Numbering. The 'Coordinates' panel is active, showing 'Coordinates' and 'Coordinates'.

Properties panel for 'Floor Plan' view. The 'Graphics' section shows 'View Scale' set to '1 : 100', 'Scale Value' set to '100', 'Display Model' set to 'Normal', 'Detail Level' set to 'Fine', 'Parts Visibility' set to 'Show Original', 'Visibility/Graphics O...' set to 'Edit...', 'Graphic Display Opt...' set to 'Edit...', and 'Orientation' set to 'Project North'. The 'Project Browser - Project1.rvt' shows a tree view with 'Views (all)' expanded, showing 'Floor Plans' (Level 0, Level 1, Site), 'Ceiling Plans', '3D Views', 'Elevations (12mm Circle)' (East, North, South, West), 'Legends', 'Schedules/Quantities (all)', 'View List', and 'Sheets (all)'.





File Architecture Structure Steel Systems Insert Annotate Analyze Massing & Site Collaborate View Manage Add-Ins Curtins AEC LABS Modify

Video Library Naming Procedure Revit Procedure QMS Procedures  
BEP Checklist COBie Exchange Handover  
EIR Checklist Uniclass 2015 BIM360  
Digital Delivery Resource

TIDP Model Transmittal  
TIDP Transmit  
Isolate Clashes Pile Renumber  
Coordination  
EC Sustainability  
Datum Align Datum  
CDM CDM

Properties

SV - Curtins-Starting View {3D} Level 0

Structural Plan

Structural Plan: Level 0 Edit Type

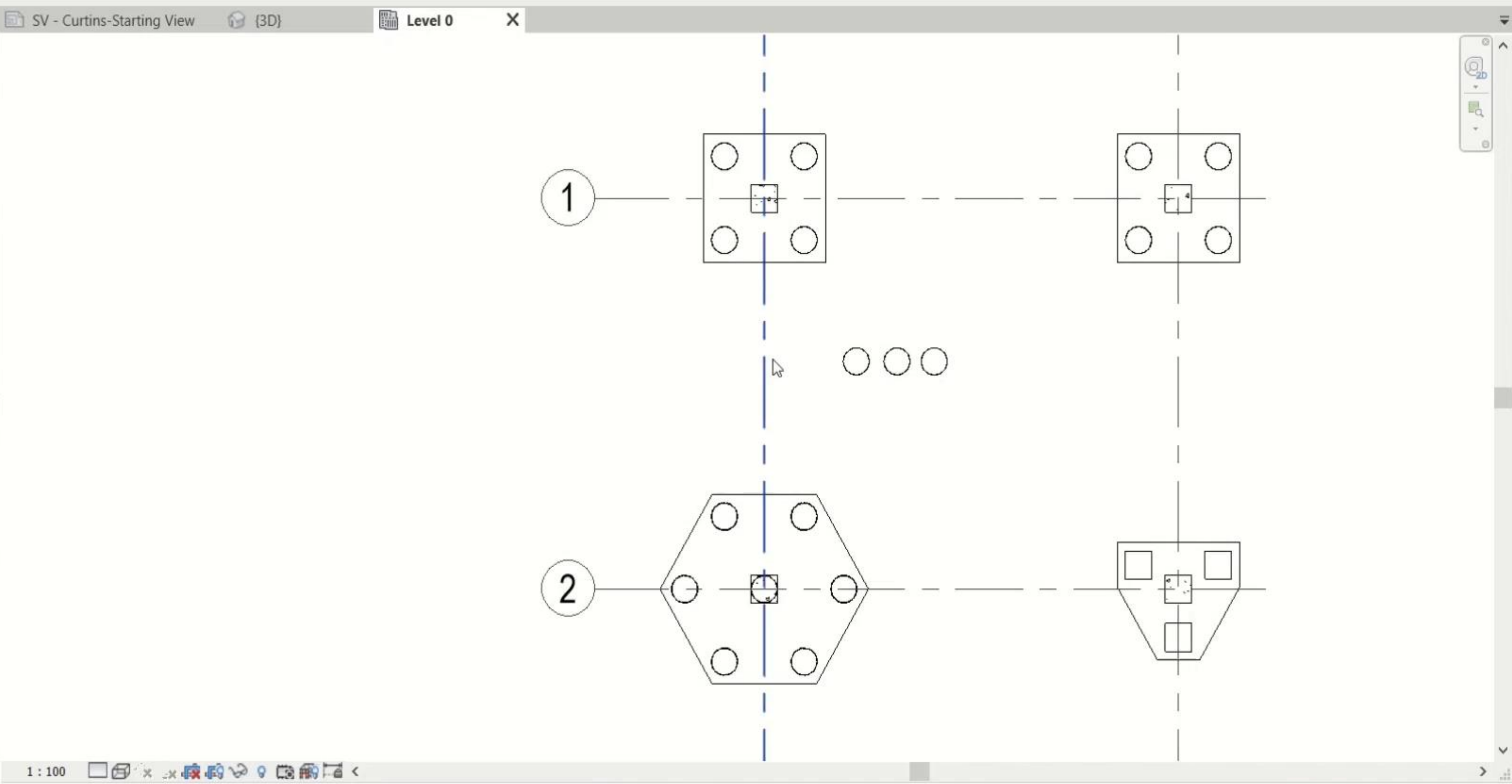
Graphics

View Scale	1 : 100
Scale Value 1:	100
Display Model	Normal
Detail Level	Coarse
Parts Visibility	Show Original
Detail Number	1
Rotation on Sheet	None
Visibility/Graphics...	Edit...

Properties help Apply

Project Browser - EC Validation.rvt

- CUR\_Symbol-ClientLogo
- CUR\_Symbol-Embodied Carbon
- CUR\_Symbol-Embodied Carbon
- CUR\_Symbol-Embodied Carbon
- CUR\_Symbol-Embodied Carbon
- CUR\_T-Column-[Section Name]
- CUR\_T-FOU-[Type Name]
- CUR\_T-Framing-[Section Name]
- CUR\_T-SPA\_X-SpanSymbol
- CUR\_T-SpanSymbol
- CUR\_View-(ViewName)(View Sc
- CUR\_View-Detail(Detail Numbe
- Fixed Up Direction
- KeyPlan
- M\_Connection-Column-Defaul
- M\_Connection-Column-Filled T





Autodesk Revit 2019 - 18-052-CUR-00-XX-M3-S-00001\_detached.rvt - 3D View: {3D}

Type a keyword or phrase

Peter.Morton

File Architecture Structure Steel Systems Insert Annotate Analyze Massing & Site Collaborate View Manage Add-Ins Curtains Modify

Modify Select

Wall Door Window Component Column Roof Ceiling Floor Curtain System Mullion Railing Ramp Stair Model Text Model Line Model Group Room Separator Tag Room Area Area Boundary Tag Area

Build Circulation Model Room & Area Opening Datum Work Plane

By Face Shaft Wall Vertical Dormer

Level Grid Show Set Ref Plane Viewer

Properties

3D View

3D View: {3D} Edit Type

Graphics

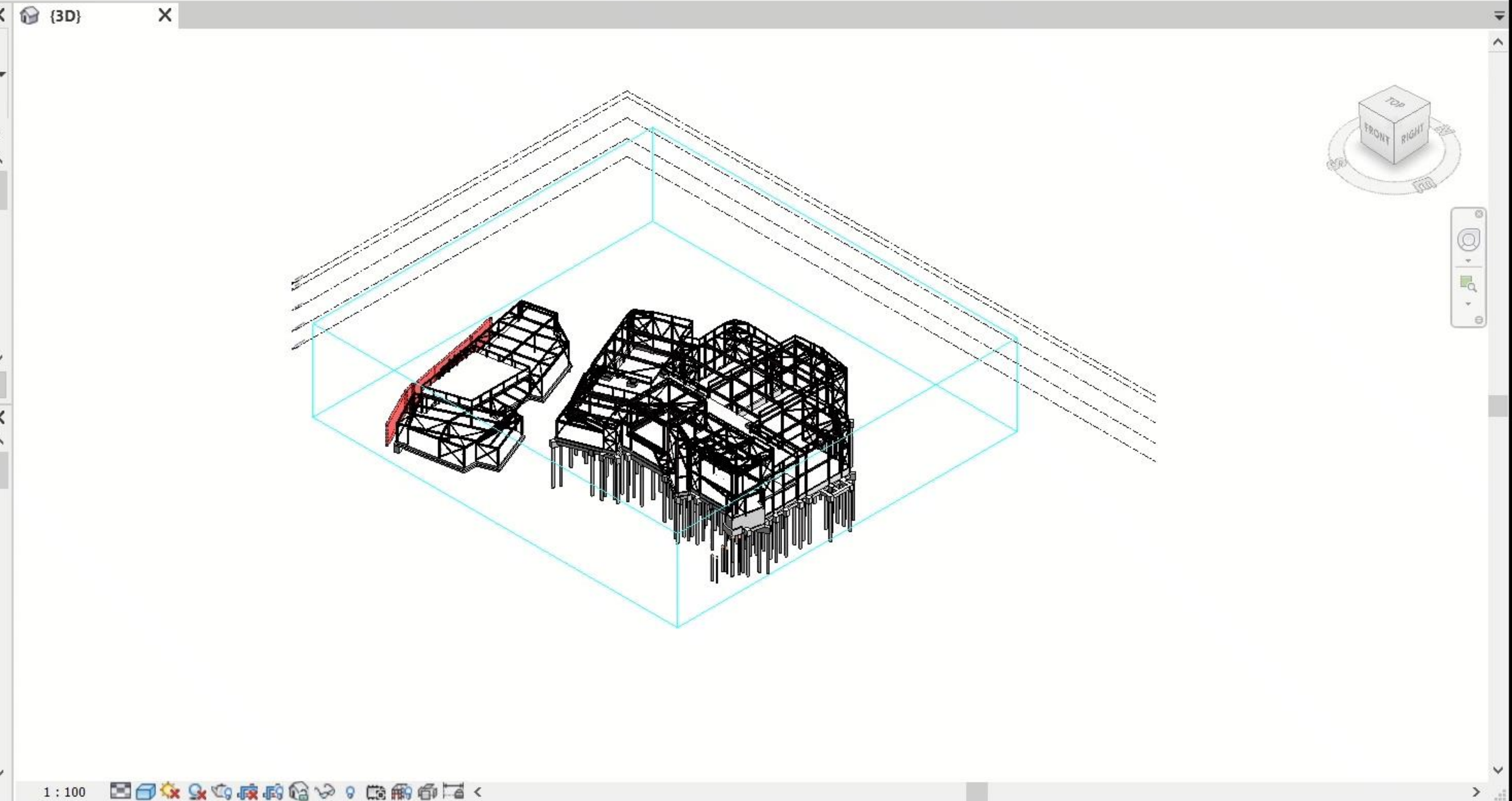
View Scale	1 : 100
Scale Value 1:	100
Detail Level	Medium
Parts Visibility	Show Original
Visibility/Graphics Overrides	Edit...
Graphic Display Options	Edit...
Discipline	Coordination
Show Hidden Lines	By Discipline

Properties help Apply

Project Browser - 18-052-CUR-00-XX-M3-S-00001\_detached.rvt

Views (Curtains)

- 3D VIEWS
  - 3D View: 3D coordination
  - 3D View: 3D First Floor structure only
  - 3D View: 3D foundations only
  - 3D View: 3D Ground Floor structure only
  - 3D View: 3D Lower Ground structure only
  - 3D View: 3D Roof structure only
  - 3D View: 3D starting view
  - 3D View: 3D structure + M&E
  - 3D View: 3D structure only
- ???
- Architect Plan
- Coordinates
  - Structural Plan: Ground Floor - coordinates
- DRAINAGE





File Architecture Structure Steel Systems Insert Annotate Analyze Massing & Site Collaborate View Manage Add-Ins BIM Interoperability Tools Curtains Twinmotion GRAITEC PowerPack Axiom Modify

Naming Procedure Revit Procedure QMS Procedures  
Process Terminology COBie Exchange Handover  
BIM Process Uniclass 2015 BIM360  
Digital Delivery Resource

TIDP TIDP  
Model Transmittal Transmit  
Isolate Clashes Coordination  
Datum Align Datum  
CDM CDM

Properties {3D}

3D View

3D View: {3D} Edit Type

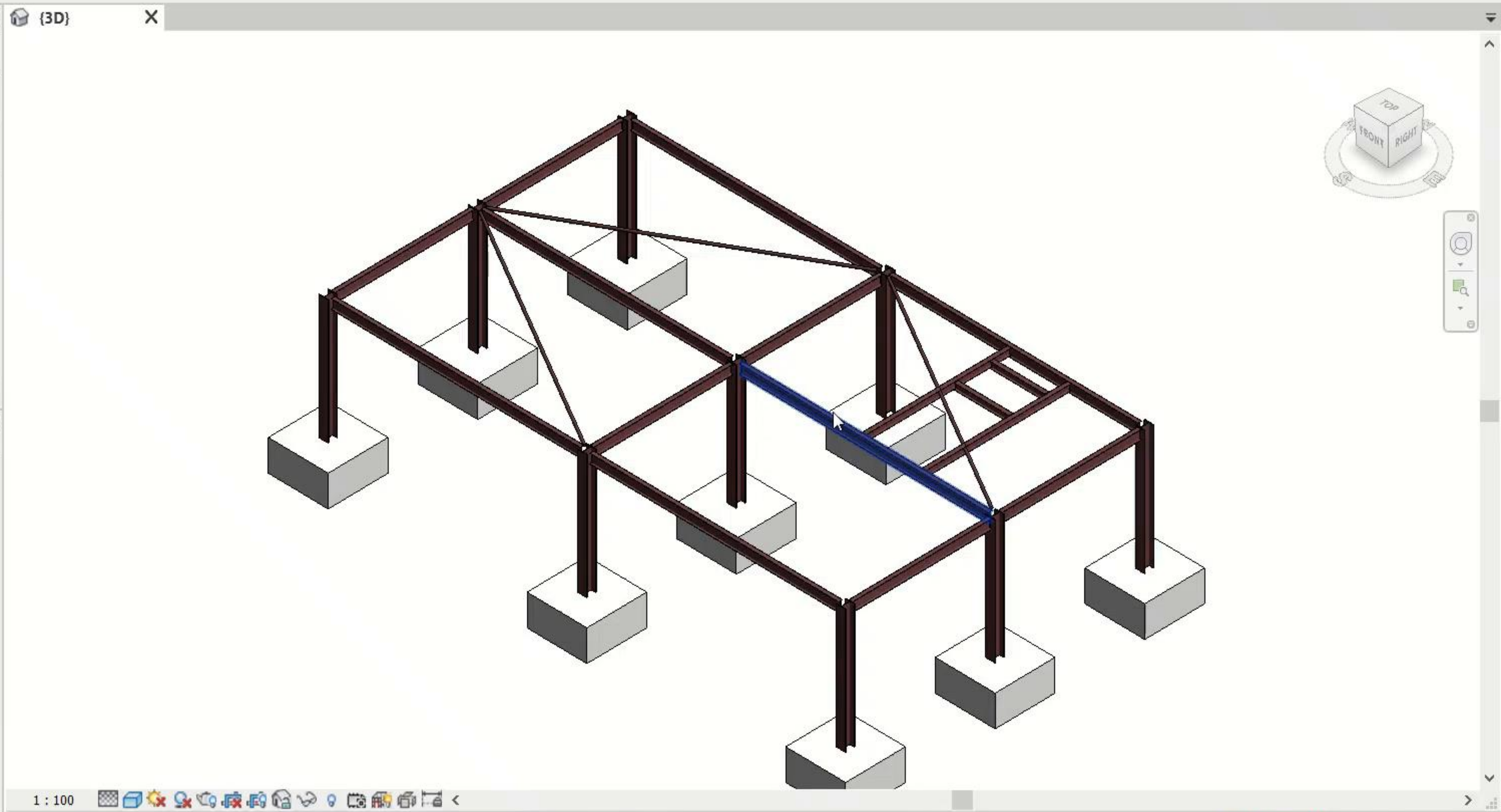
Graphics

View Scale	1 : 100
Scale Value 1:	100
Detail Level	Fine
Parts Visibility	Show Original
Visibility/Graphics Overri...	Edit...
Graphic Display Options	Edit...
Discipline	Architectural
Show Hidden Lines	By Discipline

Properties help Apply

Project Browser - Project1.rvt

- Views (all)
  - Floor Plans
    - Level 0
    - Level 1
    - Site
  - Ceiling Plans
  - 3D Views
  - Elevations (12mm Circle)
    - East
    - North
    - South
    - West
  - Legends
  - Schedules/Quantities (all)
  - View List
  - Sheets (all)





# UK BIM FRAMEWORK

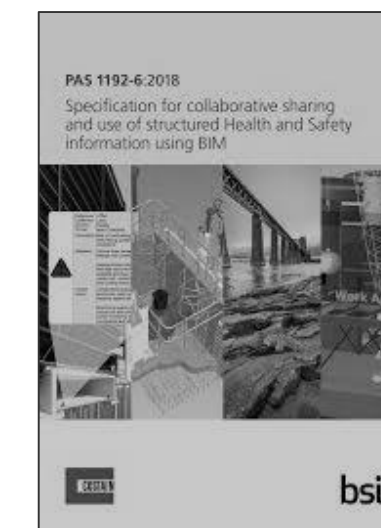
## UK BIM Framework



- ISO 19650-1:2018
- ISO 19650-2:2018



- ISO 19650-5:2020
- BS 1192-4:2014



- PAS 1192-6:2018

DESIGN



BUILD



OPERATE

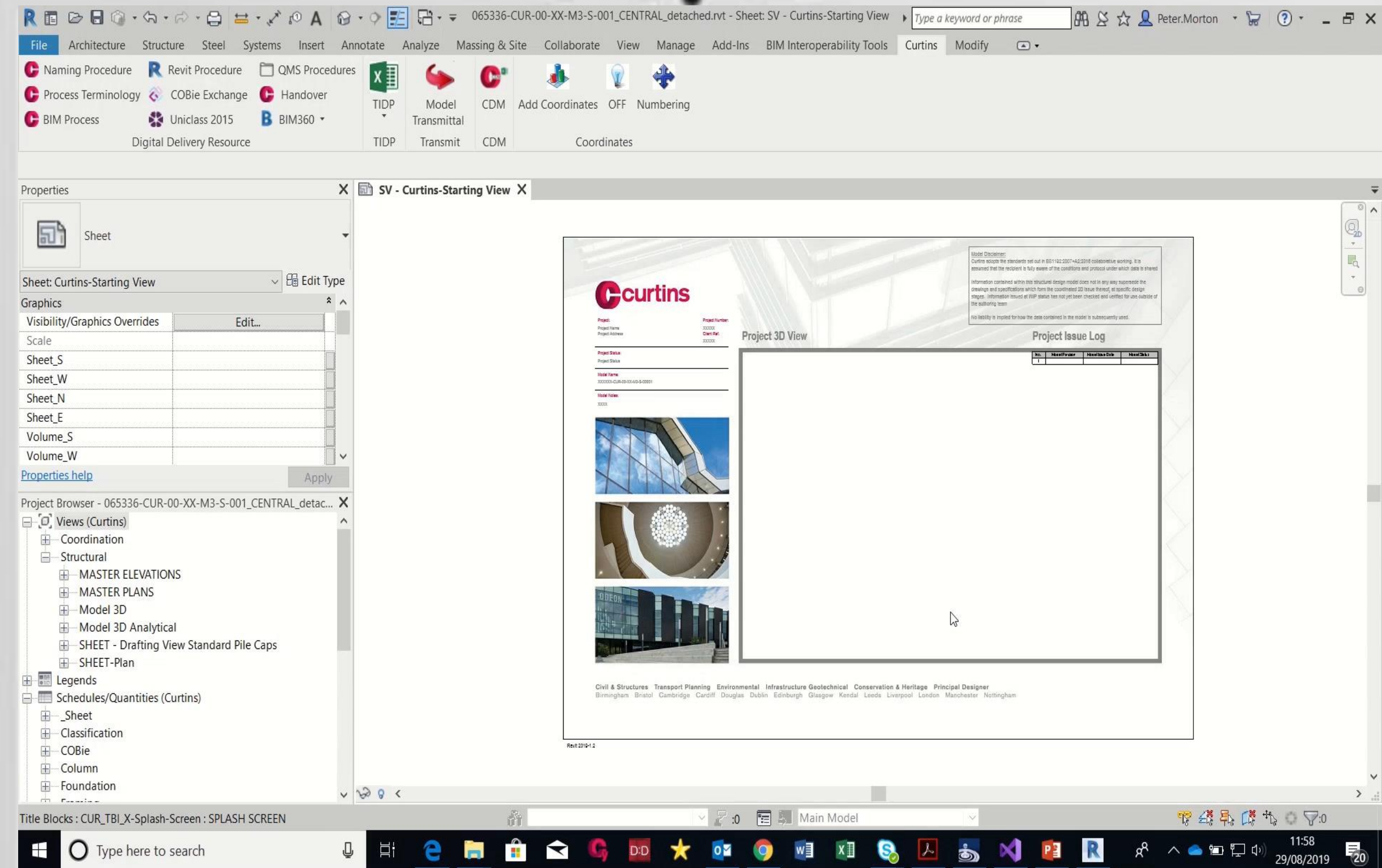


INTEGRATE





# Task Information Delivery Plan





# UK BIM FRAMEWORK

## UK BIM Framework



- ISO 19650-1:2018
- ISO 19650-2:2018



- ISO 19650-5:2020
- BS 1192-4:2014



- PAS 1192-6:2018

DESIGN



BUILD



OPERATE



INTEGRATE





# Health and Safety

**Microsoft Word Ribbon:**

- Home**: Clipboard (Cut, Copy, Paste), Font (Calibri, 11, Bold, Italic, Underline, Color), Paragraph (Bullets, Indentation), Styles.
- Insert**: Tables, Illustrations, Links.
- Draw**: Shapes, Lines, Callouts.
- Page Layout**: Margins, Orientation, Columns.
- Data**: Data Entry, Validation.
- Review**: Proofing (Spelling, Grammar), Comments, Track Changes.
- Developer**: Form Controls, Macros.
- Help**: Search, Feedback.
- Curtins**: Custom ribbon with various icons.

**Word Document Content:**

M34

A	B	C	D	E	F	G	H	I	J	K
			51-55 Tithebarn Street, Liverpool, L2 2SB 0151 726 2000 liverpool@curtins.com www.curtins.com							
Project Number			XXXXXX							
Client Reference										
Project Title										
Doc. No			xxxxxx-CUR-XX-XX-HA-Z-00001							
Revision			P01							
Principle Designer										

## Designer's Hazard Register

This Designer's Hazard Register has been prepared in accordance with the Construction (Design and Management) Regulations 2015, and using the principles of E.R.I.C and A.L.A.R.P.

Hazard Ref.	Date Added	Item (Feature, Element or Activity)	Potential Hazard Identified	Design Response (Eliminate or Reduce)	Ownership	Action (Information to Assist Control)	Residual Hazard	Close Out Evidence	Close Out Date	Shown in Model / Drawing
	xx/xx/xx	Client responsibility under CDM regulations	Client unaware of their obligations under the CDM regulations and so hasn't taken steps to carry them out.		Curtins	Curtins to inform, in writing, the client of their duties under the CDM Regulations and ensure a Principle Designer is appointed.				Yes
<b>1.0 Enabling / Highways Works</b>										
1.1	28/9/18	S278 works	Vehicle impact with site operatives during highways works	Curtins provided costs for undertaking the Principal Designer role as part of project fee proposal.	Principal Designer					Yes
<b>2.0 Site Wide Issues</b>										
2.1	28/9/18	Groundworks	Collapse of excavations due to flooding	Site in flood zone 2	Main Contractor	Main contractor to design temp. works and manage excavations on site to limit risk of collapse.	Collapse of excavations due to flooding	Highlighted on drawings, hazard closed out.		Yes
2.2	28/9/18	Offsite traffic	Vehicle impact with columns adjacent to highway	Curtins to encourage the introduction of bollards/crash barriers to external	Curtins	Further discussion required between design team & client.	Disproportionate collapse due to vehicle impact with structure			
<b>3.0 Existing Buried &amp; Overhead Services</b>										
	28/9/18	Groundworks	Striking buried services	Topographical survey shows approximate location of existing services that have been identified to date.	Main Contractor	Contractor to scan site for existing services, mark out and hand dig in the region of services established. Contractor to advise PM of services	Electrocution/ explosion due to striking buried services	Highlighted on drawings, hazard closed out.		

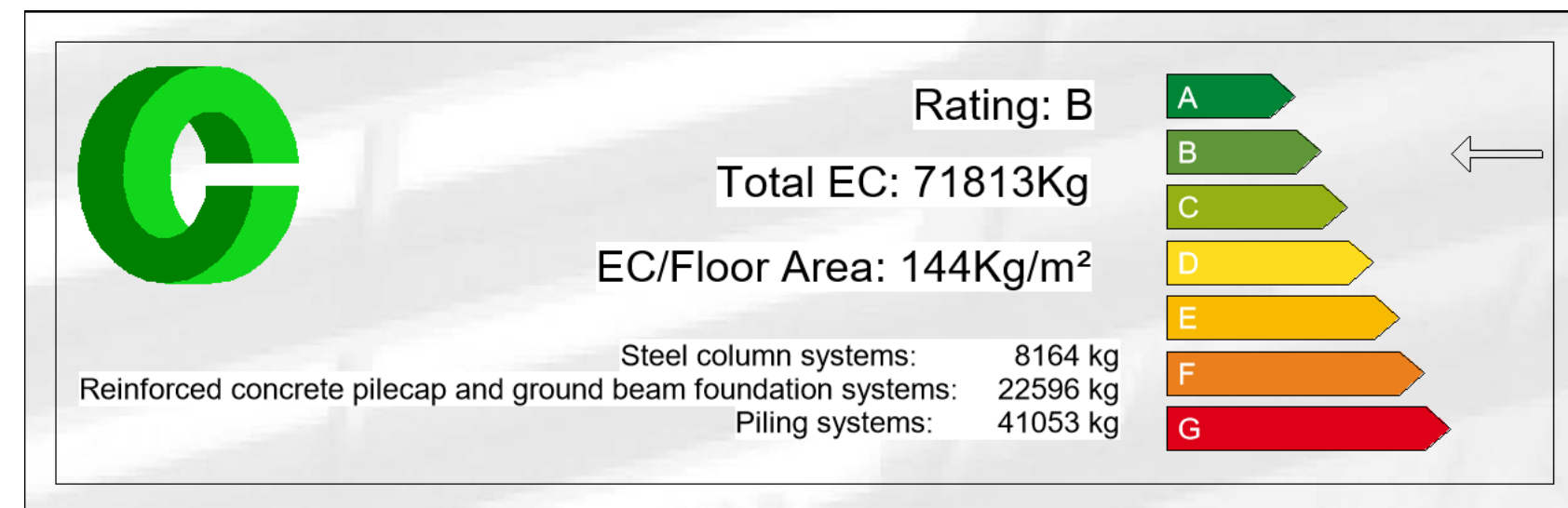
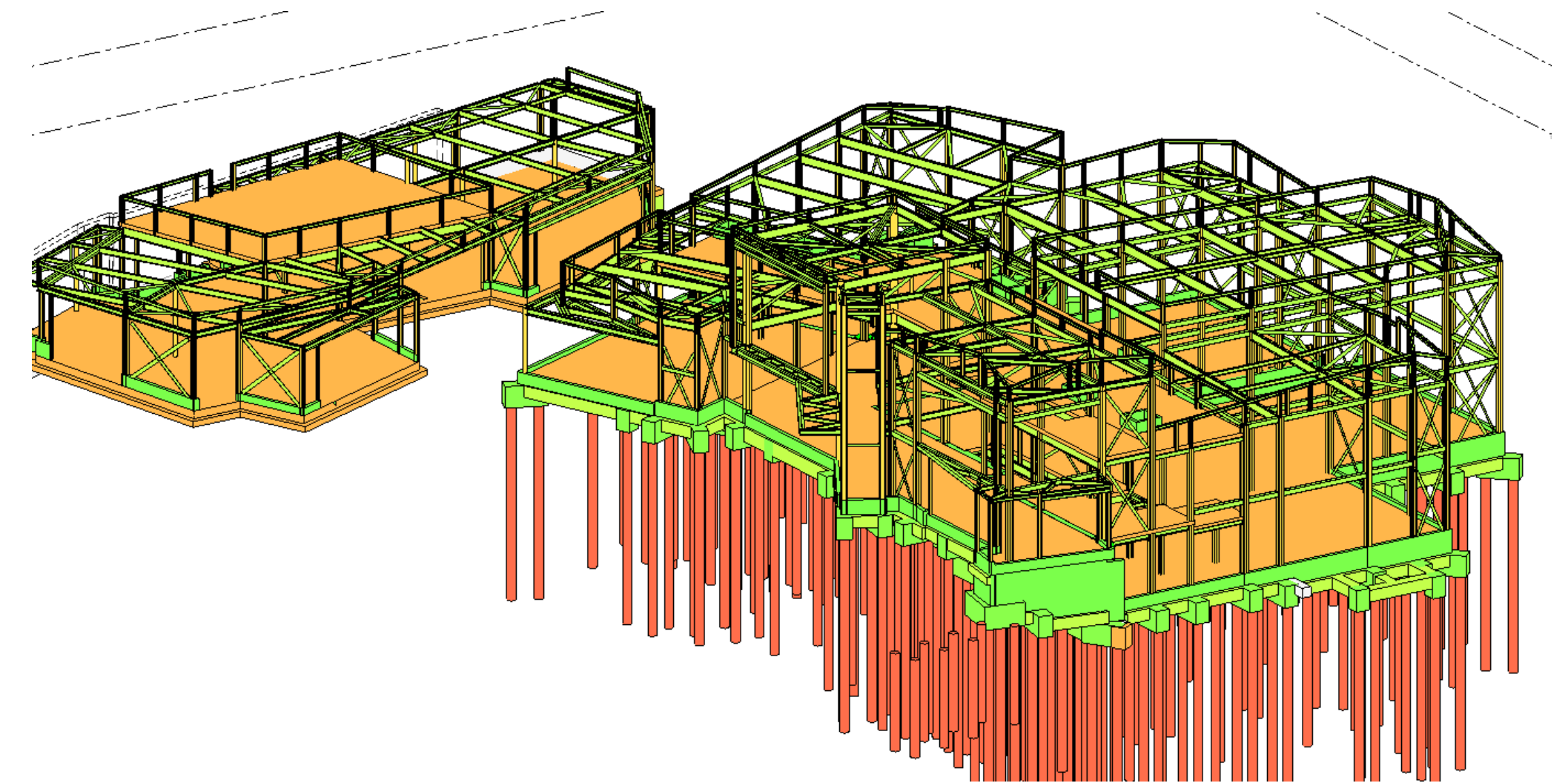
**Hazard Register**



# Carbon Footprint – Mission Statement

2020 plan to reduce Curtins' carbon impact:

- Build awareness
- Measure and record carbon on projects
- Include information on drawings and models

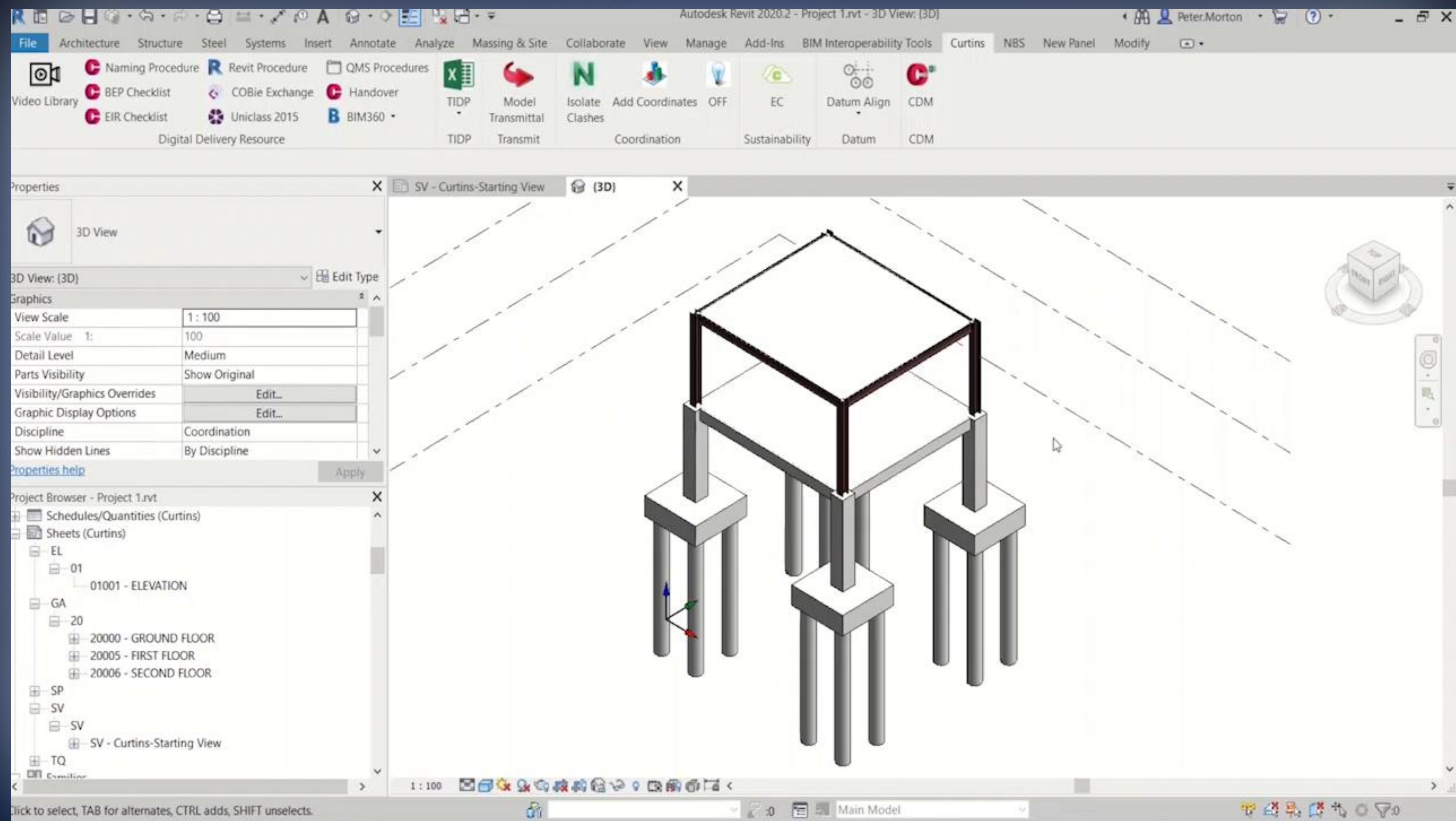




A photograph of an industrial facility, likely a power plant or refinery, featuring several tall smokestacks. The stacks are painted with alternating bands of red and white. Thick plumes of white smoke or steam are rising from the stacks, filling much of the sky. The sky is a mix of blue and grey, with large, billowing clouds. In the foreground, there are silhouettes of bare trees and the complex structure of the industrial plant itself, including pipes, tanks, and buildings. The overall scene conveys a message about industrial emissions and environmental impact.

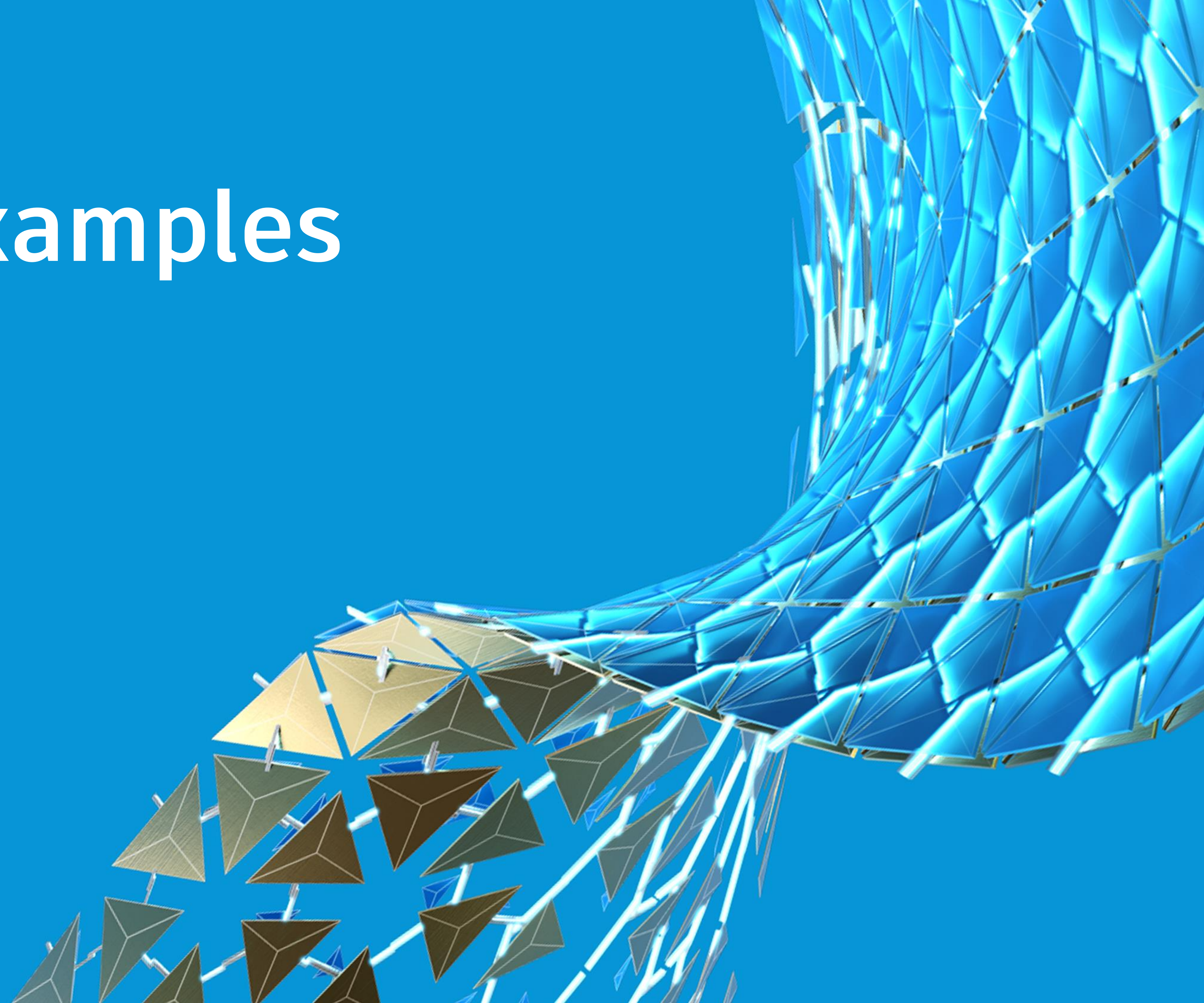
**TIME TO ACT IS NOW!**







# Project Examples





# Exemplar Projects







Precast



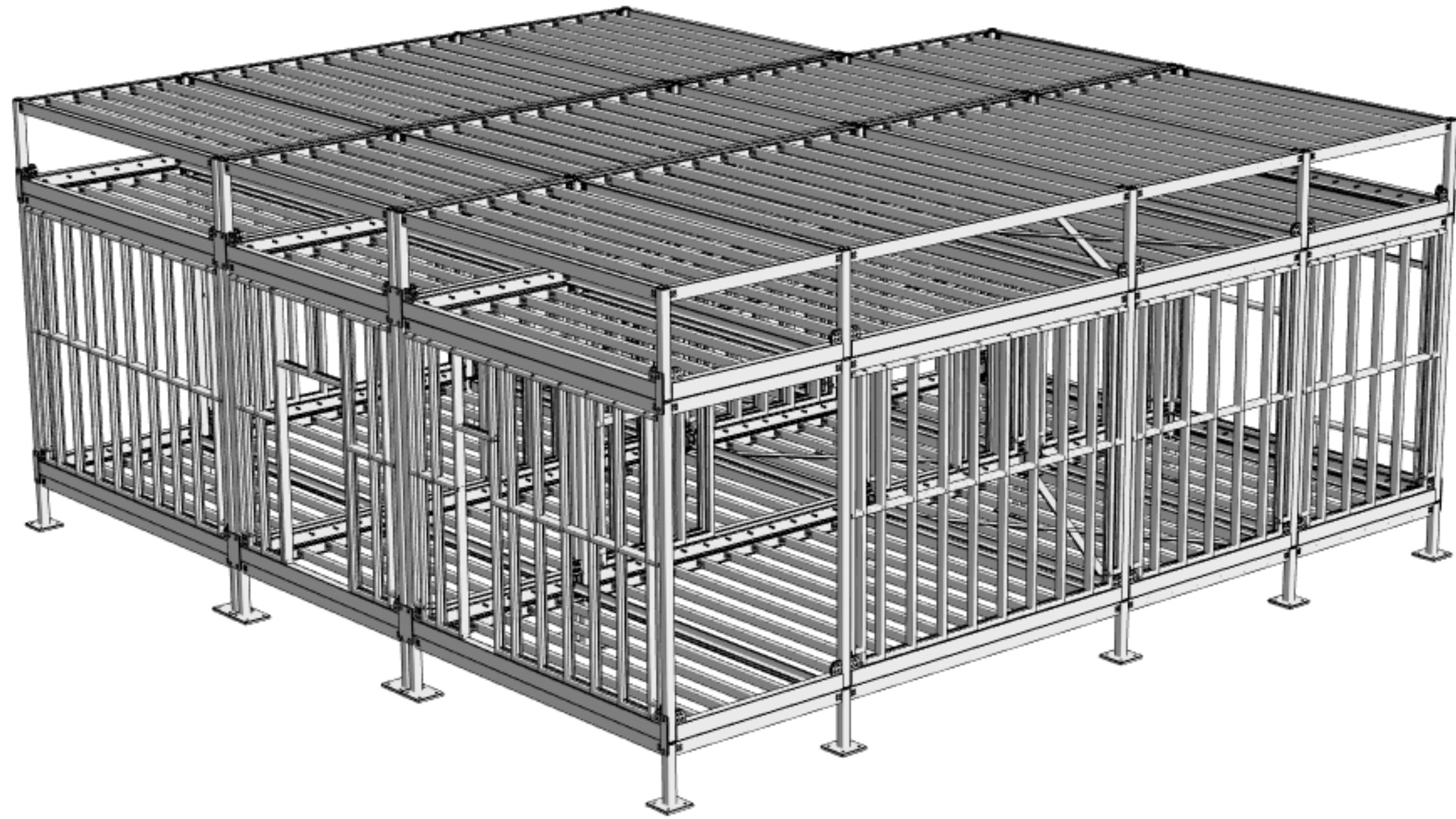


# 3D Modular



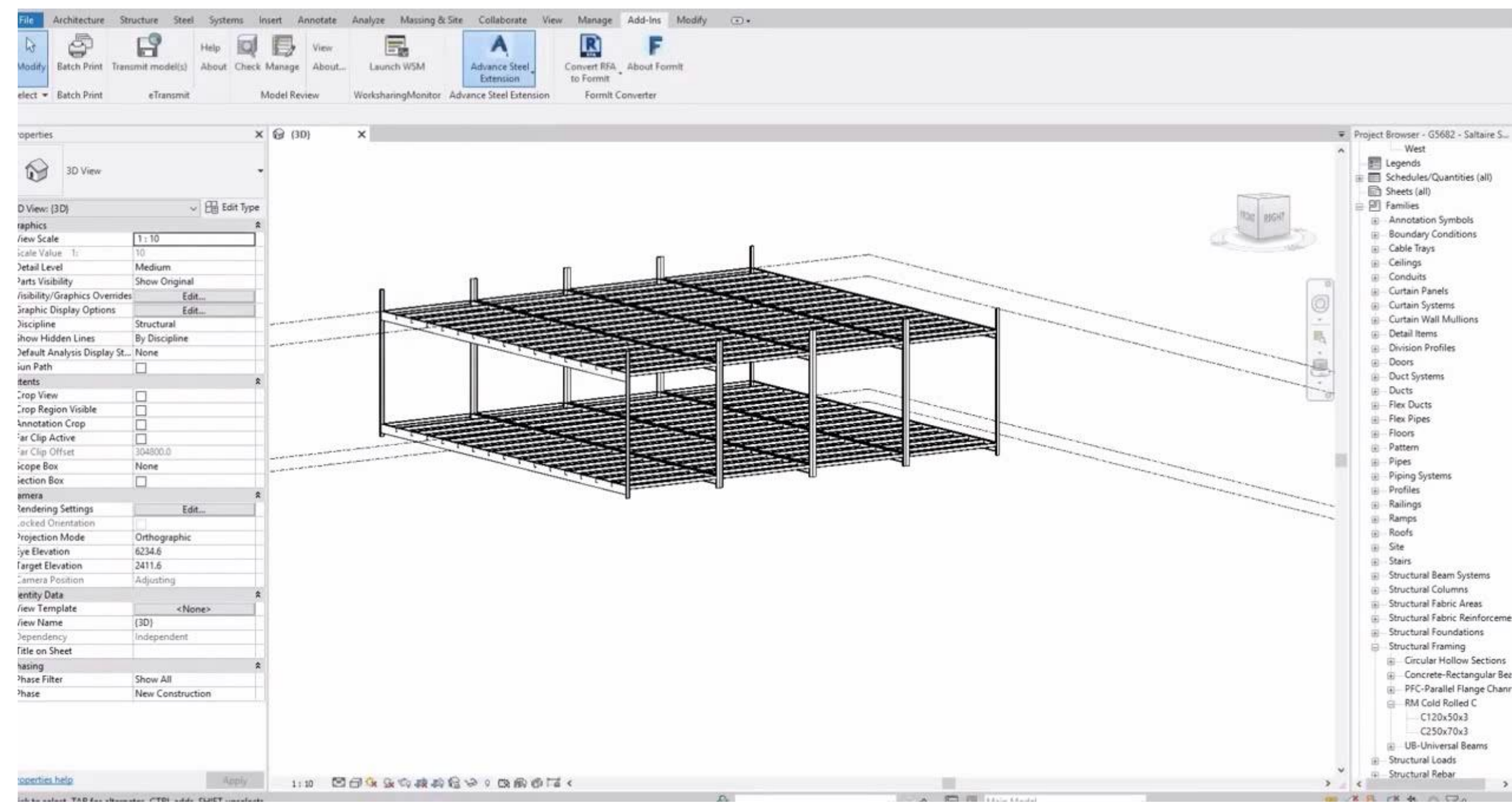
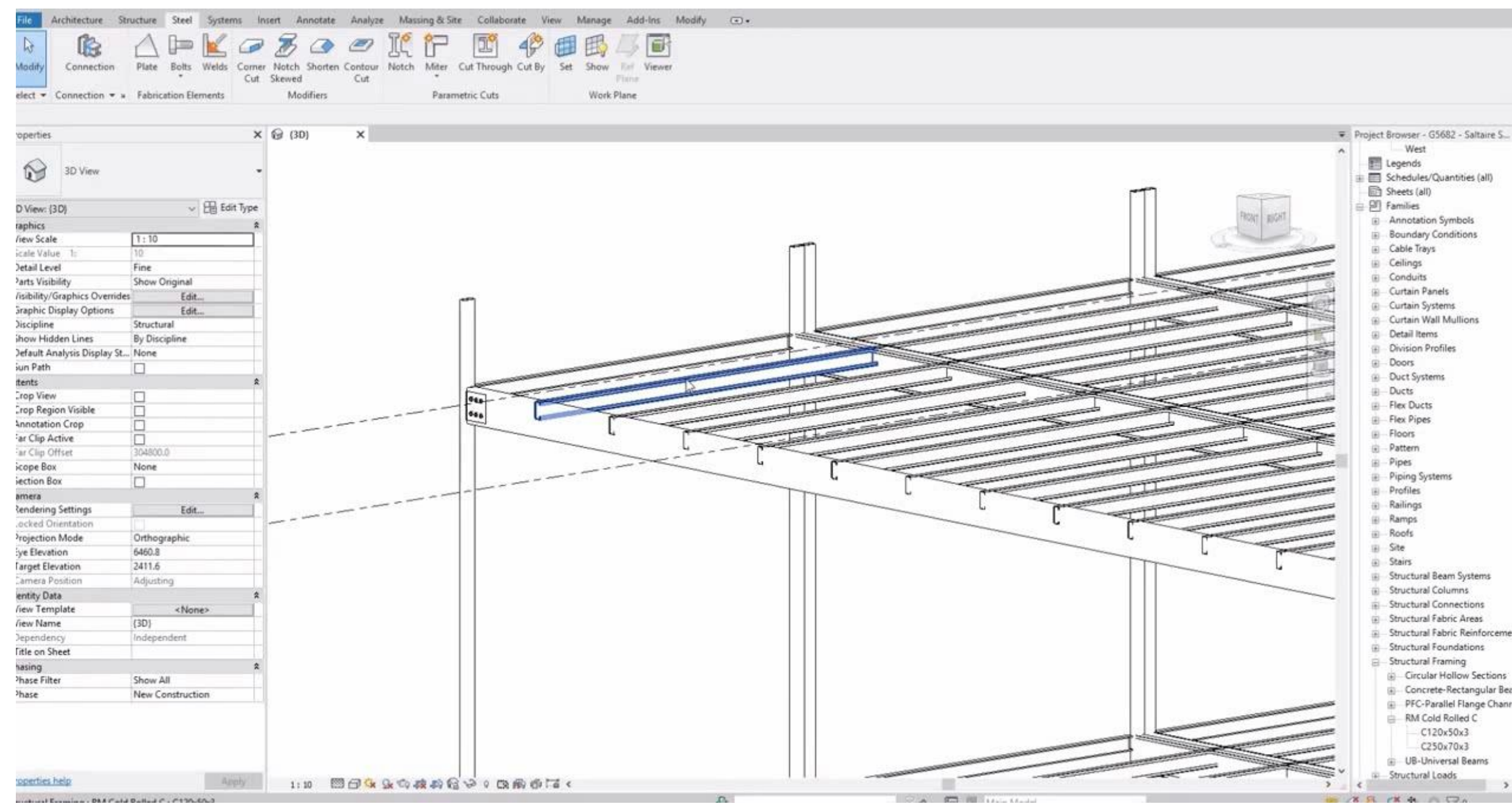


# AECC Interoperability



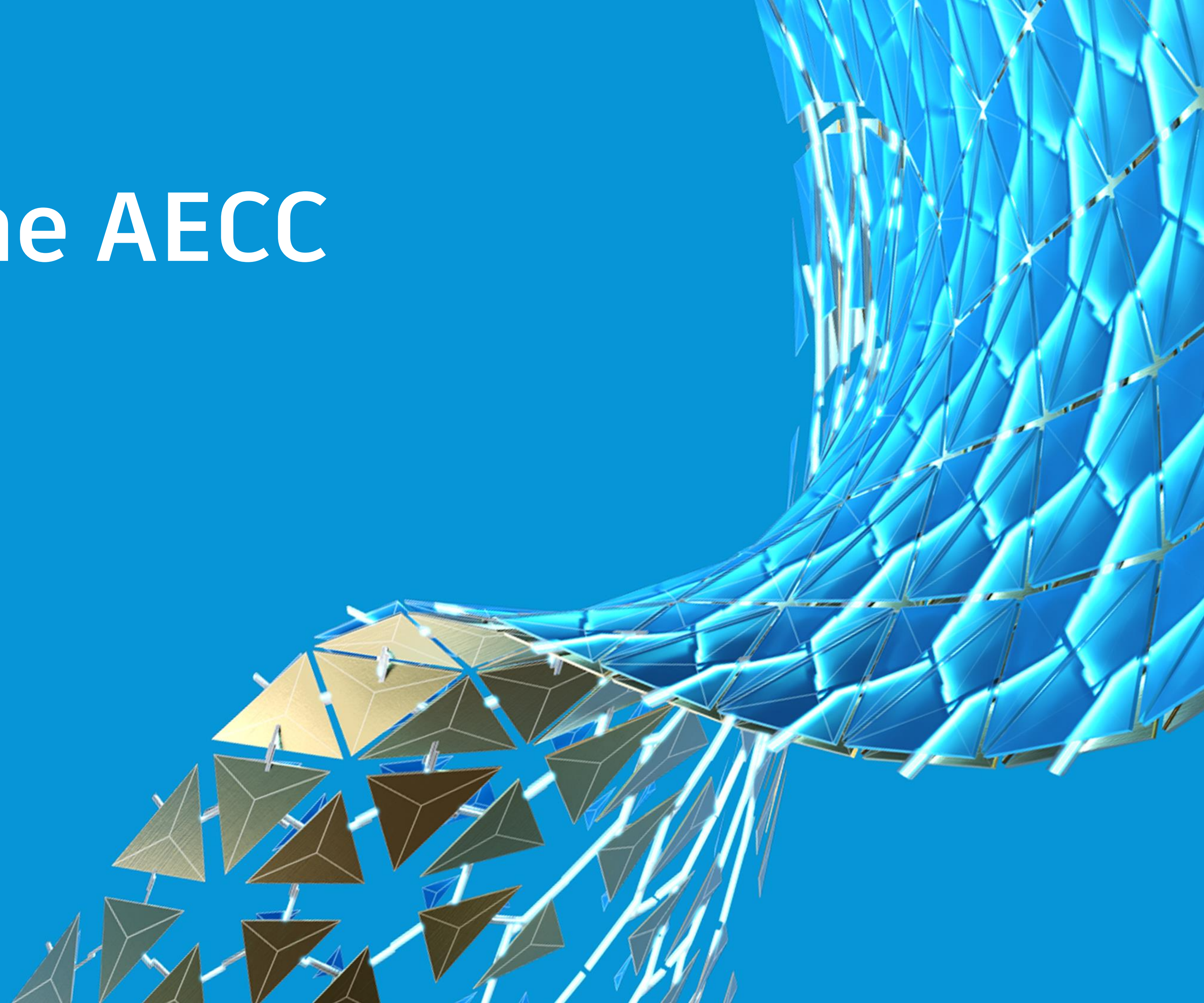


# Revit to Advanced Steel



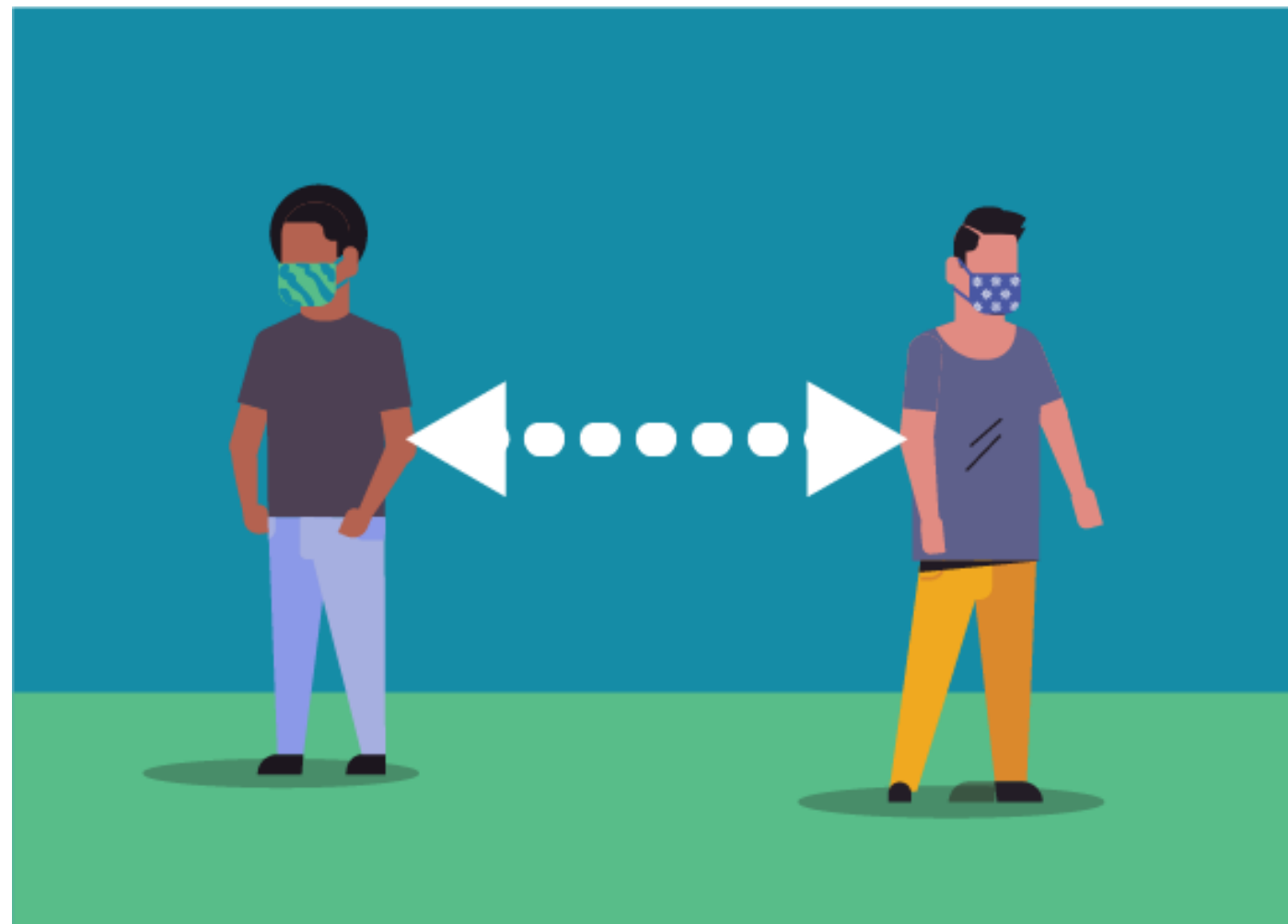


# Beyond the AECC





# Current Climate



Social Distancing



Working From Home



Digital  
Collaboration



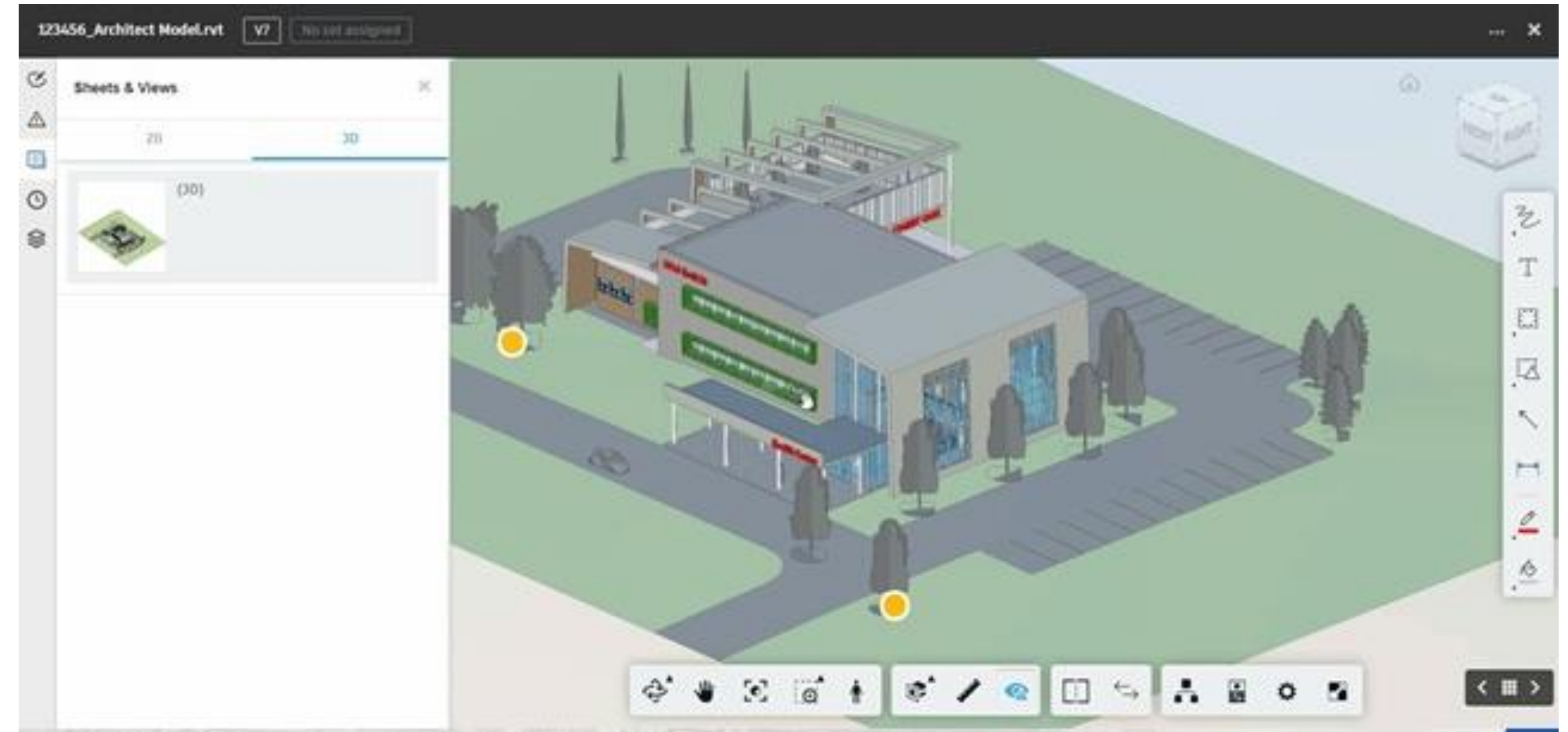
A man with short dark hair and a beard is sitting in a wooden beach chair with a colorful striped cushion. He is wearing a dark blue t-shirt and shorts, and is barefoot. He is looking at a laptop screen which displays a blue abstract pattern. The chair is on a sandy beach. In the background, there is a calm ocean with small waves and a bright blue sky with wispy white clouds. The text "Access Anywhere" is overlaid in white on the right side of the image.

# Access Anywhere



# BIM 360 Docs

- Power of document management
- Compare and review tools



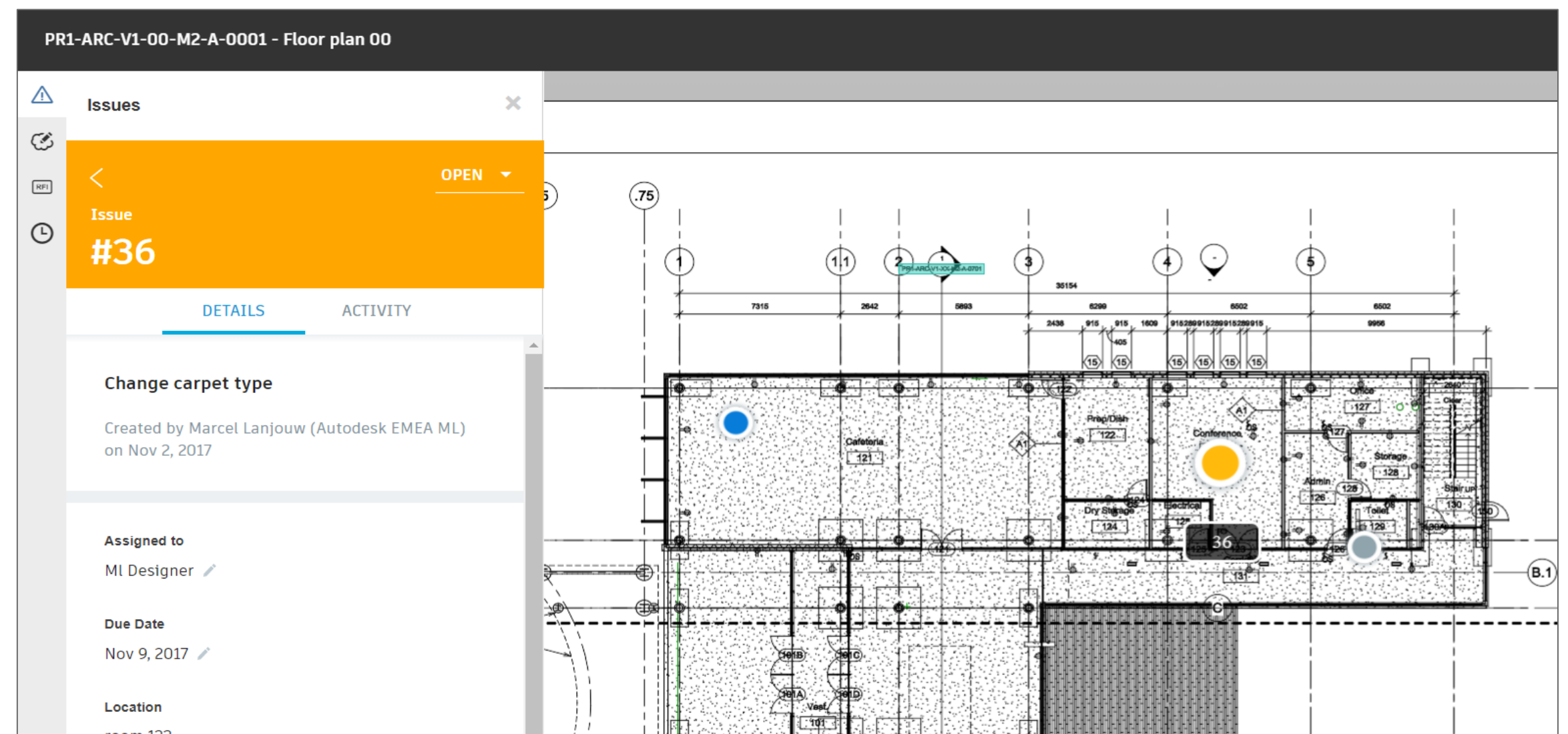
AUTODESK BIM 360 | Autodesk EMEA ML | ADSK-Demonstration BIM360 Docs

### Document Management

FOLDERS ISSUES RFIS

Filter Export Create Issue

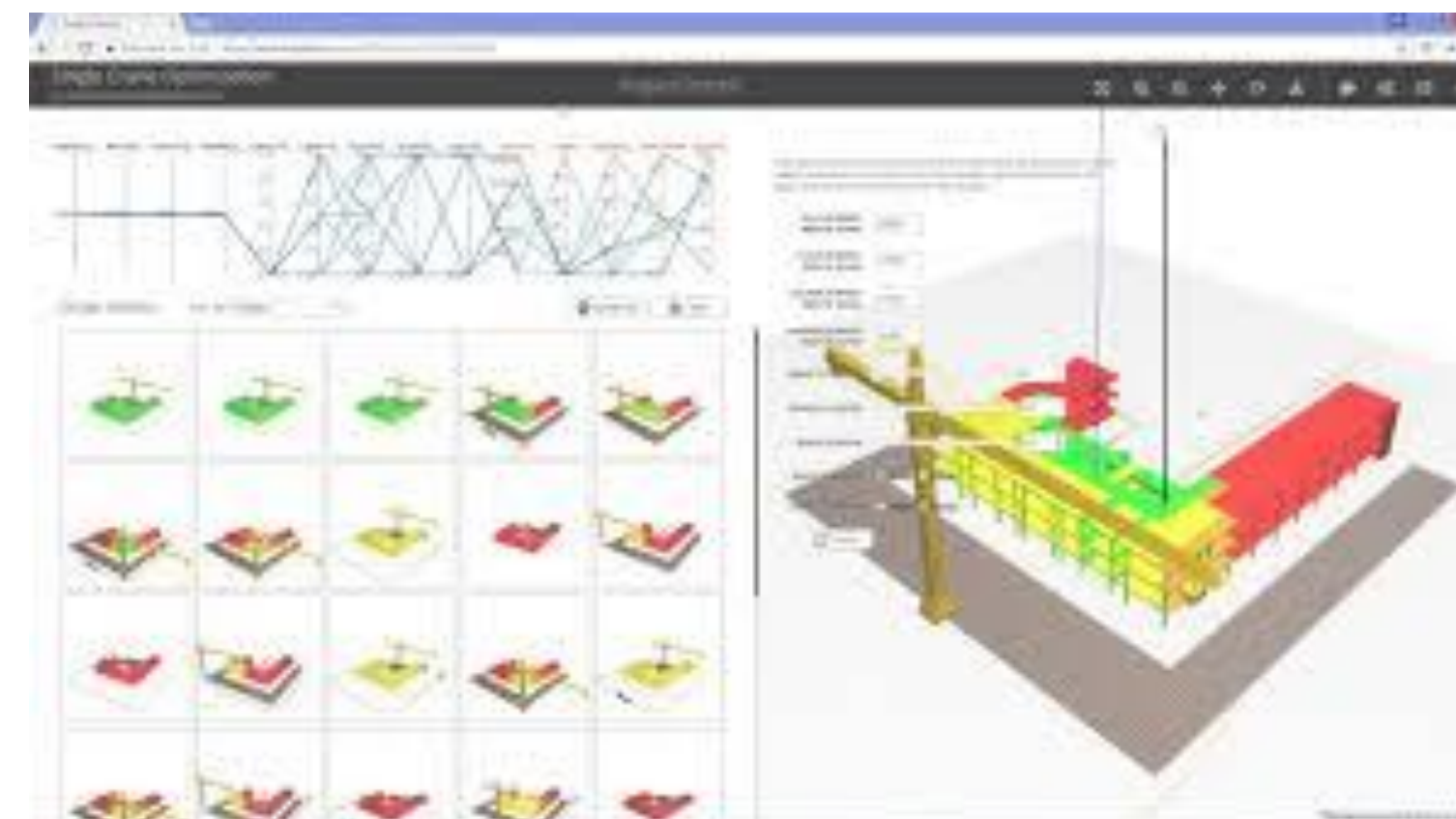
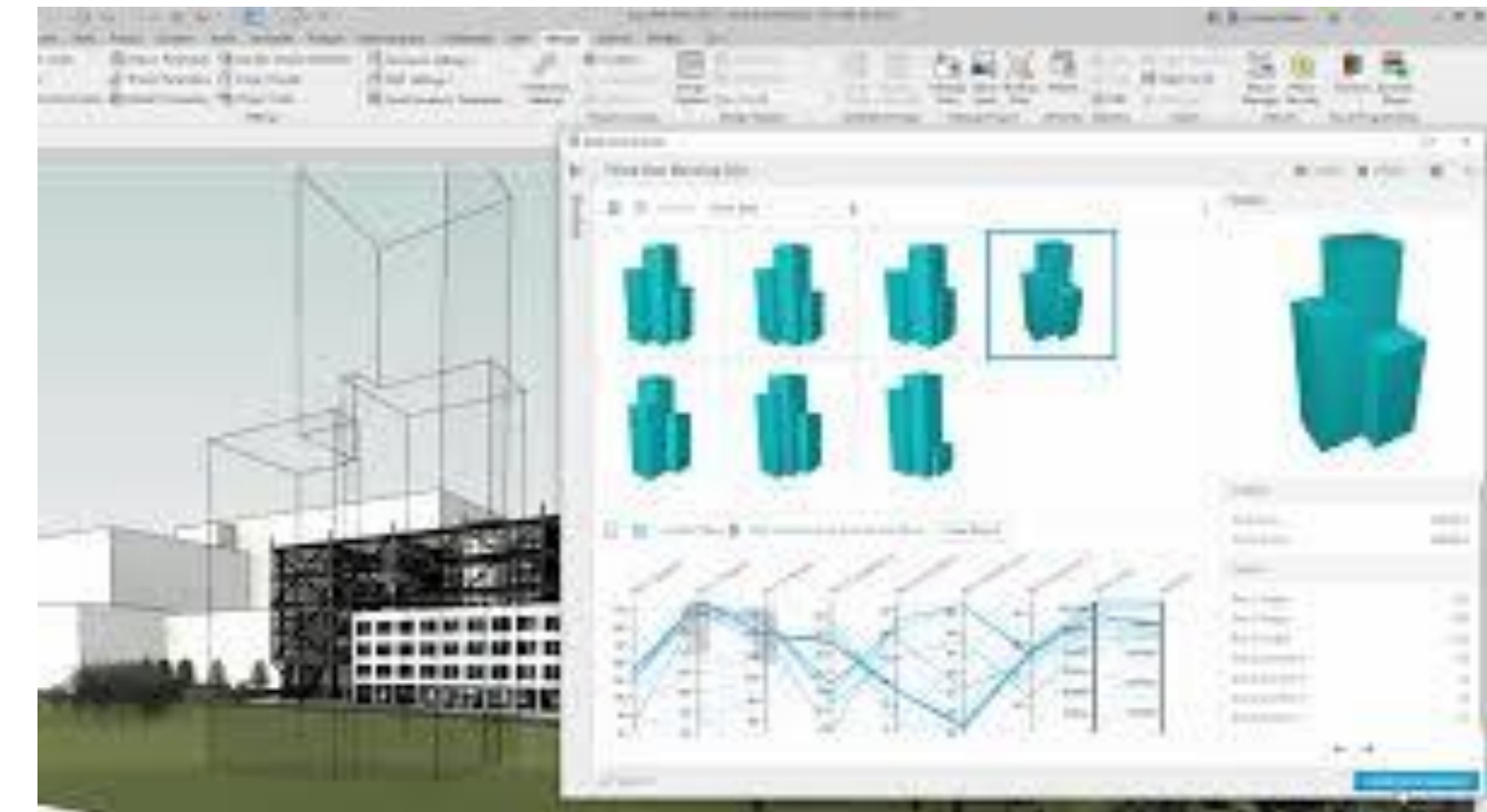
ID	Title	Location	Assigned to	Due date	Document		
38	change to double door	room 117	Marcel Lanjouw	Nov 9, 2017	PR1-ARC-V1-...	0	0
37	change to round pillars	entrance	Construction Mana...	Nov 3, 2017	{3D}_PR1-A...	0	0
36	Change carpet type	room 123	MI Designer	Nov 9, 2017	PR1-ARC-V1-...	0	0
35	link - doc1			-	PR1-ARC-V1-...	1	0
34	cdevdv	efvfevfev	IT	Oct 21, 2017	{3D}_PR1-A...	0	0
33	door wrong color	129	Ronald Loggen	Oct 22, 2017	PR1-ARC-V1-...	0	0
32	Tiling not correct	room 102	Marcel Lanjouw	Oct 20, 2017	PR1-ARC-V1-...	0	0





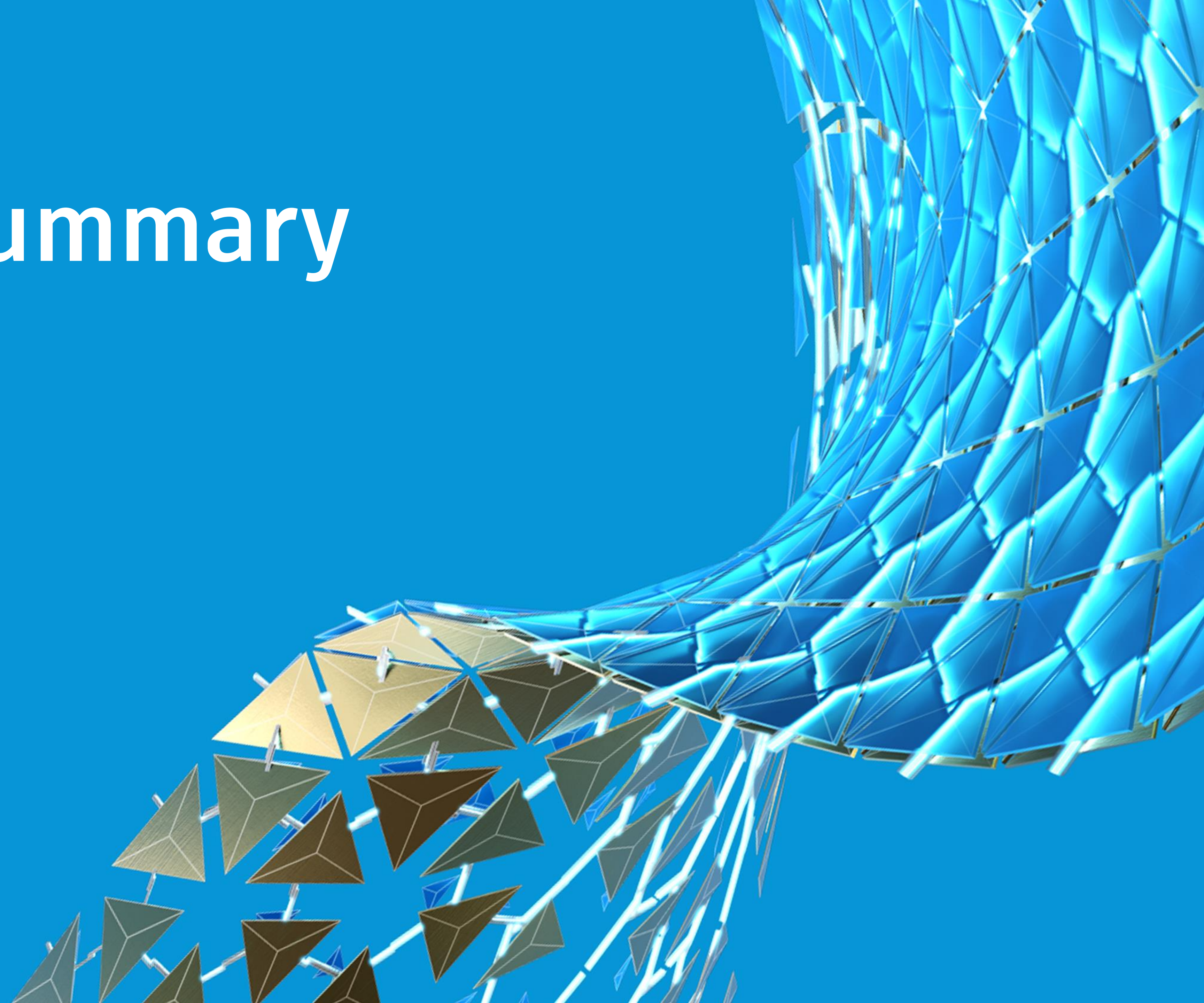
# Generative Design

- Massing studies
- Room layouts
- Crane position
- What else?





# Closing Summary







# Fully Documented Workflow





Communication



A group of people, including men and women, are standing outdoors in a line, holding a long wooden beam above their heads with both hands. They are all wearing bright yellow t-shirts. The background is filled with lush green trees and foliage, suggesting a park or forest setting. The lighting is bright and natural, indicating it's daytime. The overall mood is positive and collaborative.

# Uniformity





# Automation



The image shows two hikers silhouetted against a bright sun. One hiker is on a rocky slope, reaching out to help another hiker who is lower down. The background features a vast mountain range under a blue sky with wispy clouds. The text "Full Potential" is centered in the image.

Full Potential





**Be Brave**



# Try Something New







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