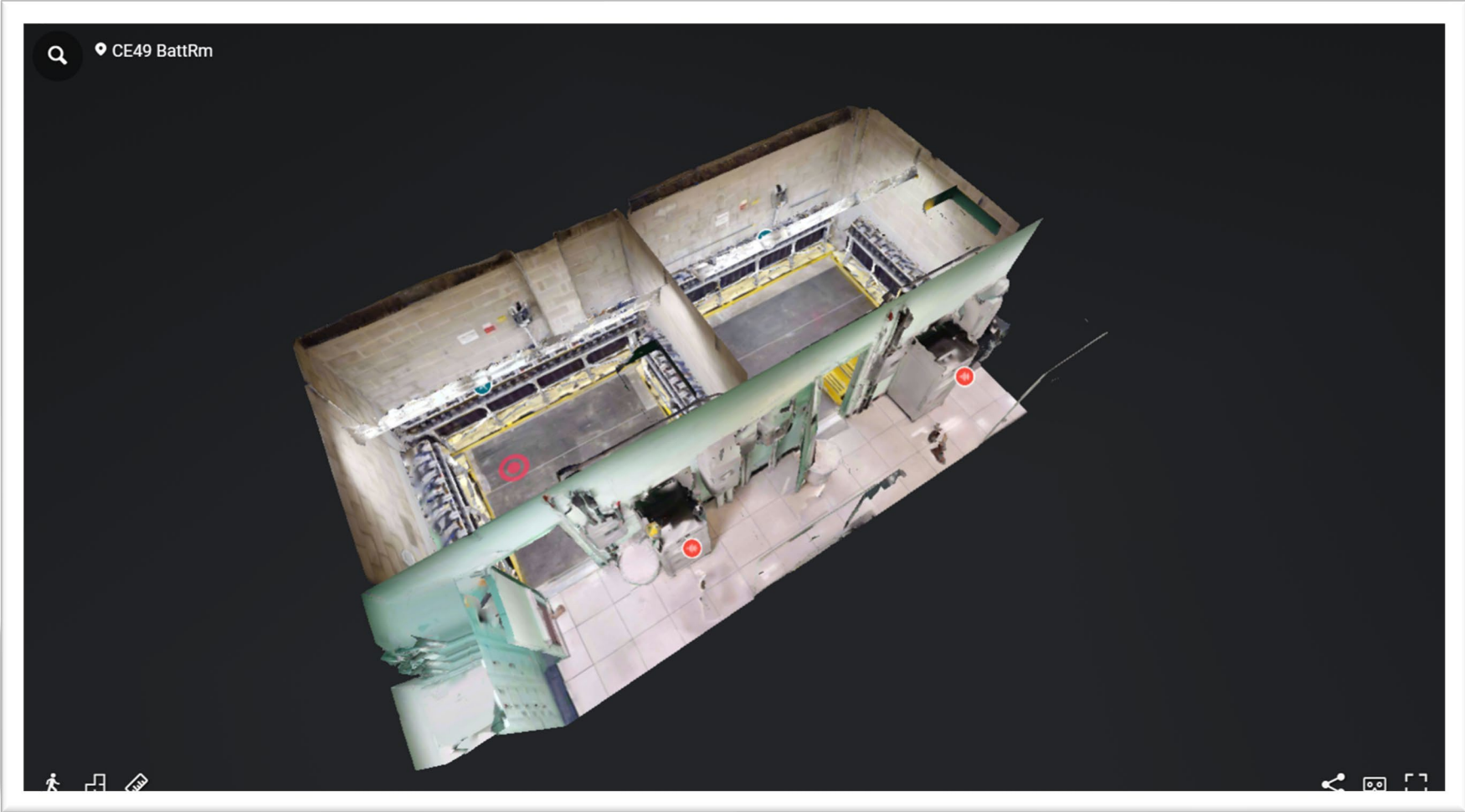


# Creating a Digital Twin at Con Edison



# Presenters

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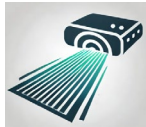


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# Definitions



**Digital Twin** – visual (virtual) representation of a physical space or asset



**Scan** – camera capture of physical space to render into a model



**Model** – final version of a scanned virtual space



**Space** – the physical location of where the scan takes place

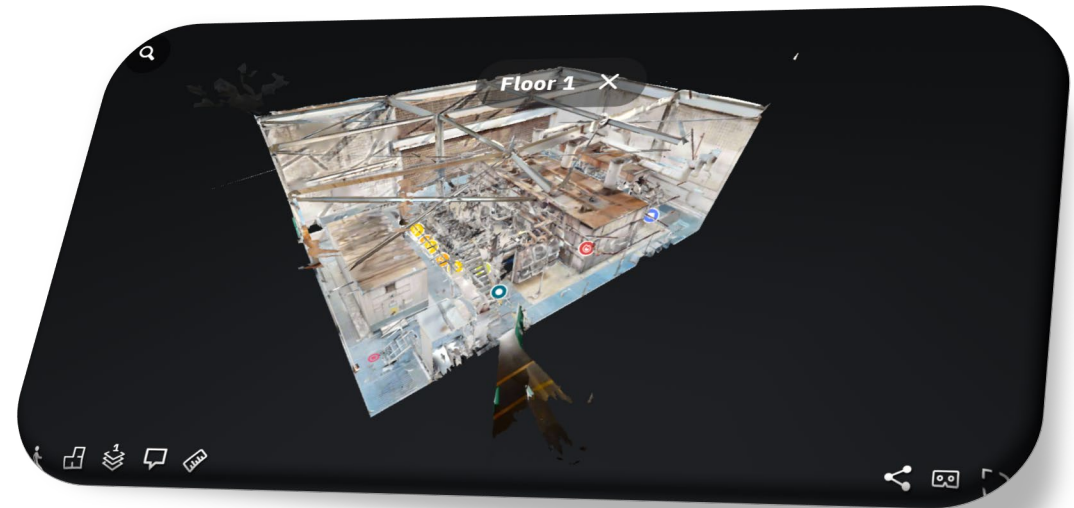
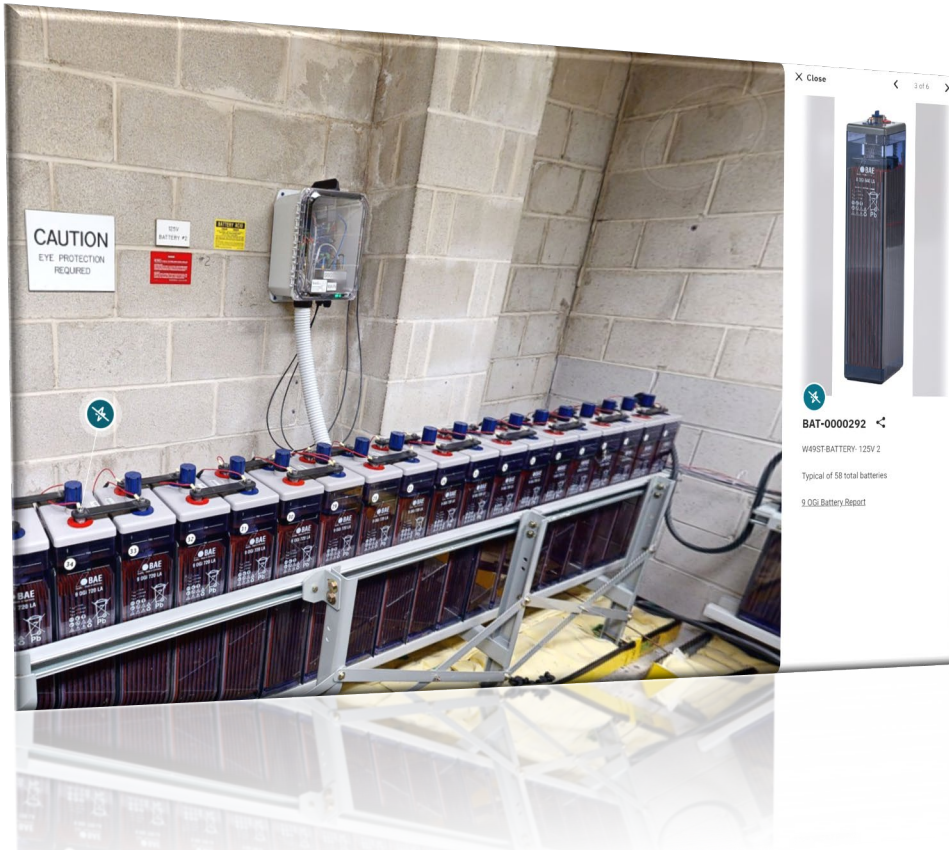
# Digital Transformation

A behavioral change management process of going from an analog base to a digital base of operations



## Connecting The Unconnected

# Digital Twins and Their Importance



Virtual space review can aid in:

- Work Planning
- Safety Task Analysis
- Contractor Reviews
- Training

See assets in real world scenarios

View asset information directly within the scan

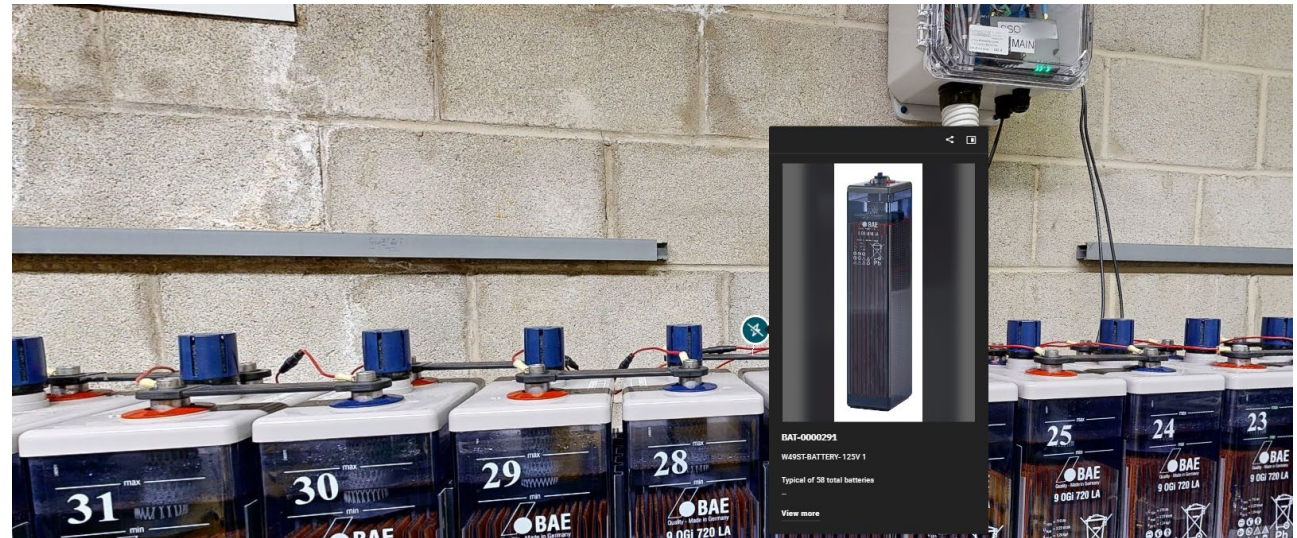


# Matterport – 3D Scanning



## POC Problem Statement Challenges

- Maximo Integration for Digital Twins
- Identify hazards associated to jobs in pre-onsite job briefing discussions.
- Initial scoping of PM/CM jobs followed by Field Presence
- Risk assessment (Safety/Equipment Reliability/Environment)
- Heightened Situational Awareness
- Drawing Management
- Visual Aid for Engineering Reviews



# Digital Twin Tools

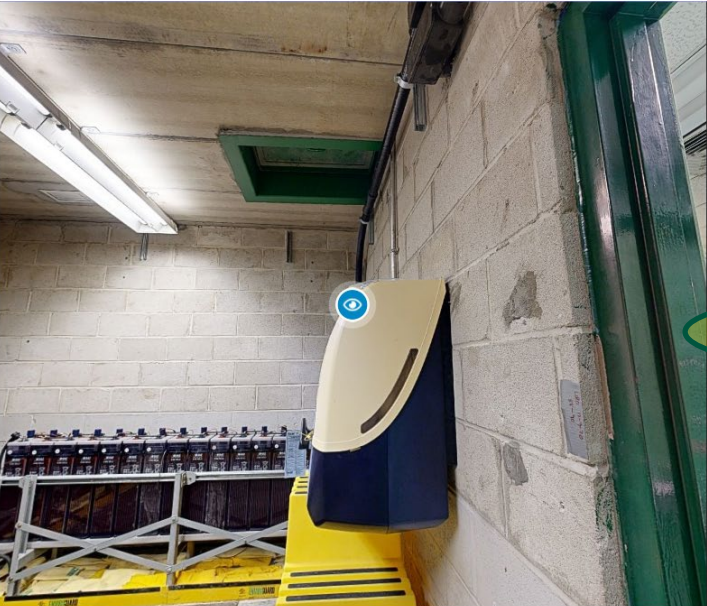


All Spaces

**CE49 BattRm** 3C :

Export ▼ Share Edit

Space Details Add-ons Media Property Report New Stats



**EWH-0000335** 👁️ 🔗

W49 EMERGENCY EY WASH 1 BATTERY ROOM 1  
[Zoro - Aquarion Eyewash Station](#)

**Attachments**

[Aquarion\\_Eyewash\\_Cut\\_She...](#) 258.7kB 📄

Downloads/Aquarion\_Eyewash\_Cut\_Sheet%20(3).pdf

UCSDH UCSF Valley Water IRM Hub - Planner Maximo Support Se... Projectech Apps Da... Home - SmartSheet... IFS Ultimo Academy 2023 AMP VOLUNT...

Ask Copilot


1 of 2

**Aquarion™ Portable Eye Wash Station**

PLS455 Portable, Holds 7.4 gal., Flow Rate 0.4 gal./Minute Minimum

Self-contained eye wash station offers multiple inspection points and factory-sealed saline solution cartridges for easy maintenance.

- Multiple points of inspection include a usage seal on the tray, side windows for quick visual inspections and a removable lid for a thorough inspection of cartridges
- Factory-sealed cartridges are ideal when a direct plumbing line is inaccessible or inconvenient
- Sleek design avoids crevices where dust or dirt can accumulate to prevent the growth of mold, fungus and bacteria
- High-visibility eye wash is easy to find in emergency situations
- One-step activation; just pull down the tray and water flow begins in less than a second
- Self-contained fluid cartridges (PLS456, sold separately) provide a 0.4 gallon-per-minute eye wash for up to 15 minutes; replacing used cartridges is quick and easy



**Specifications**

Style	Portable
Dimensions	17.5" W x 23.5" L x 30.5" H
Brand	Encon
Capacity	7.4 gal.
Dispensing Method	Gravity-fed
Flow Rate	0.4 gal./Minute Minimum
Color	Black/Yellow
Fluid Storage Method	Cartridge
Sold as	1 each
Weight	30 lbs.
# per Pallet	10
Composition	Abs Plastic & Polycarbonate
UNSPSC	46181810
Pigalogo® Page Number	Page 202



# Digital Twins and Maximo



**Matterport**

- Dashboard
- All Spaces
- Public and Unlisted Spaces
- Statistics
- Users
- Capture Services
- What's New
- Discover
- Settings

Michael

All Spaces  
**MEP Room** 3C

Space Details Add-ons Media Property Report **New** Stats



Close 5 of 13

**1008**

Assetnum: 1008  
Description: Hot Water Heater 2  
Priority: undefined  
Location: BOILER

Status: OPERATING

[Add WorkOrder](#)  
[Add ServiceRequest](#)

[Installation and Operation Manual](#)

List View Work Order Plans Assignments Related Records Actuals Safety Plan Log Failure Reporting Specifications Service Address Map

\*Work Order: 55006

Location: BOILER >> MEP Room

Asset: 1008 >> Hot Water Heater 2

Classification Item:

Parent WO:

Classification:

Class Description:

Launch Entry Name:

Site: BEDFORD

Class: WORKORDEF

Work Type:

GL Account: 6210-300-???

Failure Class:

Problem Code:

Storeroom Material Status:

Direct Issue Material Status:

Work Package Material Status:

Material Status Last Updated:

Attachments

Status: WAPPR

\*Status Date: 3/8/24 10:02 AM

Inherit Status Changes?

Accepts Charges?

Is Task?

Under Flow Control?

Suspend Flow Control?

Flow Action:

Flow Action Assist?

Appointment Required?

**Job Details**

Job Plan:

Job Plan Revision #:

PM:

Safety Plan:

Contract:

Asset Details

Asset Up?

Warranties Exist?

SLA Applied?

Charge to Store?

Current Value:

Priority

Asset/Location Priority:

Priority:

Priority Justification:

Risk Assessment:



# Digital Twins and Maximo



The screenshot shows the Maximo Assets interface. On the left is a navigation sidebar with sections like 'Go To Applications', 'Available Queries', 'All Records', 'Common Actions', and 'More Actions'. The main area displays the 'MatterPort' for asset 'BAT-0000291'. A 3D digital twin of a room, 'CE49 BattRm', is shown with red markers on the floor. The top navigation bar includes 'List View', 'Asset', 'Spare Parts', 'Safety', 'Meters', 'Specifications', 'Relationships', 'Work', 'Work Zones', 'Service Address', 'Map', and 'CONNEX'.

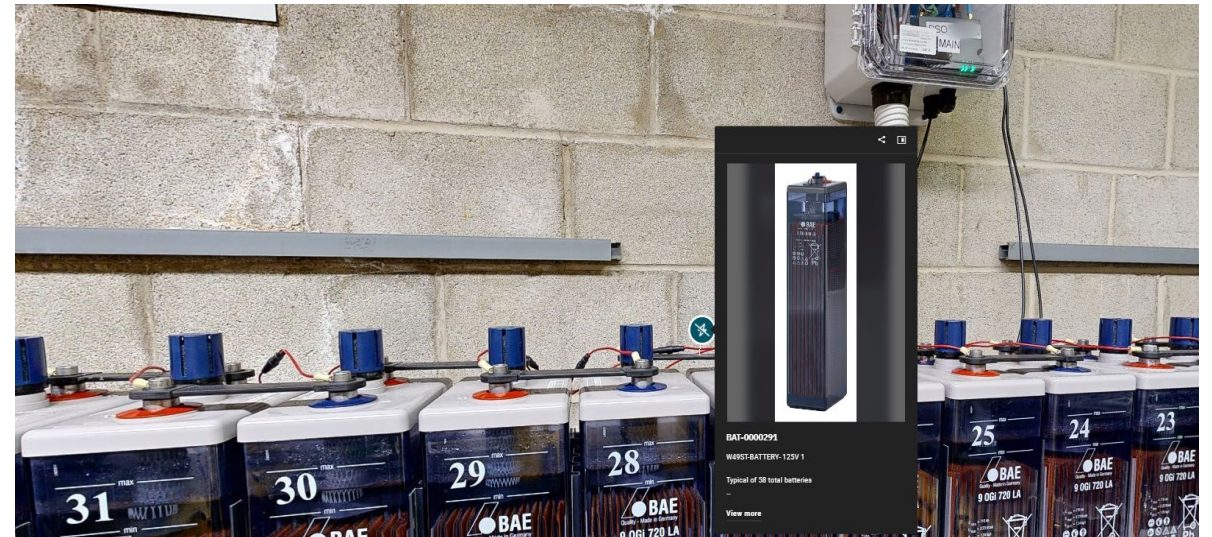
This screenshot shows the same Maximo interface but with a photo of a battery rack. The rack contains multiple BAE batteries. A detailed view of a single battery is shown on the right, with the following information:  
**BAT-0000292**  
W49ST-BATTERY- 125V 2  
Typical of 58 total batteries  
[2\\_OGI\\_Battery\\_Report](#)

The photo shows a rack of BAE batteries in a room with a 'CAUTION EYE PROTECTION REQUIRED' sign. A green 'X' icon is overlaid on the photo. The detailed view includes a 'Close' button, navigation arrows, and a dropdown menu for 'CE49 BattRm'.

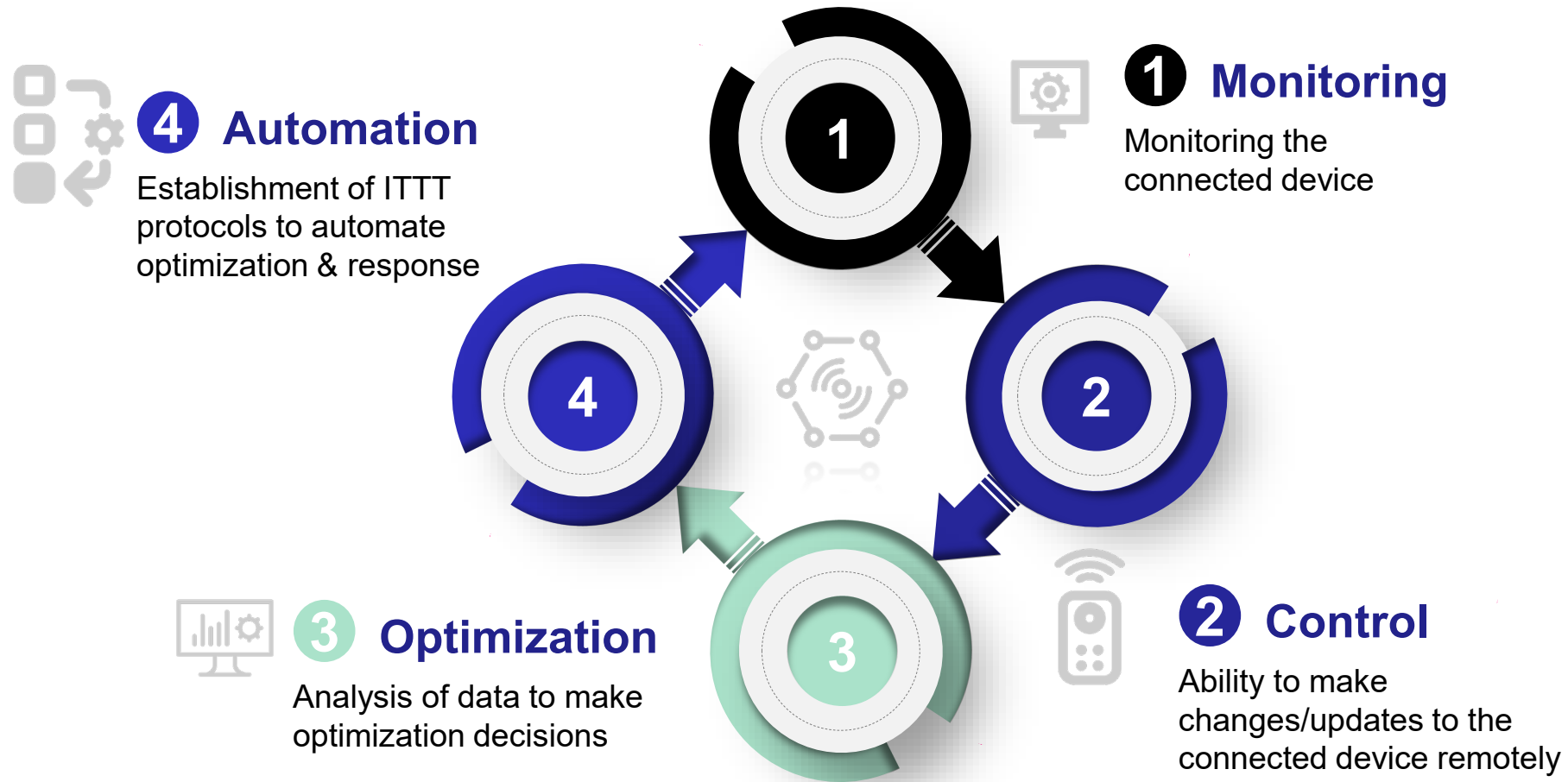
# Matterport – 3D Scanning

## POC Problem Statement Solutions

- Maximo Integration for Digital Twins
- Increased visibility over work bundling opportunities
- Train new personnel on substations (Virtual Tours)
- Identify hazards associated to jobs in pre-onsite job briefing discussions.
- Utilize wearables to see asset tags and Aveva Pi real-time data
- Initial scoping of PM/CM jobs followed by Field Presence
- Operational Excellence in Operating Orders
- Risk assessment (Safety/Equipment Reliability/Environment)
- Heightened Situational Awareness
- Historical Reference
- New station design efforts referencing with existing as-builts
- 3D CAD and BIM extraction for Design Engineering







## IoT Cycle - Alignment of Components

# Bridging Aveva Pi



PKCH 1-BATTERY-125V 2\_(BAT-0000243) ● Active Alarm  
● Good

### Battery Data refreshed: 4/10/2023 12:00:00 AM

Ambient Temperature	Float Current	Ripple Current	String Current	String Ripple Voltage
19 °C	0.45095 A	0.20142 A	0.39979 A	0.030519 V
String Voltage	Thermal Risk	Max Voltage	Min Voltage	Avg. Voltage
128.5 V	0	2.2217 V	2.2065 V	2.2156 V

### Trends

### Cell Data Show Faulty Cells

Name	Internal Resistance	Temperature	Voltage	Connection Resistance
Cell 01	222 µohm	20 °C	2.2168 v	21 µohm
Cell 02	221 µohm	20 °C	2.217 v	19 µohm
Cell 03	219 µohm	20 °C	2.214 v	25 µohm
Cell 04	219 µohm	20 °C	2.216 v	19 µohm
Cell 05	226 µohm	20 °C	2.219 v	9 µohm
Cell 06	224 µohm	20 °C	2.2178 v	21 µohm
Cell 07	221 µohm	20 °C	2.215 v	22 µohm
Cell 08	222 µohm	20 °C	2.215 v	21 µohm
Cell 09	227 µohm	20 °C	2.22 v	22 µohm
Cell 10	226 µohm	20 °C	2.2188 v	15 µohm
Cell 11	217 µohm	20 °C	2.215 v	22 µohm
Cell 12	224 µohm	20 °C	2.217 v	17 µohm





# Applying IoT Readings in Meters for PM Generation



Asset: 2900 AIR HANDLER UNIT - IBM INNOVATION NY - 003-1 Site: BEDFORD

Meter Group: >

Meters Filter > 1 - 7 of 7

Sequence	Meter	Description	Meter Type	Unit of Measure	Active?
>					
>					
>					
>					
>					
>					

PM: 1023 AIR HANDLER UNIT - CONDITION MONITORED PM Site: BEDFORD Status: DRAFT

Forecast Exists?

Work Order Generation Information >

Do Not Estimate?

Frequency is Reached?

**Time Based Frequency** | **Meter Based Frequency**

Frequency: 1 Alert Lead (Days): 0

Frequency Units: MONTHS Estimated Next Due Date: Start Date

**Time Based Frequency** | **Meter Based Frequency**

Meter Based Frequency Filter > 1 - 1 of 1

Meter	Description	Frequency	Units to Go	Generate WO Ahead By	Alert Lead
>	>	50.00			

Details

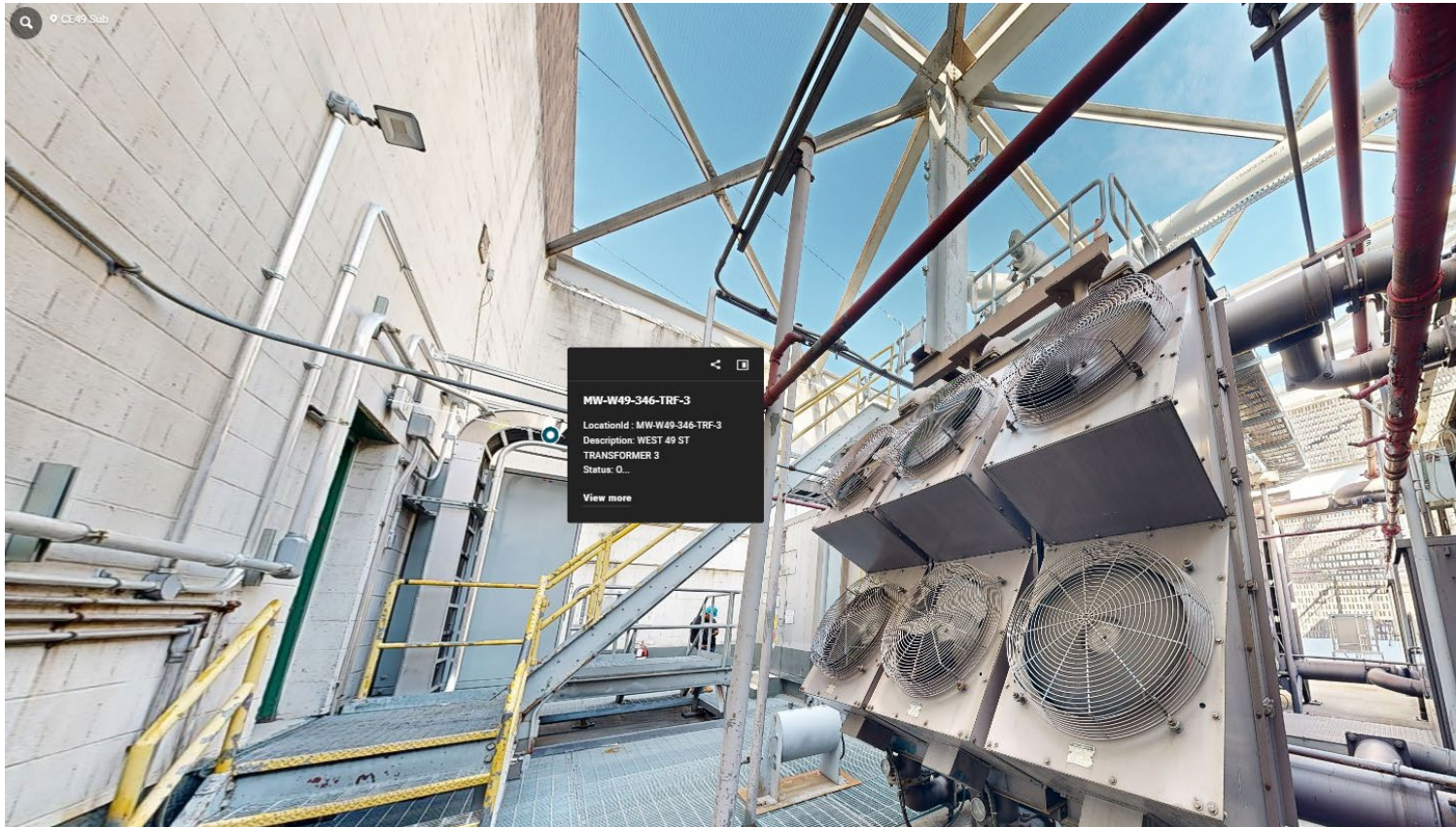
Meter: > Average Units/Day:         

Frequency: 50.00 Rollover:         

Alert Lead:         

Generate WO Ahead By:

# Safety Benefits of 3D Scans



ENGAGE P3  
Dashboard | Work Orders | Resources | Operations | E-Report | Engage Modules | Config

CENG Pre Site Visit Discussion Rd.000 | STKY Essentials

Central Engineering - Job Briefing Review

Initial Briefing To Be Given By Management

JOB BRIEFING TITLE\*  
test

INITIAL JOB BRIEFING PROVIDED BY\*  
Ramkishun, Shaun

INITIAL JOB BRIEFING DATE\*  
5/14/2024

ONSITE JOB BRIEFING PROVIDED BY\*  
-Select-

ONSITE JOB BRIEFING DATE\*  
5/14/2024

FACILITY/SITE\*  
ADDRESS\*  
EMERGENCY SITE CONTACT\*

JOB FUNCTION\*  
JOB/PROJECT NUMBER\*

WORK PERMIT NUMBER  
ORGANIZATION/DEPARTMENT\*  
CENG Maximo Center of Excellence

ENGAGE P3  
Dashboard | Work Orders | Resources | Operations | E-Report | Engage Modules | Config

REMARKS / COMMENTS

**SECTION #3 - HAZARDS ASSOCIATED WITH THE JOB**  
Perform a site survey to identify any EH&S hazards that exist and need to be controlled or warnings that need to be discussed to prevent injury or environmental issues.

EXAMPLES  
 Arc / Flash  Electric Contact  Environmental Issues  Slip/Trips/Falls  Lifting  Cell Phone Usage  Lighting  Overhead Hazards  
 Weather  Gas Presence  Air Quality / Hazardous Atmosphere  Traffic  STKY  Other (List Below)

DID CONDITIONS CHANGE?

REMARKS / COMMENTS:

**\*\* CELL PHONES CAN LEAD TO DANGER AND PERSONAL USE SHOULD BE KEPT TO BREAKS \*\***

**SECTION #4 - PROCEDURES/INSTRUCTIONS**  
Access to procedures?  
 Yes  N/A  
REMARKS / COMMENTS

**SECTION #5 - SPECIAL PRECAUTIONS TO BE TAKEN - WHERE APPLICABLE**  
List and discuss special precautions associated with the job (ex: review rescue actions, public safety, walking surface, construction sites, coordination with other crews, adjacent equipment,




# Purpose Benefit Check

- Received explanation of background and capabilities of Digital Twin and Maximo in the utilities space
- Received examples of use cases to leverage IoT and Digital Twin, including use within Maximo
- Gained understanding of how digital transformation can aid in asset management, safety, and sustainability
- Gained understanding of how to be better positioned to provide mandatory regulatory compliance and sustainability reporting

Please answer these two questions  
in Guidebook about the session  
you just attended.



← Session Feedback 

1. Did This Session Meet Your Expectations? •

YES

NO

2. Please give us feedback about your previous answer. •

Your answer

Also, be sure to  
complete the overall  
conference evaluation  
in Guidebook.





# Questions

# THANK YOU!

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