AUTODESK. UNIVERSITY

CES469274 - Leveraging Autodesk \ Esri integration for Project Collaboration & Delivery

Micah Callough

Technical Director for AEC @Esri | micah-callough (LinkedIn)

Neil Wakeman

BIM Technology Lead @Wade Trim Group | neilwakeman (LinkedIn)

Adam Young

Sr. Project Manager @Wade Trim Group | adam-young-308049169/ (LinkedIn)

About the speakers

Micah Callough (Esri)

Micah is the **Technology Director for the Esri AEC sector**. He has a background in technology delivery based on his 25+ year career in AEC. During that time he has worked for two leading AEC firm across their Water, Infrastructure, Environment, Buildings and Global Digital Solutions (IT) business lines. Throughout this period, he has served as a GIS professional, a management consultant, project manager, a department manager, a technical leader, a technical sales leader, product manager, scrum master and a global IT director. His passion is transforming businesses using technology as a catalyst.

Neil Wakeman (Wade Trim)

Neil is the **Design Technology Lead for the Wade Trim Group**. His lifelong career in the AEC industry led him from humble beginnings as a Structural Designer to IT Administrator, Microsoft Certified Systems Engineer, Department Manager, Design Technology Manager, and even Manager of Innovation for many markets served within that time. Neil is also a Certified Autodesk Professional managing a team of people on how BIM, VDC, Reality Capture, AR/VR, GIS and more can complement each other via innovation and the latest technologies surround such. When he's not "geeking out" on all that, he's been known to be a closet musician and original music composer.

Adam Young (Wade Trim)

Senior Project Manager at Wade Trim. Adam is committed to improving the quality of life within a community through a responsible, creative, and citizen-focused approach to the management of land and resources. His experience includes long-range master plans, recreation plans, downtown plans, neighborhood studies, and corridor studies. Adam’s emphasis on the creation of user-friendly products featuring easily understood language, attractive graphics, and relevant mapping, has proven to be an asset for many client communities and their citizens.

Agenda

01 Why BIM and GIS?
Including C3D and Revit

02 Understanding the Platforms
ArcGIS and BIM360

03 Connected Data Environments
Bridging the gap between workflows

04 Why Location Matters
Why including location in design matters

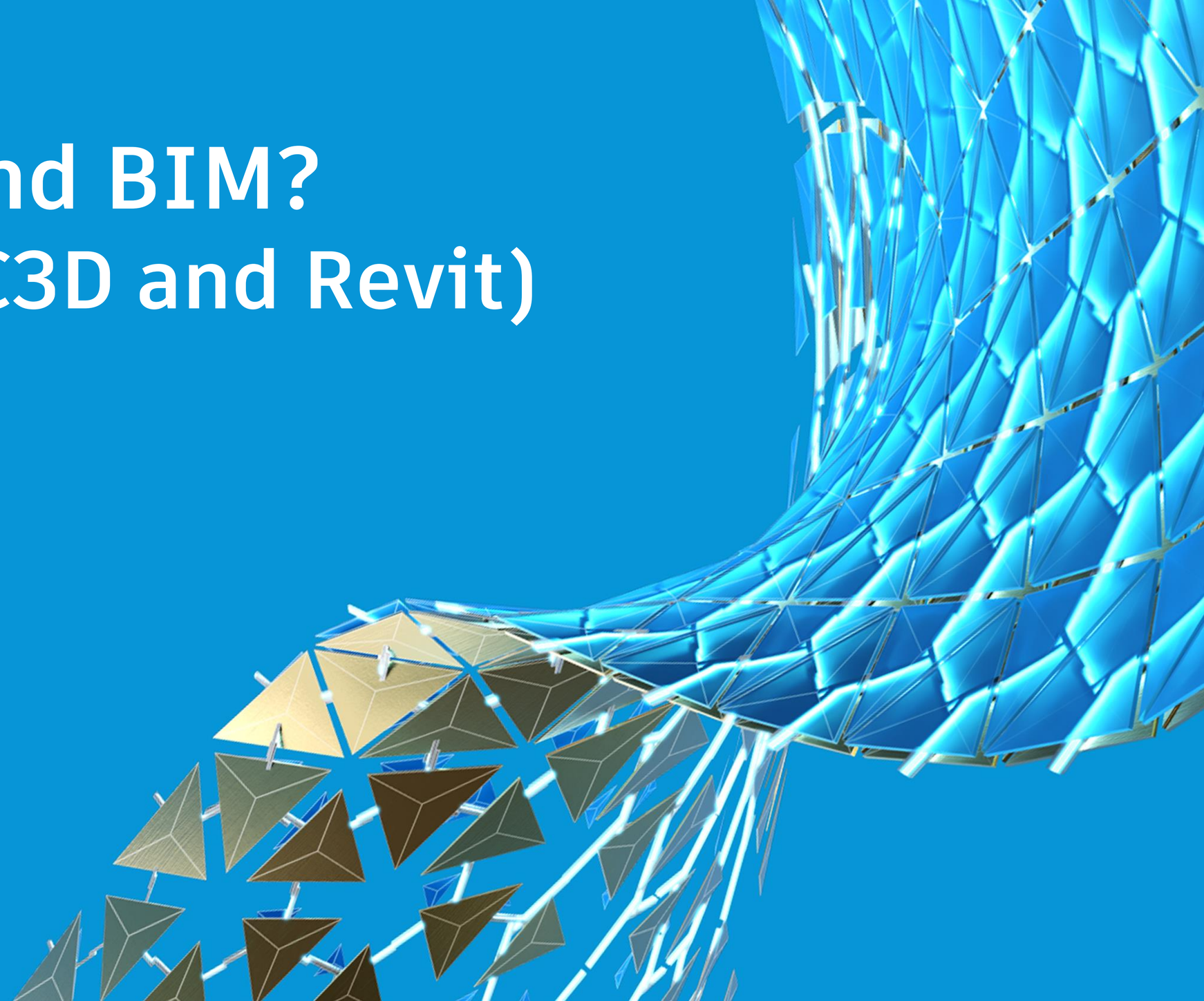
05 Setting and Wining Work
Leveraging location to support your work

06 Collaboration
Geospatial 2 Design Engineer + Field

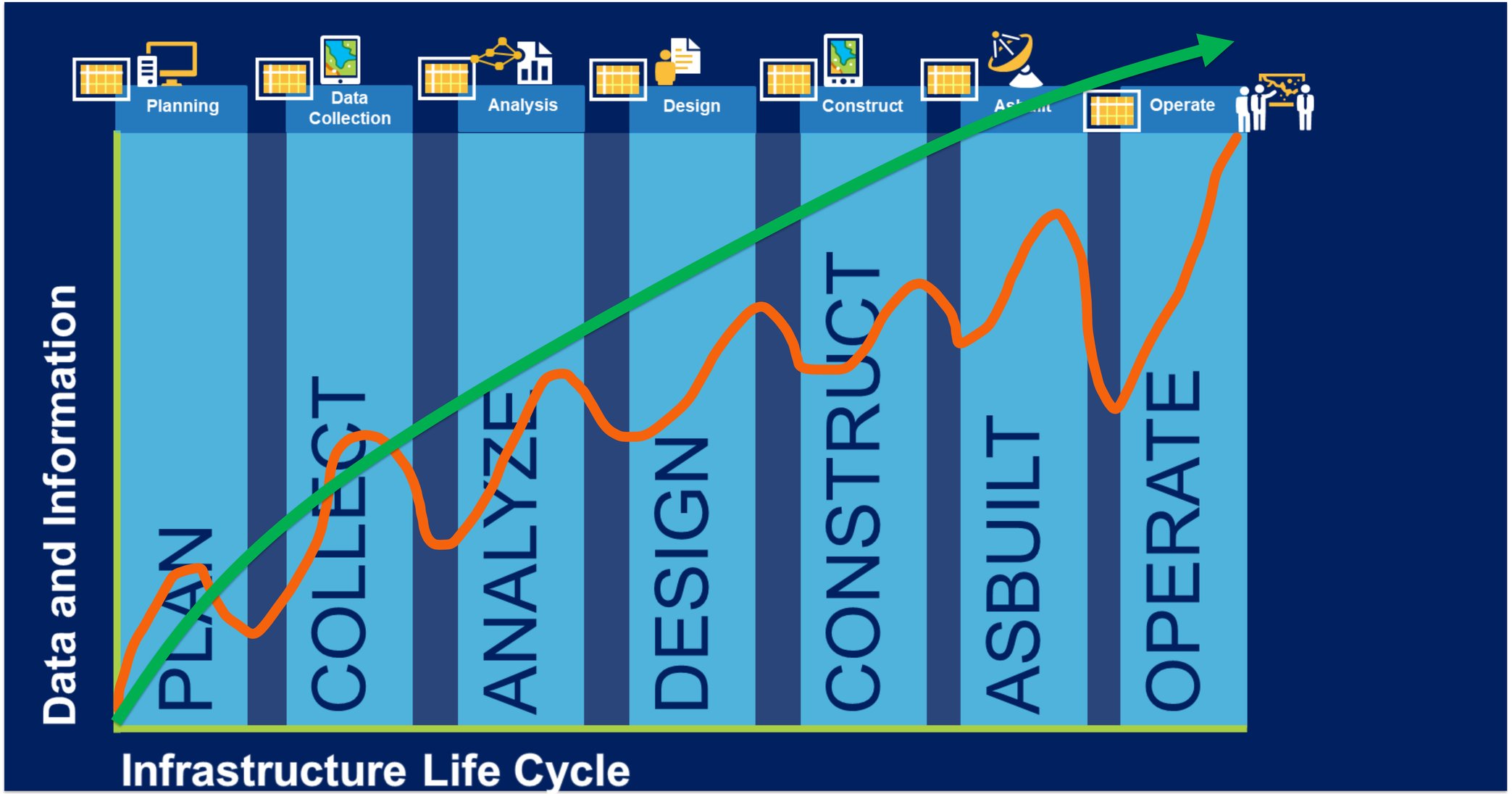
07 Collaboration
Design Engineer to Geospatial

08 Finish the Story
A real world example

Why GIS and BIM?
(including C3D and Revit)

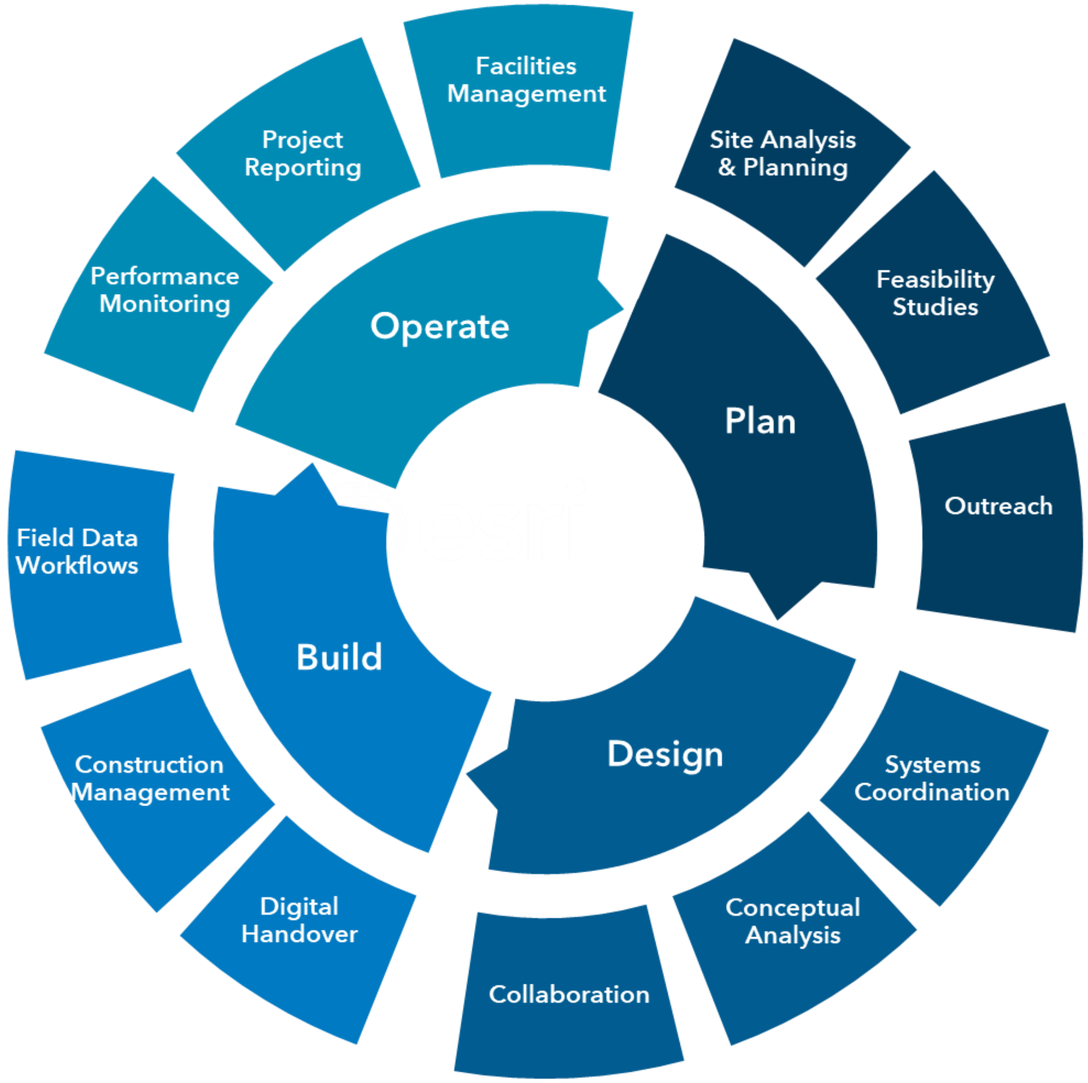


Information Loss is Commonplace



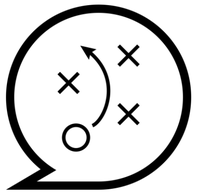
Silos are the result!

Typical or Traditional Workflow



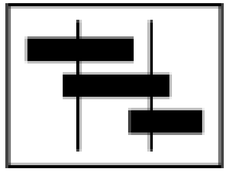
Other AEC Workflows

Examples



Consulting & Advisement

- Strategic Environmental Services
- Water Advisement
- Mobility
- Operational Efficiency
- Asset Management
- Financial Advisement
- Supply Chain
- Security
- Compliance



Project or Program Mgmt.

- Work Planning
- Resource Management
- Supply Chain Mgmt.
- Portfolio Management
- Oversight
- Contracting
- Coordination

Field Operations

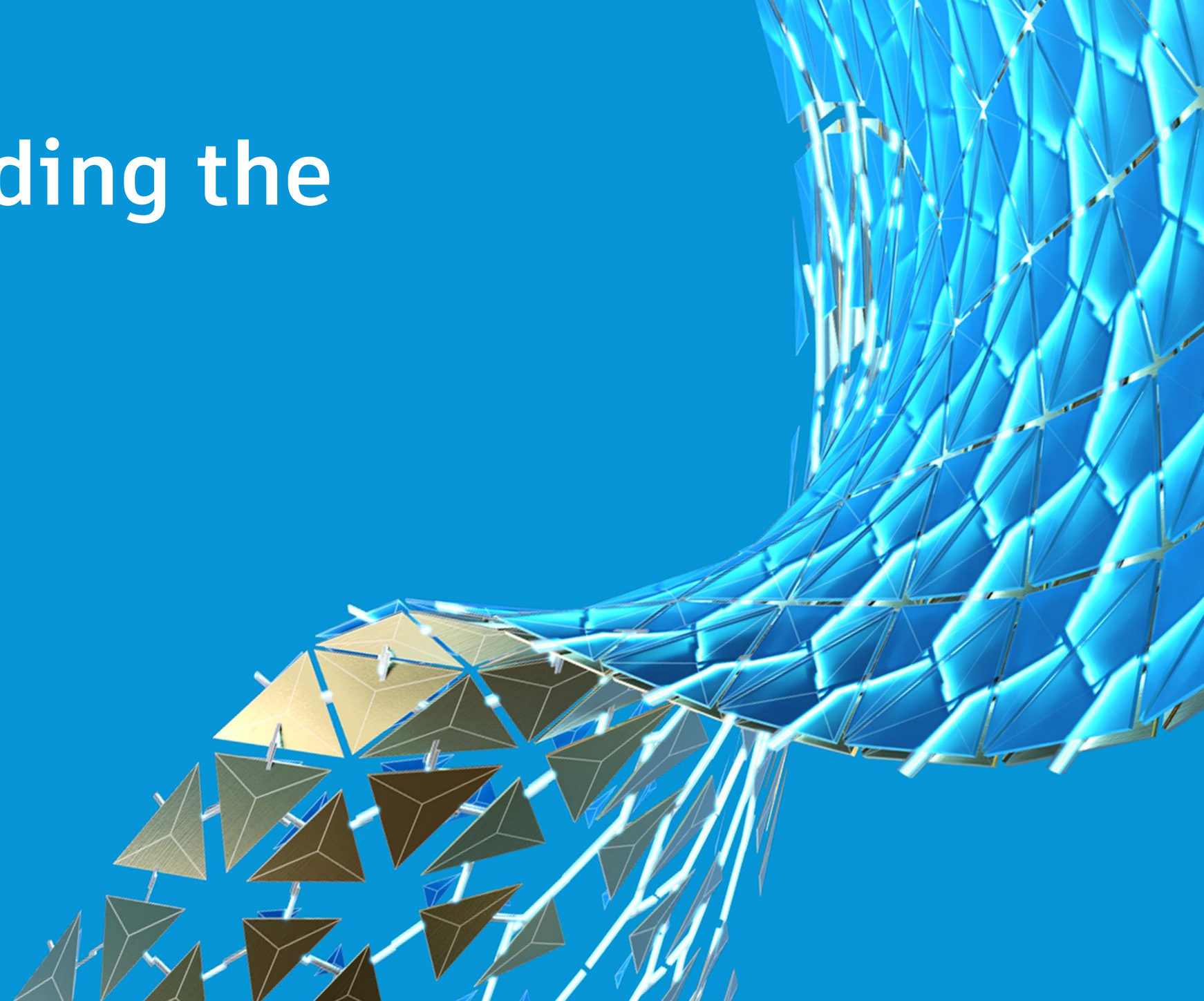
- Asset Inventory
- Field Workflow Tracking
- Resource Tracking
- Field Verification
- Routing
- Remote Sensing \ Reality Capture

Solutions

- Problem Solutions
- Technology Oriented
- Repeatable and Scalable
- Revenue Generators

And potentially many more as AEC evolves…..

Understanding the Platforms

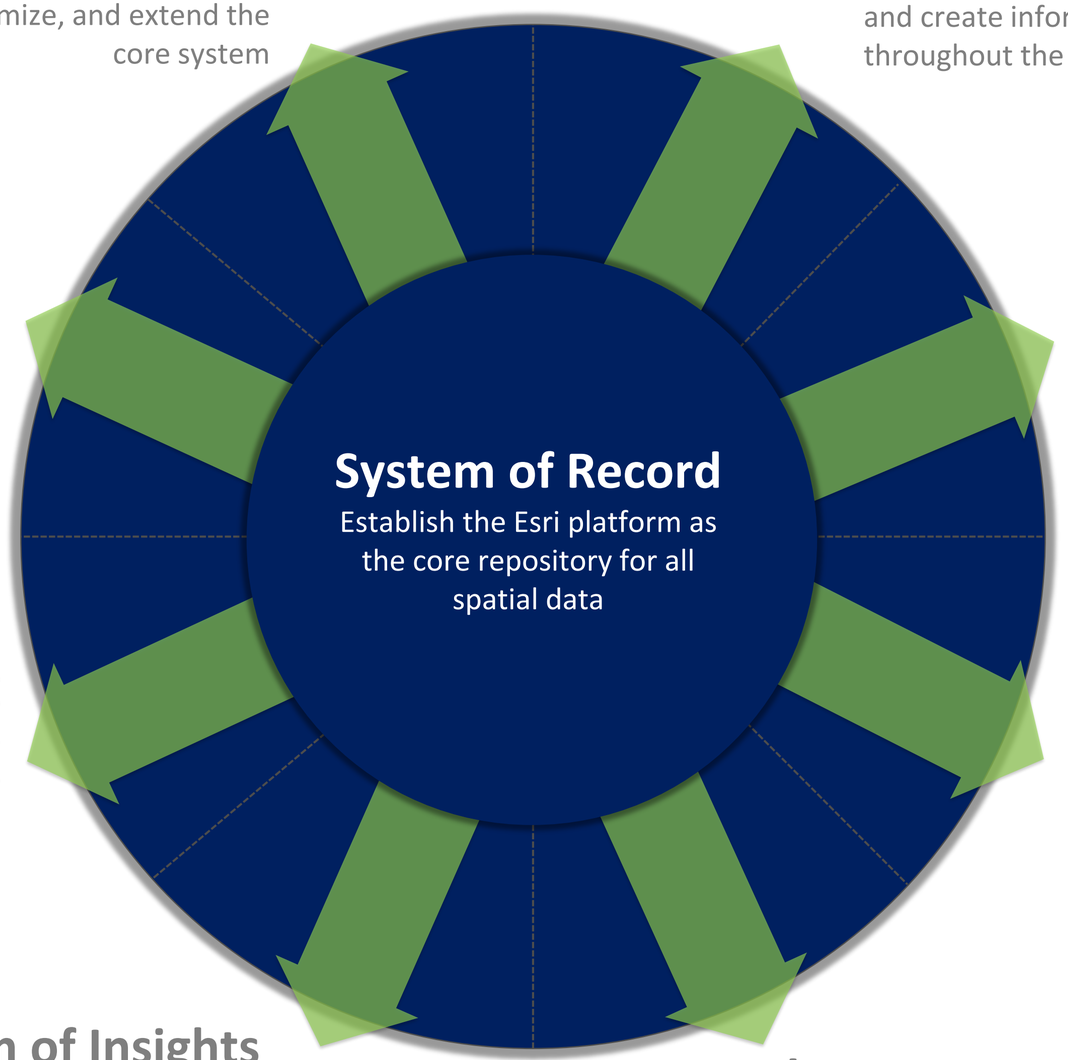


The ArcGIS Platform

Developers
Integrate, customize, and extend the core system

Desktop
Professional GIS users develop, manage and create information products used throughout the organization

Big Data GeoAnalytics
Analyze your historic spatial and non-spatial data



System of Engagement
Maps and apps for everyone on any device, anywhere, anytime.

Real-time Tracking
Capture, analyze, and alerting of device readings for fixed and mobile assets

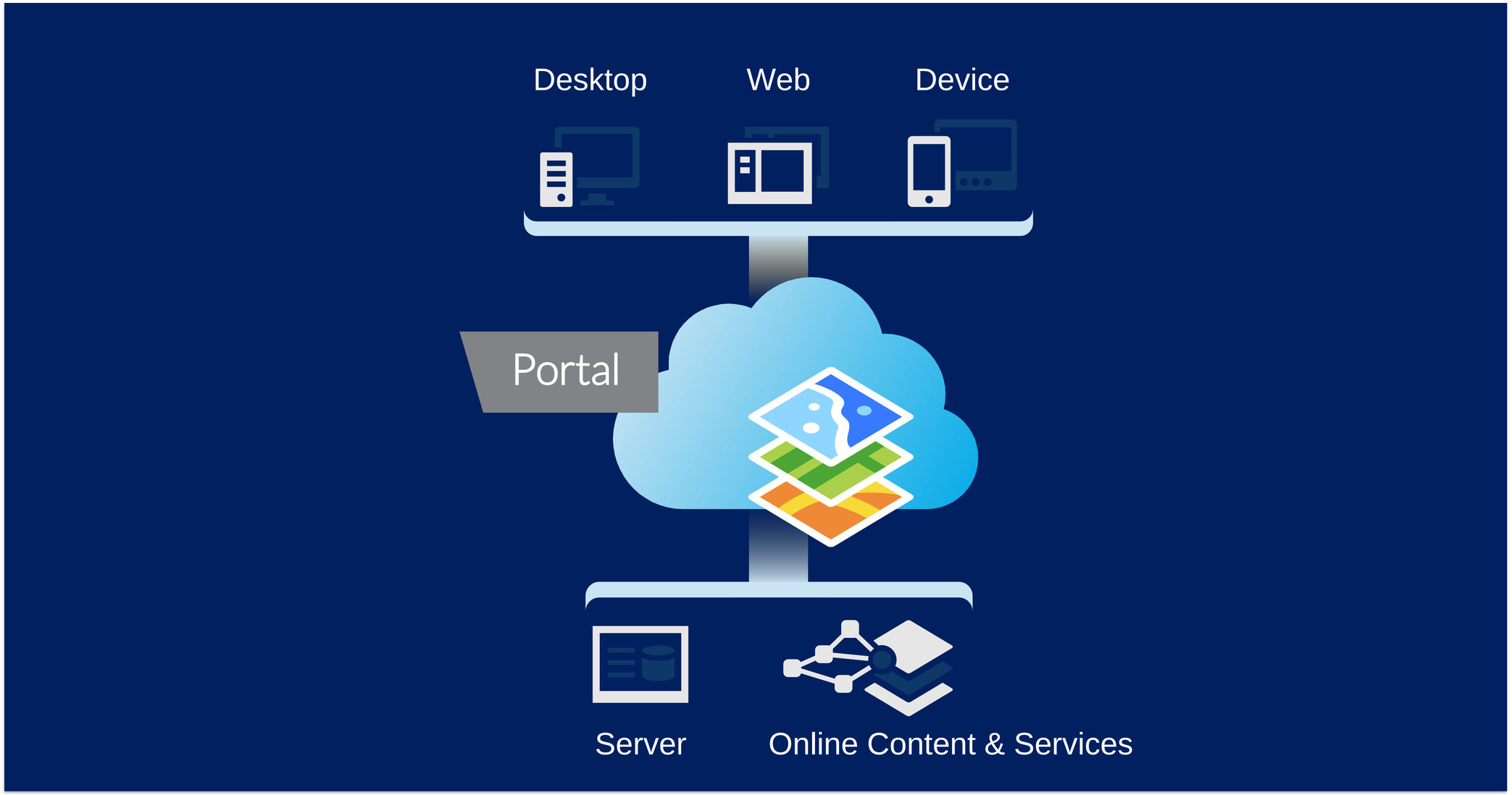
Field Mobility
Inspect, Inventory, Survey and Report on all aspects of your business

System of Insights
Interactive exploration and analysis of spatial, tabular, and unstructured data

Imagery
Visualize, Manage and Analyze Imagery from every source

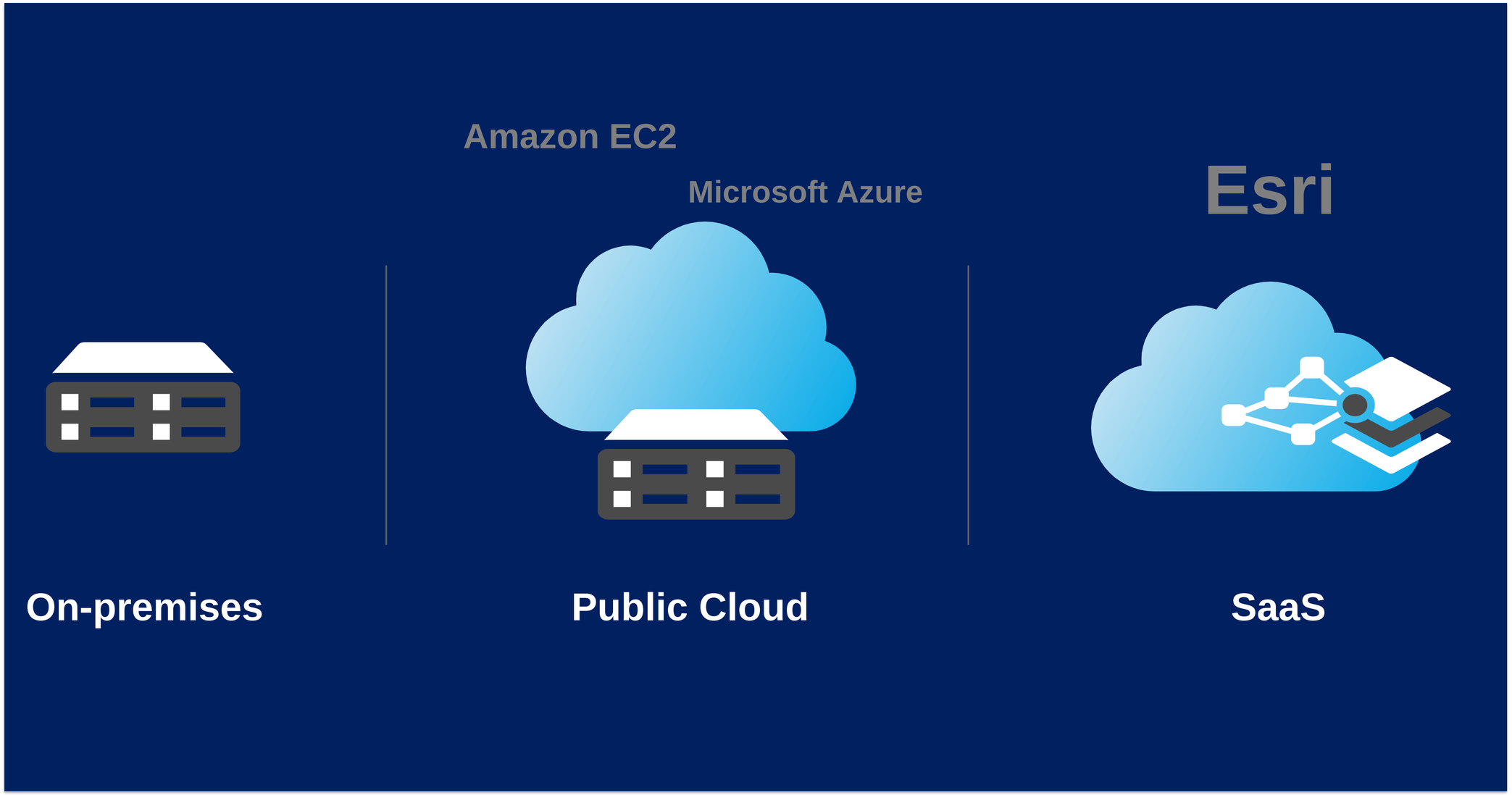
ArcGIS – An Integrated Web GIS Platform

Providing Mapping, Analysis, Data Management, And Collaboration



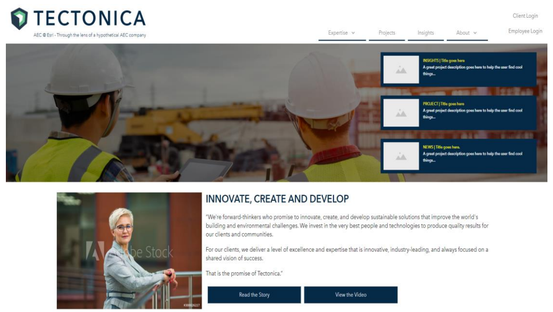
Flexibility to Deploy

Deploy ArcGIS **On-Premises**, in **Public Clouds (PaaS),** and/or use **Esri's Cloud (SaaS)**

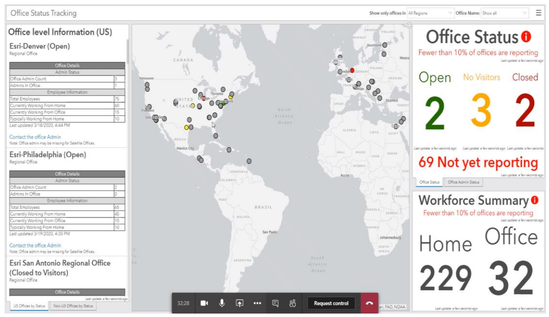


Common themes of the ArcGIS Platform….

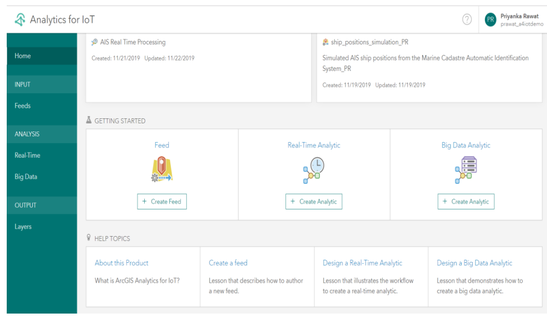
Centralized Portal



Focused Delivery



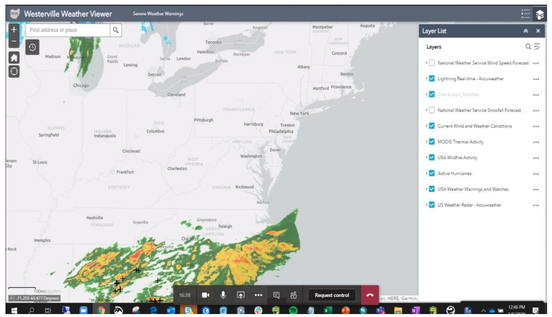
Informative Dashboards



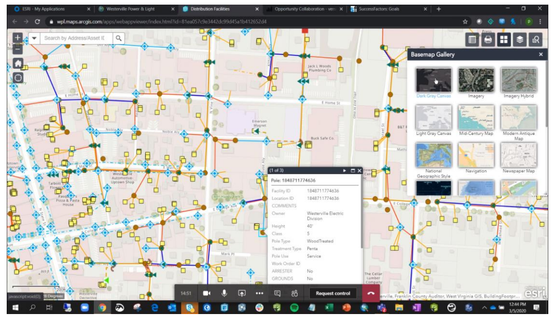
IoT Analytics

3D Visualization

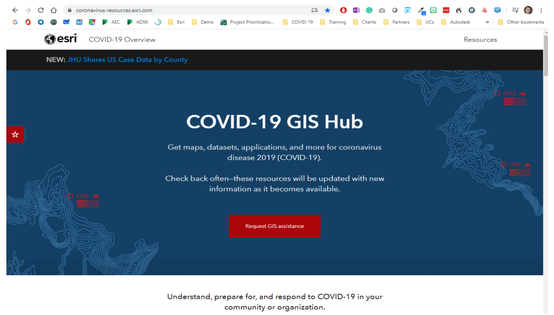
Urban Planning



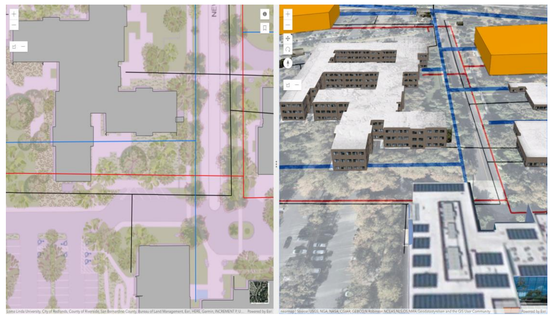
Focused Apps



Asset Operations



Public Outreach

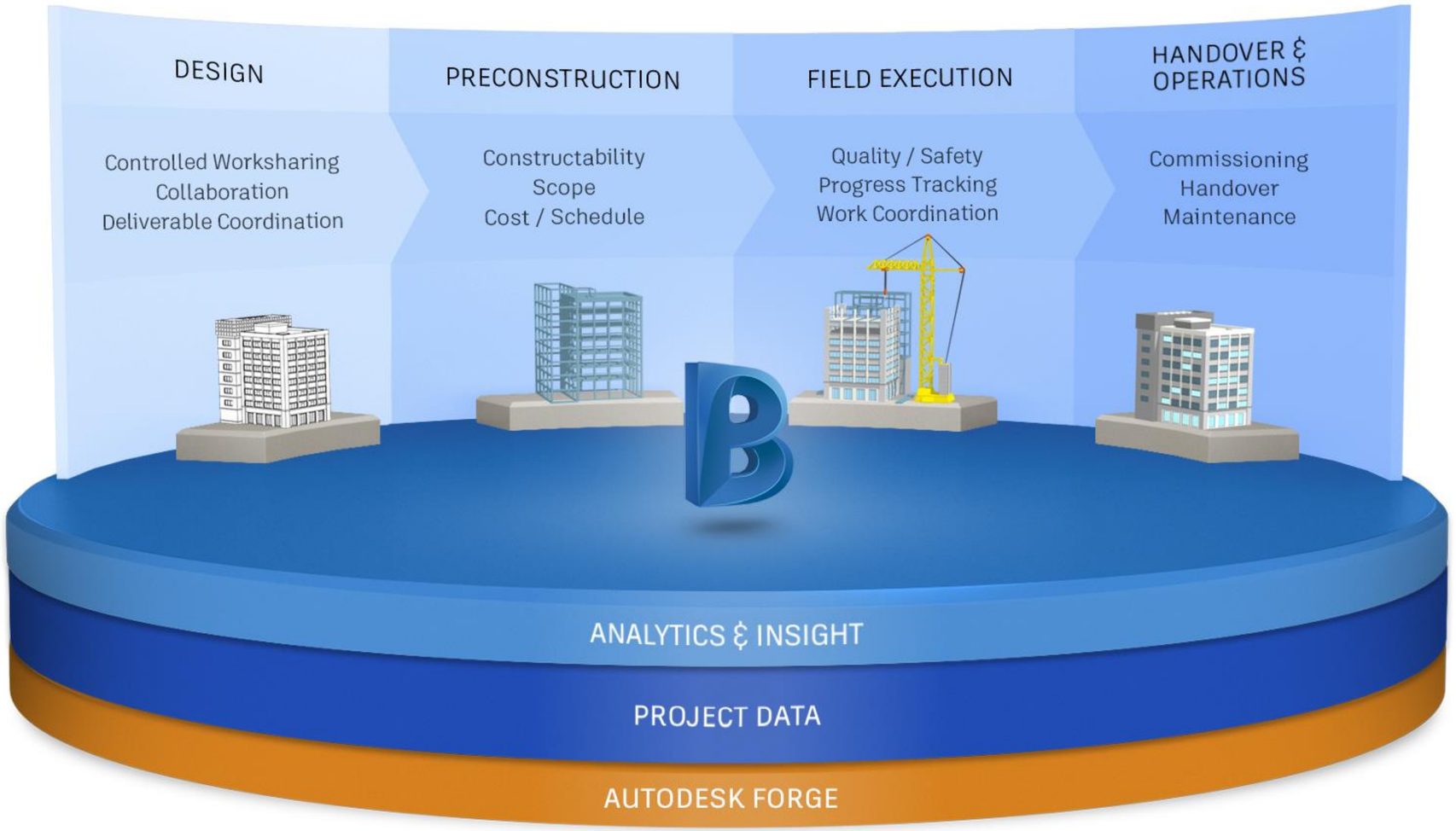


Collaborative Hubs

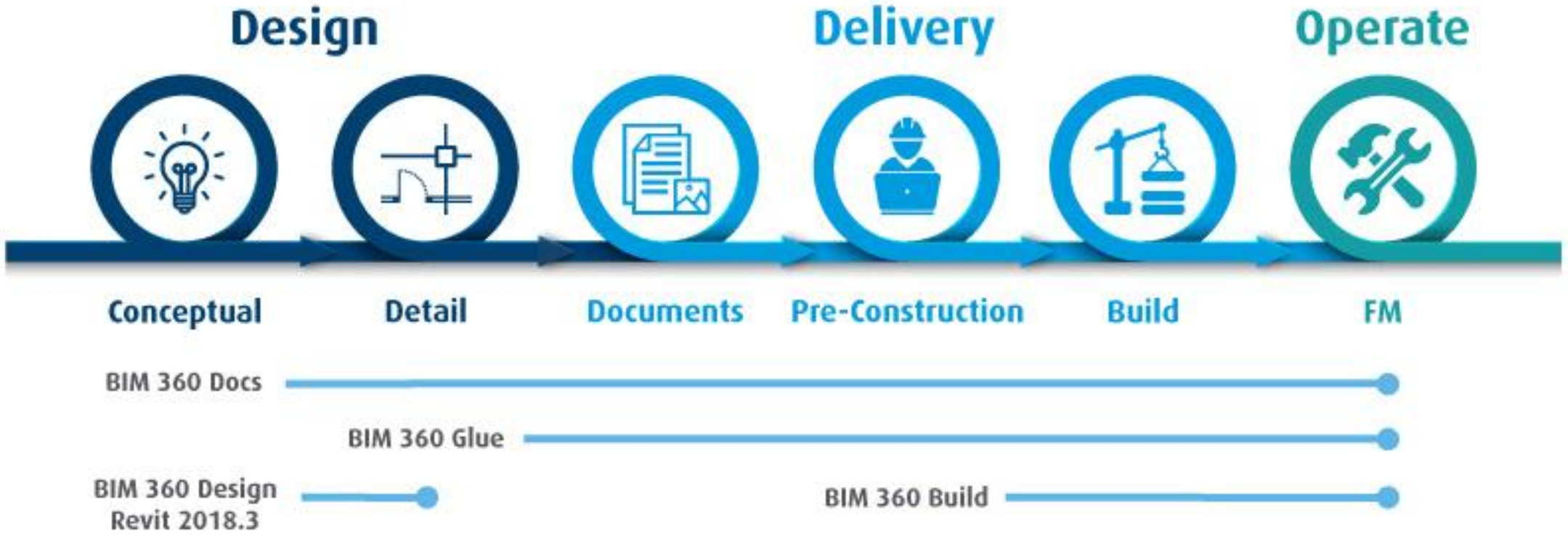
Drone Collection

Field Operations

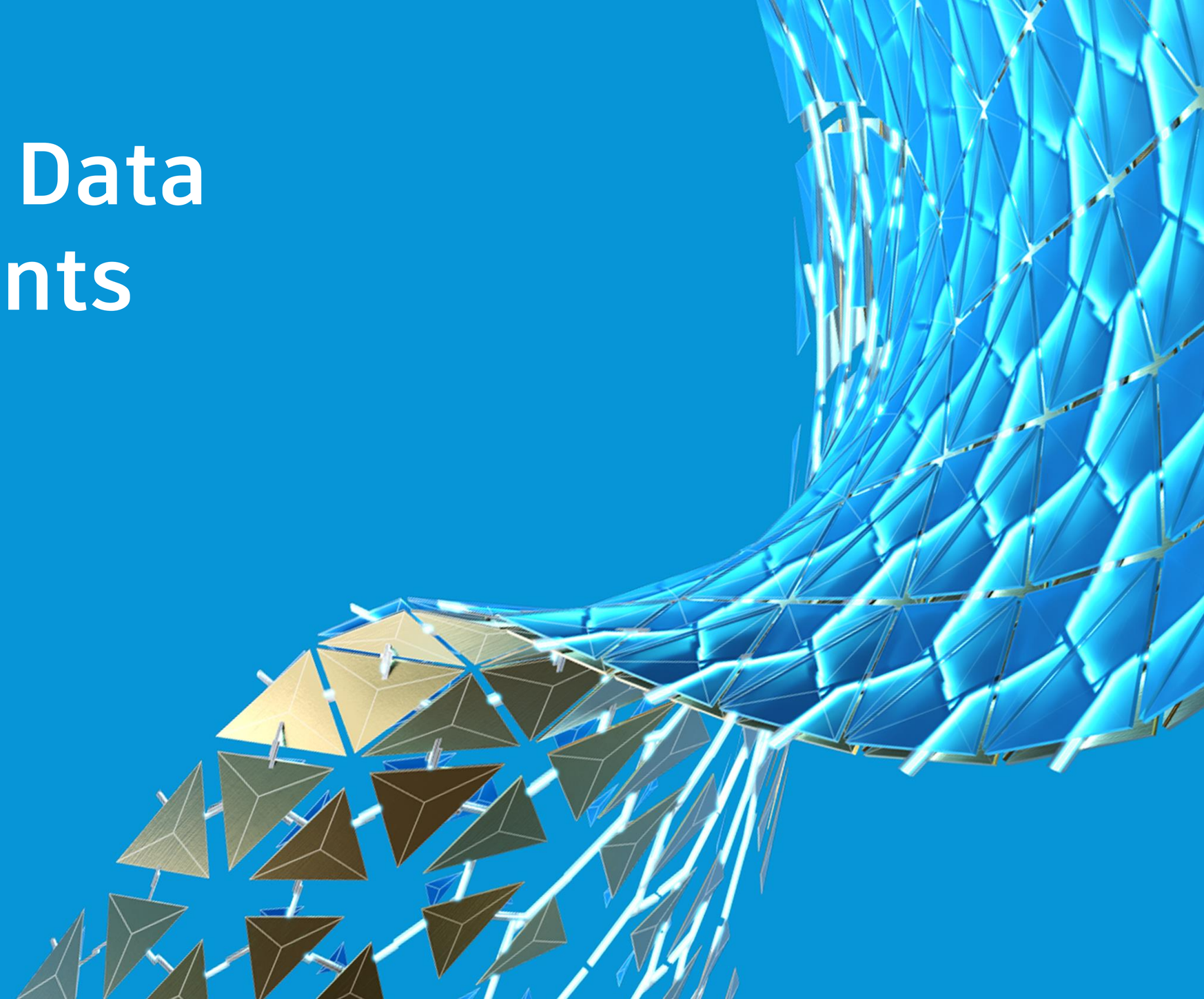
BIM360


DESIGN
Controlled Worksharing
Collaboration
Deliverable Coordination
PRECONSTRUCTION
Constructability
Scope
Cost / Schedule
FIELD EXECUTION
Quality / Safety
Progress Tracking
Work Coordination
HANDOVER & OPERATIONS
Commissioning
Handover
Maintenance
ANALYTICS & INSIGHT
PROJECT DATA
AUTODESK FORGE

BIM360 Detailed Workflow



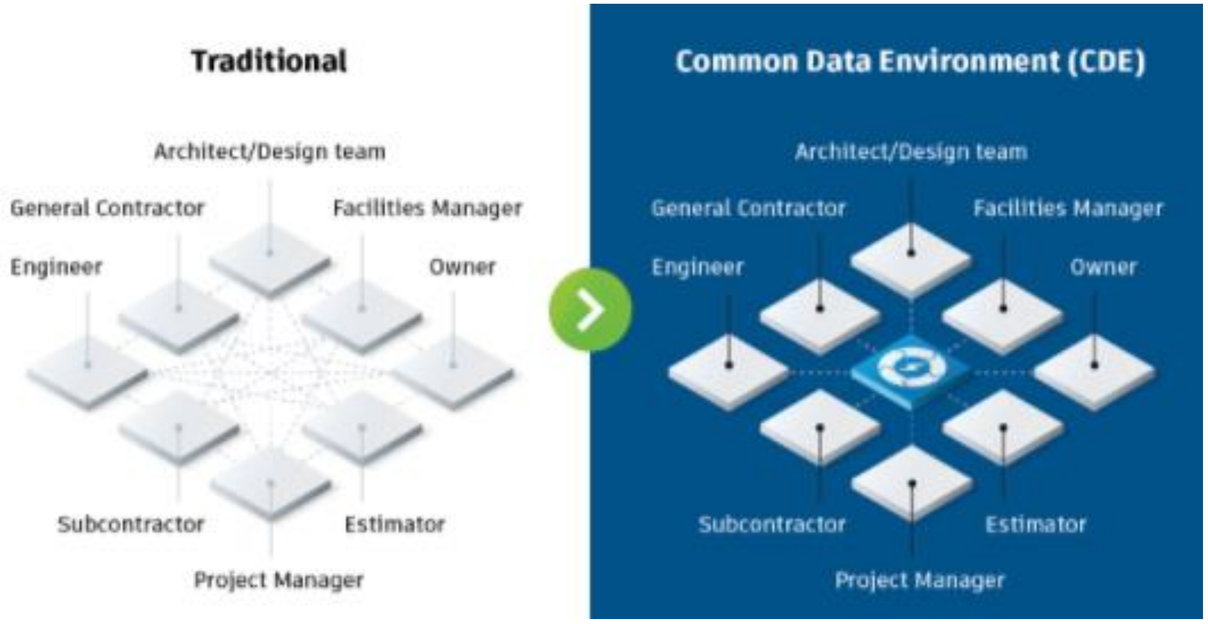
Connected Data Environments



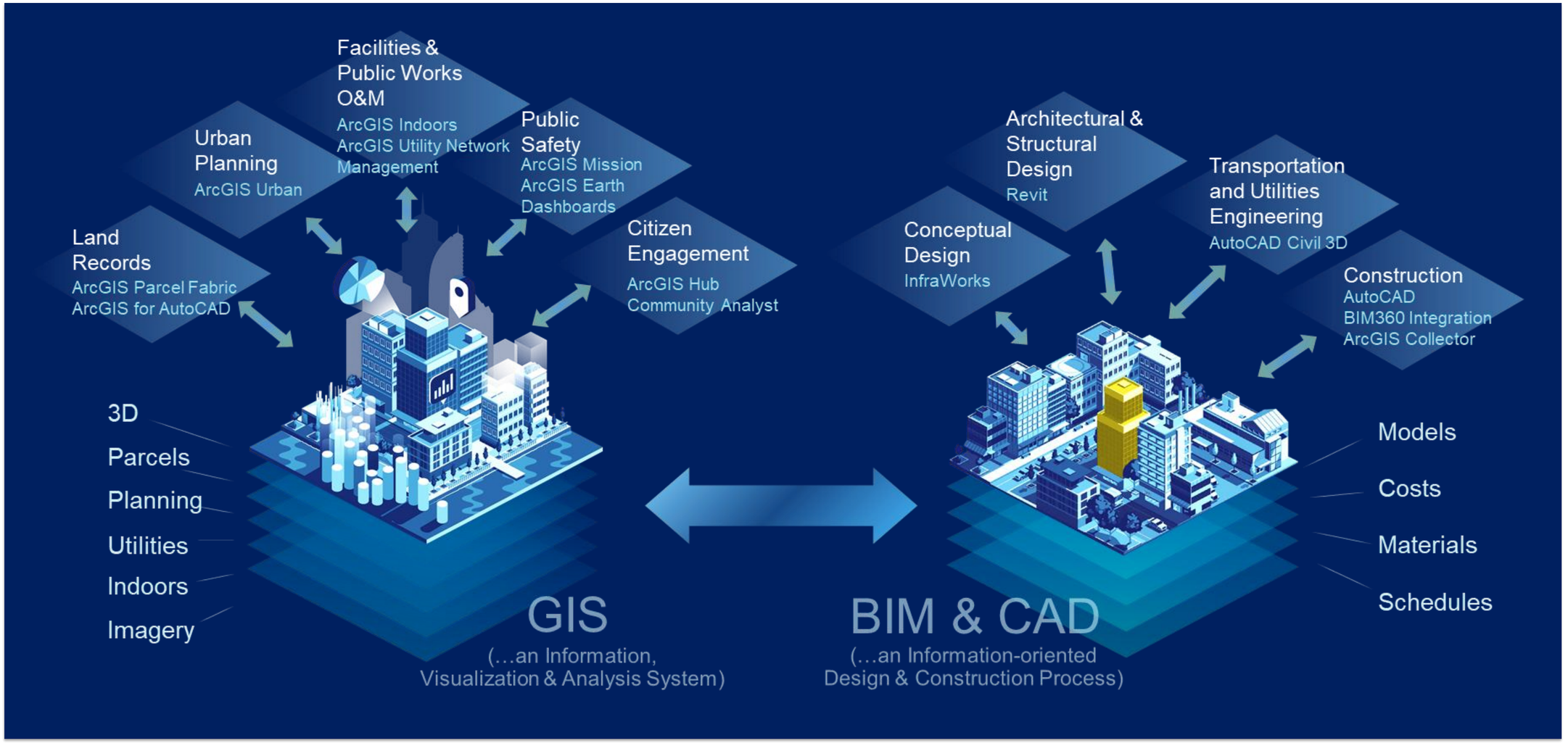
Connecting the dots through word!

AUTODESK.

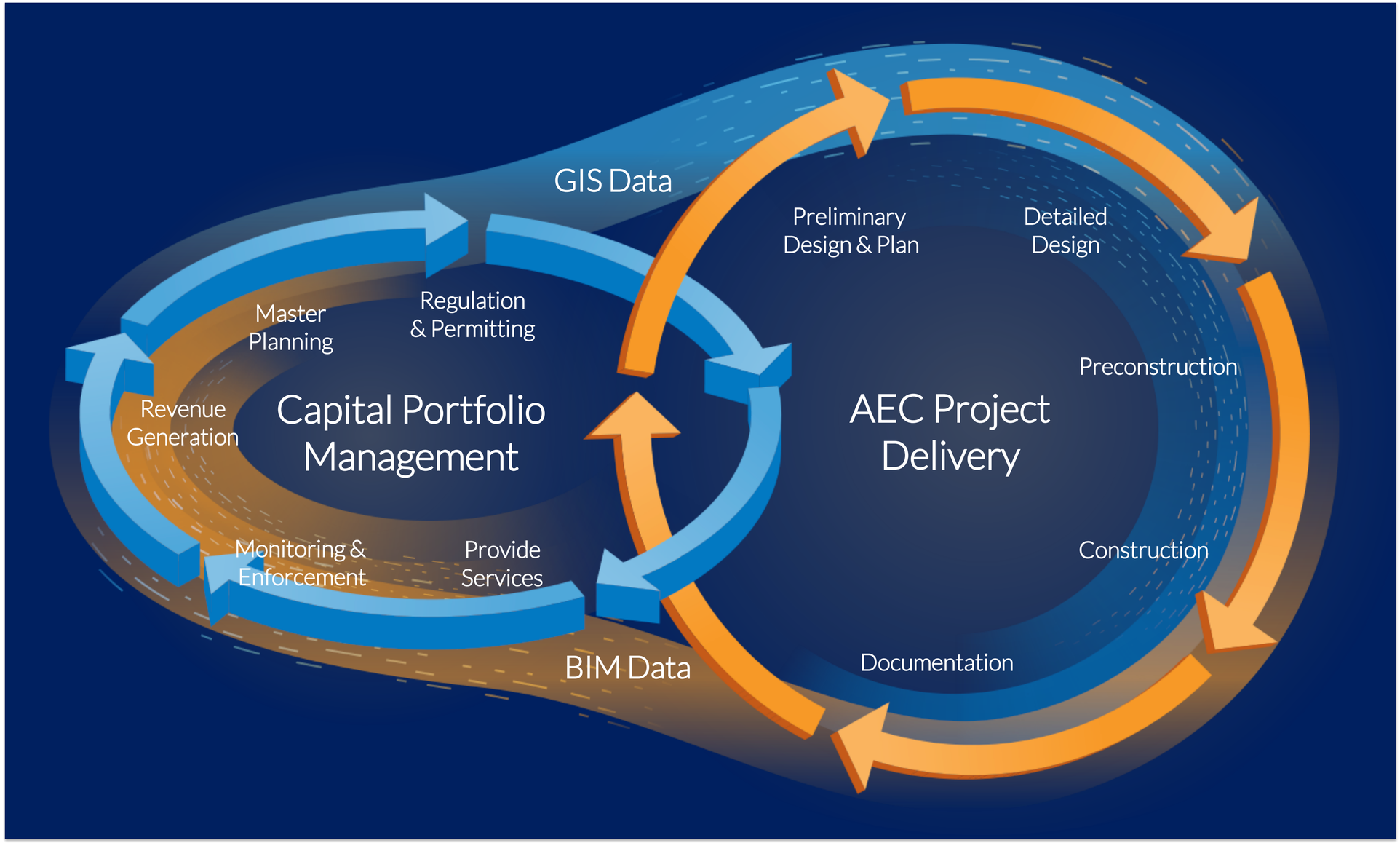
esri®



Connected Data Environment



Built World - Natural Flow

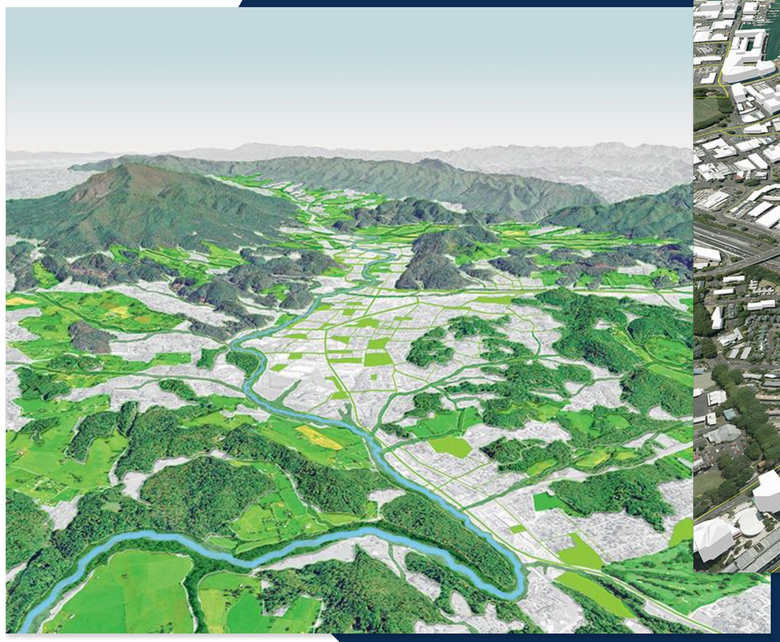


Designing with Nature

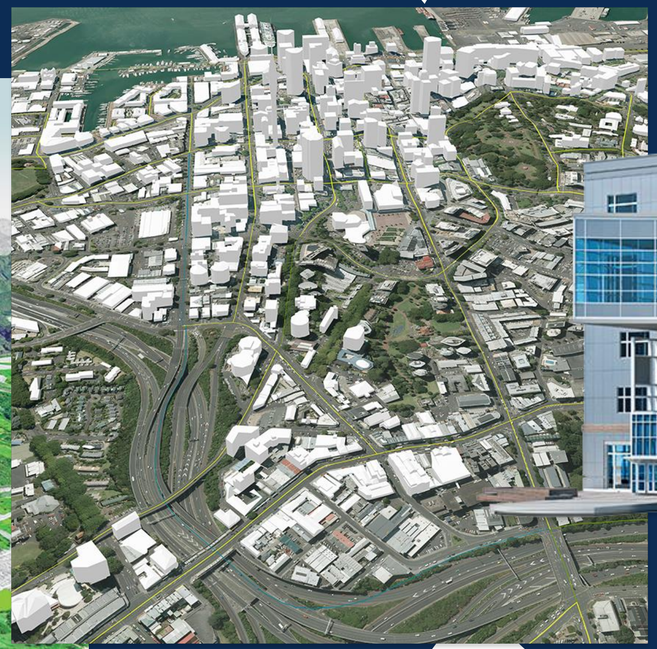
Requires an Integrated and Holistic Approach

Context

Content



Landscape Information Models

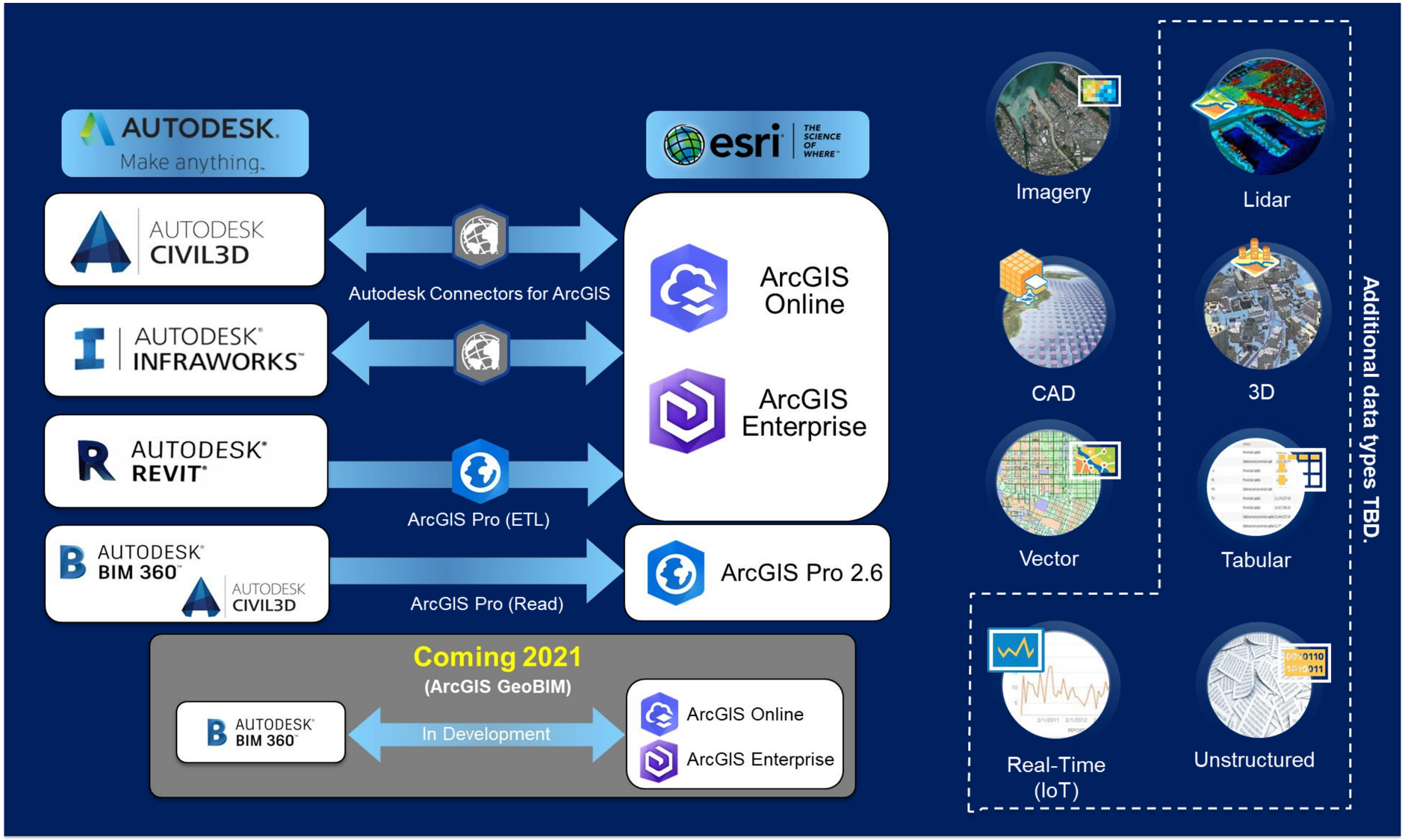


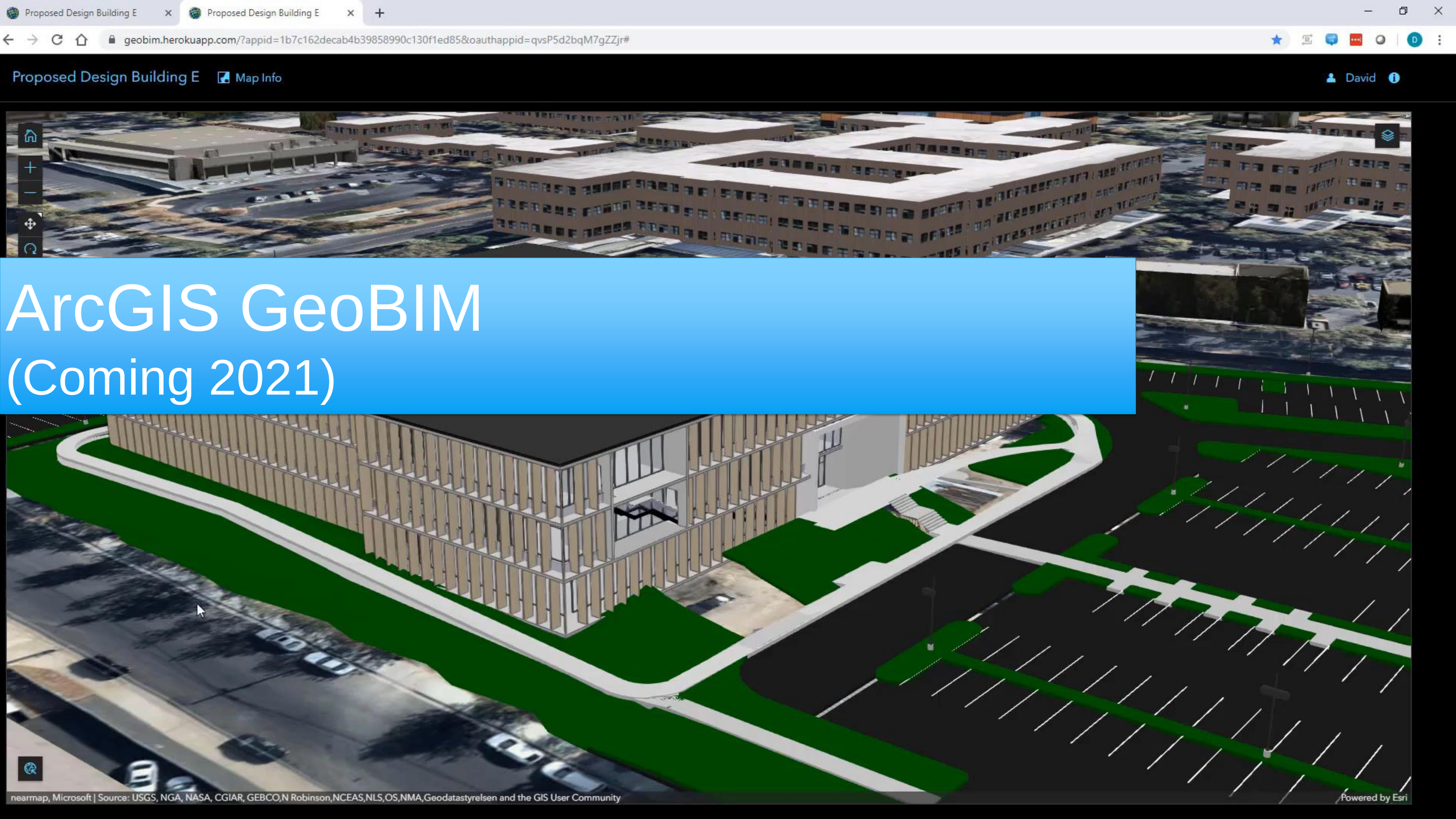
City Information Models

Building Information Models

Geography Provides the Common Language for Collaborating

State of the Integration




Proposed Design Building E
Proposed Design Building E
geobim.herokuapp.com/?appid=1b7c162decab4b39858990c130f1ed85&oauthappid=qvsP5d2bqM7gZZjr#
Proposed Design Building E
Map Info
David
ArcGIS GeoBIM
(Coming 2021)
nearmap, Microsoft | Source: USGS, NGA, NASA, CGIAR, GEBCO,N Robinson,NCEAS,NLS,OS,NMA,Geodatastyrelsen and the GIS User Community
Powered by Esri

Location is the Key!

Why does location matter?

Utilities
Infrastructure
Biology
Hydrology
Terrain
Land-use
Zoning
etc…

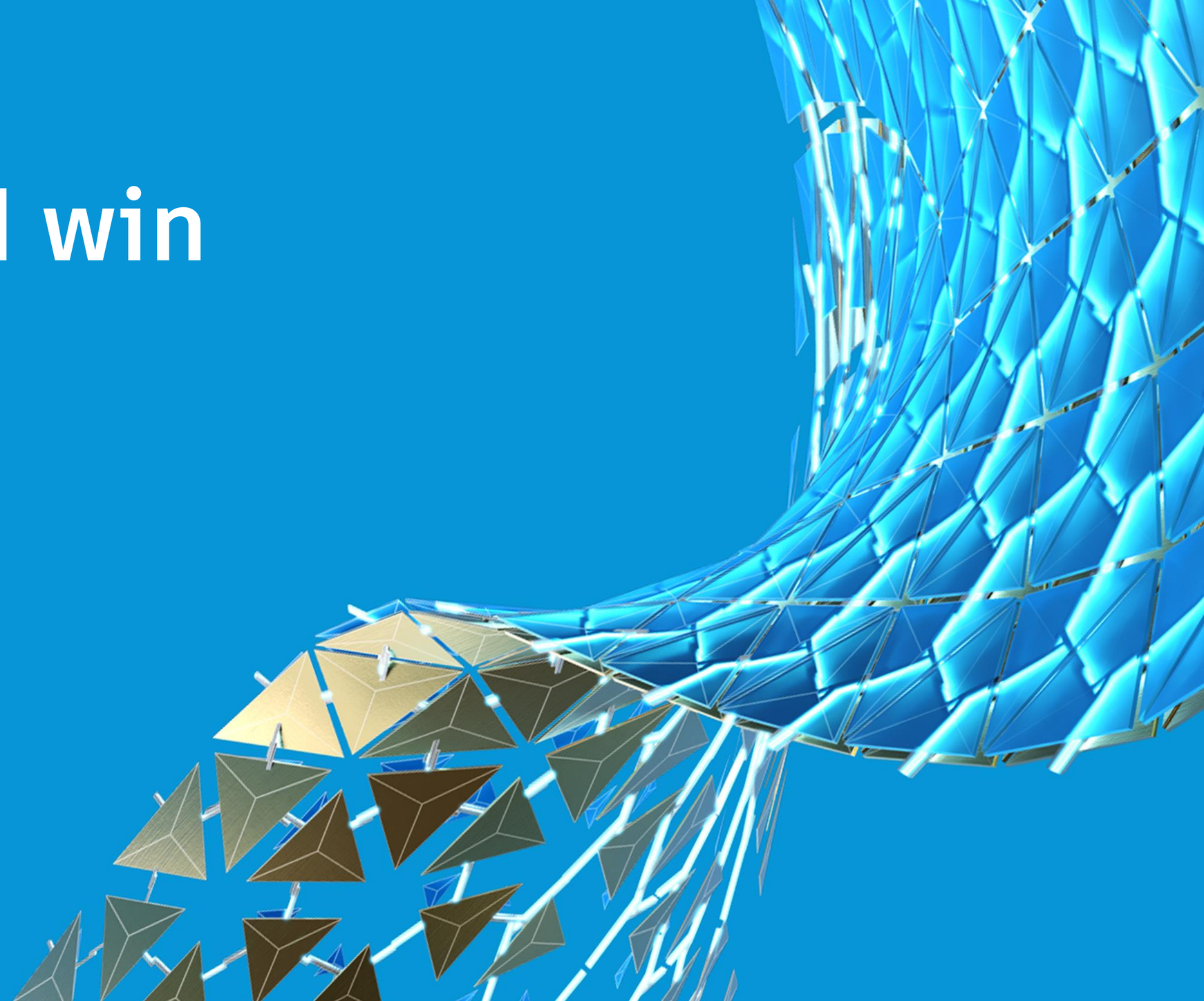
- Everything has location
- Location establishes relationships
- Location enables analysis
- Location dictates policy
- Location dictates behavior and design

How to Establish Location

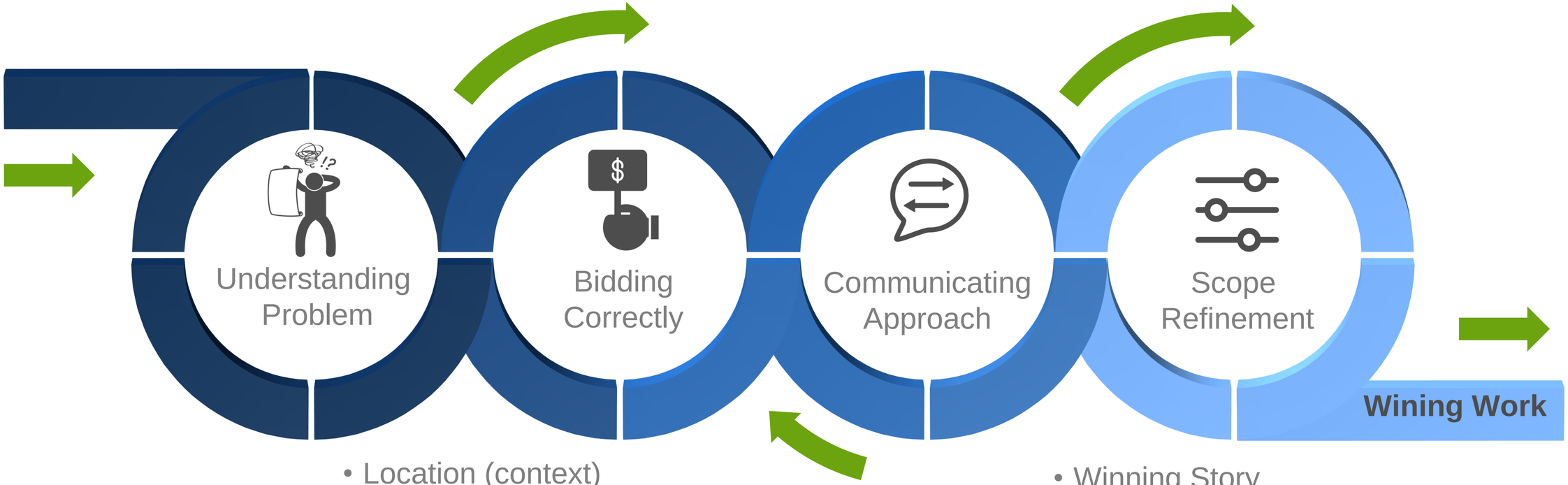
- Coordinates (X, Y \ Lat. Long.)
- Measure (milepost, bearing and distance)
- Geocoding (address, intersection, what3words, etc.)

Not model space or paper space!

Setup and win



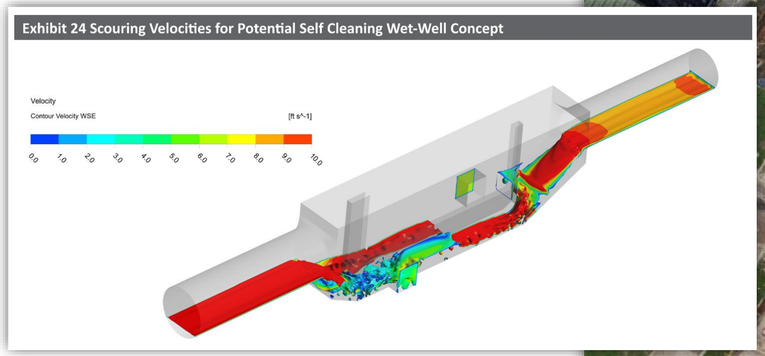
Business Problem to Solve

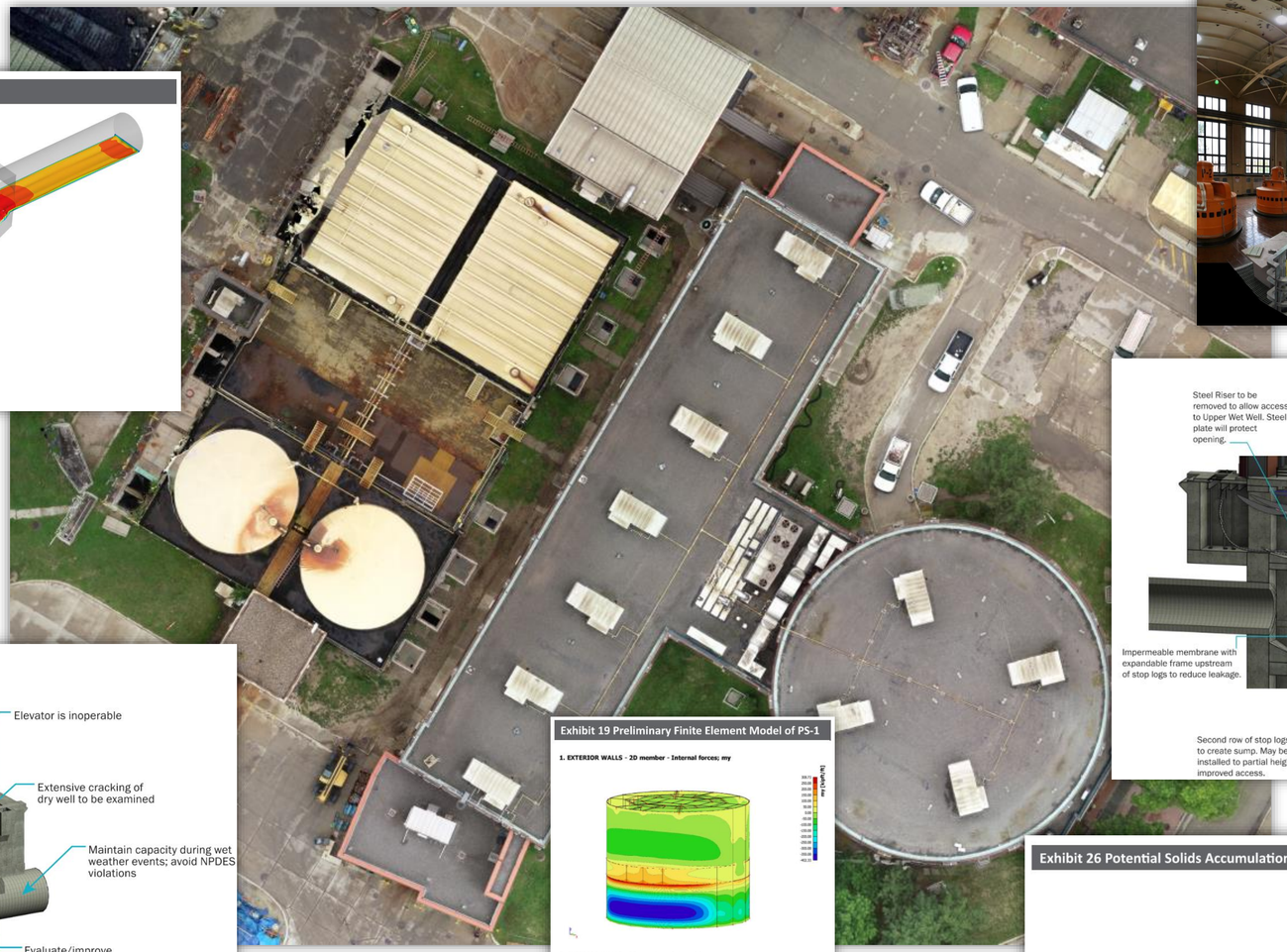


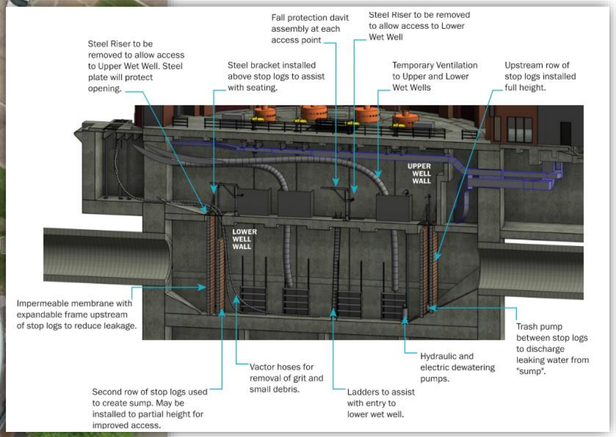
- Location (context)
- Complexities
- Quantities and Scale
- Influences

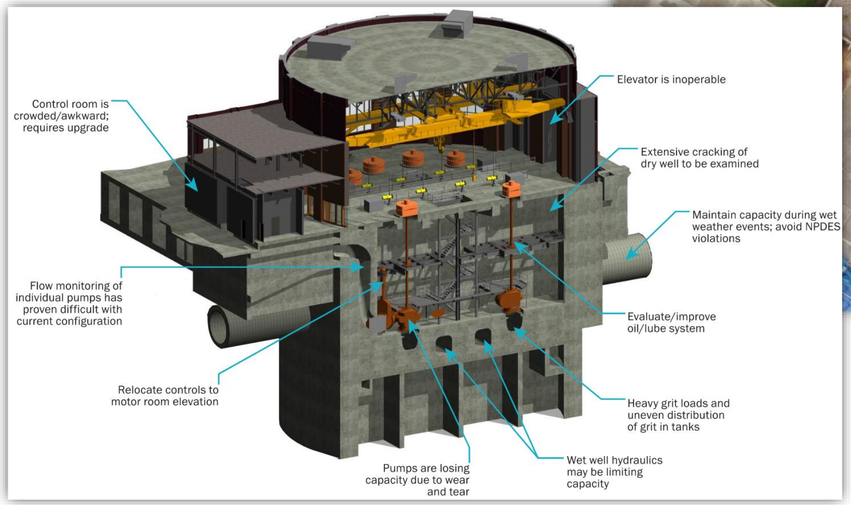
- Winning Story
- Demonstrate Understanding
- Innovative Approaches
- Flexibility and Confidence

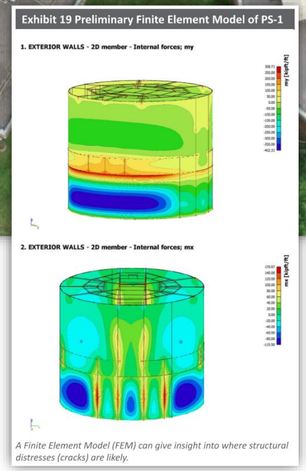
Wade Trim – Pump Station Example

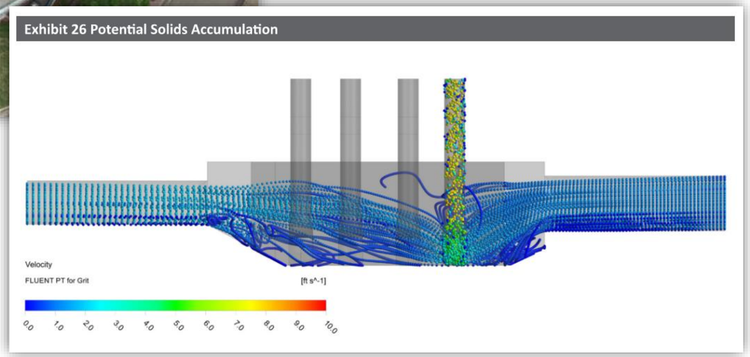


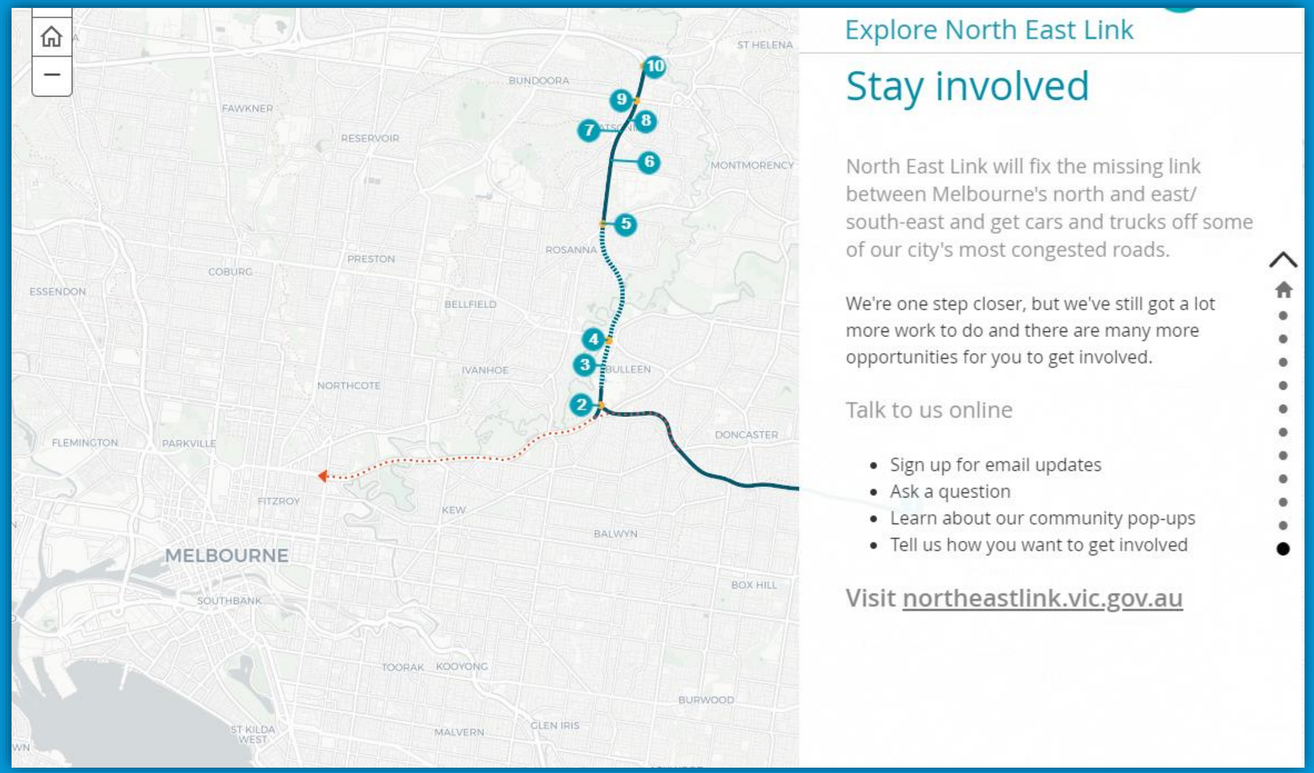




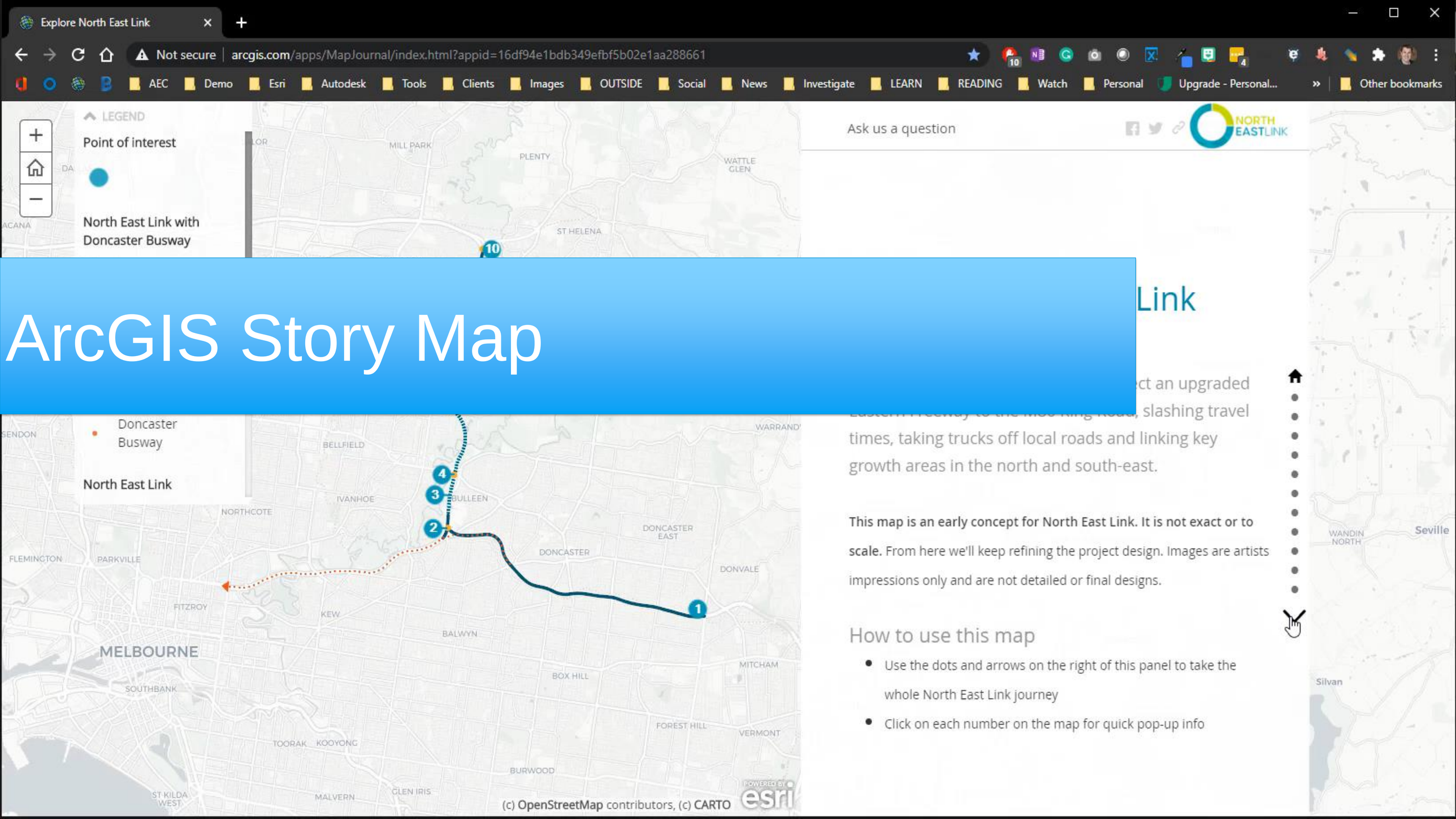






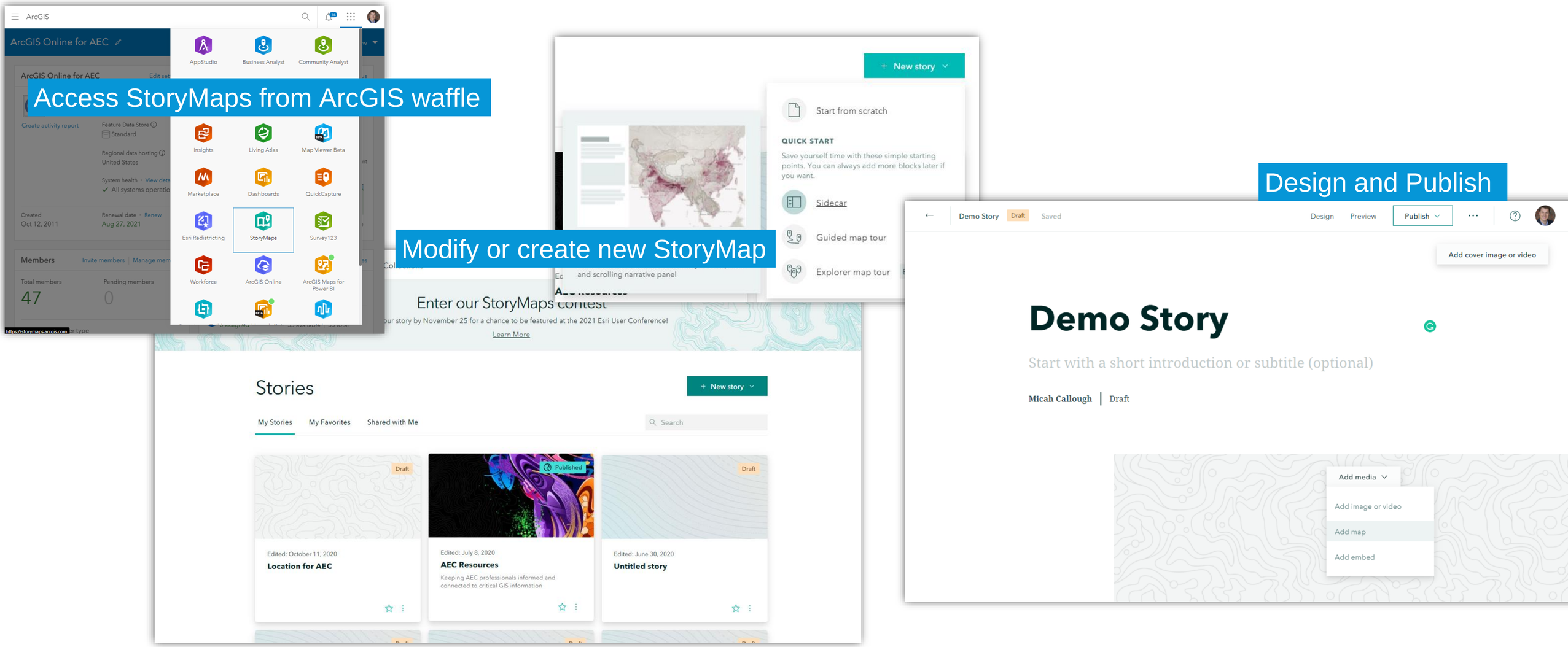


LEARN:
Story Maps



ArcGIS Story Map

StoryMap Creation



Business Results

Bids are based on data and experience

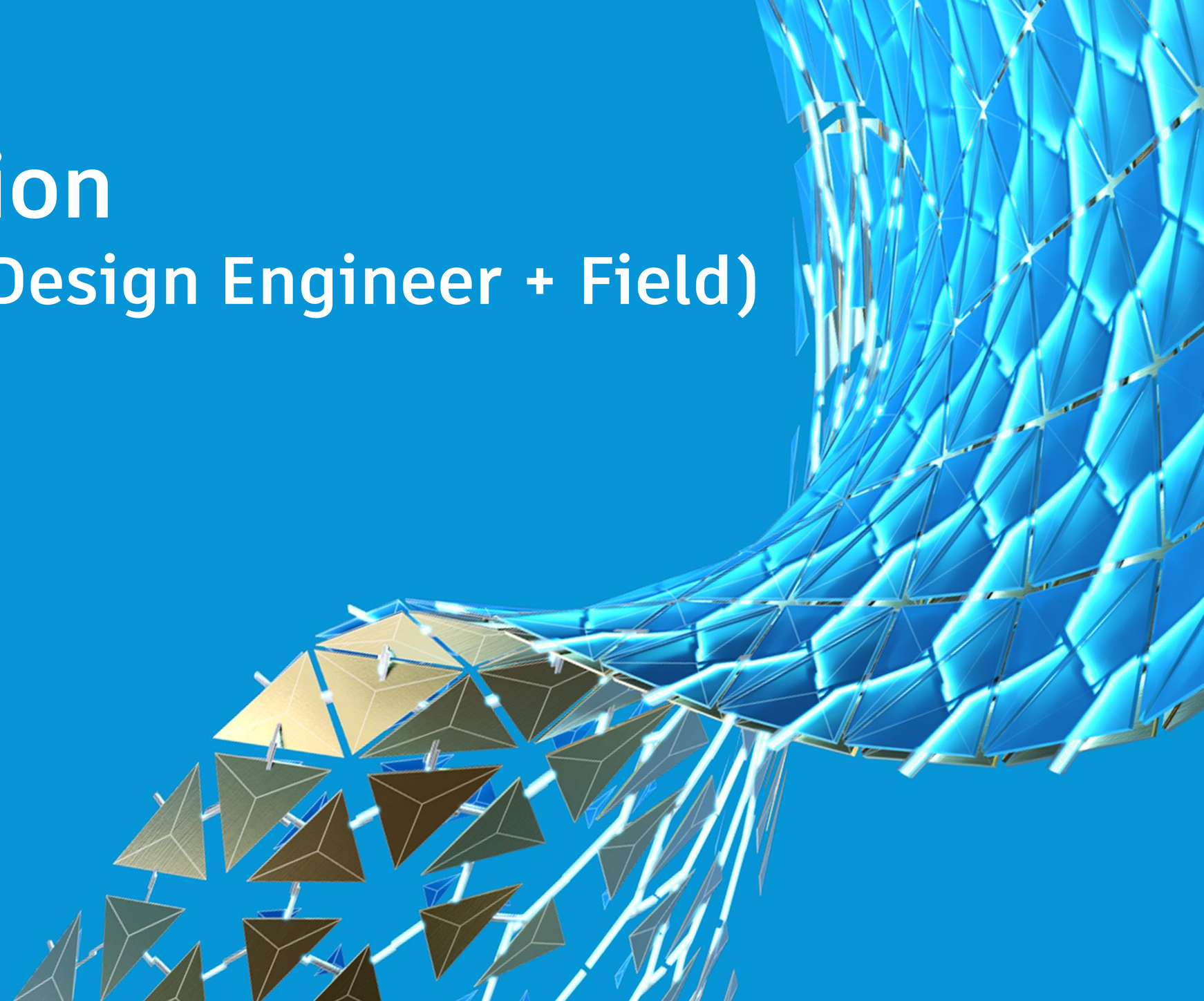
Opens door for innovative approaches (due to understanding)

Initial project go\no-go's are better informed

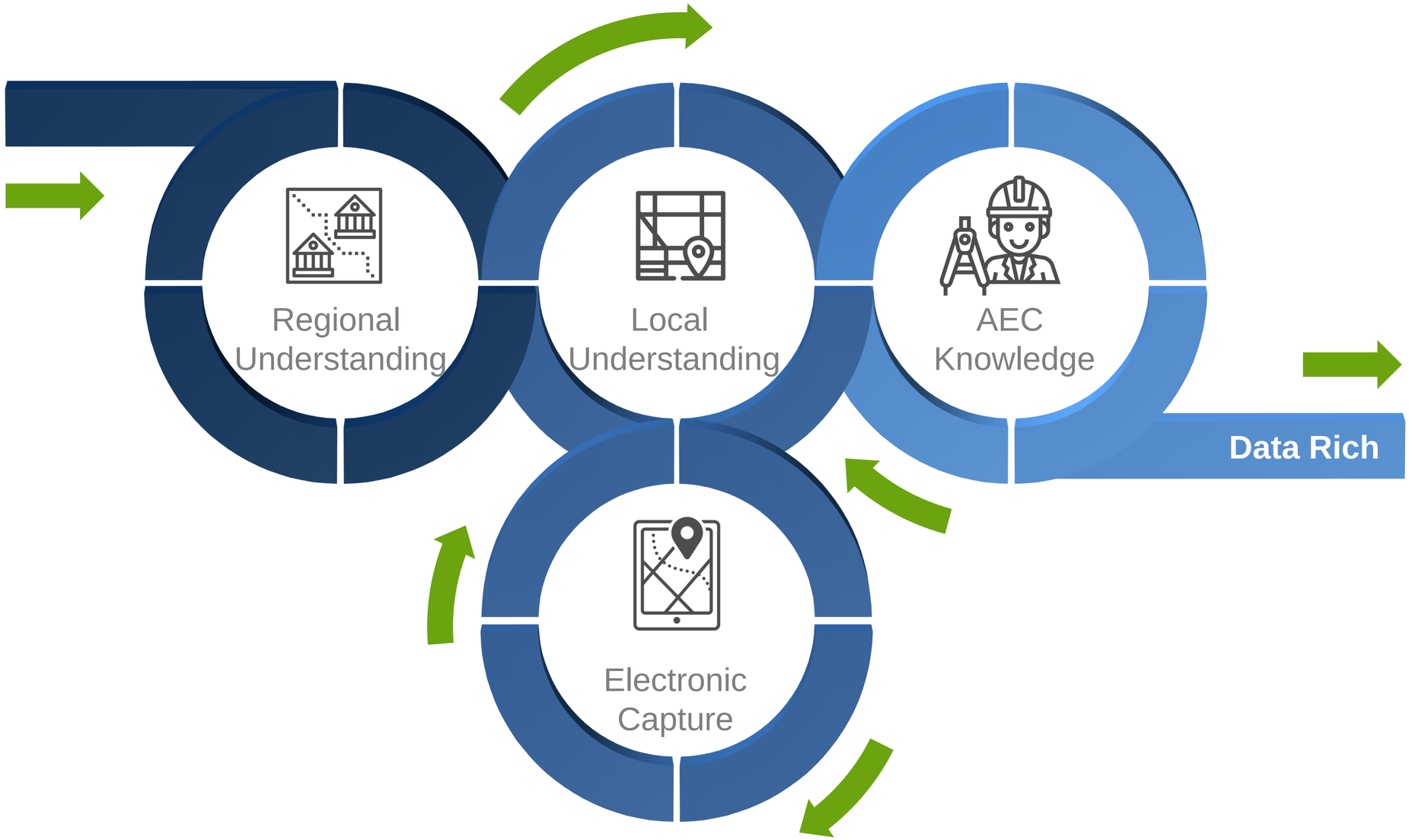
Project approach is communicated more effectively to customer

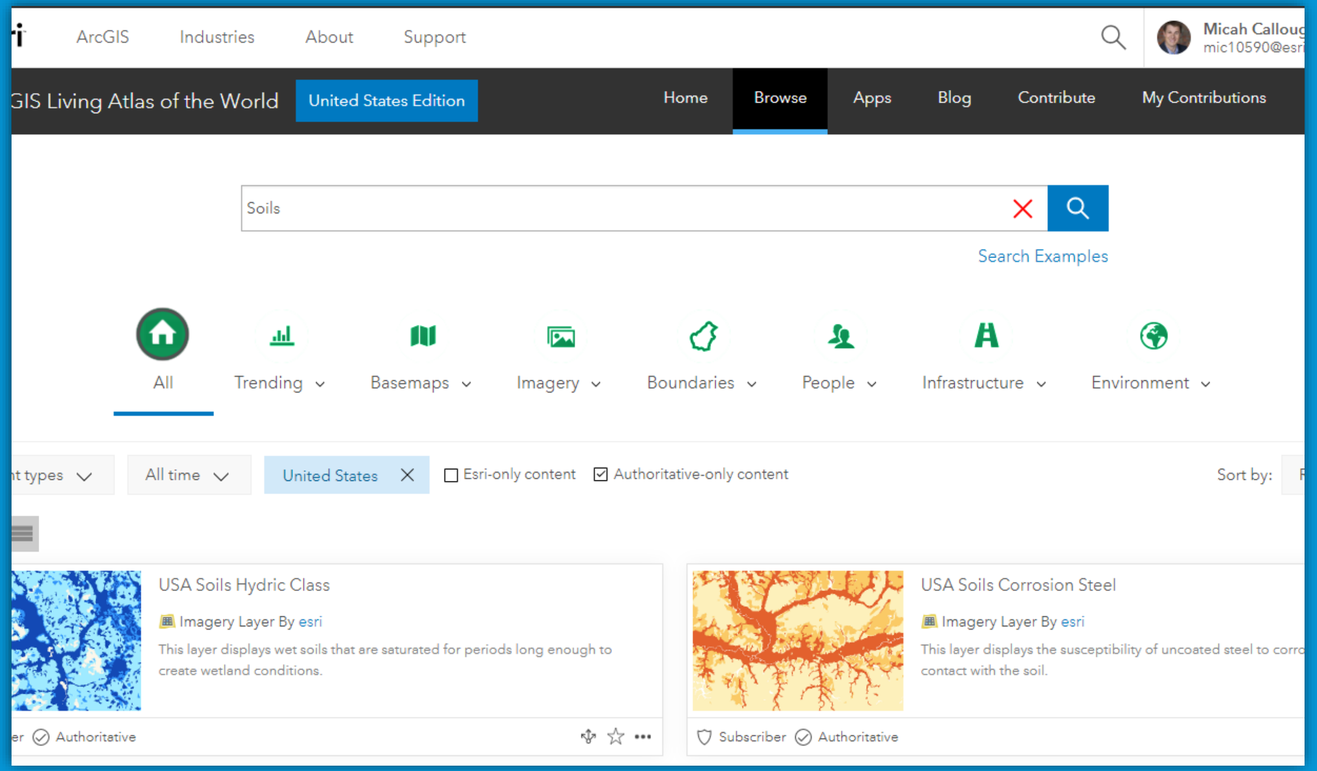
Bid cycles are reduced!

Collaboration
(Geospatial 2 Design Engineer + Field)



Business Problem to Solve





LEARN:
Living Atlas & Shared Content

ArcGIS Online for AEC | Living Atlas of the World | ArcGIS | Untitled map

livingatlas.arcgis.com/en/browse/#d=2&rgnCode=US&authoritative=true

AEC | Demo | Esri | Autodesk | Tools | Clients | Images | OUTSIDE | Social | News | Investigate | LEARN | READING | Watch | Personal | Upgrade - Personal... | Other bookmarks

esri ArcGIS Industries About Support

Micah Callough
mic10590@esri.com_ArcAEC

ArcGIS Living Atlas of the World | United States Edition

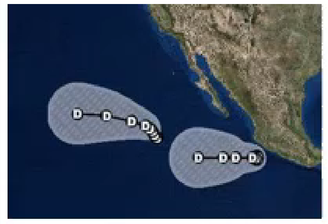
Home | Browse | Apps | Blog | Contribute | My Contributions | My Favorites

ArcGIS Living Atlas for D&E

All | Trending | Basemaps | Imagery | Boundaries | People | Infrastructure | Environment

All content types | All time | United States | Esri-only content | Authoritative-only content | Sort by: Relevance

617 Results

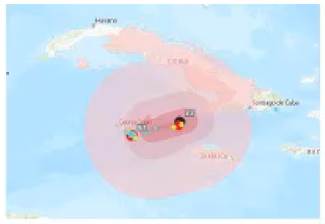


Active Hurricanes, Cyclones and Typhoons

Feature Layer By esri_livefeeds2

This layer describes the observed path, forecast track, and intensity of tropical cyclone activity (hurricanes, typhoons, cyclones) from the National Hurricane Center (NHC) and Joint Typhoon Warning Center (JTWC).

Authoritative



Recent Earthquakes

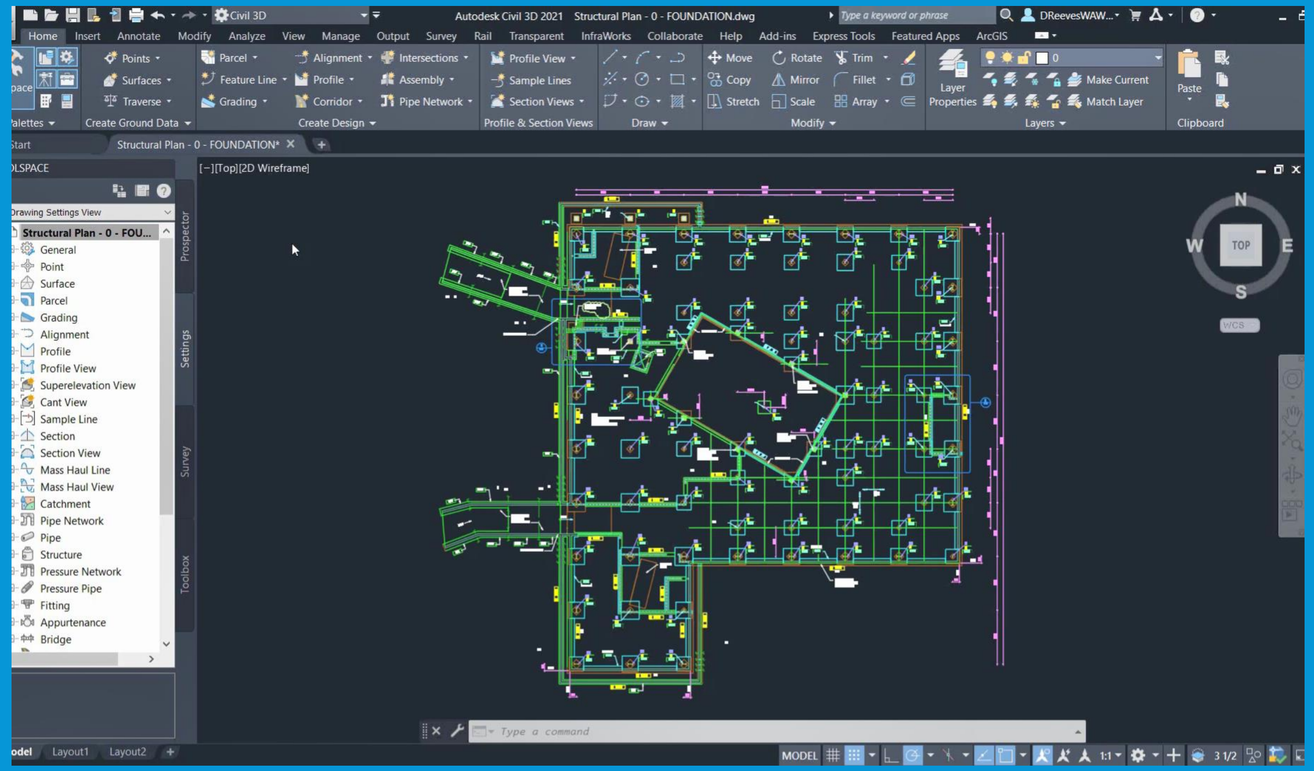
Feature Layer By esri_livefeeds2

This service presents recent earthquake information from the USGS Prompt Assessment of Global Earthquakes for Response (PAGER) program.

Authoritative

USA Current Wildfires

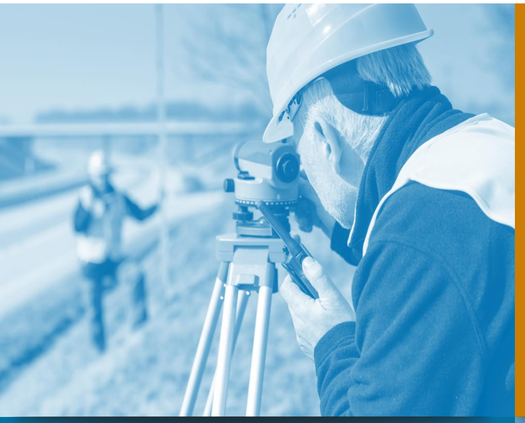
USA Weather Watches and Warnings



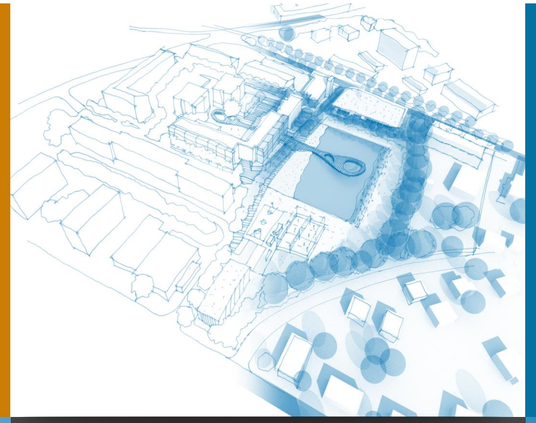
LEARN:
ArcGIS Connector for Civil3D + ArcGIS Web and Field


Final Approved Design Commercial Office Building
made with ArcGIS Configurable Apps
Slides
South Entrance
South Entrance
ArcGIS Connector for C3D + Field
34.05858,-117.19693 | 21 | 1:379 | 329° | 66°
Source: USGS, NGA, NASA, CGIAR, GEBCO,N Robinson,NCEAS,NLS,OS,NMA,Geodatastyrelsen and the GIS User Community
Powered by Esri

Business Results

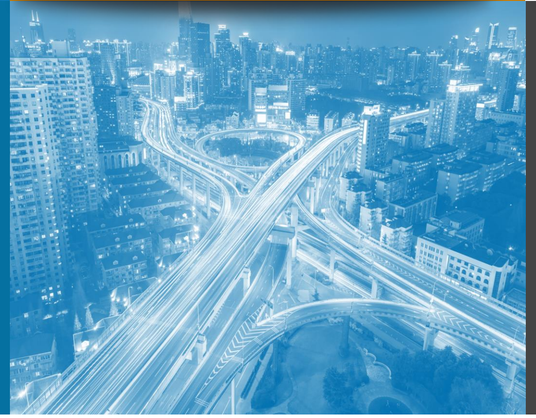


Valuable Geospatial content is unlocked for Design Engineers, Contractors & Owners at any lifecycle moment

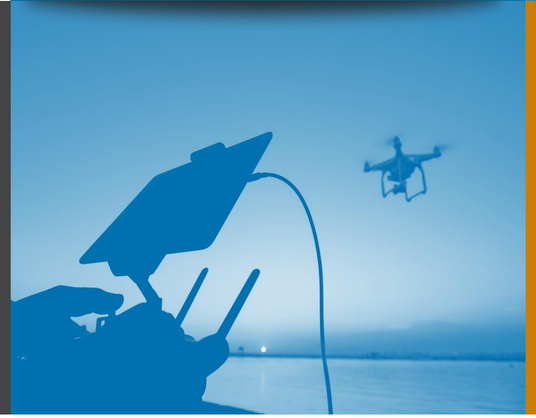


Digital capture from variety of methods (device, drone, sensor)

Duplication of effort reduced thru native data connections



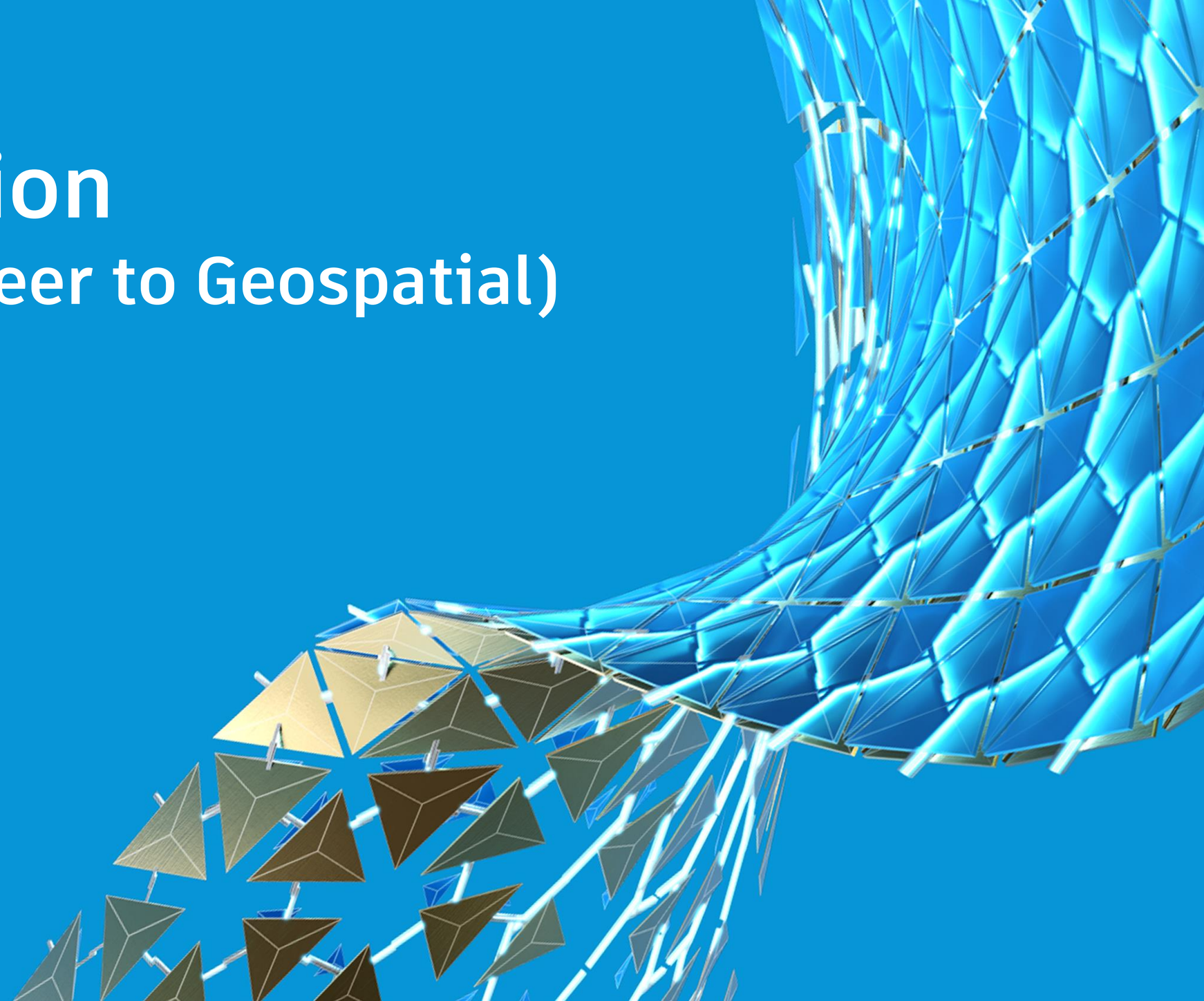
Design decisions or alternatives can be explored earlier on in the project



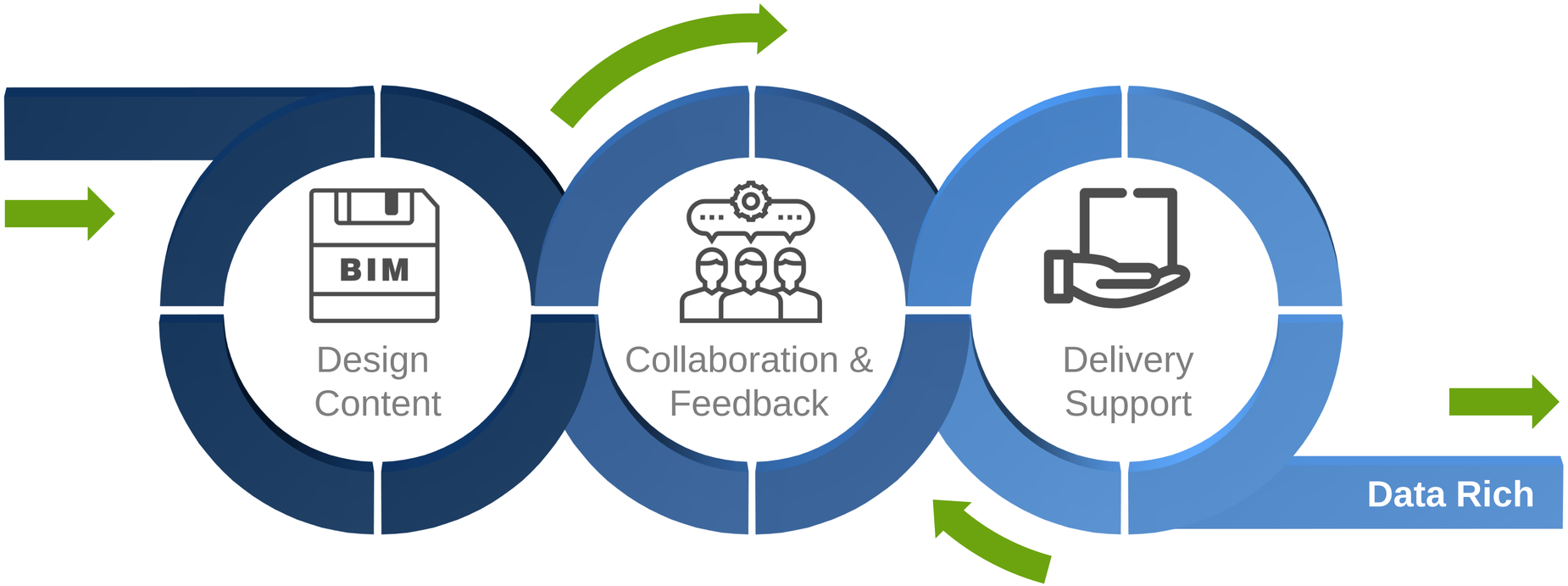
Increased efficiency in planning and executing field projects

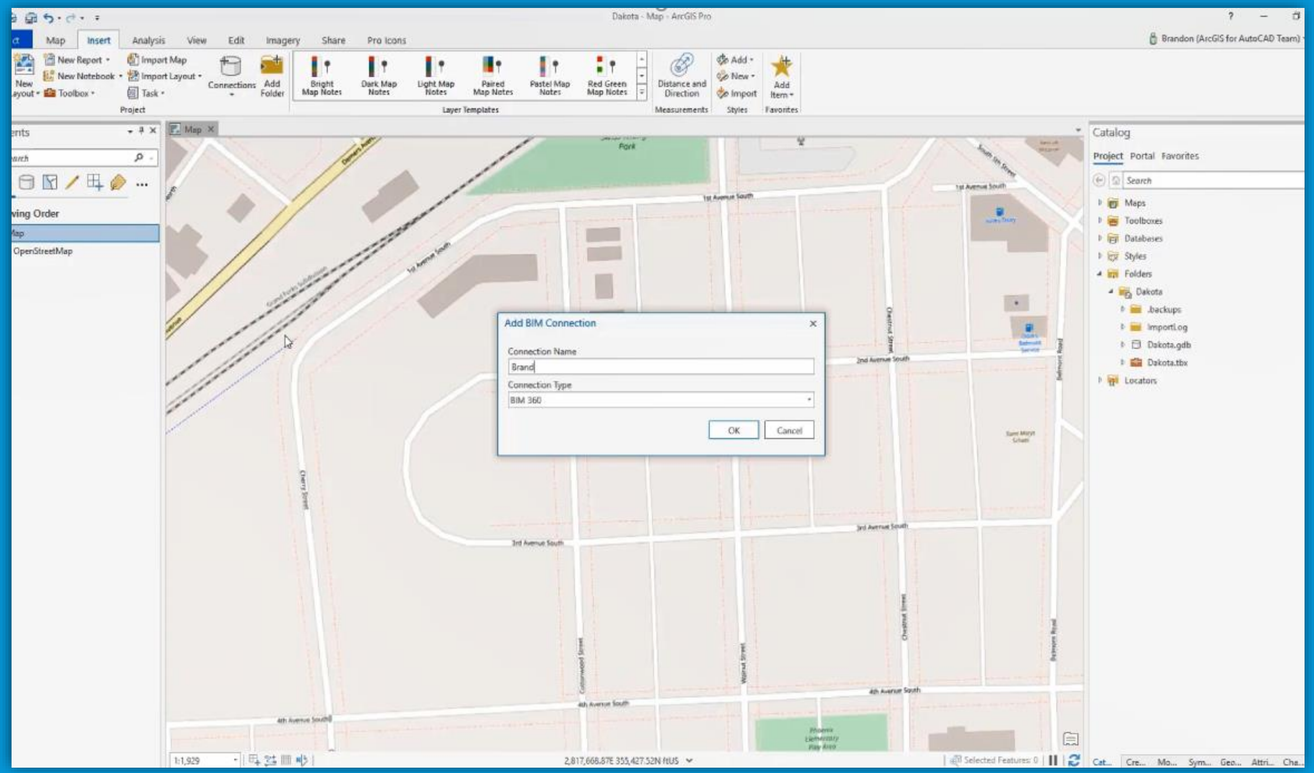
Beginning of a truly connected workflow!

Collaboration
(Design Engineer to Geospatial)

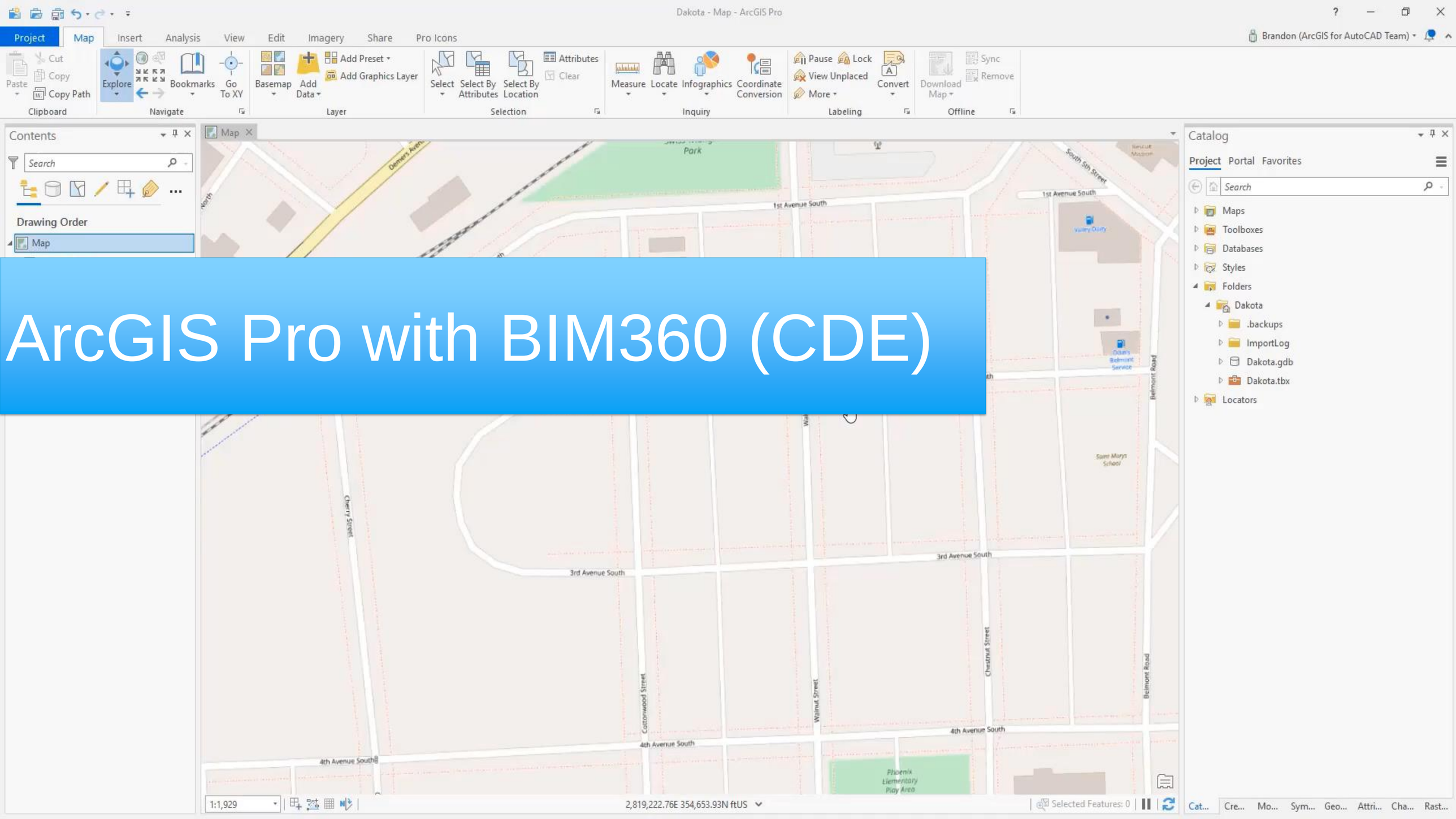


Business Problem to Solve

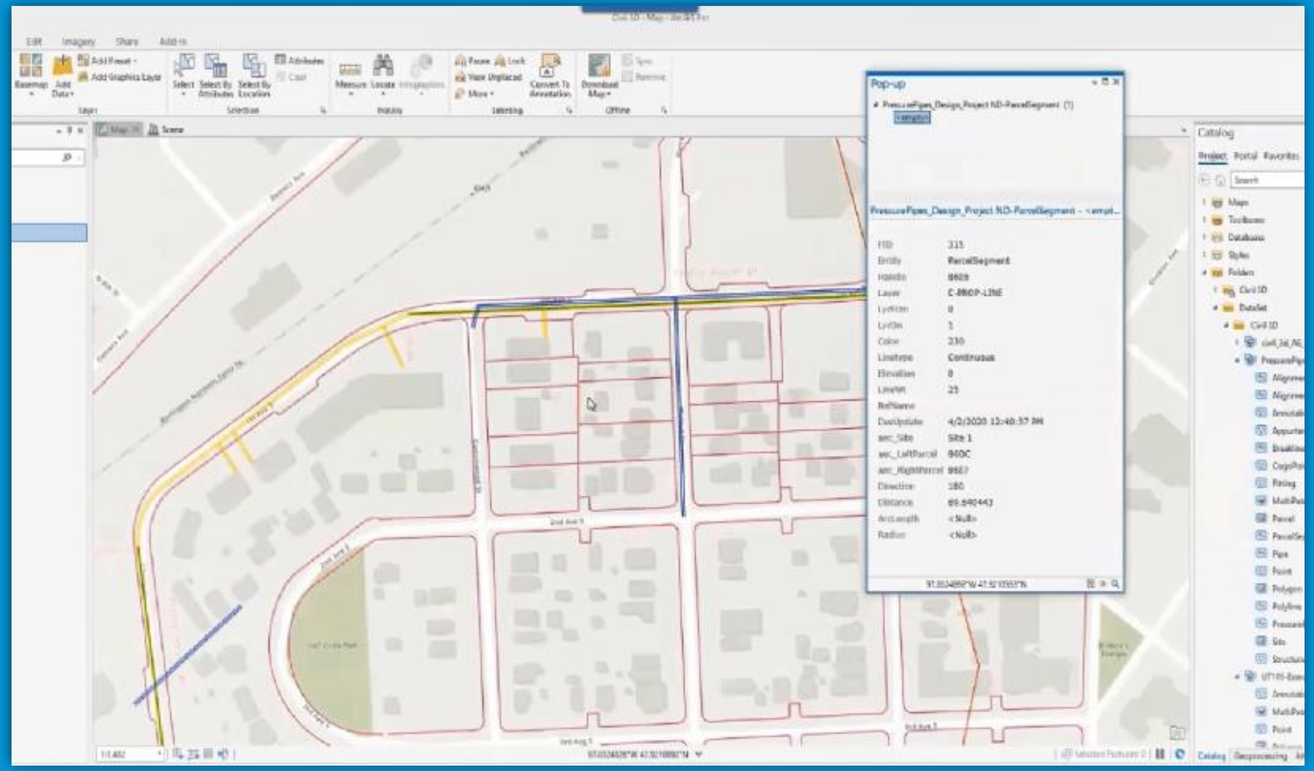




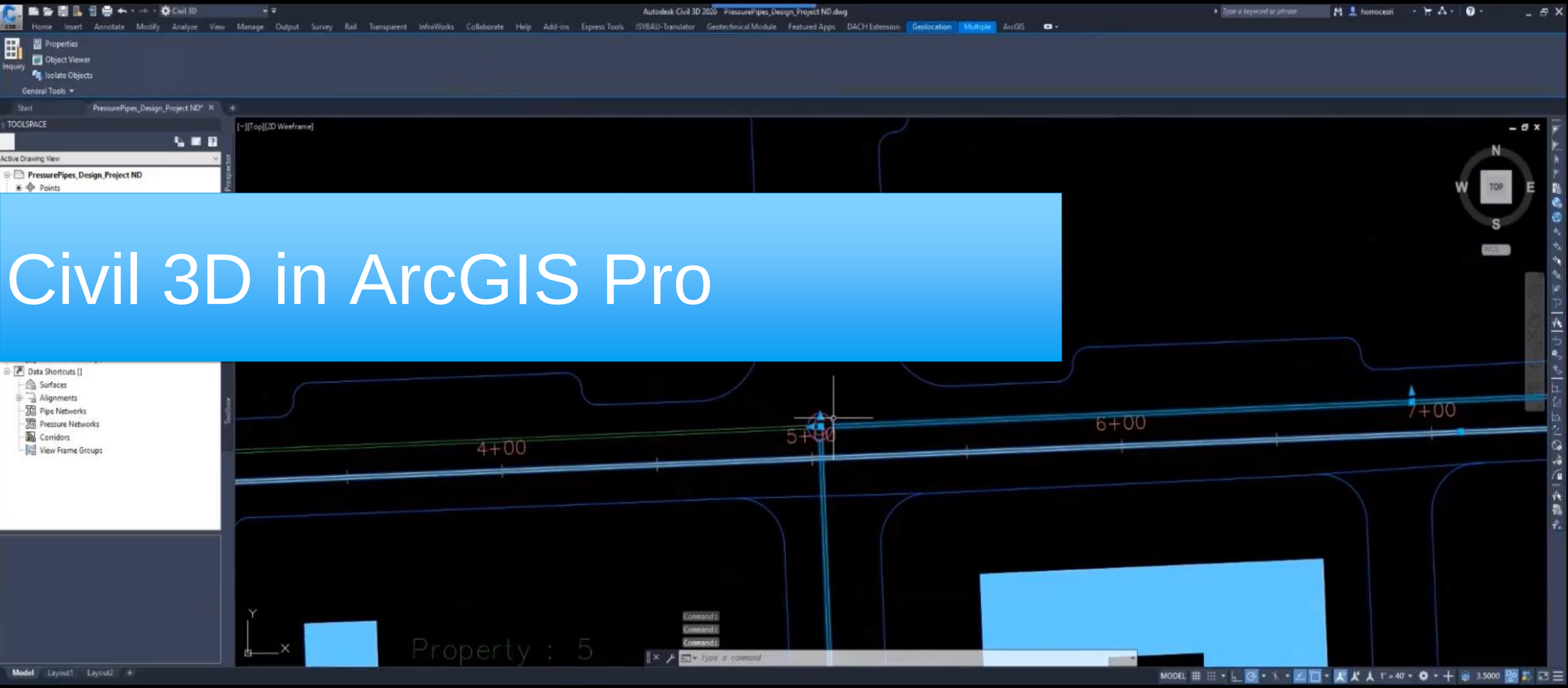
LEARN:
BIM360 Connect from ArcGIS Pro



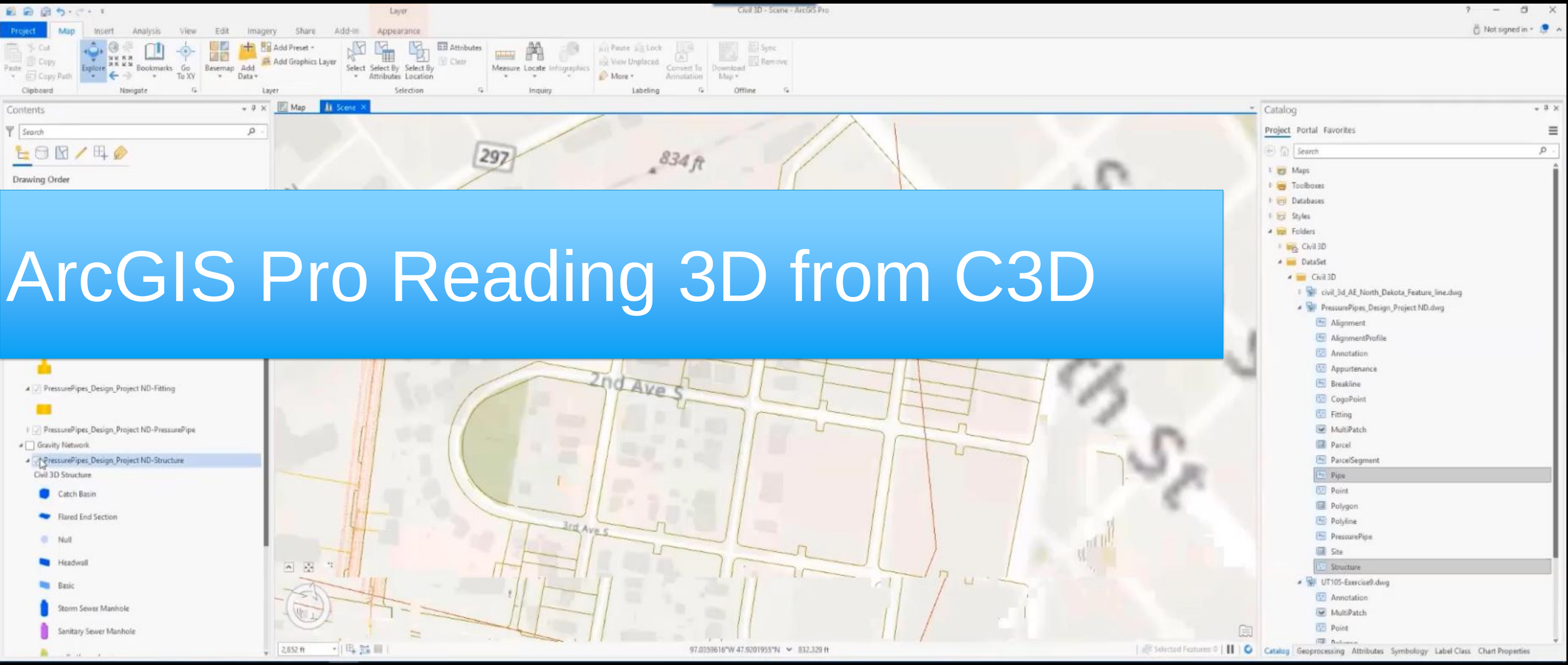
ArcGIS Pro with BIM360 (CDE)



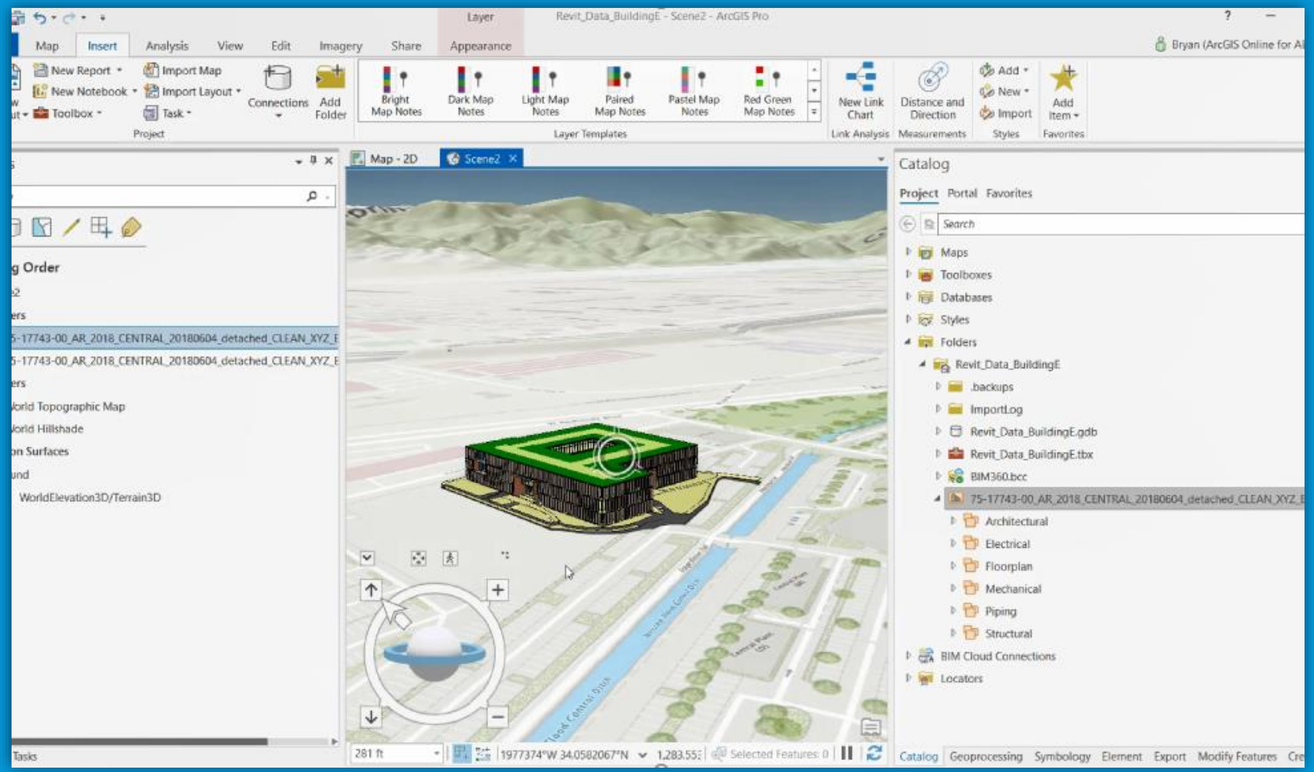
LEARN:
Civil3D in ArcGIS Pro



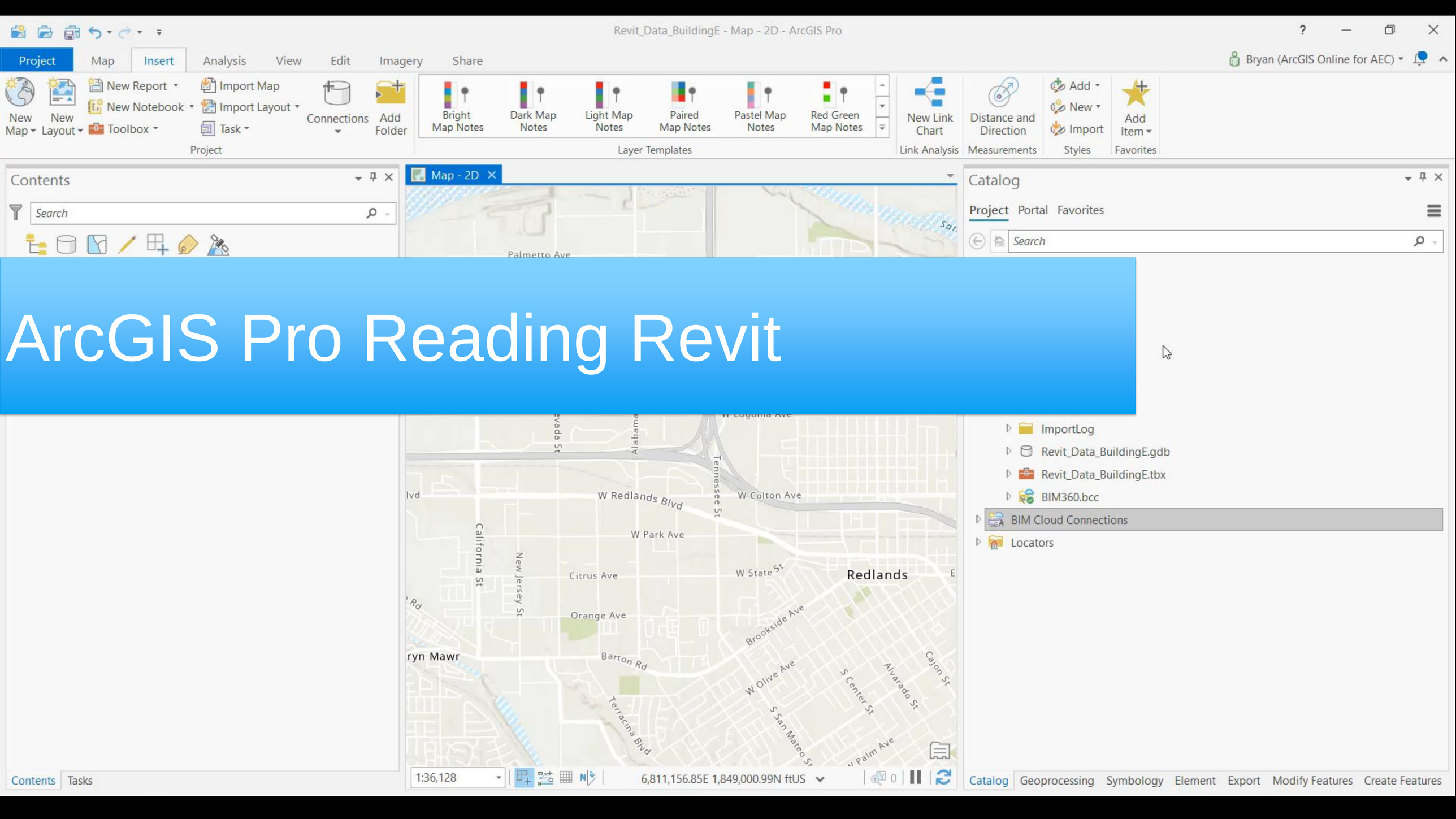
Civil 3D in ArcGIS Pro

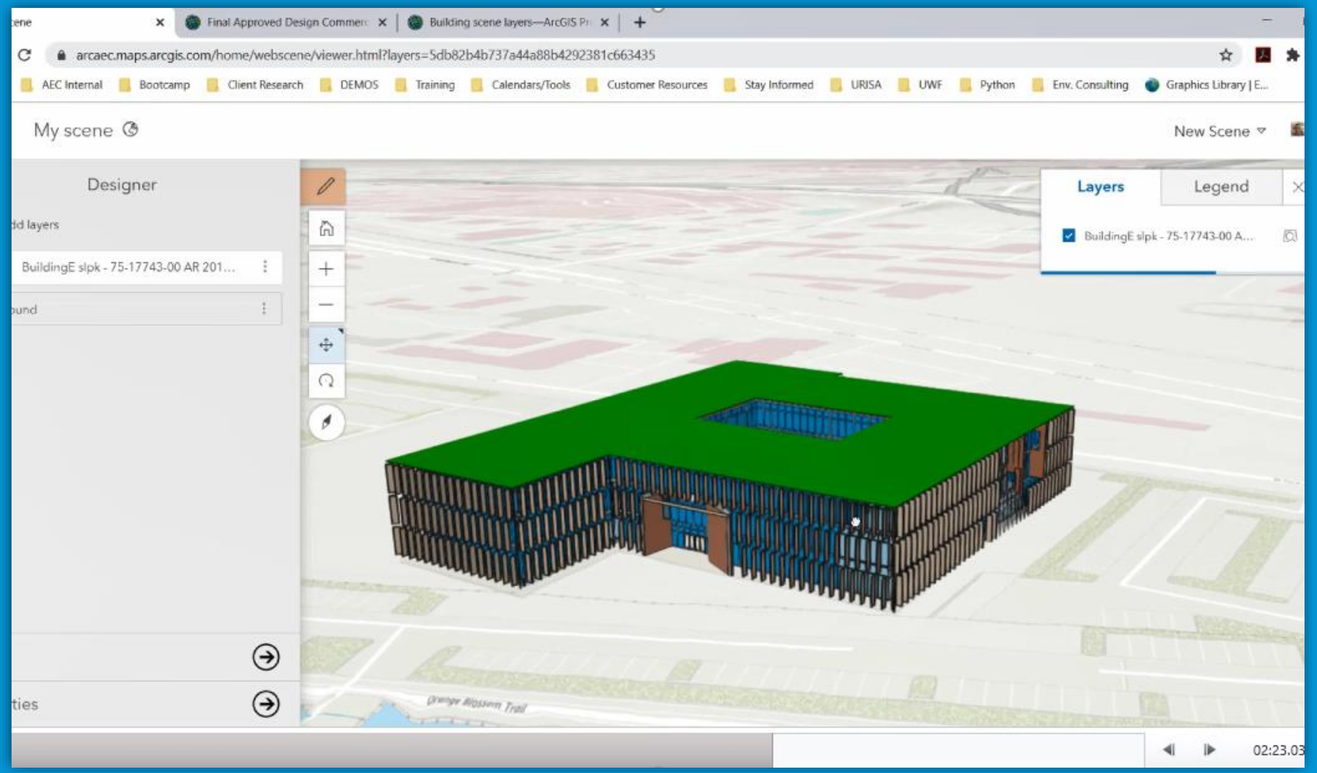


ArcGIS Pro Reading 3D from C3D



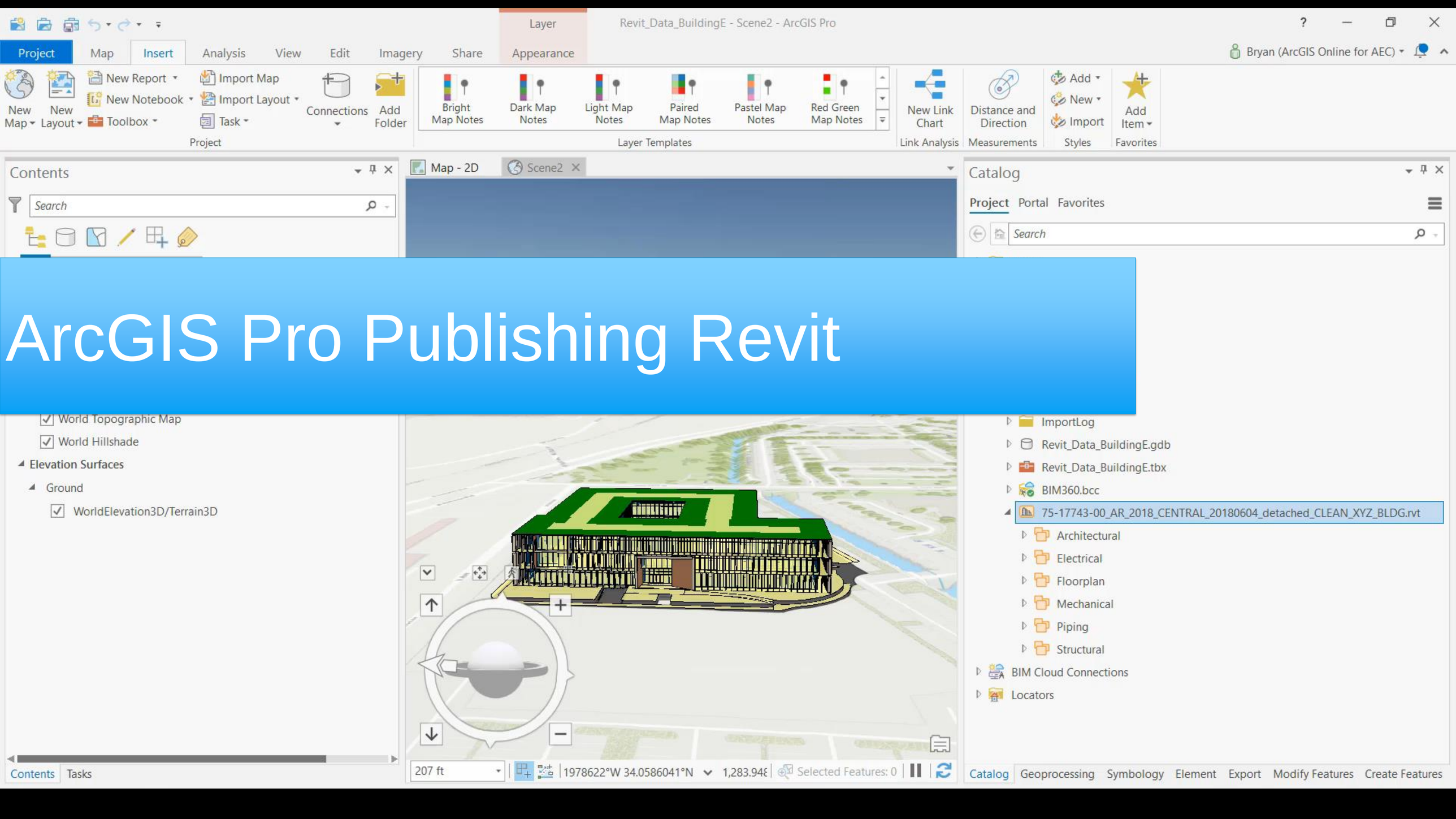
LEARN:
Revit in ArcGIS Pro


Revit_Data_BuildingE - Map - 2D - ArcGIS Pro
Project
Map
Insert
Analysis
View
Edit
Imagery
Share
Bryan (ArcGIS Online for AEC)
New Map
New Layout
New Report
New Notebook
Toolbox
Import Map
Import Layout
Task
Connections
Add Folder
Project
Bright Map Notes
Dark Map Notes
Light Map Notes
Paired Map Notes
Pastel Map Notes
Red Green Map Notes
Layer Templates
New Link Chart
Link Analysis
Distance and Direction
Measurements
Add
New
Import
Styles
Add Item
Favorites
Contents
Search
Map - 2D
Palmetto Ave
W Redlands Blvd
W Colton Ave
W Park Ave
Citrus Ave
W State St
Redlands
Orange Ave
Barton Rd
Brookside Ave
W Olive Ave
Terracina Blvd
California St
New Jersey St
Tennessee St
Alabama
S Center St
Alvarado St
Cajon St
S San Mateo St
Catalog
Project
Portal
Favorites
Search
ImportLog
Revit_Data_BuildingE.gdb
Revit_Data_BuildingE.tbx
BIM360.bcc
BIM Cloud Connections
Locators
ArcGIS Pro Reading Revit
Contents
Tasks
1:36,128
6,811,156.85E 1,849,000.99N ftUS
Catalog
Geoprocessing
Symbology
Element
Export
Modify Features
Create Features

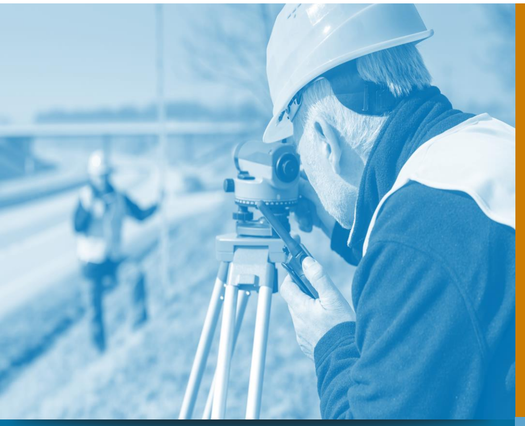


LEARN:
Sharing Content – Building Scene Layer

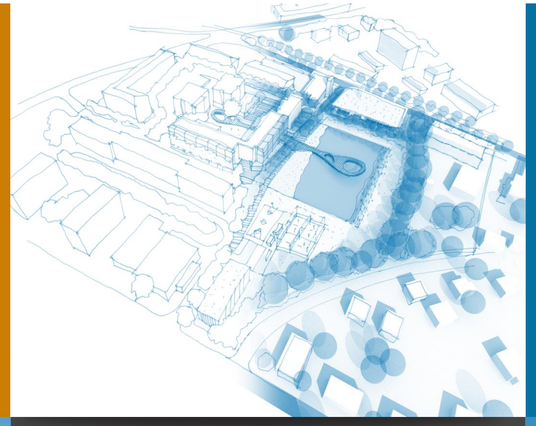
ArcGIS Pro Publishing Revit



Business Results

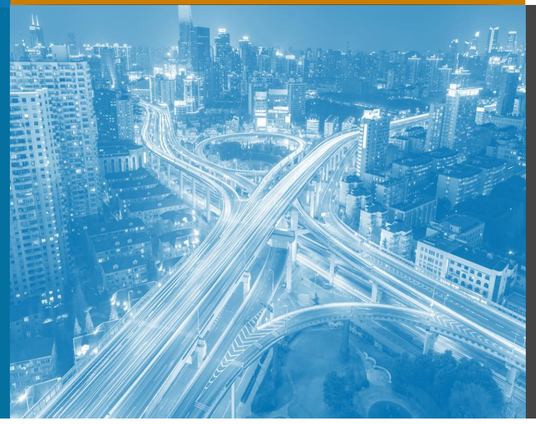


Connect design to other critical or influencing data sources

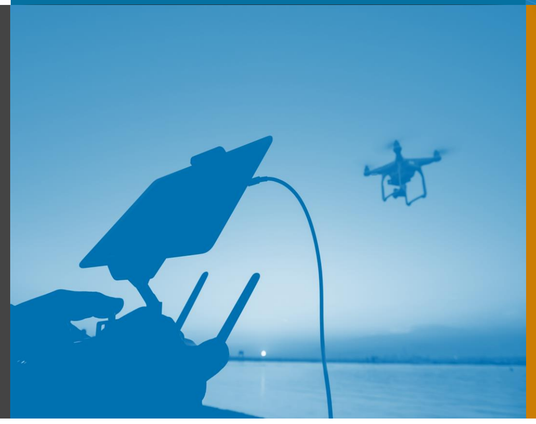


Supporting as-built deliverables for bigger O&M needs

Building stronger integration between BIM and GIS

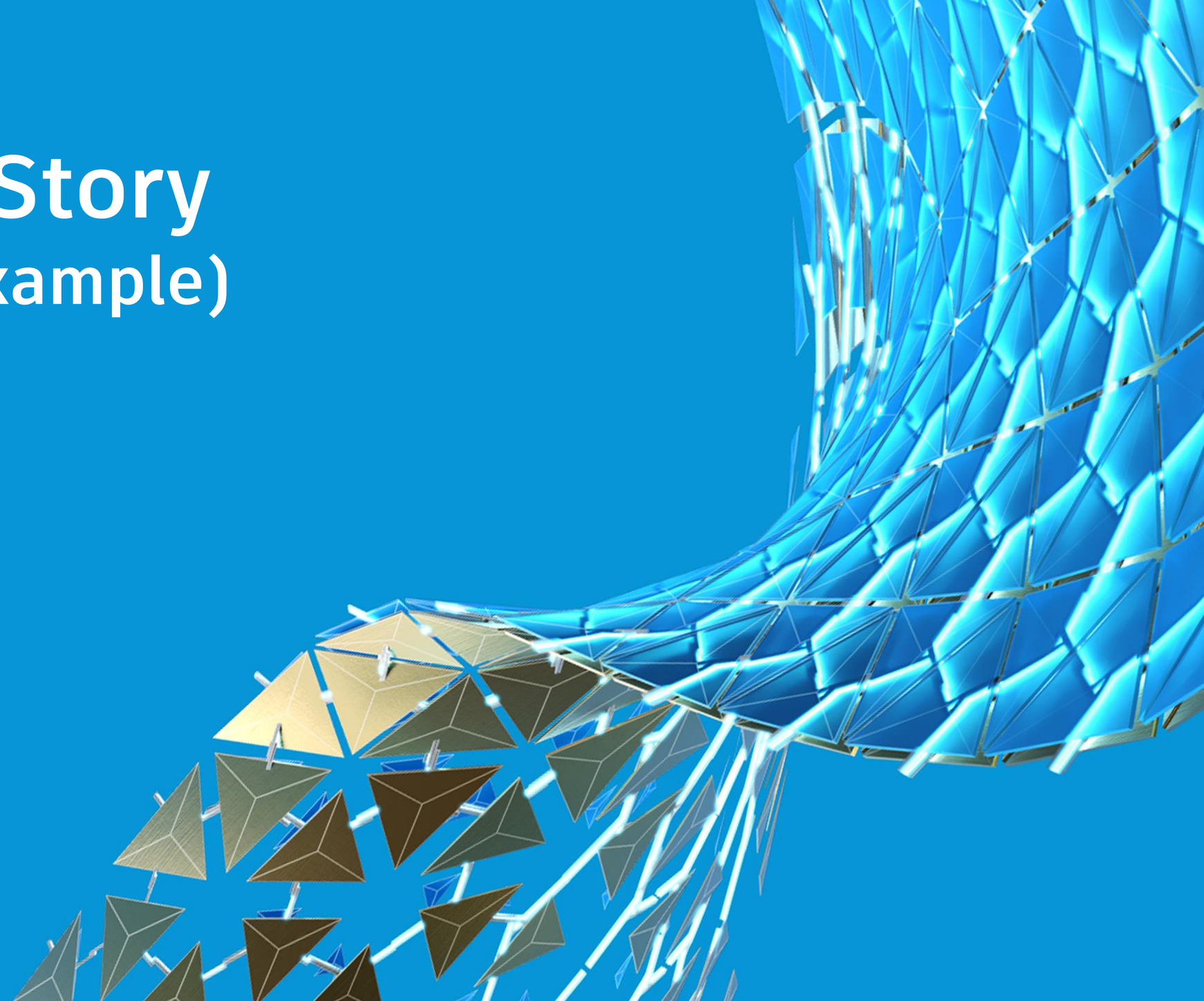


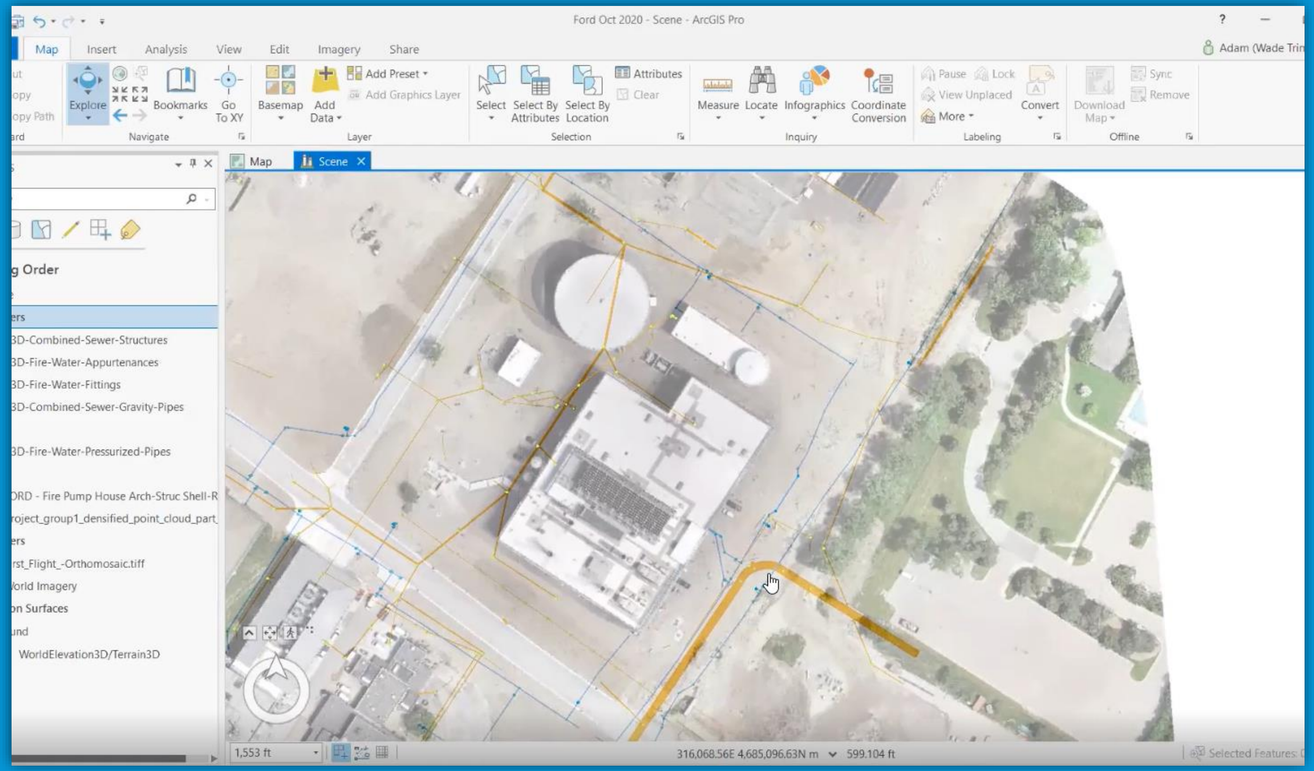
Open Design and Engineering Data to wider audience



Breaking down barriers between Design Engineering & Geospatial

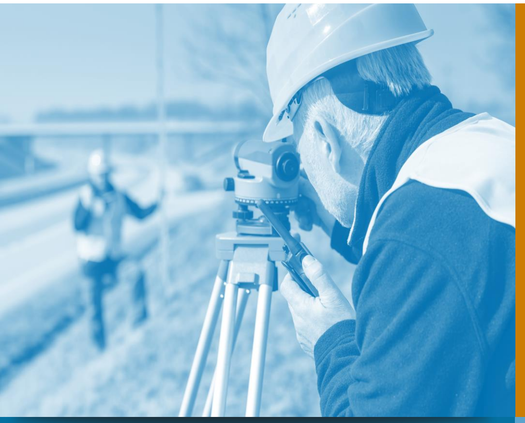
Finish the Story
(Real World Example)



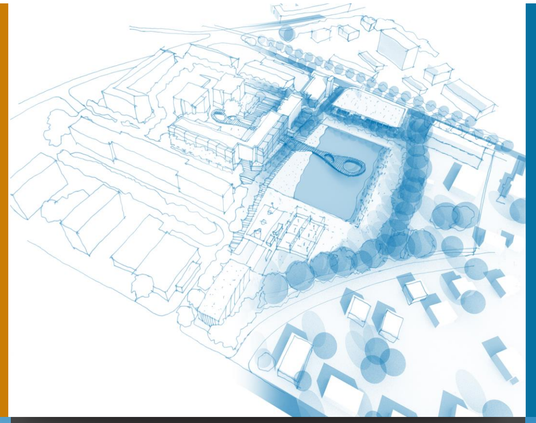


LEARN:
Example Wade Trim

Business Results

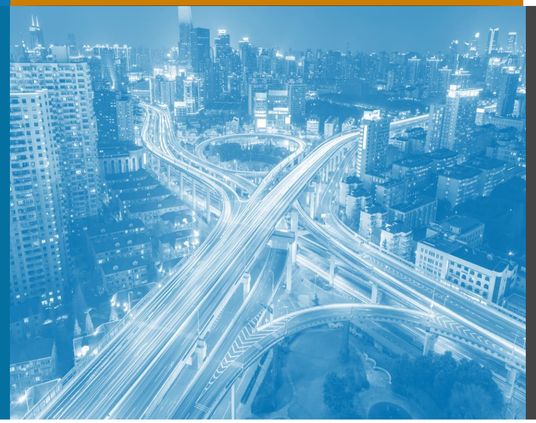


Increase safety & reduce cost by providing a framework to support wide range of analysis to support iterative rapid design

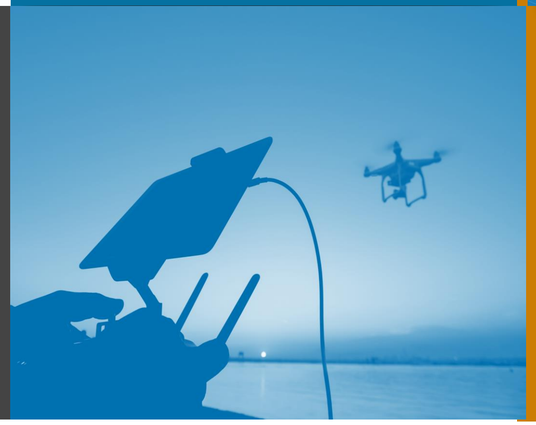


Makes digital handover an easier and more valuable process.

Provides early insight to design development to all stakeholders



Aligns with customer’s O&M needs earlier in the project



Opens new business opportunities for AEC