



U.S. General Services Administration

# Digital Twin at San Ysidro LPOE

Implementation Journey

National Institute of Building Sciences

presented by  
Edmund Newman



## Learning Objectives

- Using a pilot to better understand and optimize a Digital Twin.
- Understand the process of aligning the right technology solutions with the Owner's digital twin needs
- Understand the benefits and difficulties of integrating BIM and GIS with Asset Management systems, BIM models and the user.

# Introductions



**Edmund Newman**

National BIM Program Manager

**GSA**



**Anderson Lewis**

Building Technology Consultant

procon:consulting

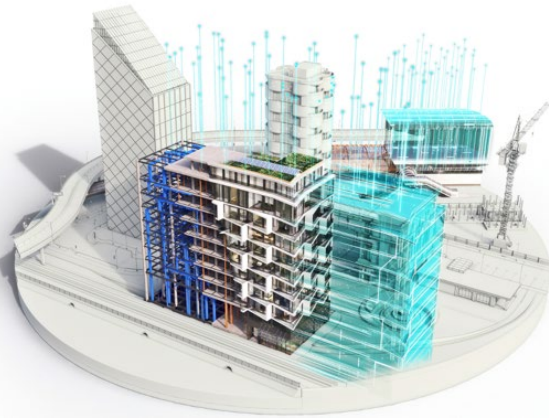


# Why Digital Twins?



# Better Use of Construction Data & Lower Cost of Ownership

**95.5%**  
of all data goes unused in  
engineering & construction<sup>1</sup>



# Bring Building Data to the Field





## Benefits of SYLPOE GIS Tool

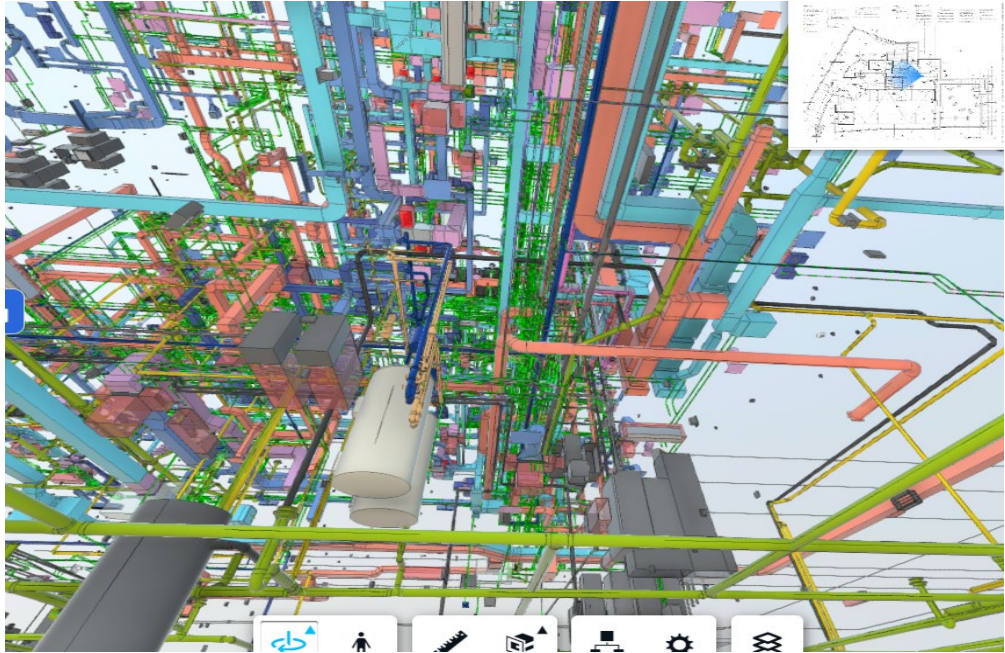
- Aggregate data many sources into one easy to use tool
- Allows users to
  - View Tasks and Data on Mobile or Desktop
  - See information in Accurate Plan or 3D Views
  - See Information about Building Equipment
  - Enables User Inputs of Model and Data Inaccuracies, Enhances User Confidence, Creates a Self-Healing Environment

We have moved from this world





To managing this one

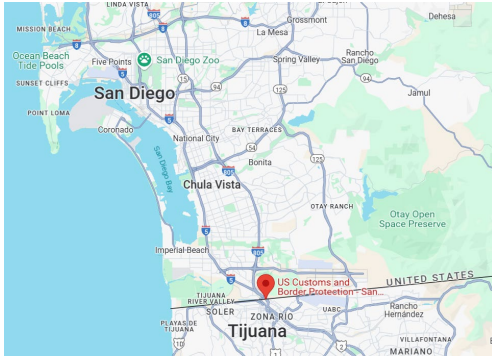




# SYLPOE Project Background

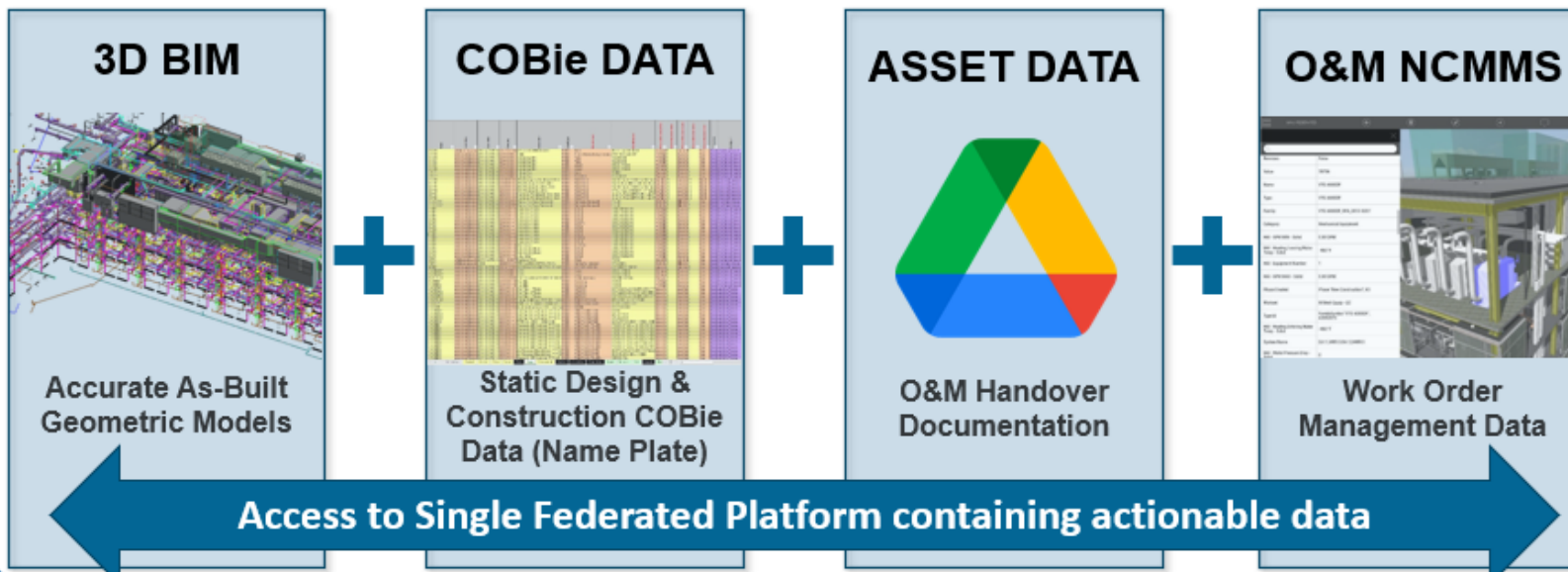


# \$1B, 3-phase Improvement Completed

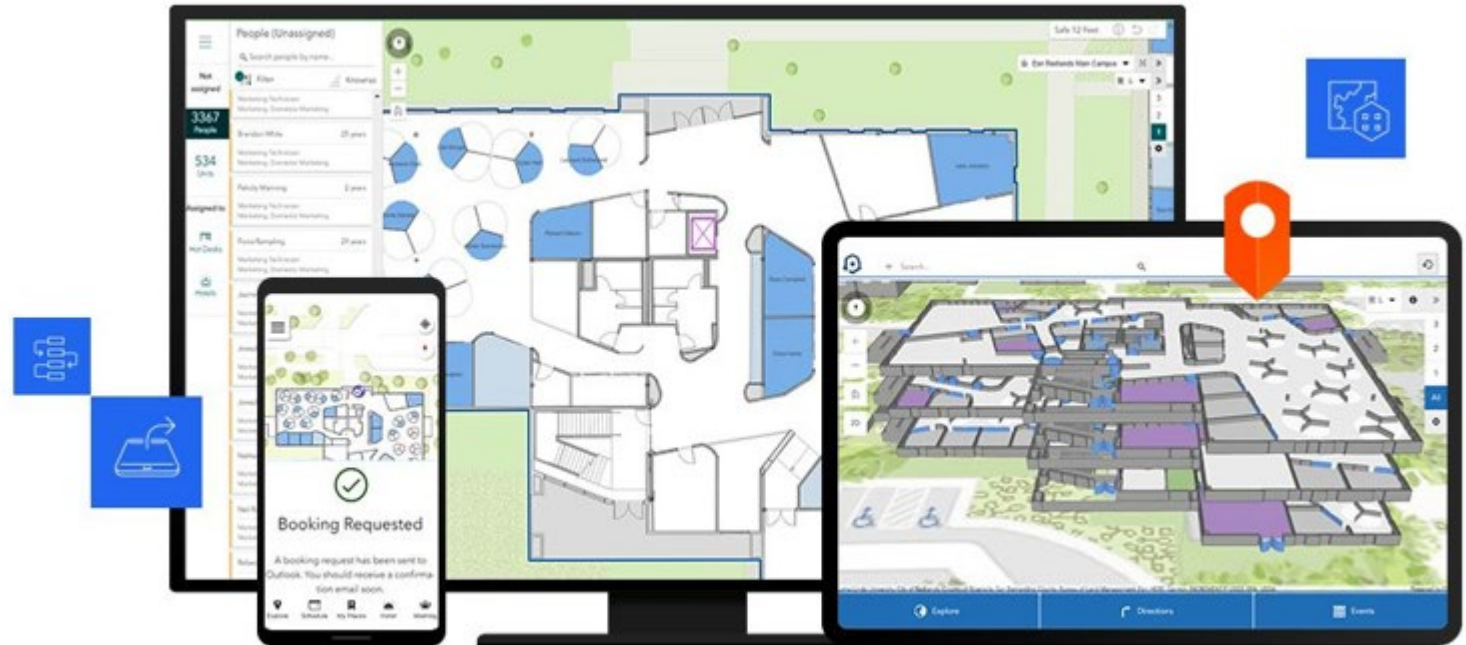


# High-level Implementation Strategy

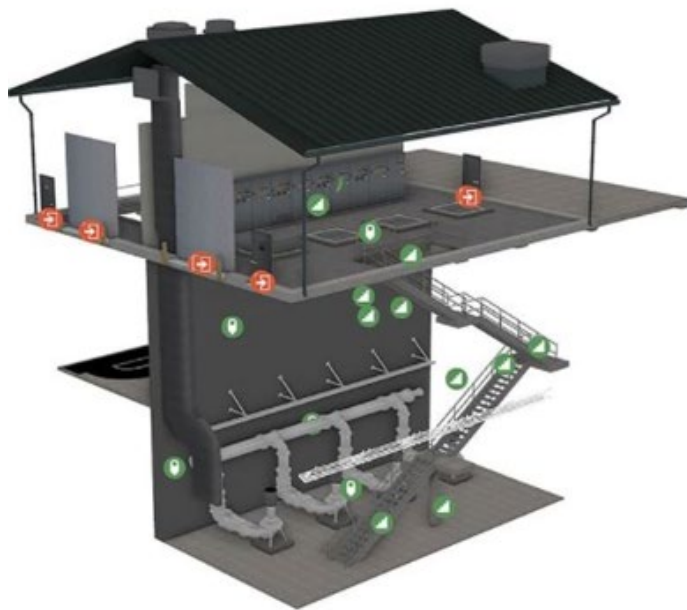
Multiple data sources Connected into a single intuitive geodatabase:



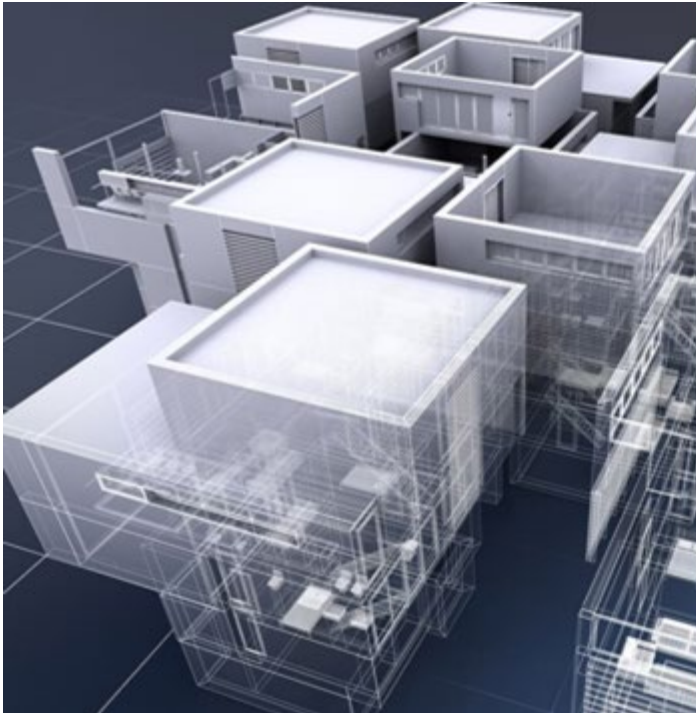
# Data in the Office or Field; Desktop or Mobile



## 2D & 3D capabilities + Points of Interest (POI)



# Platform Choice: ArcGIS Indoors



## A platform for building management

Facility location technology comes together on the ArcGIS Enterprise platform. Operations Dashboard for ArcGIS, ArcGIS GeoEvent Server, and ArcGIS field operations apps provide operators real-time facility awareness. The indoor positioning system (IPS) supports wayfinding and tracking inside and between buildings. The powerful analytic capabilities and multidimensional visualizations of ArcGIS Indoors increase the performance of malls, airports, campuses, and other large facilities.

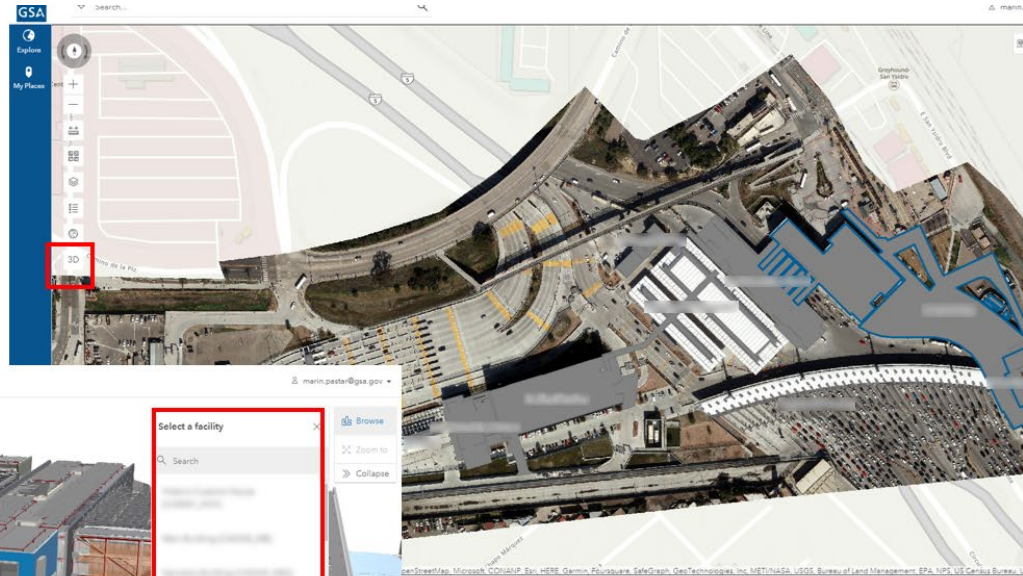


# App Features

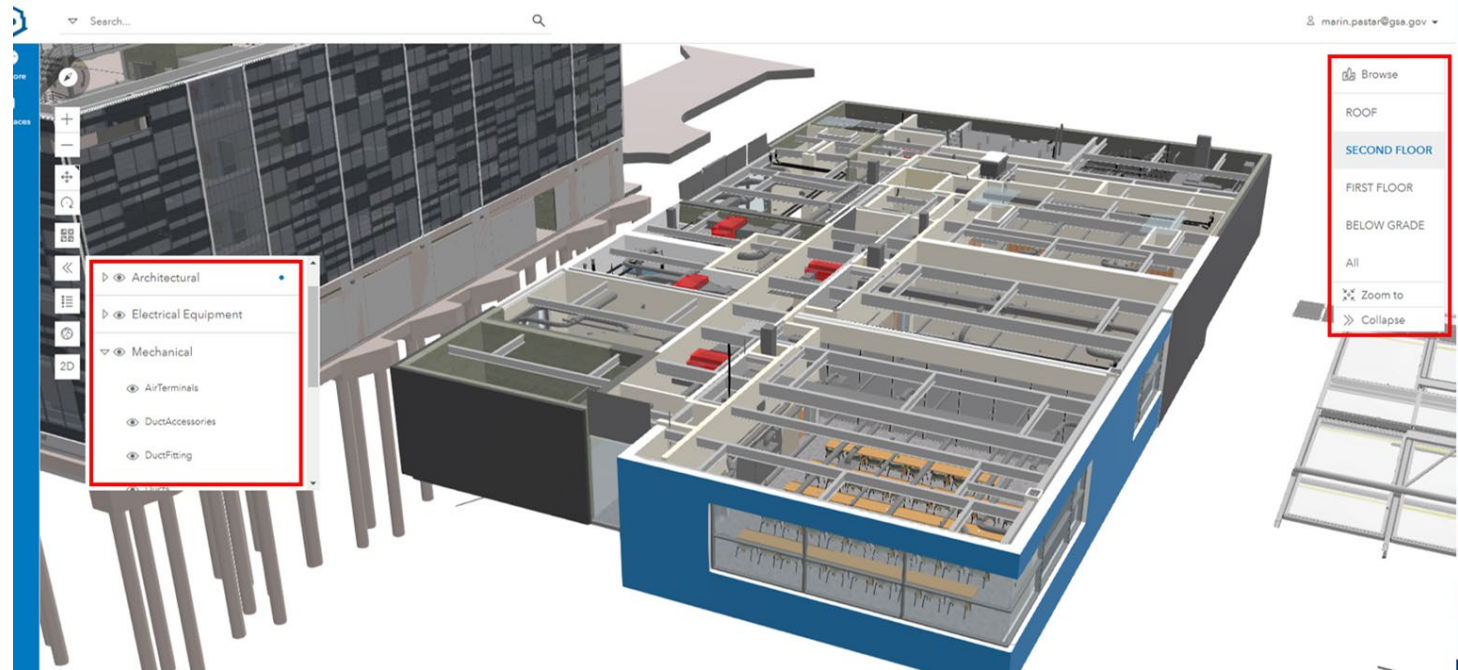


## 2D & 3D access to:

- All buildings (BIM)
- GIS Data (ESRI)
- Imagery (Drone)



## Turn On/Off floor-aware building systems/layers for easy viewing



# O&M Asset Data Linked to Asset Types

Search... marin.pastor@gsa.gov

Facility

Pipe Accessories

- < Back
- TOS
- L5
- L4
- L3
- L2
- L1
- BL1
- BL2
- Status
- Asset Tag
- Facility ID
- Level ID
- Building Name
- Level Name
- Maximo Asset
- Asset Name
- Description

GSA GUID  
e12700a7-5634-40c4-e07a-12fed4eebf4-0024c43b

Asset Type

Serial Number

GSA Equipment ID

Location

Status

Asset Tag

Facility ID  
CA0340\_NB

Level ID  
CA0340\_NBL1

Building Name  
Narcotics Building

Level Name  
Level 1

Maximo Asset  
Yes

Asset Name  
Pipe Accessories\_Backflow Preventer 3/4"

Description  
backflow preventer - 3/4"

Get this information on mobile

40056713\_Re... vice\_BFP.pdf Open with Google Docs

221400 2.16 RP/IS-994/994RPDA

### Series 994/994RPDA

#### Reduced Pressure Zone Assemblies

#### Reduced Pressure Detector Assemblies

Sizes: 2 1/2" - 10" (65 - 250mm)

- Installation
- Service
- Repair Kits
- Maintenance

For field testing procedure, send for literature IS-TK-DL, IS-TK-9A, IS-TK-99E and IS-TK-99D.  
For troubleshooting guide, send for literature S-TSG.  
For other repair kits and service parts, send for literature PL-RP-RPD.  
For technical assistance, contact your local Watts representative on back page.

**WATER WORKS**

SUBMITTAL DOCUMENT

Part # 994-6"

Tag # BFP-101

This stamp does not guarantee accuracy of the information contained in this document.

994

LIMITED WARRANTY: Watts Regulator Co. (the "Company") warrants each product to be free from defects in material and workmanship under normal conditions for a period of one year from the date of original shipment. It is the buyer's sole obligation to maintain proper care. The Company will, at its option, replace or repair the product without charge. THE WARRANTY SET FORTH HEREIN IS GIVEN EXPRESSLY AND IS THE ONLY WARRANTY COVERED BY THE COMPANY WITH RESPECT TO THE PRODUCT. THE COMPANY MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED. THE COMPANY SPECIFICALLY DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

The remedy described in the first paragraph of the warranty shall constitute the sole and exclusive remedy for breach of warranty, and the Company shall not be responsible for any incidental, special or consequential damages, including without limitation, lost profits or the cost of repairing or replacing other property's value in damaged if this product does not work properly, other costs resulting from pipe charges, delays, relocation, negligence, having caused by failure, material, defective workmanship, installation, chemical, fire, any other circumstances over which the Company has no control. This warranty shall be considered by all states, residents, municipalities, engineer installation or engineer maintenance or alteration of the product. Some States do not allow limitations on how long a contract or warranty may last, and some States do not allow the exclusion or limitation of incidental or consequential damages. Therefore the above limitations may not apply to you. This Limited Warranty gives you specific legal rights, and you may have other rights that vary from State to State. You should consult appropriate State laws in determining your rights. IN ALL AS IS CONNECTION WITH APPLICABLE STATE LAW, ALL IMPLIED WARRANTIES, THAT ARE NOT EXCLUDED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN EXTENSION TO ONE YEAR FROM THE DATE OF ORIGINAL PURCHASE.

**CALIFORNIA PROPOSITION 65 WARNING**  
WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. (California law requires this warning to be given to customers in the State of California.)  
For more information: [www.watts.com/prop65](http://www.watts.com/prop65)

**IMPORTANT:** Inquire with governing authorities for local installation requirements.

**NOTE:** For Australia and New Zealand, should be installed between the upstream

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**WATTS**

# NCMMS data and Work Orders linked

The screenshot displays the NCMMS interface. At the top, a search bar and a user profile for 'merin.pastor@gse.gov' are visible. The main area is a map showing various asset locations, with one asset highlighted by a red circle. A context menu is open over this asset, listing options such as 'Perform PM Task', 'Model Update Request: Asset', and 'Model Update Request: Spaces'. A red arrow points to the 'Perform PM Task' option. To the right, a data panel provides details for the selected asset, including its location, description, and various identifiers.

Field	Value
Location	62112
Location Description	MO0570AG-Basement, 1st Level
Legacy Location	
Type	CHL-CW2
Serial #	YD-790002904
Asset Tag	
Model no.	YD-2200
Manufacturer	YORK

# Update NCMMS Asset Data Linked Request Model updates

Search...

marin.pastar@gse.gov

Mechanical Equipment\_Cooling tower\_1

Set Home Save Share More

Attrit Perform PM Task

Model Update Request: Asset

Model Update Request: Spaces

Bldg\_Name CA0337-HH

Category Mechanical Equipment

COBie\_Component\_AssetIdentifier N/A

COBie\_Component\_BarCode N/A

COBie\_Component\_Description Cooling Tower

COBie\_Component\_InstallationDate 12/01/2014

COBie\_Component\_Name Mechanical Equipment\_Cooling tower\_1

COBie\_Component\_SerialNumber AAA-Update

COBie\_Component\_Space 335

COBie\_Component\_TagNumber N/A

COBie\_Component\_ManufacturerData

Model Update Request: Asset

Asset 200000

Building -Please select-

Issue Type Select the option that most closely describes your issue.

Equipment: Wrong location

Equipment: Incorrect Geometry

Equipment: Incorrect Count

Other

Model Issue Description Provide a clear text description of the issue and what steps need to be taken to resolve it.

Attach Photo Upload an image of the area/asset to provide the model manager greater context into the issue.

Drop image here or select image



# Development Challenges & Insights

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# Project Delivery and Deliverables

- Turnover data quality is a big challenge!
- Many conversion issues can be avoided with:
  - Solid BIM & Data Standards
  - Strong Contract Language
  - Clear understanding of system requirements
  - Periodic QA/QC Checks
  - Enforce the Digital Deliverables and Delivery Timelines



# General Challenges

- IT Security and Permissions:
  - What is allowed
  - What interconnections are allowed
  - Will it stay that way?
- Who are your Stakeholders
- Software Versioning / Updates / IT Security Changes



Thank you!



