Esri Infrastructure Management and GIS Conference

October 25–28, 2021 | Palm Springs, CA

Helping Asset Owner Succeed with BIM and GIS Integration

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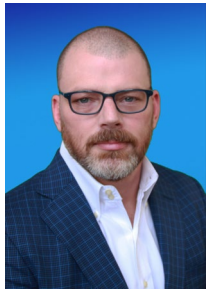


James MacDonald
Corporate Technology Leader
Boston, MA

SINCE 1951

HAZEN AND SAWYER HAS FOCUSED ON TWO THINGS

Providing Safe Drinking Water & *Controlling Water Pollution*

ALL WE DO IS WATER

ENR TOP FIRM

1,295 EMPLOYEES

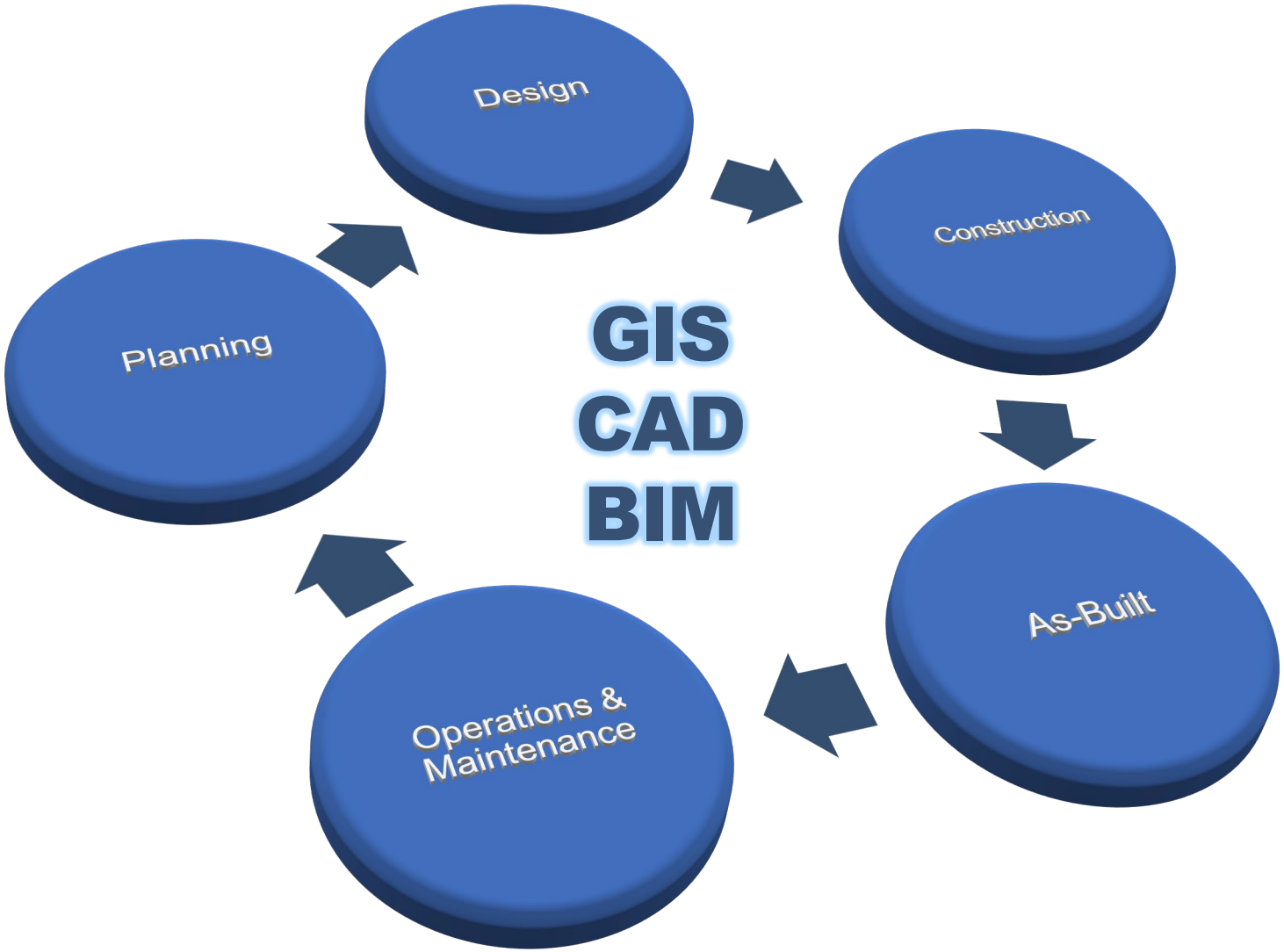
350 PROFESSIONAL ENGINEERS

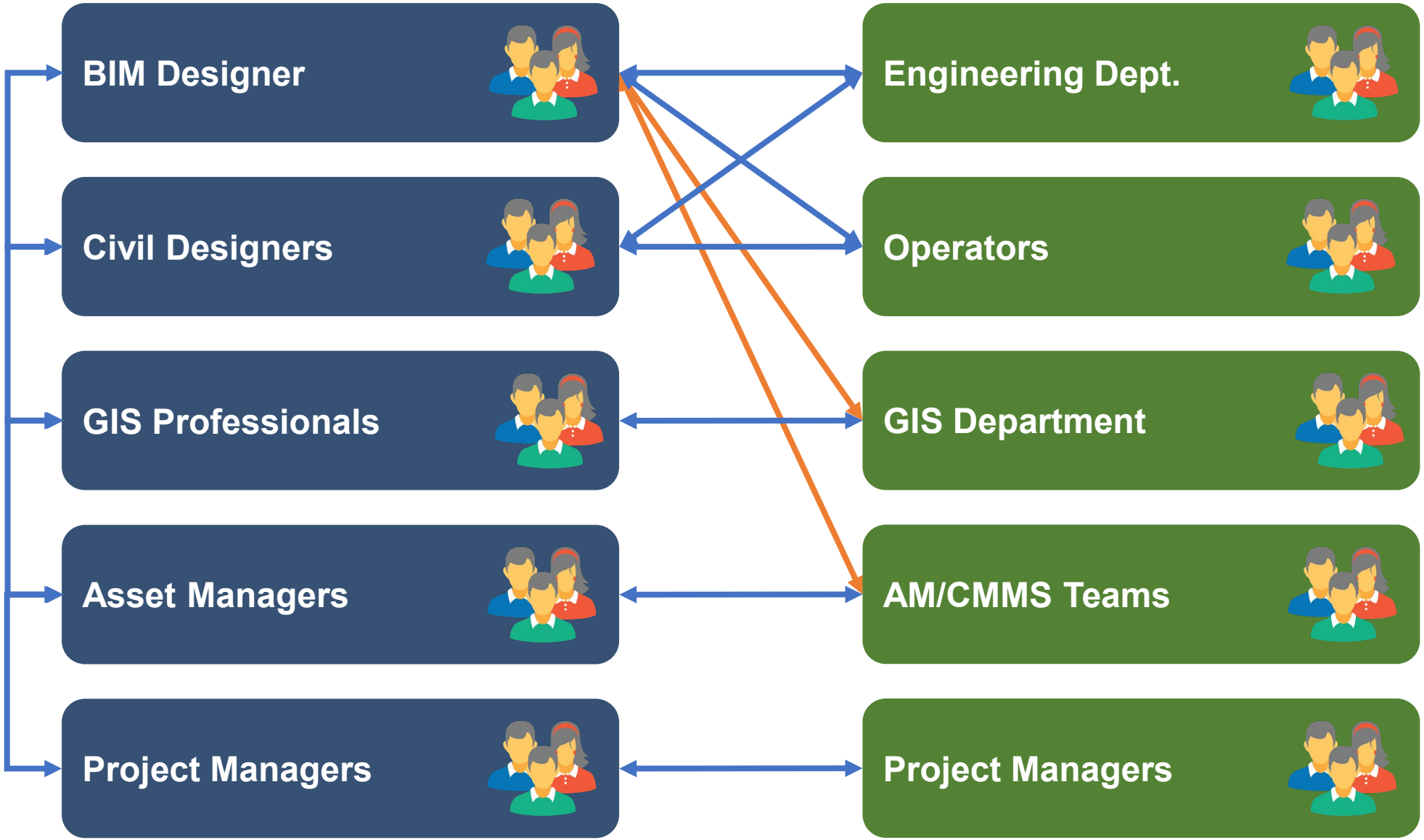
Areas of Service

drinking water | wastewater | water resources | stormwater | conveyance | CSO | biosolids | reuse

Expand Your Asset Inventory	Add vertical assets to your GIS using BIM
Improve Collaboration during Planning & Design	Share BIM with different audiences using ArcGIS
Create Better Facility Information	Improve as-built and asset documentation using GIS and BIM

Thank you and be safe!


Design
Construction
As-Built
Operations &
Maintenance
Planning
GIS
CAD
BIM


BIM Designer
Civil Designers
GIS Professionals
Asset Managers
Project Managers
Engineering Dept.
Operators
GIS Department
AM/CMMS Teams
Project Managers

Strategy

Governance

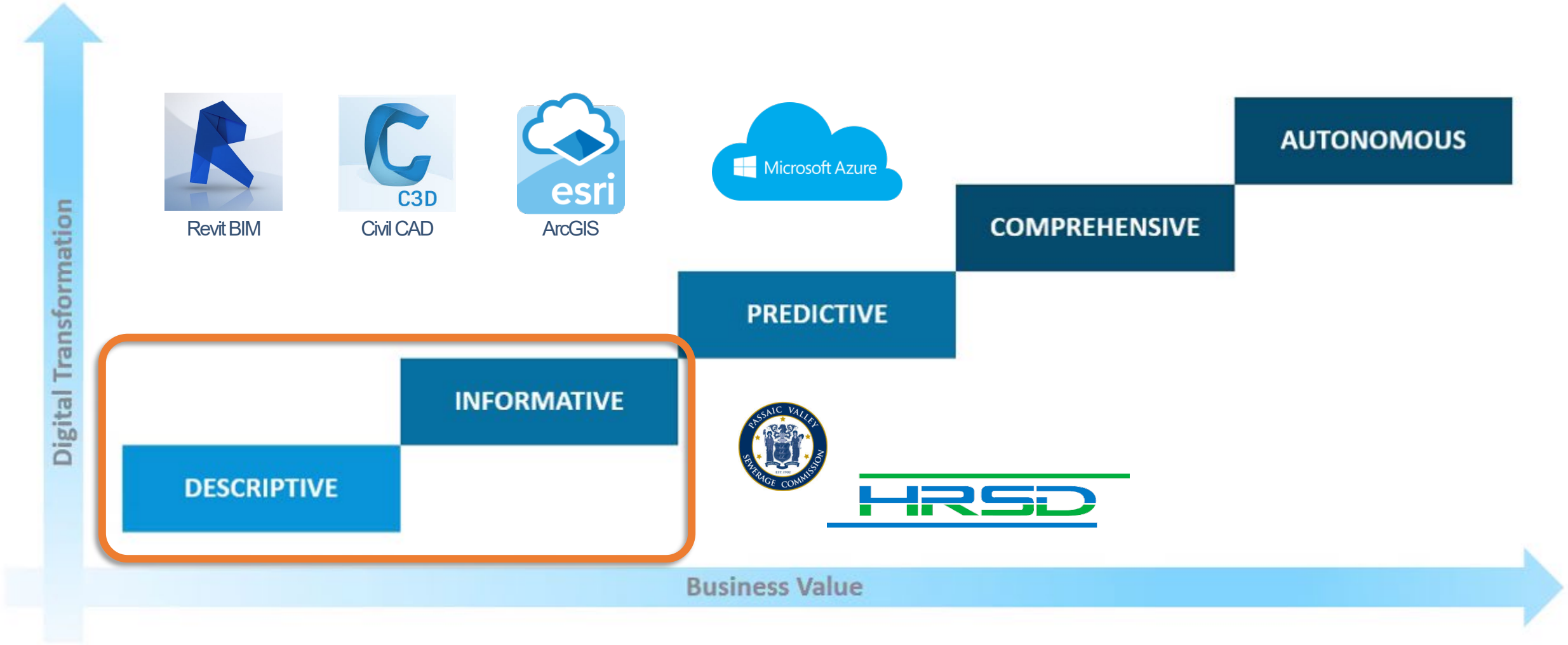
Costs

Security

Innovation

Support

Digital Twin Maturity Roadmap



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C.O.T.S.NOW

Desktop – Web – Mobile - Augmented

Esri
Enterprise
ArcGIS

Esri
ArcGIS Pro

Autodesk
Construction
Cloud

AutoCAD
Civil 3D

Revit
(BIM)

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Passaic Valley Sewerage District (PVSC)

Newark, NJ

Decant Facility Upgrades GeoBIM Project

- Newark Bay Treatment Plant 300 MGD
- 22-mile interceptor sewer line
- 1.5 million residents
- 48 municipalities
- Alleviate pollution in the Passaic River and its tributaries

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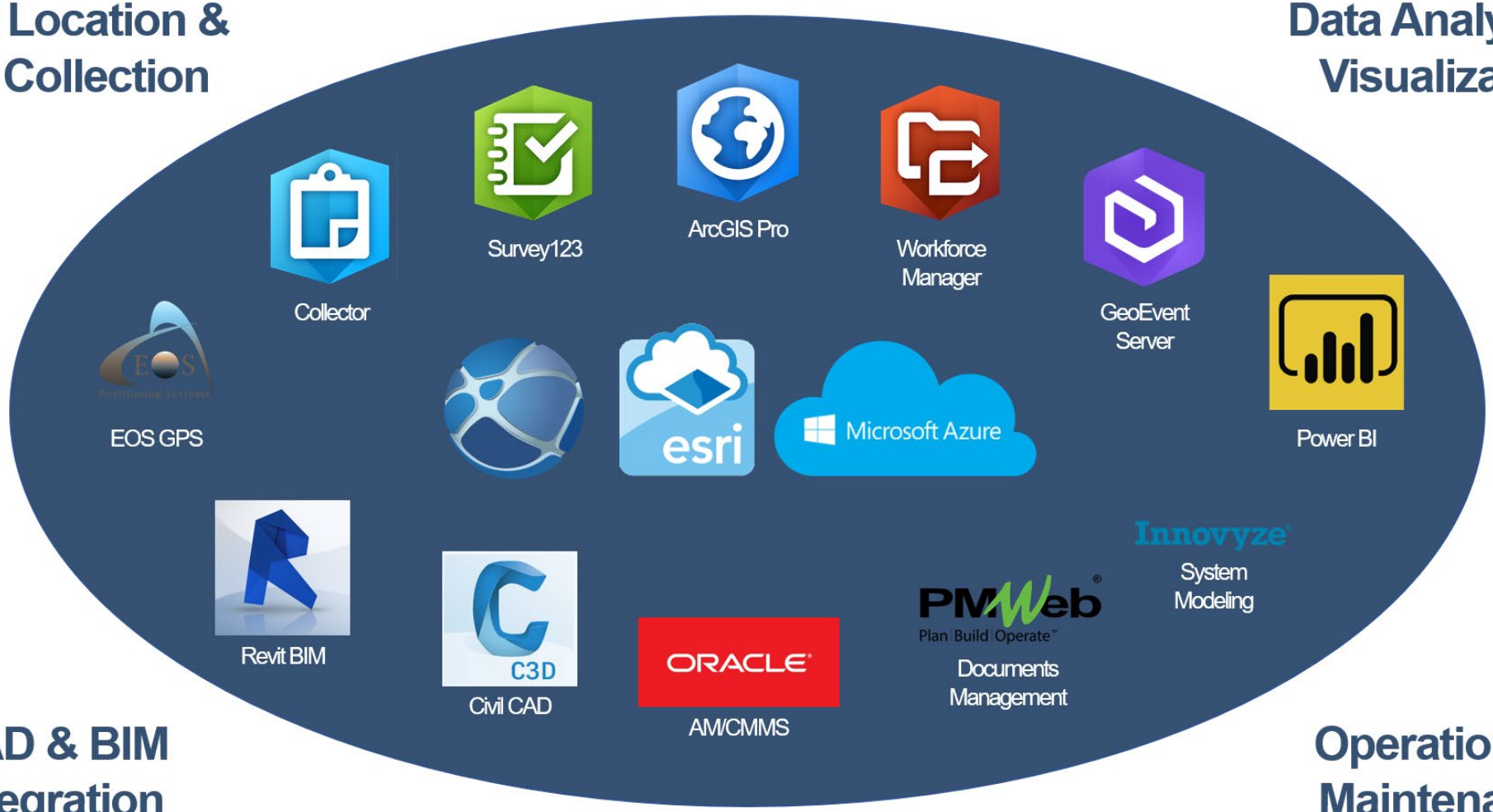
PVSC Enterprise ArcGIS Overview



PVSC Enterprise ArcGIS and BIM Integration

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8.0: Information Exchanges

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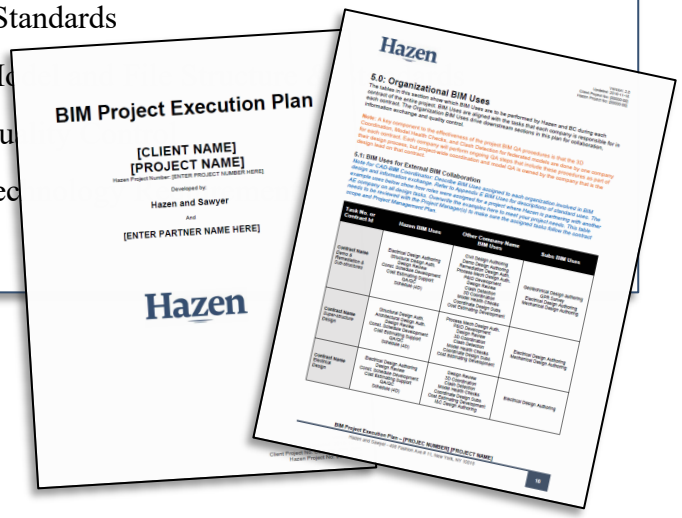
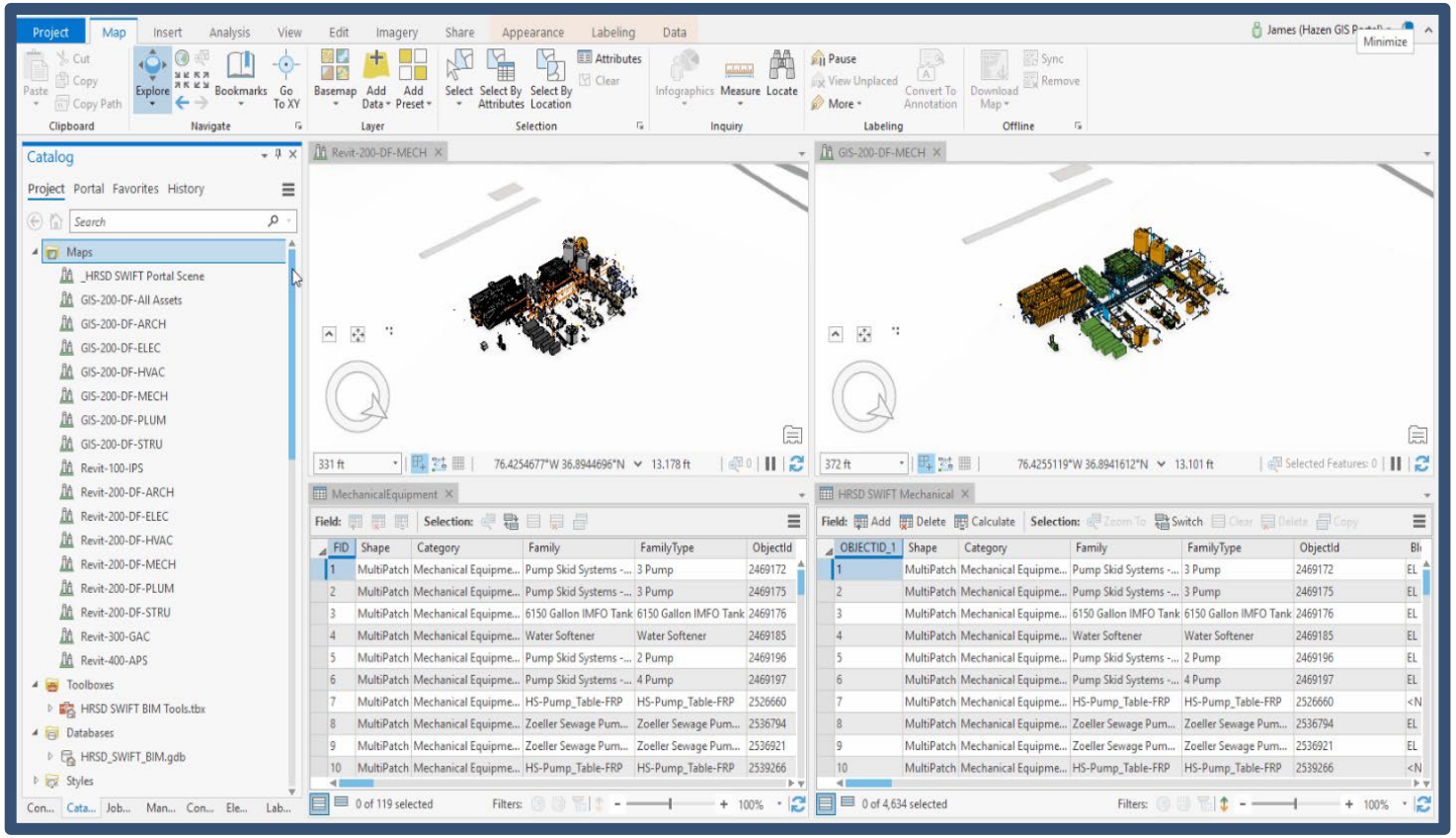
10.0: BIM Mo

11.0: BIM Qu

11.0: BIM Tec





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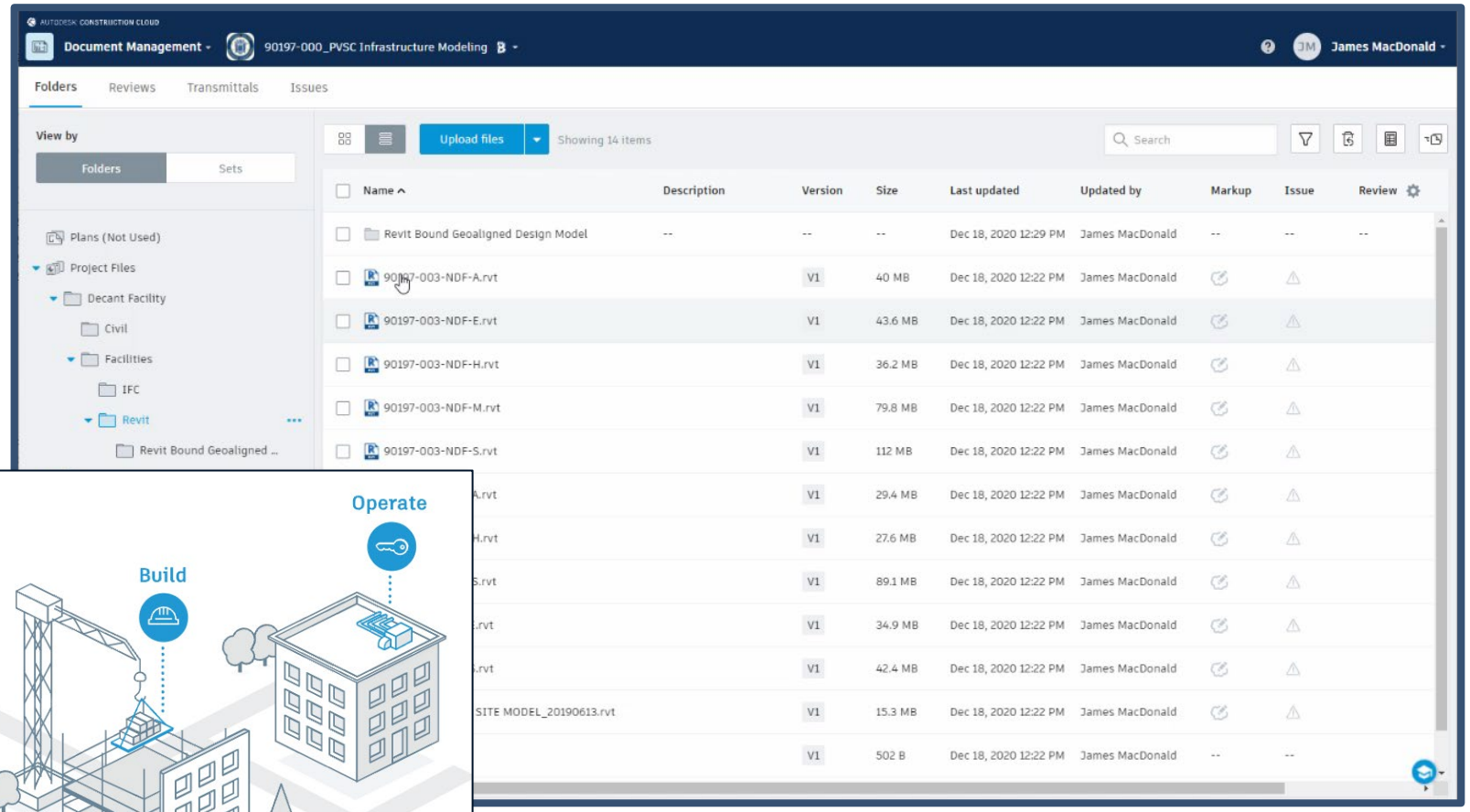
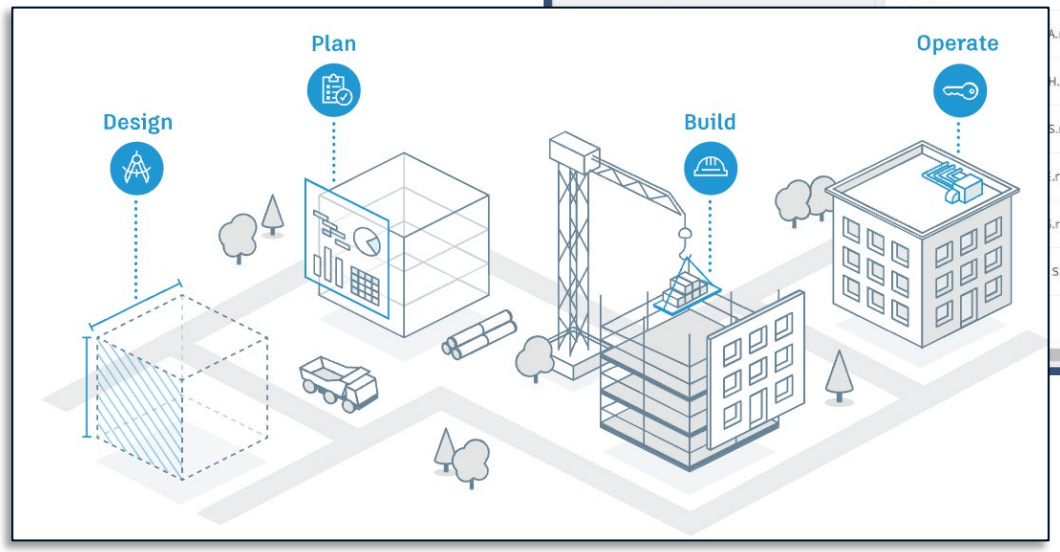
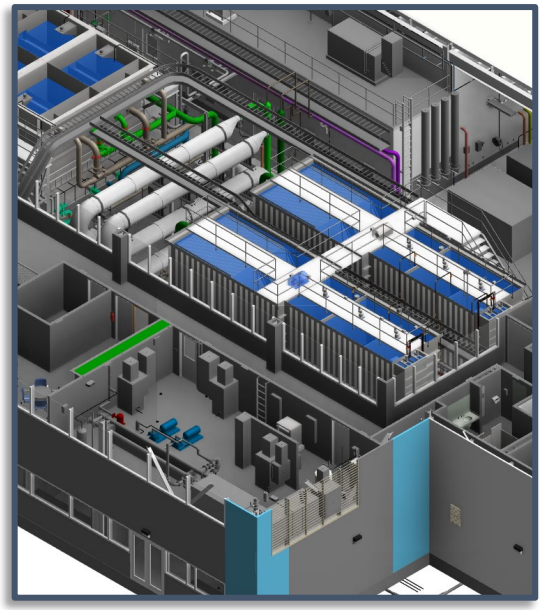
PVSC Autodesk Design (BIM360)

AUTODESK CONSTRUCTION CLOUD™

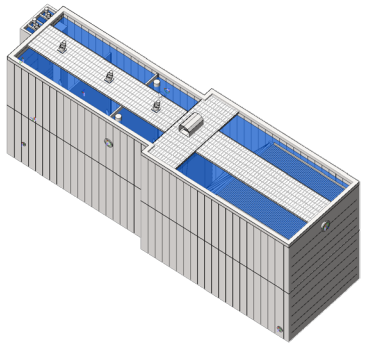




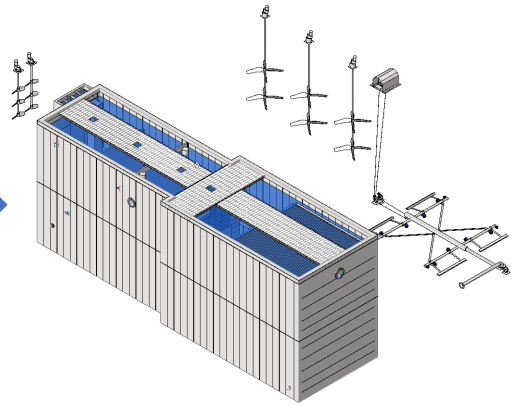
PVSC Autodesk Design (BIM360)



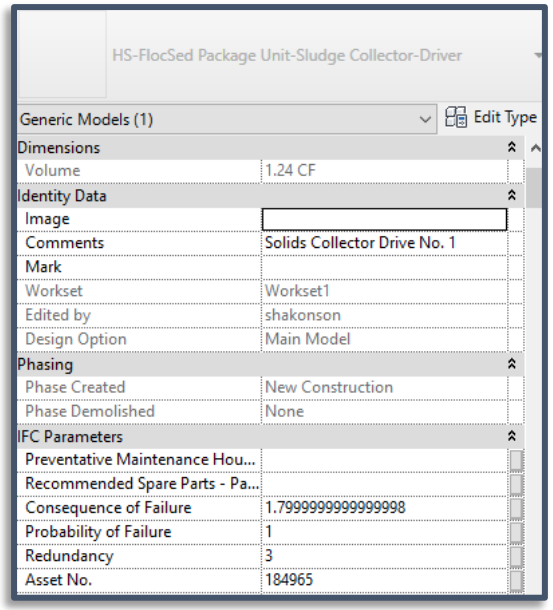
Building Information Model (BIM)



Building Families (Assemblies)



Asset Geometry



Asset Data

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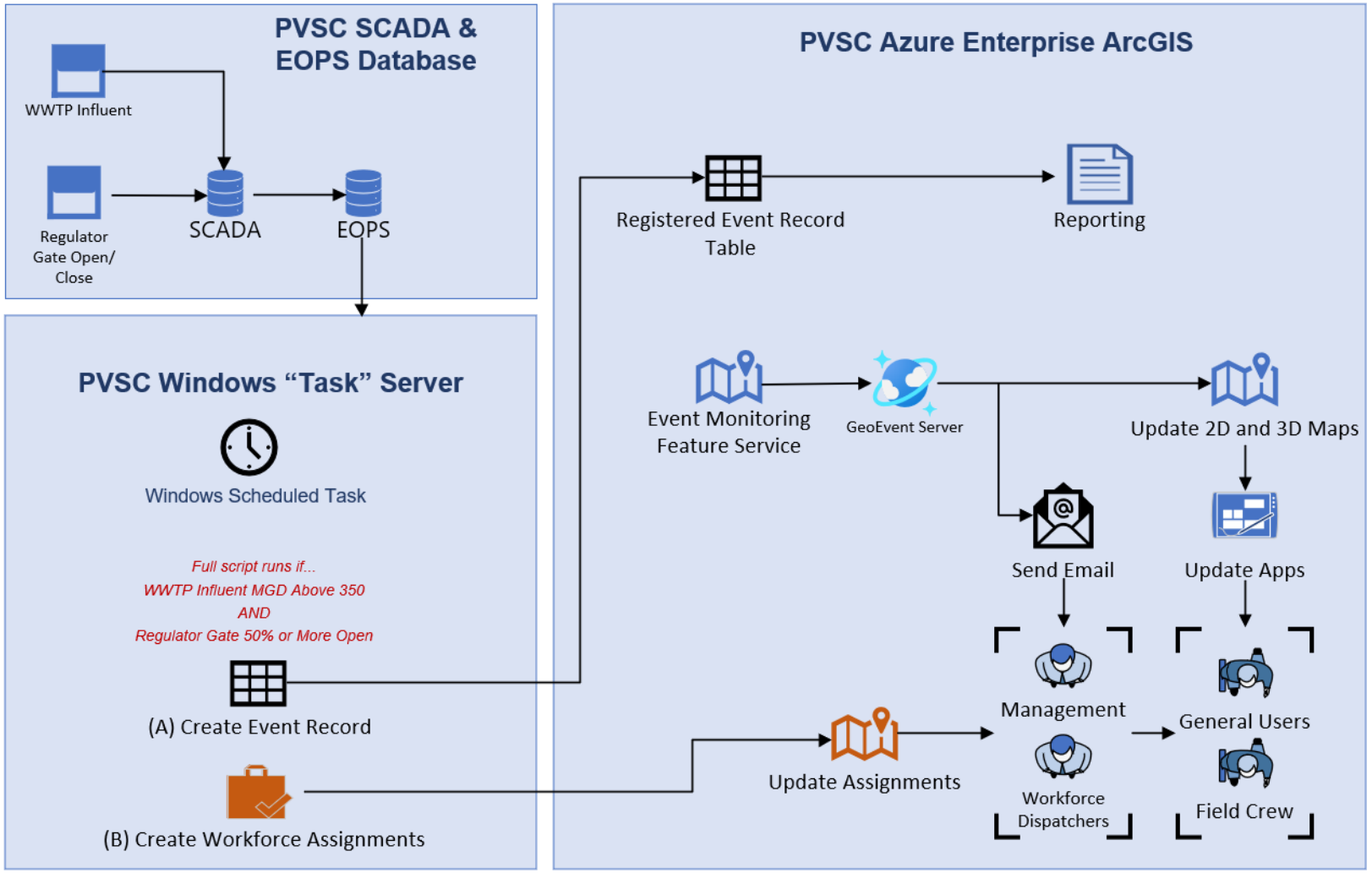
PVSC Enterprise ArcGIS Real-Time Data Analysis

1. Monitor flood gate data in SCADA
2. GeoEvent Server identifies “event”
3. Logs event in GIS SQL table
4. Sends email notifications to management
5. Creates Workforce Manager assignments
6. Field crews inspect assets
7. Workforce Manager assignments closed
8. Power BI & custom reports generated



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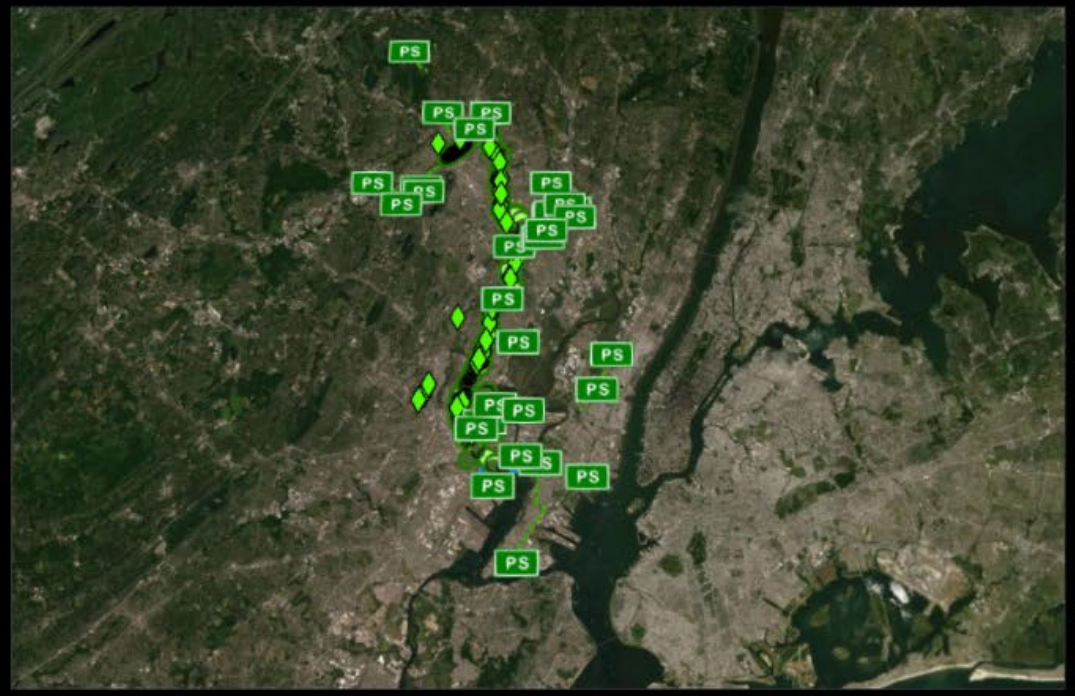
PVSC Phase 1 Enterprise GIS

PVSC Enterprise GIS+CAD+BIM+BI

2D GIS Sewer & Stormwater | 3D GIS (BIM) Decant Facility | GIS Dashboards | Decant Facility BI



SS Discharge Point

SS Manhole (Interceptor)

SS Network Structure

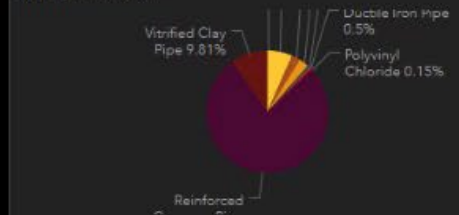
SS Pressurized Main

SS Gravity Main (Interceptor)

SS Pump Stations

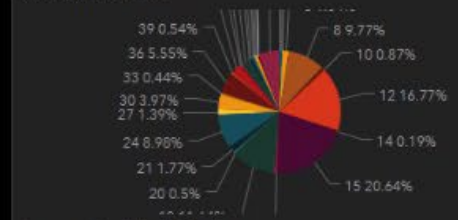
PS

SW Pipe Material



Does not include Null values

SW Pipe Diameter



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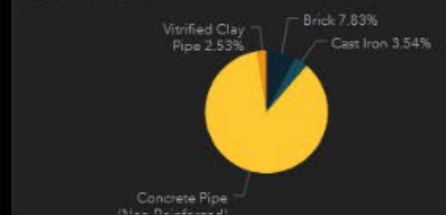
SS Pipe Material



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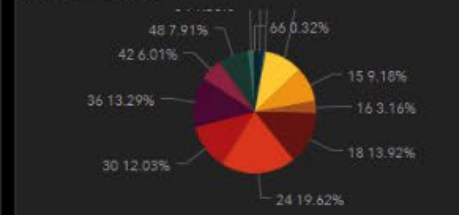
SS Pipe Diameter



Does not include Null values

SS Pipes No Material Value

194

SS Pipes No Diameter Value

199

Hampton Roads Sanitation District

Virginia Beach, VA

Sustainable Water Initiative for Tomorrow (SWIFT)

GeoBIM Project

- HRSD SWIFT Research Center
- Advanced Water Treatment
- Managed Aquifer Recharge
- 1 MGD
- Design Build Project
- BIM, PID, CAD, AM, VR, GIS
- BIM for Entire Asset Lifecycle

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HRSD SWIFT BIM GIS App
Launch BIM 360 Docs
SWIFT 3D BIM Scene
SWIFT BIM Ops Dashboard
Power BI BIM Dashboard
Assemble
HRSD 3D BIM
GIS Web Scene
-115.996 15.068 Degrees eye alt 12,104.54 Kilometers
Home (Exterio...
Earthstar Geographics | Source: USGS, NGA, NASA, CGIAR, GEBCO,N Robinson,NCEAS,NLS,OS,NMA,Geodatastyrelsen and the GIS User Community | Esri, HERE, Garmin
Powered by Esri

Improved Asset Inventory	Add vertical assets to your GIS using BIM
Expanded Collaboration	Share BIM with different audiences using ArcGIS
Better Facility Information	Improve as-built and asset documentation using GIS and BIM