



Microsoft Power BI to Maximize BIM and GIS Integration

Case Study

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Speaker

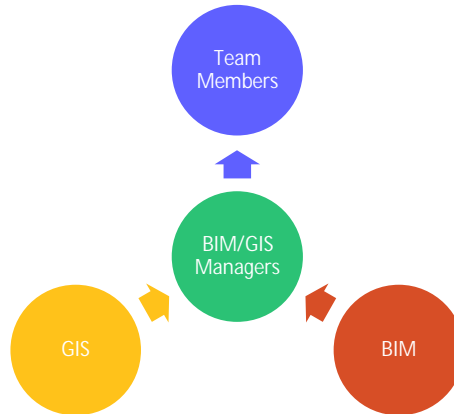
- Mostafa Elashmawy
 - Senior BIM & GIS Manager at WSP Middle East
 - Masters of Global BIM Management
 - BRE Certified Project Information Manager
 - BRE Certified BIM Professional
 - Autodesk Expert Elite
 - RICS - Certificate in BIM - Project Management
 - Operam Certified Information Management Practitioner
 - CanBIM Certified Professional P2
 - Autodesk Revit Certified Professional
 - Autodesk Ambassador
 - Autodesk Educator Expert
 - Leader of CanBIM Digitization and Data Glossary
 - Member of CanBIM Digitization and Data Think Tank (DDTT)
 - Leader of The Digital Community Group



Introduction

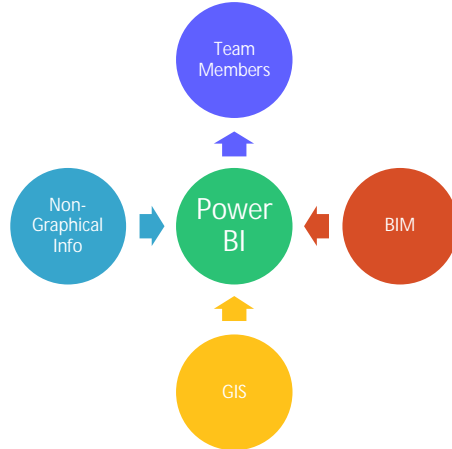
Building information modelling (BIM) and geographic information system (GIS) integration has become an essential part of large-scale projects.

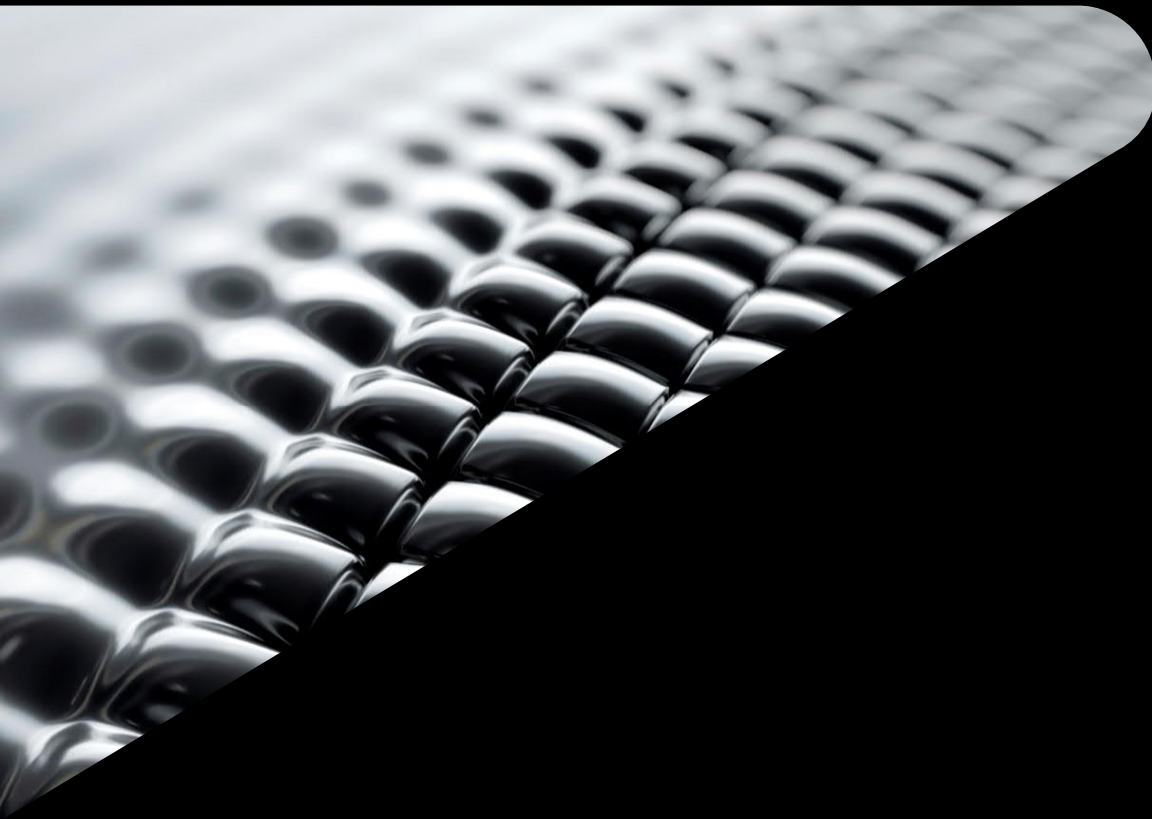
- While a massive amount of information is produced during the project lifecycle, it's sometimes hard to use it because it's trapped inside the BIM and GIS software.
- This becomes an obstacle for non-users of BIM and GIS-especially on decision-maker levels and from project management perspectives.



Introduction

- Using business intelligence software, Microsoft Power BI, and the support of other software like Autodesk Forge and VCAD, Power BI will be able to present intelligent models and GIS layers in an interactive way connected with all types of trackers.
- In this session, I will present how I created an information centre that acts as the single source of truth for the projects using the interactive connection between Power BI, BIM 360 software, ArcGIS, and trackers in Microsoft Excel to give all team members access to up-to-date information.





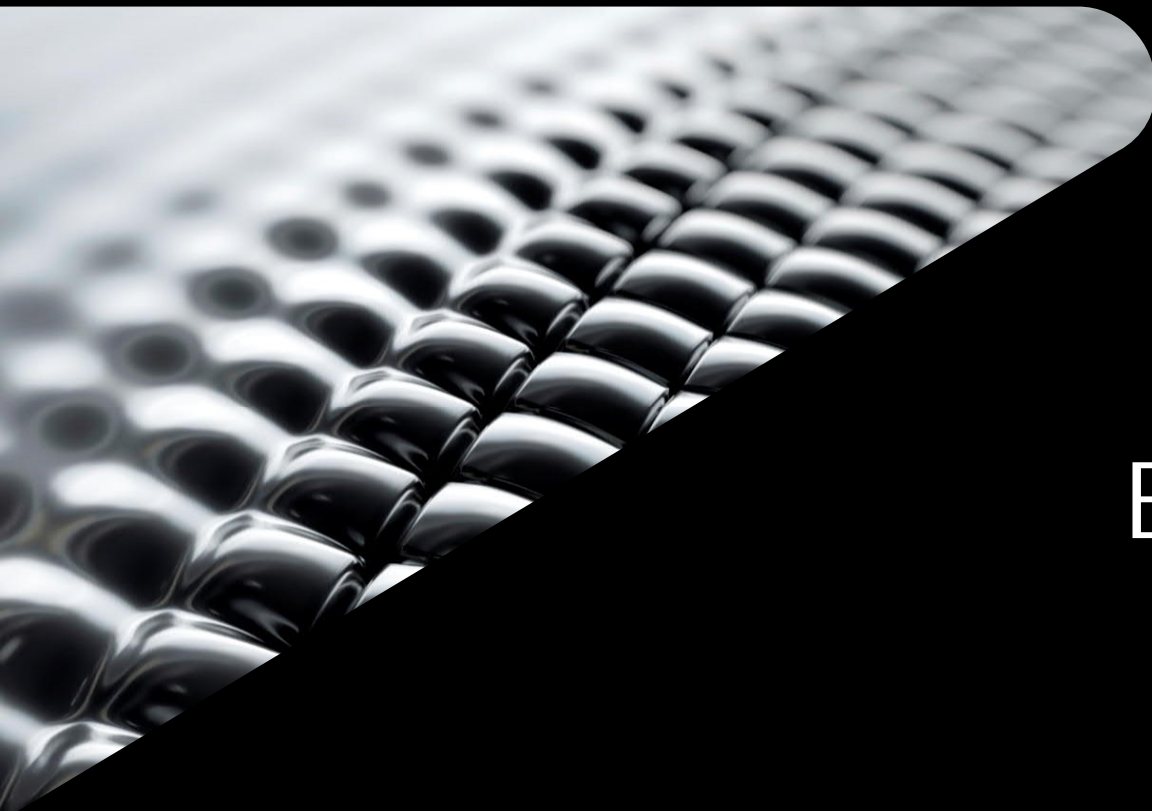
Getting Ready

Getting Ready

Software/Platforms

- Navisworks
- BIM 360
- ArcGIS Pro
- Power BI
- VCAD
- MapShaper
- Excel
- Sharepoint





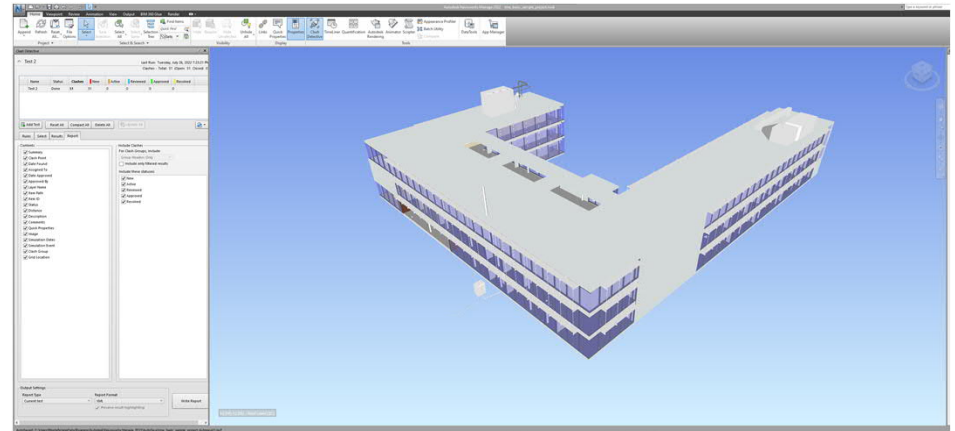
BIM to Power BI

BIM to Power BI

BIM Models

Aspects to be considered before using BIM Models

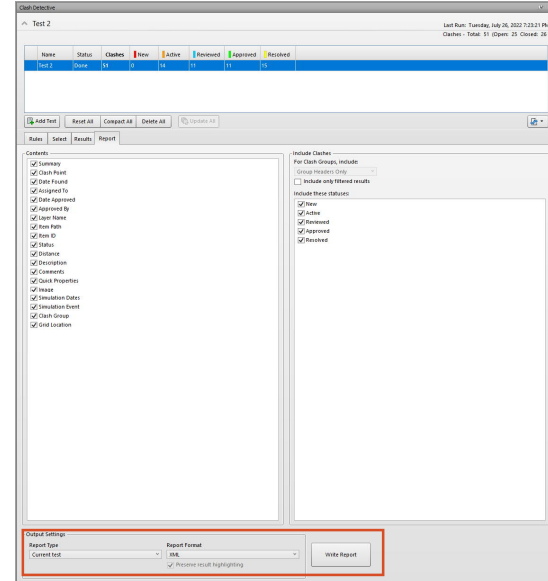
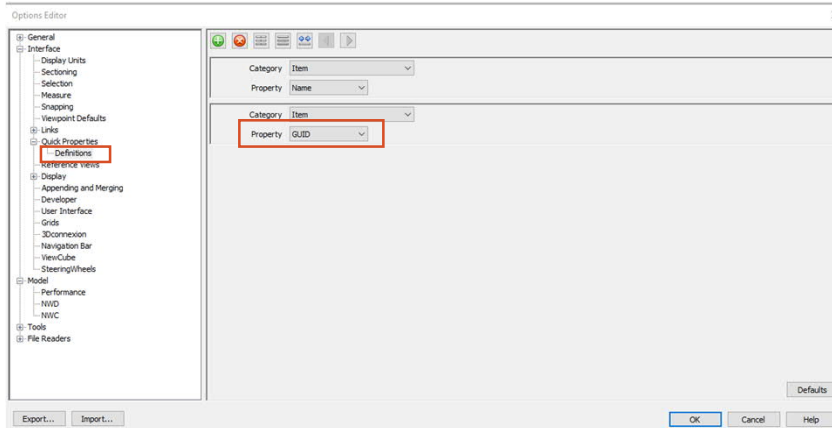
- Standards, Methods & Procedures
- QAQC process
- Size of the models to be minimised
- Federation Strategy
- Project Information to include Plot ID
- Geolocation
- Navisworks NWD files
- Models to be saved on BIM 360



BIM to Power BI

Clash Detection

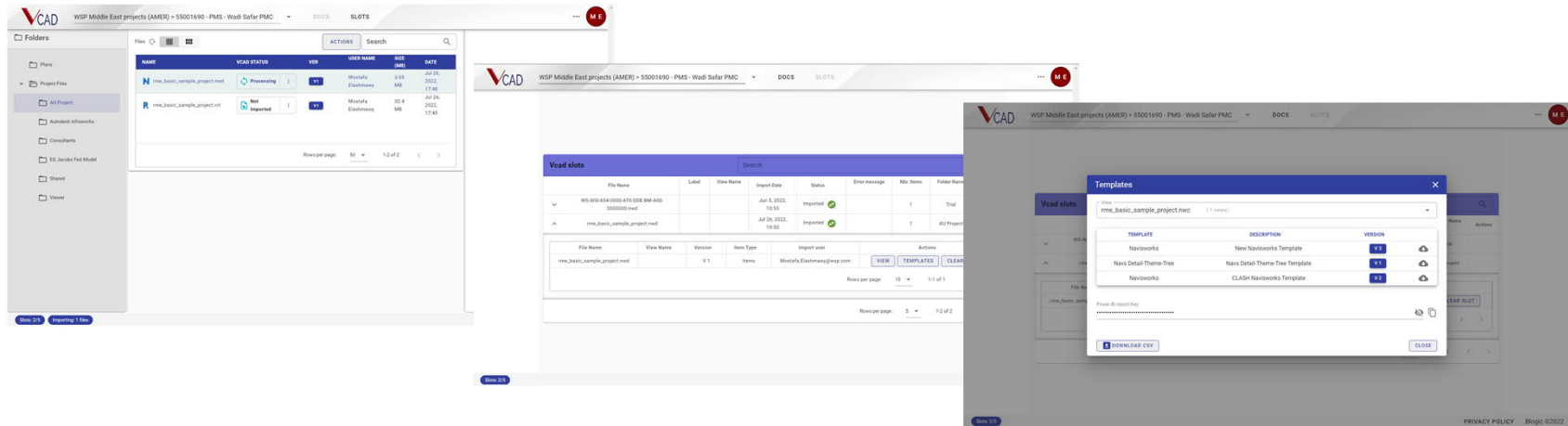
- Ensure that elements are defined by GUID
- Export the test result to XML



BIM to Power BI

VCAD

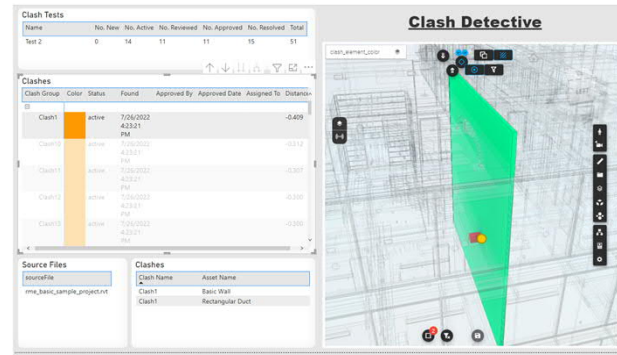
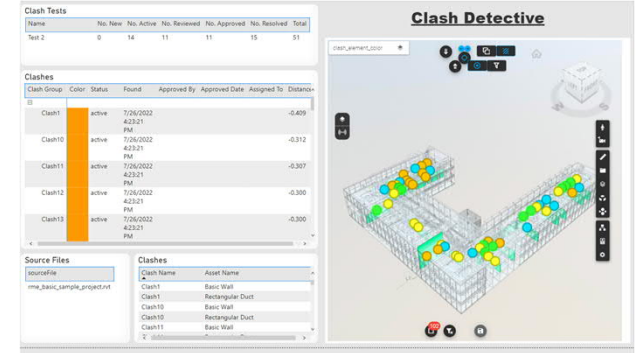
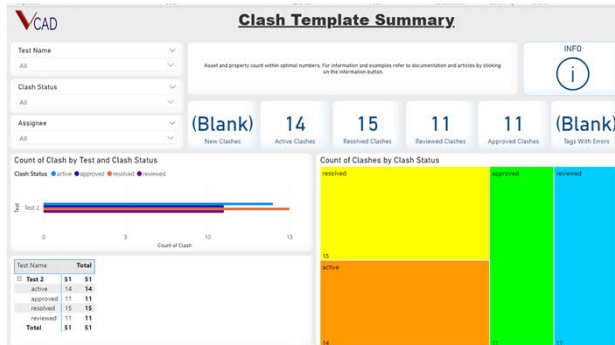
- BIM 360 Admin to activate VCAD plugin
- Load the BIM Model to a VCAD Slot
- Download the VCAD Power BI Template



BIM to Power BI

Dashboards

- Clash Detection Dashboards



BIM to Power BI

Dashboards

- Model Browsing Dashboards



File Type: All Source File: All Object Type: All

Asset Name Search

Search

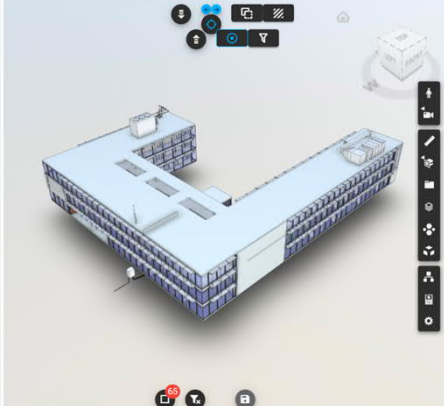
Asset List

Name	Object Type	Source File
300 kva	Electrical Equipment	rme_basic_sample_project.nt
6 x 12 in Ductwork	Type	rme_basic_sample_project.nt
6 x 10 in Ductwork	Type	rme_basic_sample_project.nt
6 x 12	Curtain Wall Mullions	rme_basic_sample_project.nt
6 x 12	Type	rme_basic_sample_project.nt
6 x 15 in Ductwork	Curtain Wall Mullions	rme_basic_sample_project.nt
6 x 15 in Ductwork	Type	rme_basic_sample_project.nt
600 x 600 Face 300 x 300	Air Terminals	rme_basic_sample_project.nt
Connection	Type	rme_basic_sample_project.nt
600 x 600 Face 300 x 300	Connection	rme_basic_sample_project.nt
600 x 600 Face 300 x 300	Connection	rme_basic_sample_project.nt

Property List

Element ID	Value
Element ID	Value
Element ID	Value
Element ID	Value
Element ID	Value
Element ID	Value
Element ID	Value
Element ID	Value
Element ID	Value
Element ID	Value
Element ID	Value

Asset Details



File Type: All Source File: All Object Type: Ducts: Rectangular...

Asset Name Search

Search

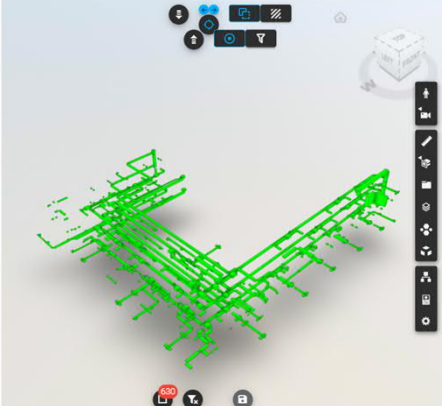
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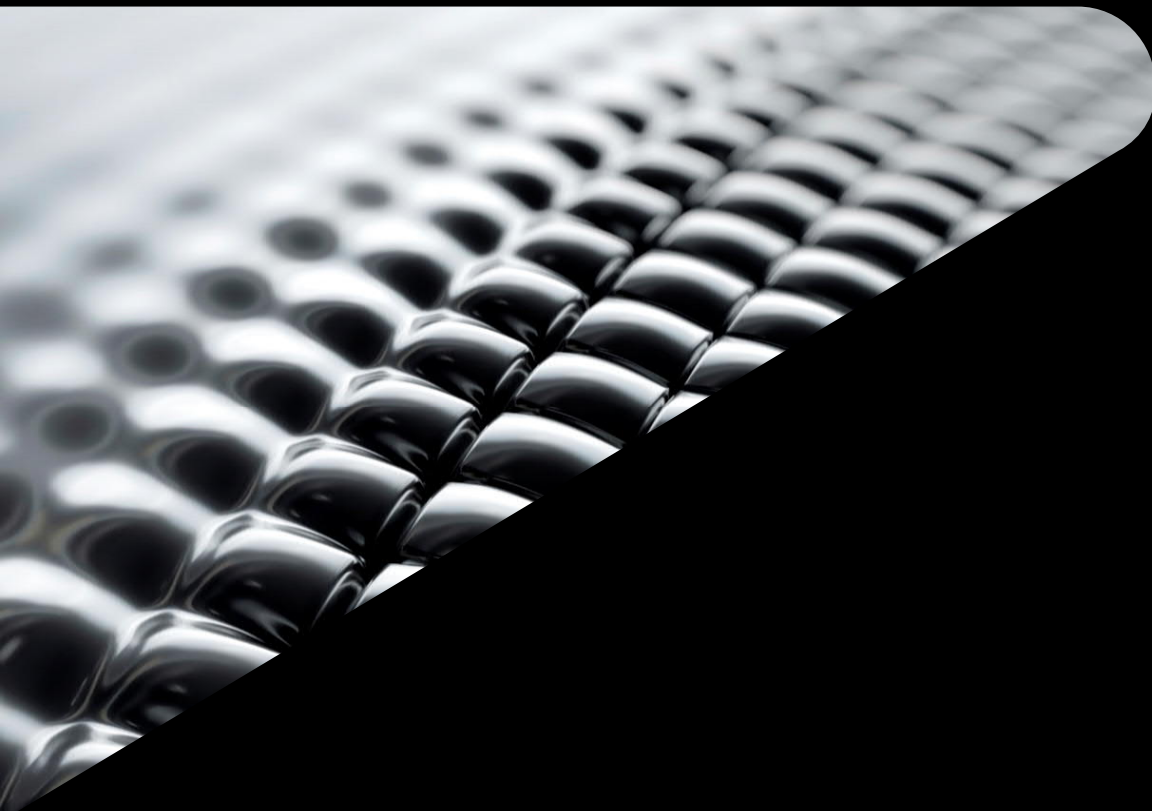
Name	Object Type	Source File
Rectangular Duct	Ducts: Rectangular Duct	rme_basic_sample_project.nt
Mitered Elbows / Taps		

Property List

Element	Additional Flow	0.0 L/s
Element	Area	0.355
Element	Area	0.449
Element	Area	0.507
Element	Area	0.517
Element	Area	0.553
Element	Area	0.656
Element	Area	0.700
Element	Area	0.840

Asset Details



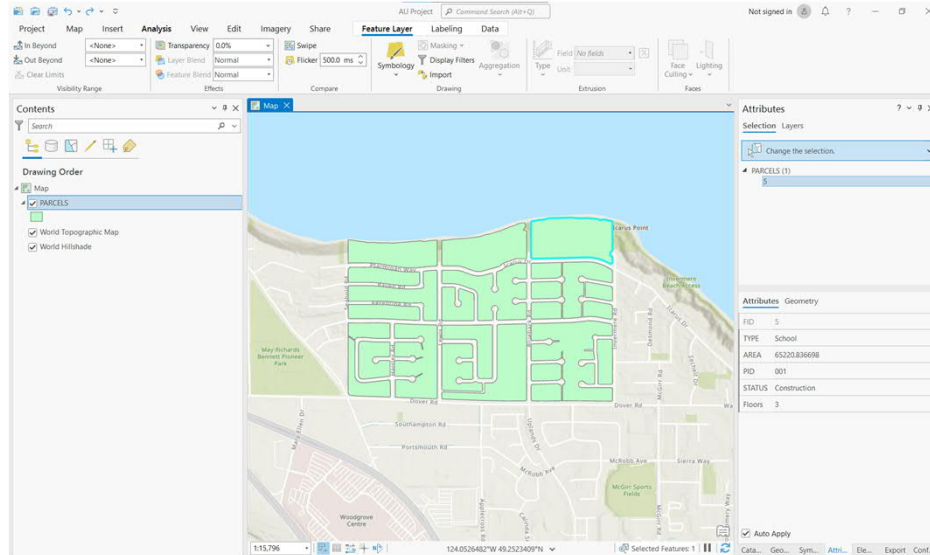


GIS to Power BI

GIS to Power BI

GIS Layers

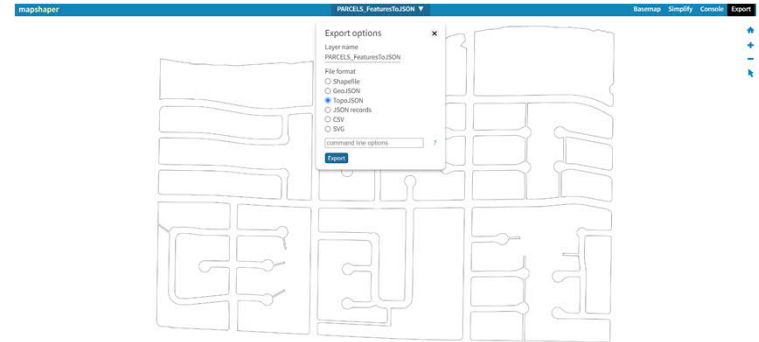
- GIS Layers shall be simplified and exported from ArcGIS Pro.
- Each Layer should have a Plot ID attribute.
- Polygons can touch but don't overlap.



GIS to Power BI

mapshaper

- GIS Layers to be imported to mapshaper in any of the following formats:
 - Shapefile
 - GeoJson
 - TopoJson
- Mapshaper transforms GIS layers to TopoJson.



GIS to Power BI

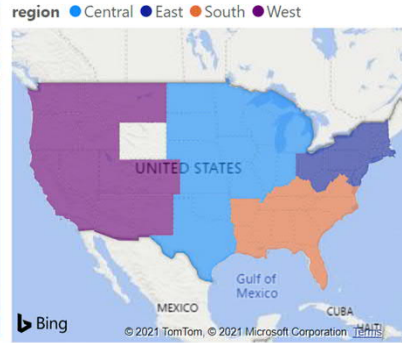
GIS Power BI Visuals



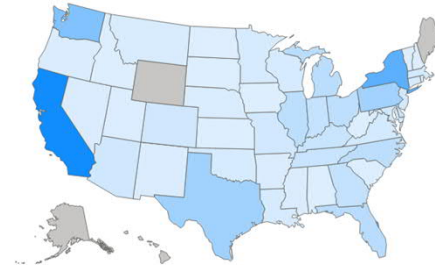
Map (Bubble)



Filled Map



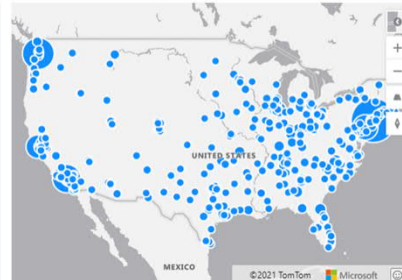
Shape Map



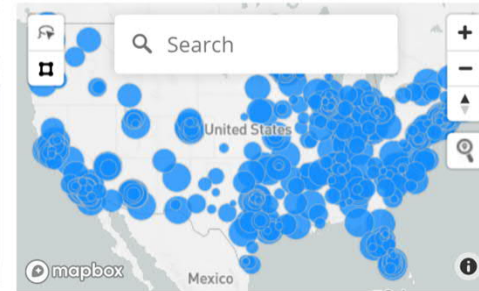
ArcGIS Map



Azure Map



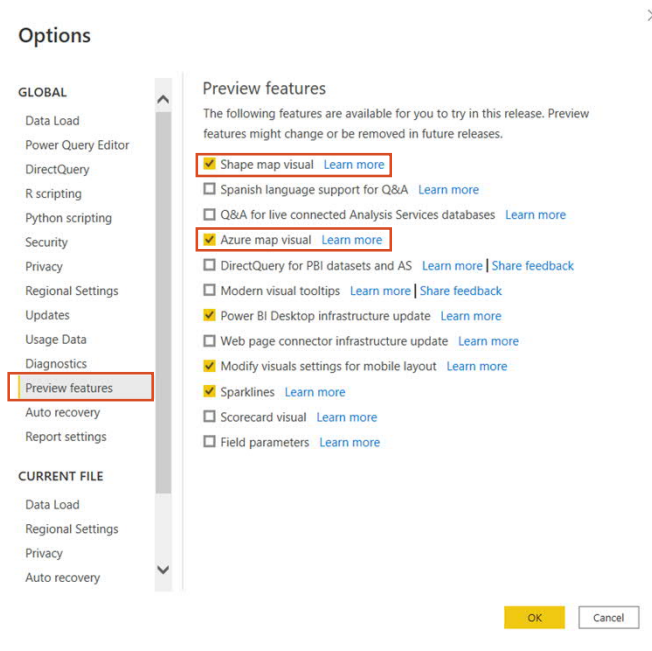
Mapbox



GIS to Power BI

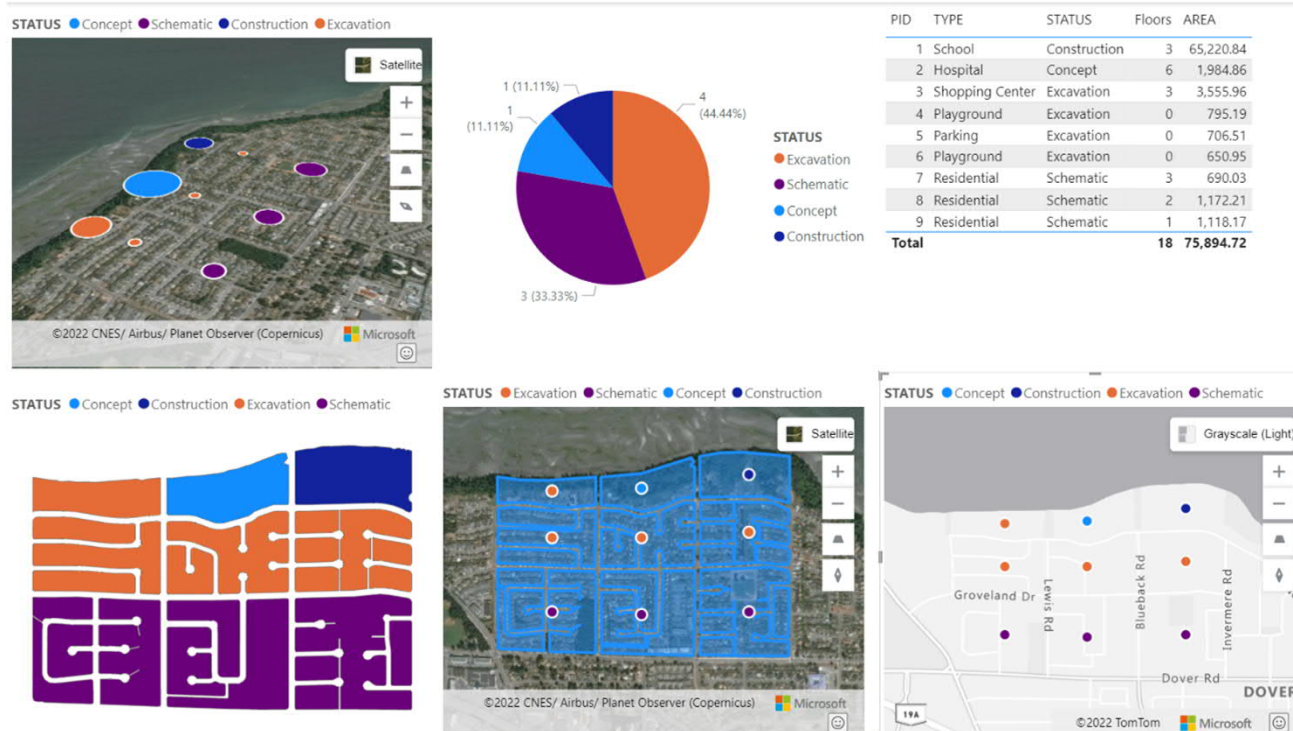
GIS Power BI Visuals

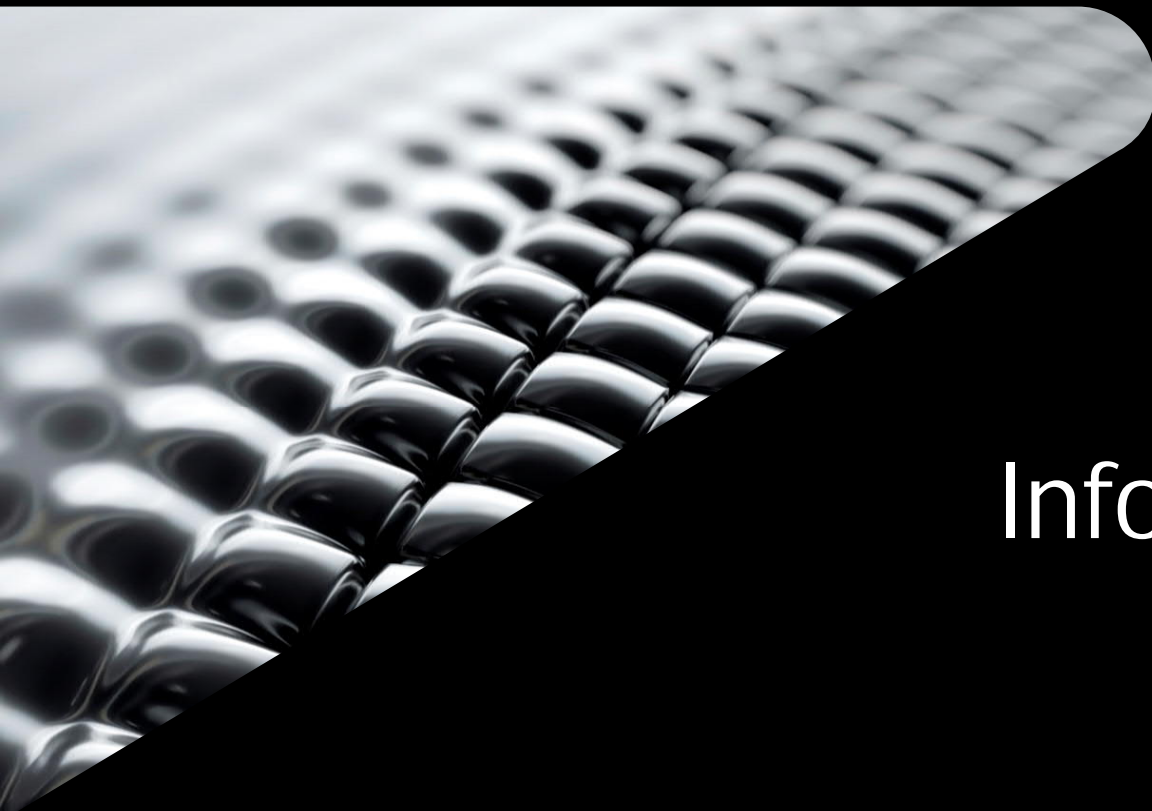
- In Power BI, enable Shape map and Azure map visuals



GIS to Power BI

Example





Information Center

Information Center











+ New ▾ Send to ▾ Page details

Draft saved 01/08/2022 Edit Publish ↗



AU_Test

 Elashmawy, Mostafa
Senior BIM & GIS Manager

Controls

- | | |
|--|---|
|  Demolition Status |  Existing Plot Status |
|  Plots Regulation Sheet |  Construction Status (WIP) |
|  Cost Control |  H&C NOC Status |
|  Permits Status (WIP) |  Archaeological Sites Status |

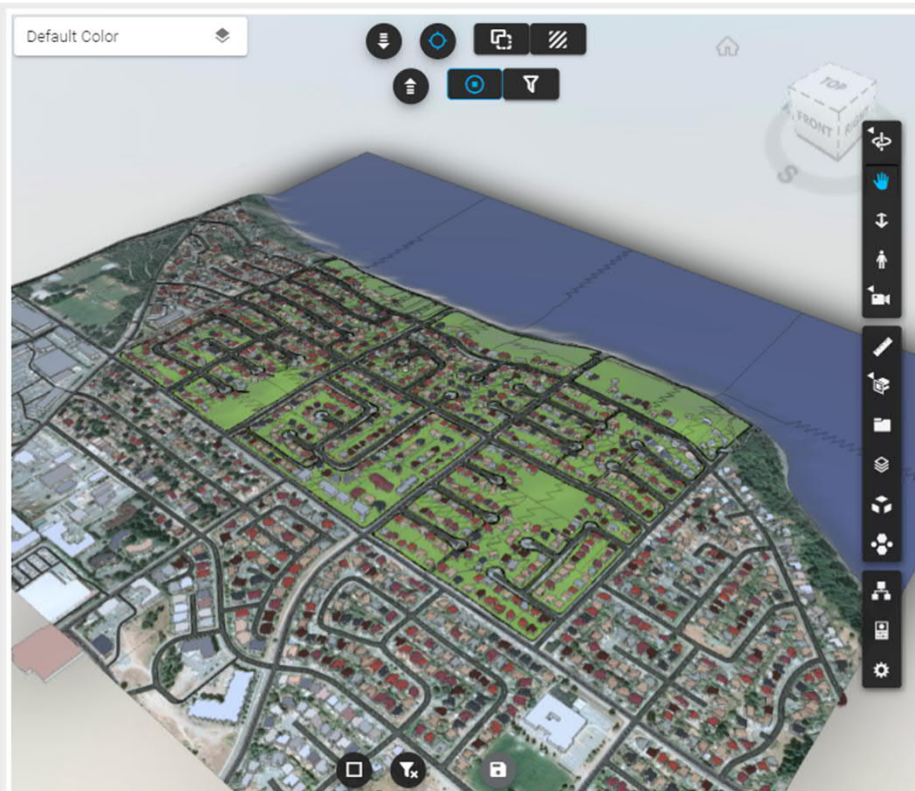
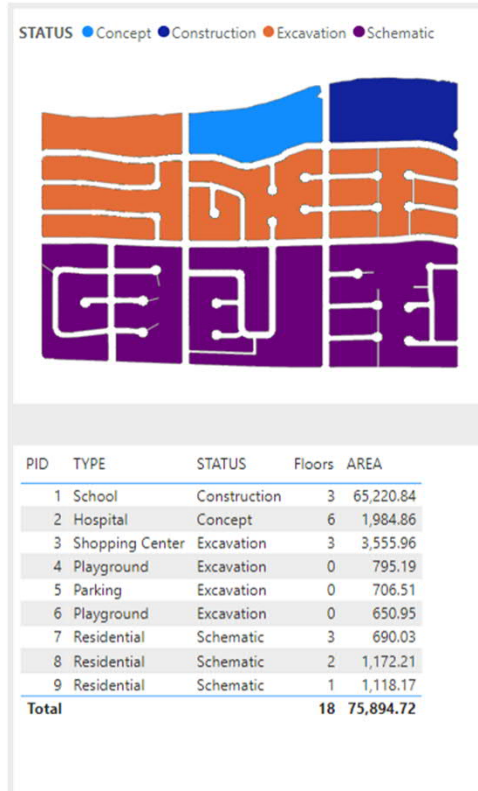
BIM Dashboards

- | | |
|---|---|
|  BIM Status |  Design Status (WIP) |
|  Common Data Environment |  Federated Model |

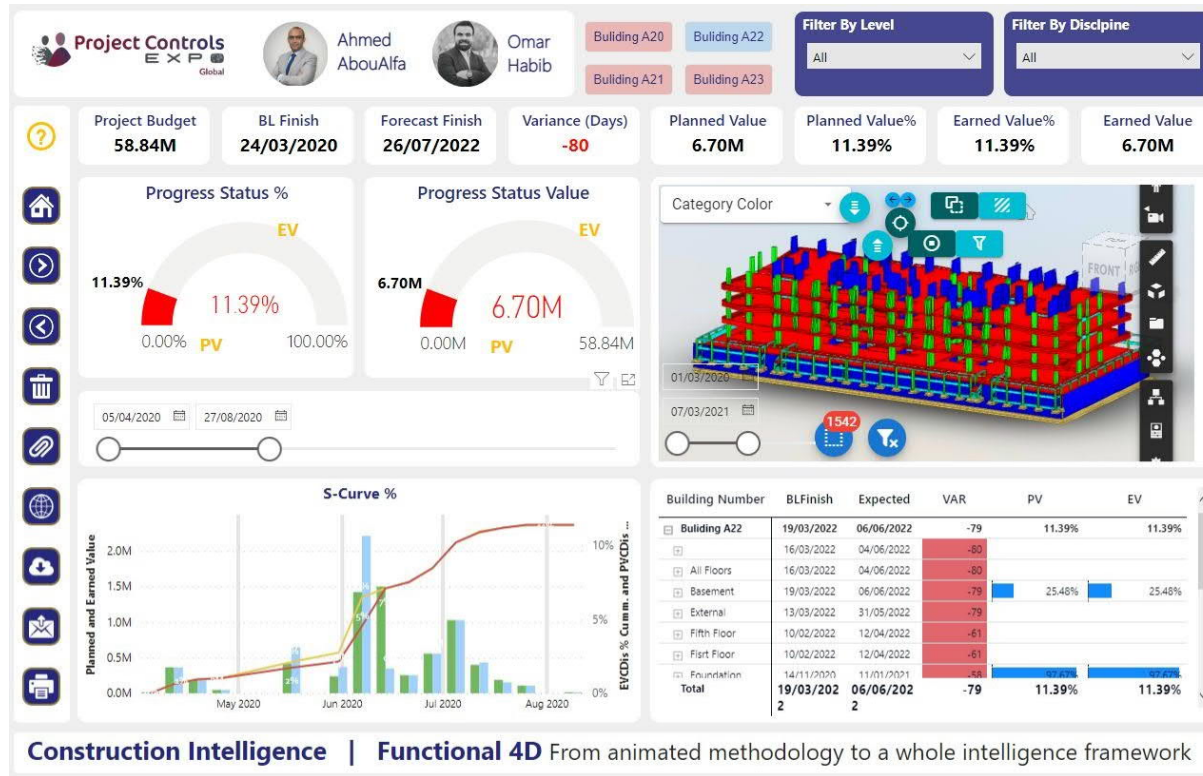
Construction Progress Dashboards



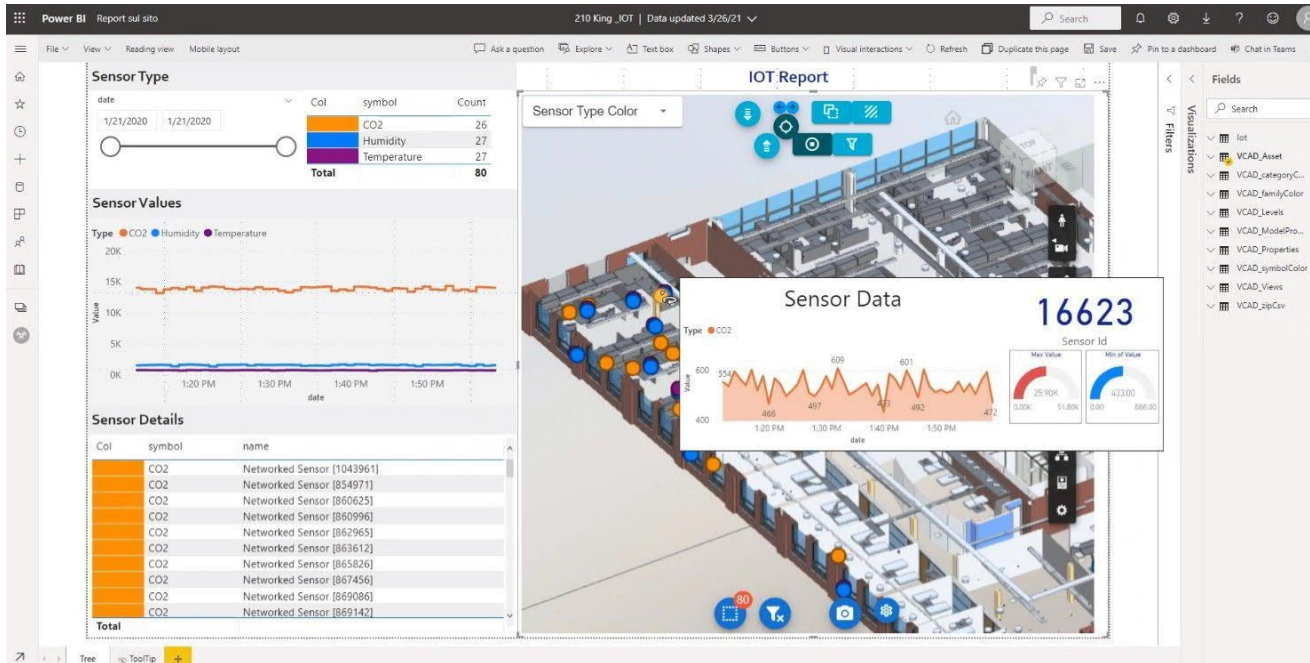
BIM & GIS Integration Dashboards



Project Control Dashboard

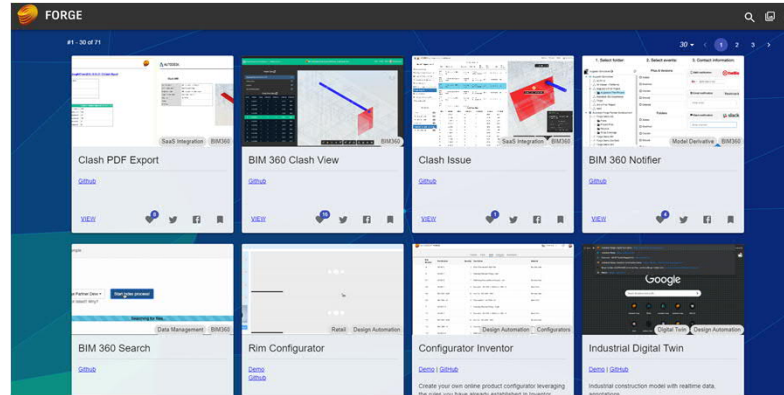


Digital twin Dashboard



Recommended Reading

- [Forge Showroom](#)



- [ArcGIS Dashboards](#)

Dashboards are for everyone

There are many types of dashboards you can build with ArcGIS Dashboards. From all levels within an organization to the public, anyone can use them. Explore the many types below.



Strategic

Strategic dashboards help executives track key performance indicators (KPIs) and make strategic decisions by evaluating performance based on their organization's goals.

[Explore this dashboard →](#)

Tactical

Tactical dashboards help analysts and line-of-business managers analyze historical data and visualize trends to gain deeper understanding.

[Explore this dashboard →](#)

Operational

Operational dashboards help operations staff understand events, projects, or assets by monitoring their status in real time.

[Explore this dashboard →](#)

Informational

Informational dashboards help organizations inform and engage their audiences through community outreach.

[Explore this dashboard →](#)



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