

19 MAY 2022

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# Maximize the Value of 3D Point Cloud Data with an integrated Information Management & Engineering solution in the cloud

Andy Davidson

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**AVEVA**

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# Agenda

- What is a point cloud?
- Point Cloud Management
- Asset Visualisation
- Brownfield Engineering
- Summary
- Q&A

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# What is a Point Cloud?

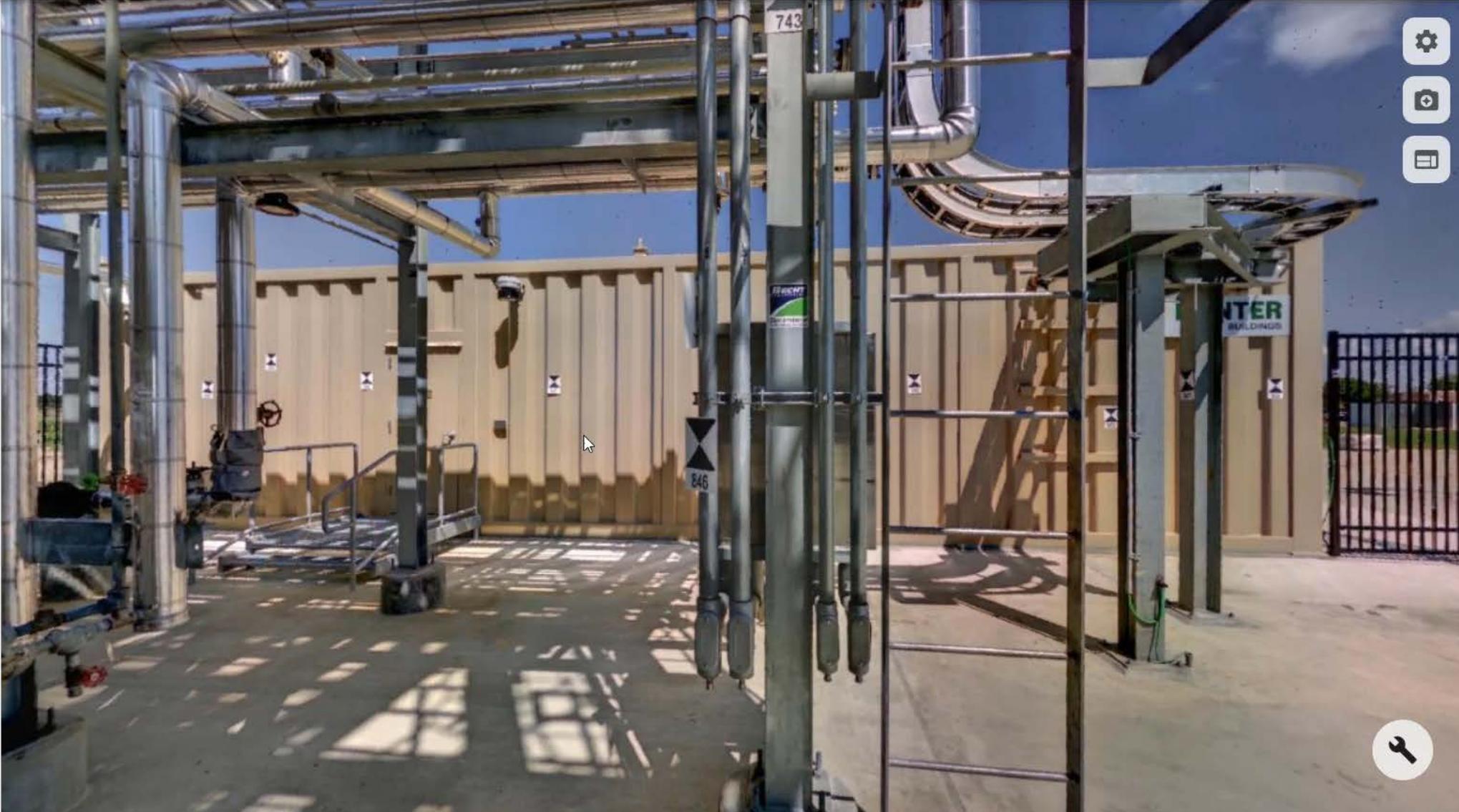


≡ AVEVA™ Point Cloud Manager - Viewer

San Jacinto ↻



- Floorplan >
- Datasets >
- 3D Markups >
- Benchmarks >
- Measurements >
- Objects >
- San\_Jacinto\_College\_Revam... ▾



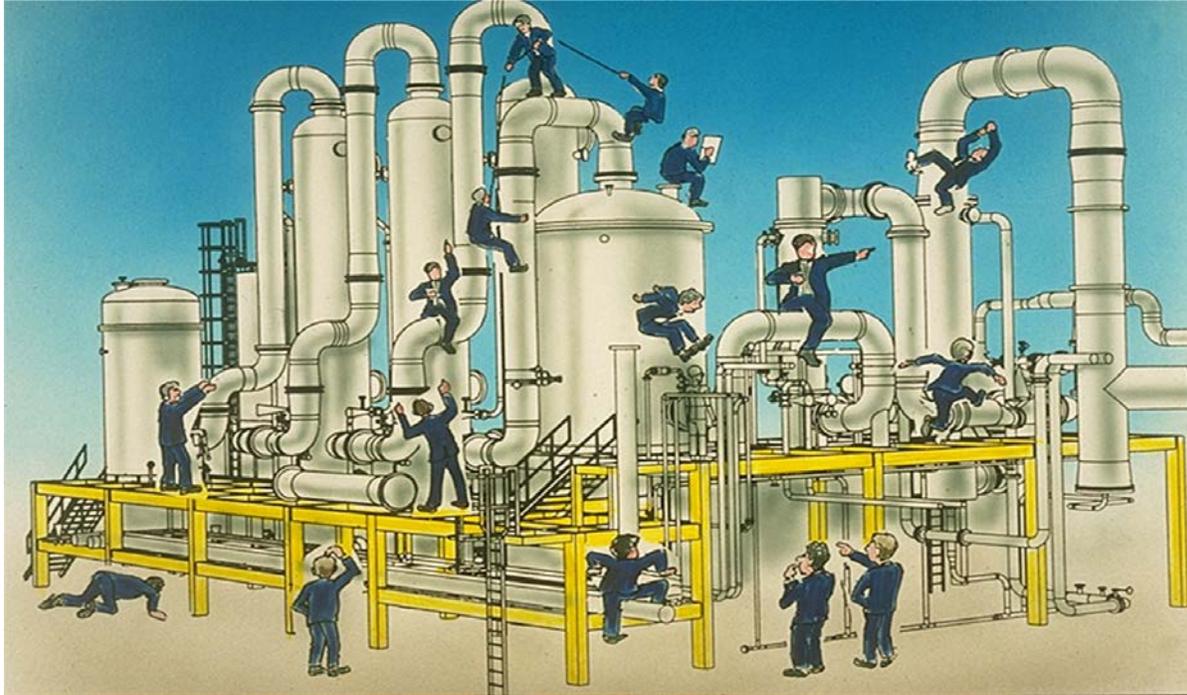
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# Why do we Laser Scan?

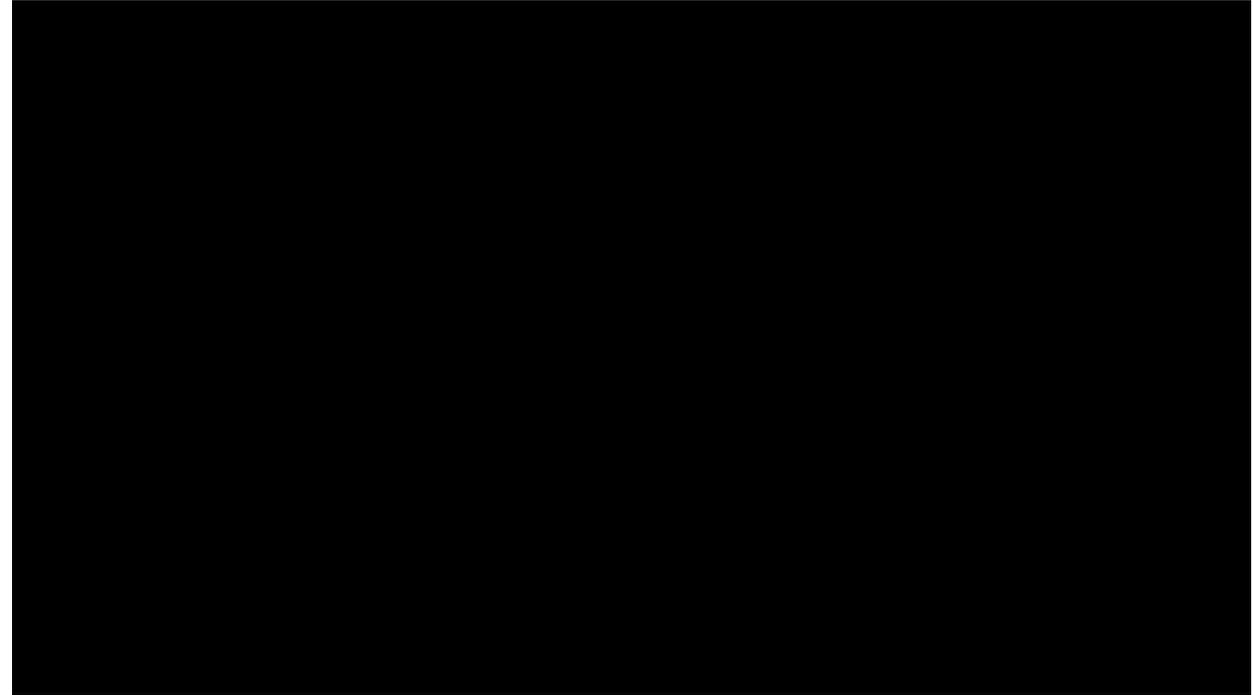
- As assets age, differences between as-built and as-design data develop
- Undiscovered differences lead to wide-ranging consequences
  - Higher re-work costs on revamp projects (*5%-7% on average, up to 15% of project costs, ENR*)
  - Unforeseen project extensions
- Laser Scans provide an opportunity to validate our work/decisions against the true as-built and reduce brownfield project rework



# Reality Capture



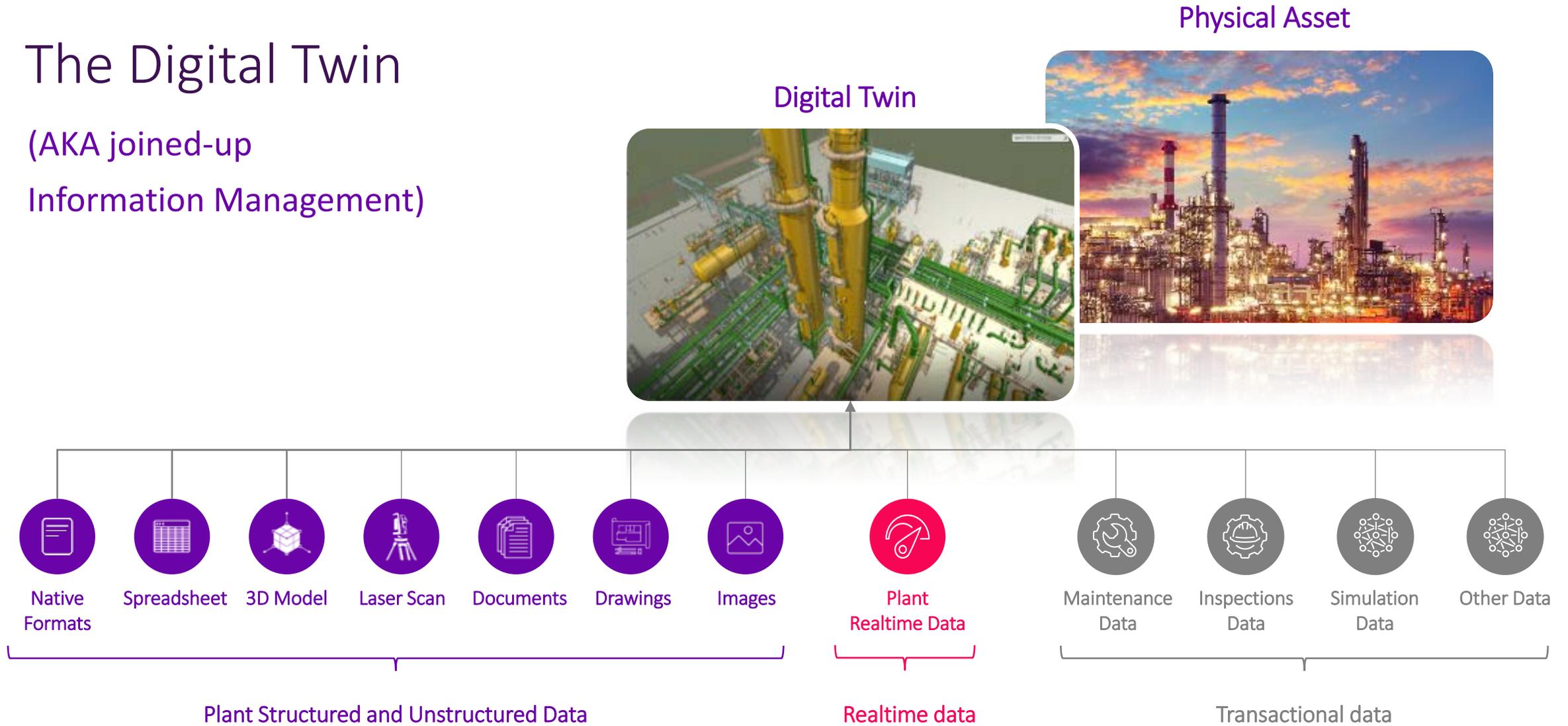
**How it Started**



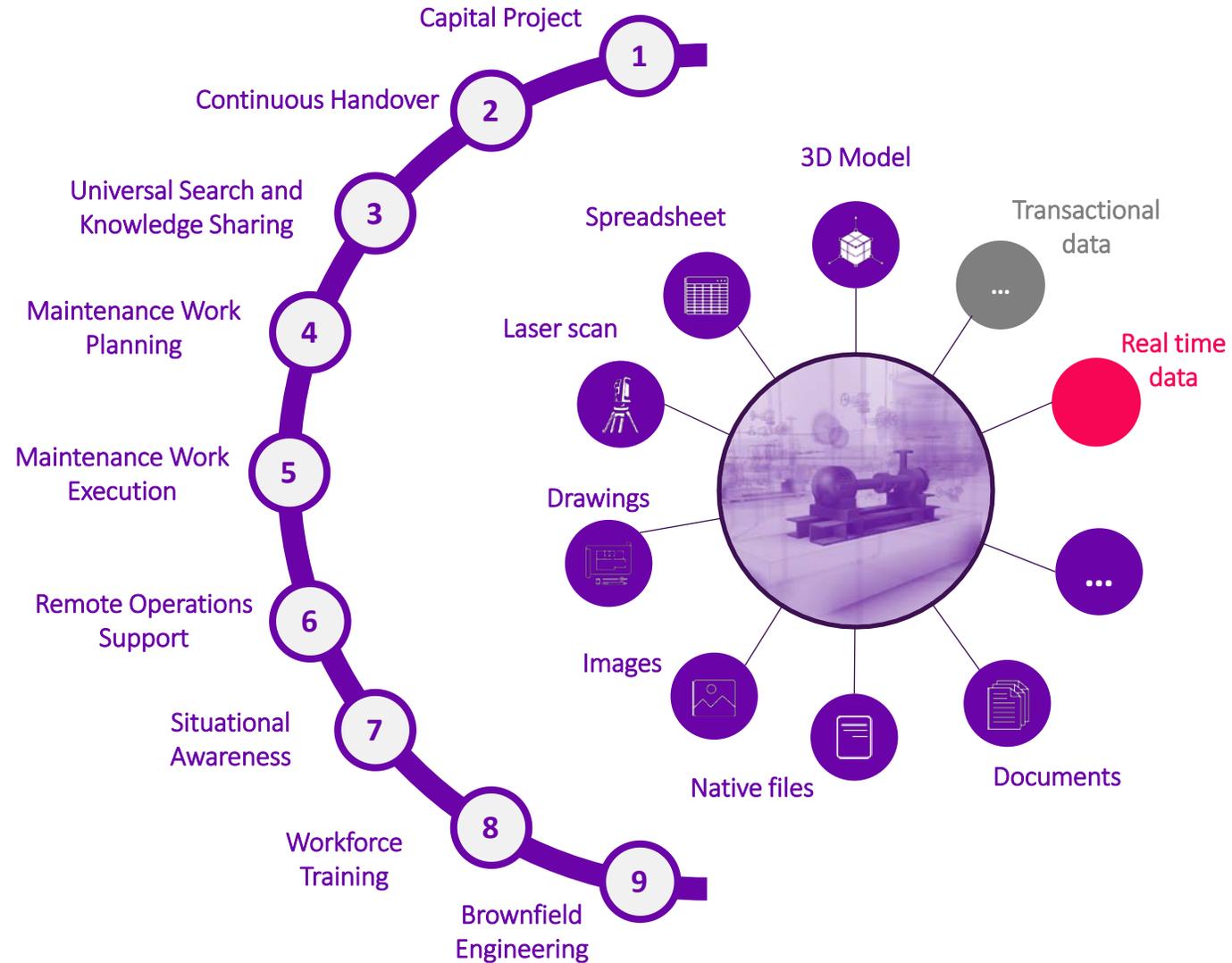
**How it's Going**

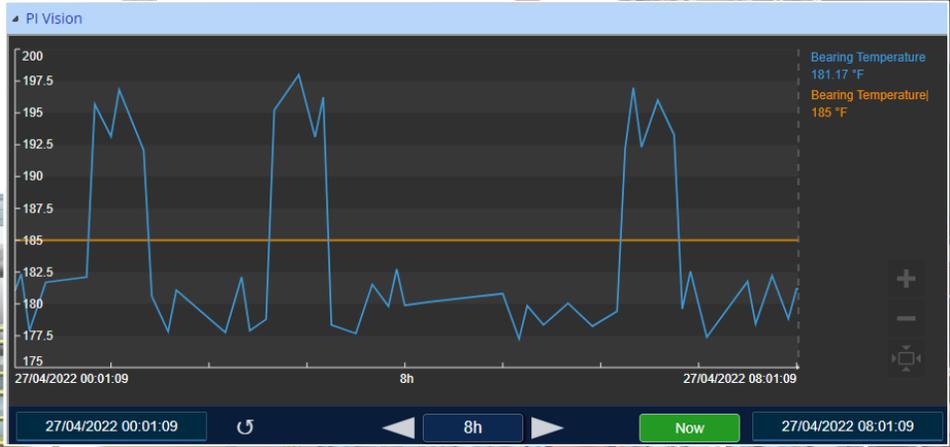
# The Digital Twin

(AKA joined-up  
Information Management)



# Supporting Many Use Cases Across the Asset Lifecycle





**P-1053**  
Equipment

2 Documents

- Model
- Reset View
- Section
- Measure
- Visual Query
- XRay

- Collect
- Collection
-

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# Challenges of Owning Point Cloud Data

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# The Problem

- Large storage requirements cause pressure from IT to reduce disk usage
- Heavy reliance on on-premise hardware for processing
- Remote teams who need access to large amounts of data
- Sites scanned multiple times leading to pile up of duplicate or fragmented data
- Naming conventions for scan jobs varied throughout group





# AVEVA Point Cloud Manager



# AVEVA Point Cloud Manager

One unified platform for your 3D captured data

- A single, scalable, multi-tenant platform enabling all stakeholders to work and collaborate effectively on any brownfield data
- A powerful set of highly integrated web-based capabilities
- Providing secure access for employees, clients, contractors and third parties
- A value proposition of a single, extensible, open cloud platform



# AVEVA Point Cloud Manager

Asset Visualisation

3



Digital Twin



3D CAD

4

Brownfield Engineering

Scalable and Secure

1

AVEVA Point Cloud Manager on Connect

Secure, Scalable and Open Point Cloud Data Processing, Storage & Management Platform



Agnostic to Scanning Device and File Format

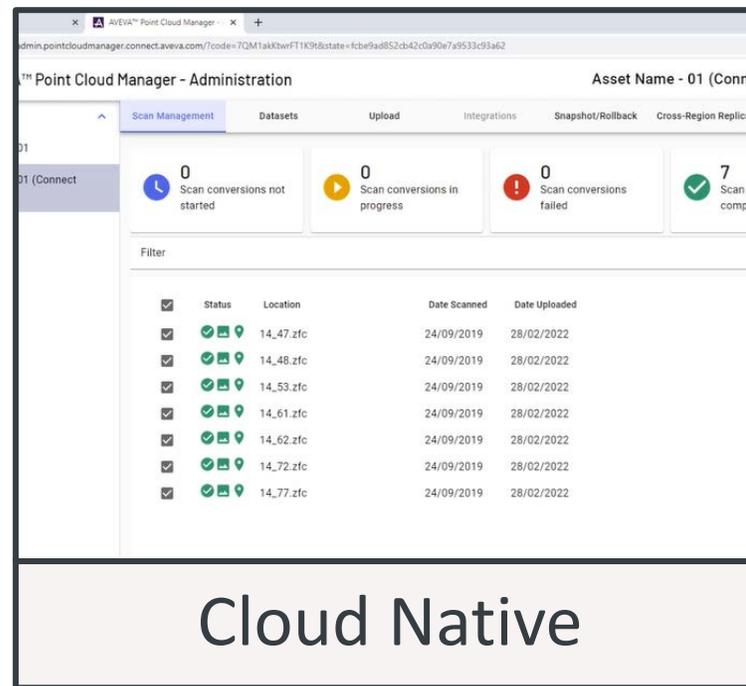
2

Open and Flexible

AVEVA

# 1. AVEVA Point Cloud Manager on AVEVA Connect

AVEVA Point Cloud Manager is much more than a viewer, it is a secure and scalable point cloud data processing and management platform



The screenshot shows the 'Administration' page for 'Asset Name - 01 (Connect)'. It features a 'Scan Management' tab with four status indicators: 'Scan conversions not started' (0), 'Scan conversions in progress' (0), 'Scan conversions failed' (0), and 'Scan conversions completed' (7). Below these is a table with columns for 'Status', 'Location', 'Date Scanned', and 'Date Uploaded'. The table lists seven scan entries, all with a status of 'Completed' and a location of 'zfc'. The dates scanned and uploaded are all '24/09/2019' and '28/02/2022' respectively.

Status	Location	Date Scanned	Date Uploaded
Completed	14_47.zfc	24/09/2019	28/02/2022
Completed	14_48.zfc	24/09/2019	28/02/2022
Completed	14_53.zfc	24/09/2019	28/02/2022
Completed	14_61.zfc	24/09/2019	28/02/2022
Completed	14_62.zfc	24/09/2019	28/02/2022
Completed	14_72.zfc	24/09/2019	28/02/2022
Completed	14_77.zfc	24/09/2019	28/02/2022

Cloud Native



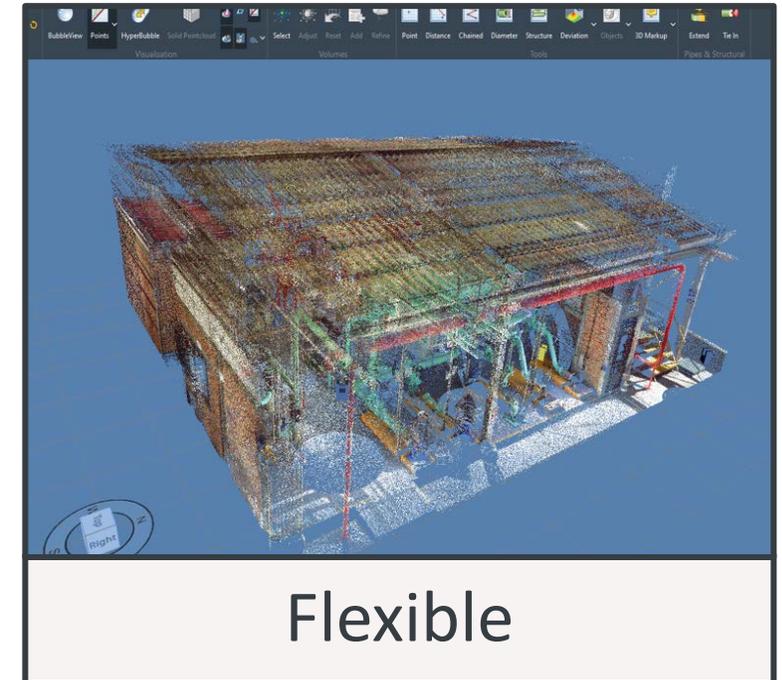
This block displays three security-related certifications. On the left is the AICPA Service Organizations (SOC) logo, formerly SAS 70 Reports. In the center is the CSA Security Alliance logo. On the right is an Exida certificate for 'Certificate / Zertifikat' SCH 1505074 C001, issued to AVEVA Software, Lake Forest, CA USA, for the 'Security Development Lifecycle Process' (ISecure®) at 'LEVEL 1'. The certificate is signed by William Altko, Authorized Representative.

Secure



A world map with red dots indicating global data center locations. The locations are labeled as follows: USA - California, Canada - Central, Europe - Ireland, India - Mumbai, Asia - Singapore, Japan - Tokyo, Australia - Sydney, and Brazil - São Paulo.

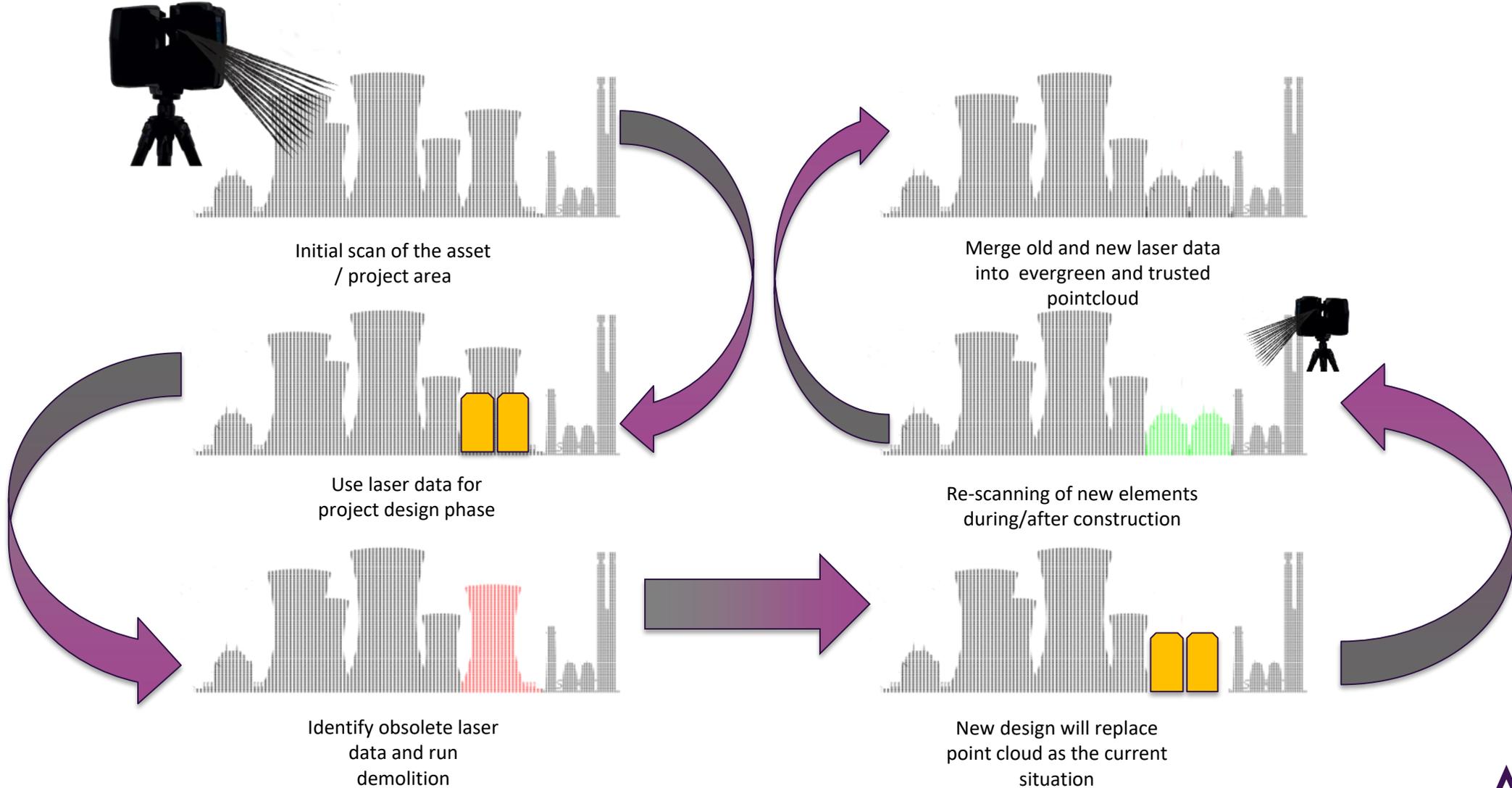
Global



A 3D point cloud visualization of a building's interior structure, showing a complex network of beams and supports. The model is rendered in a semi-transparent style, revealing the internal framework. The software interface at the top includes various toolbars and a 'Right' view indicator.

Flexible

# Keeping the data evergreen



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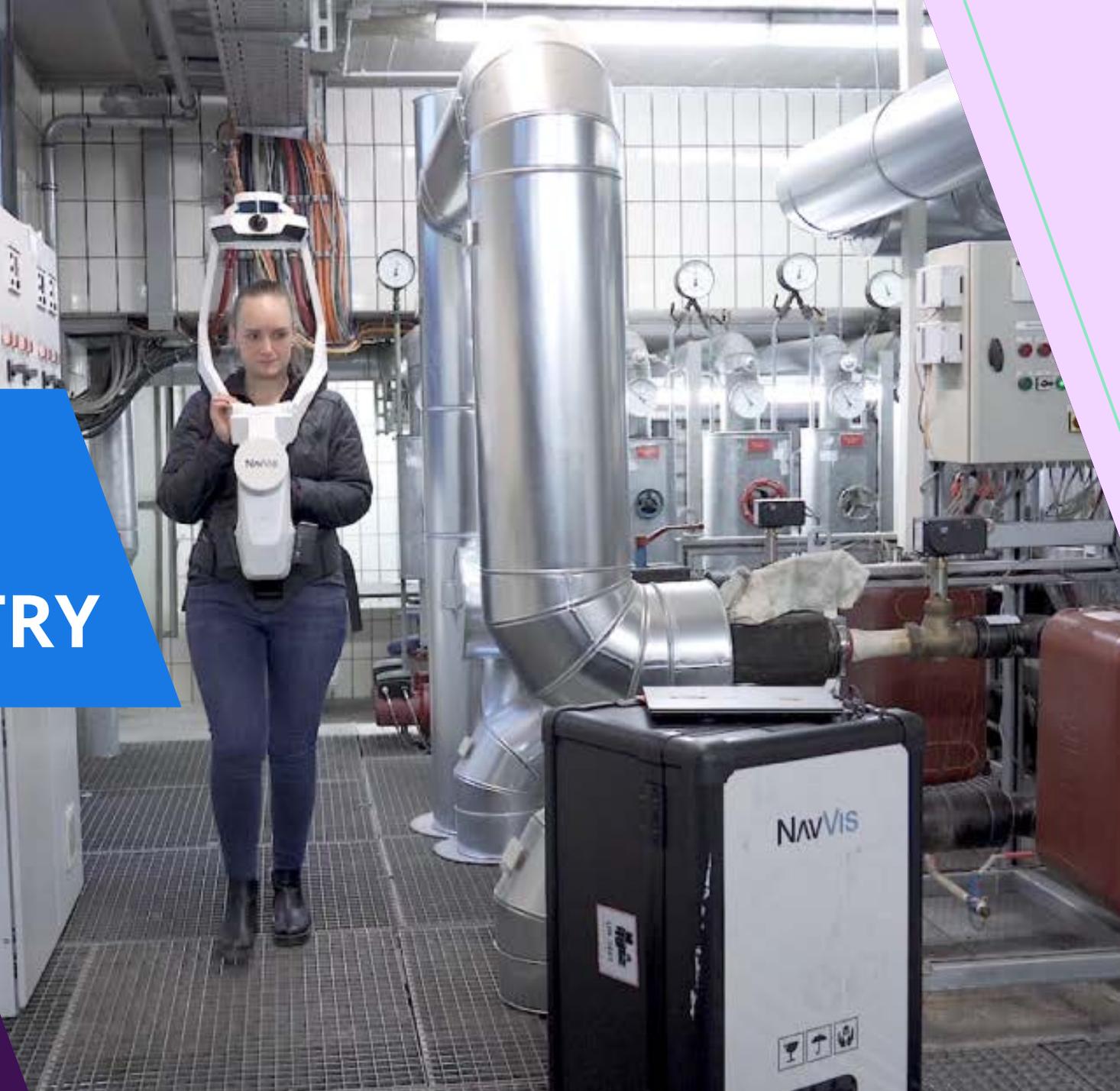
## 2. Open to Scanning Device and File Format

Import data from all common scanning devices. All common proprietary and open file formats supported.



NavVis

# REVOLUTIONISING REALITY CAPTURE IN THE PROCESS INDUSTRY

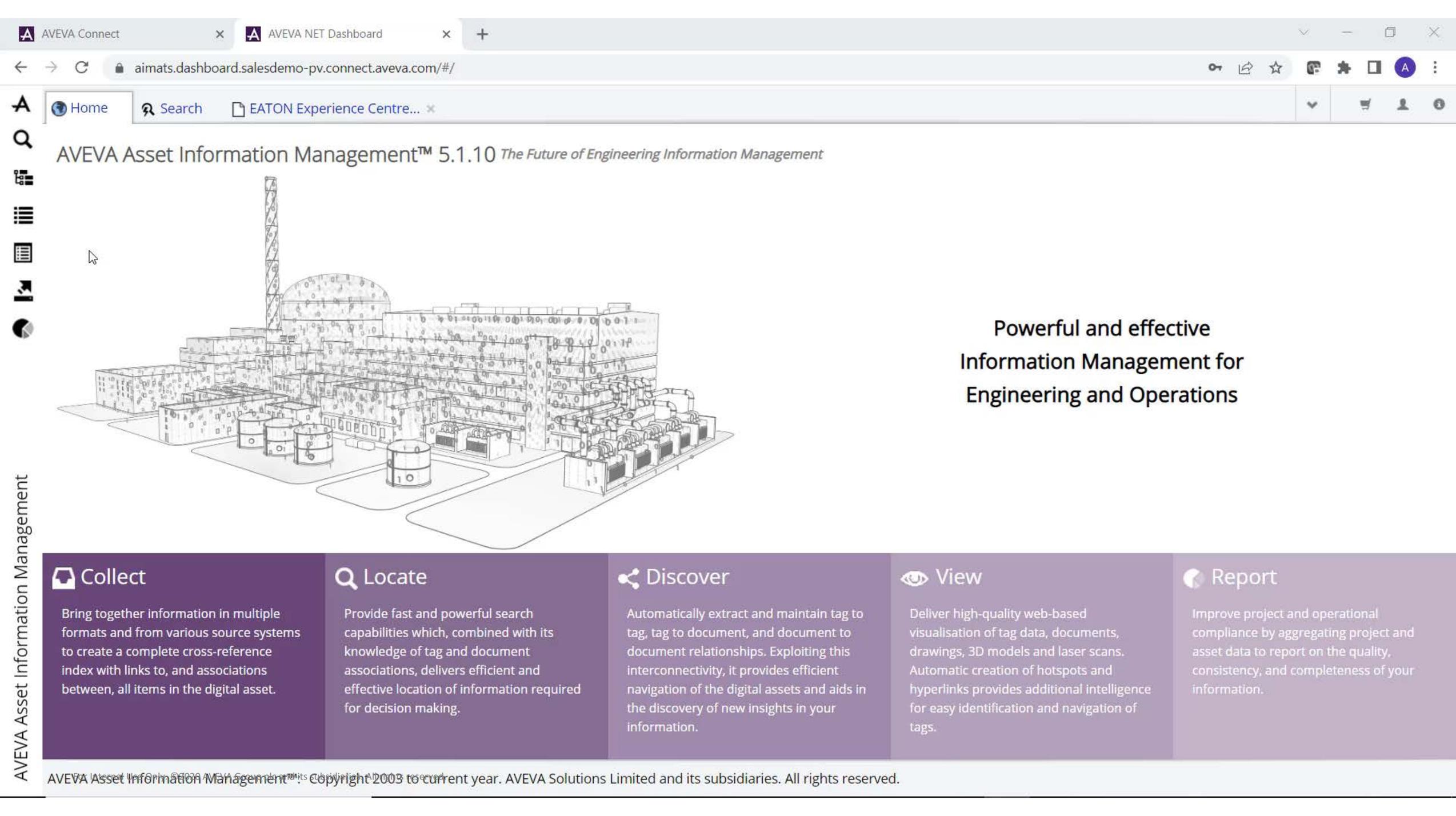


# NavVis VLX

- A disruptive, step-change, scanning technology facilitating near instant update of the Digital Twin
  - Easy to use - needs little skill
  - Can be done by one person
  - Reduces scan time by 15x

Approach	1000 Scans	Production	Handover	Total
Tripod + on-premise Production	7 days	3 days	3 days	<b>13 days</b>
Wearable + Cloud Production	3 hours	5 hours	1 hour	<b>&lt;1 day</b>





# AVEVA Asset Information Management™ 5.1.10 *The Future of Engineering Information Management*

## Powerful and effective Information Management for Engineering and Operations

### Collect

Bring together information in multiple formats and from various source systems to create a complete cross-reference index with links to, and associations between, all items in the digital asset.

### Locate

Provide fast and powerful search capabilities which, combined with its knowledge of tag and document associations, delivers efficient and effective location of information required for decision making.

### Discover

Automatically extract and maintain tag to tag, tag to document, and document to document relationships. Exploiting this interconnectivity, it provides efficient navigation of the digital assets and aids in the discovery of new insights in your information.

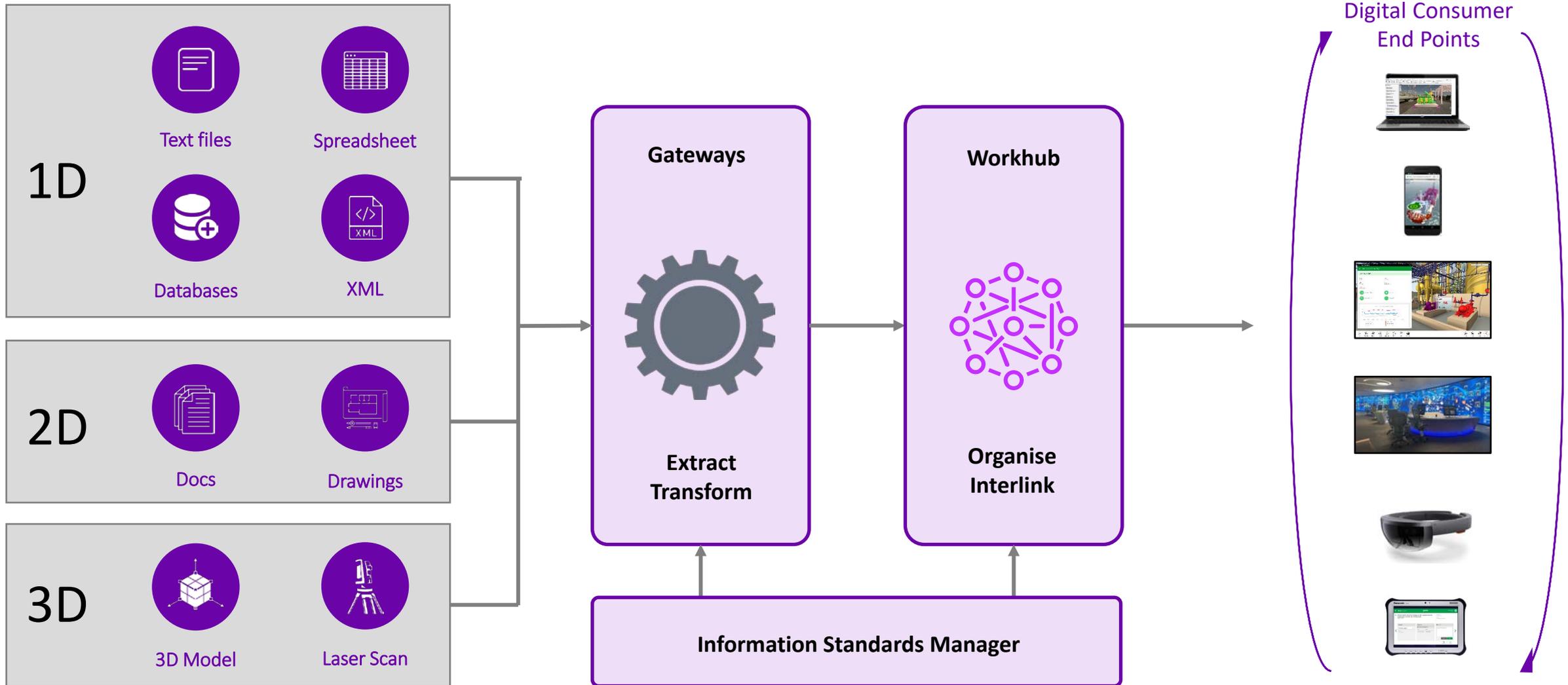
### View

Deliver high-quality web-based visualisation of tag data, documents, drawings, 3D models and laser scans. Automatic creation of hotspots and hyperlinks provides additional intelligence for easy identification and navigation of tags.

### Report

Improve project and operational compliance by aggregating project and asset data to report on the quality, consistency, and completeness of your information.

# AVEVA Asset Information Management



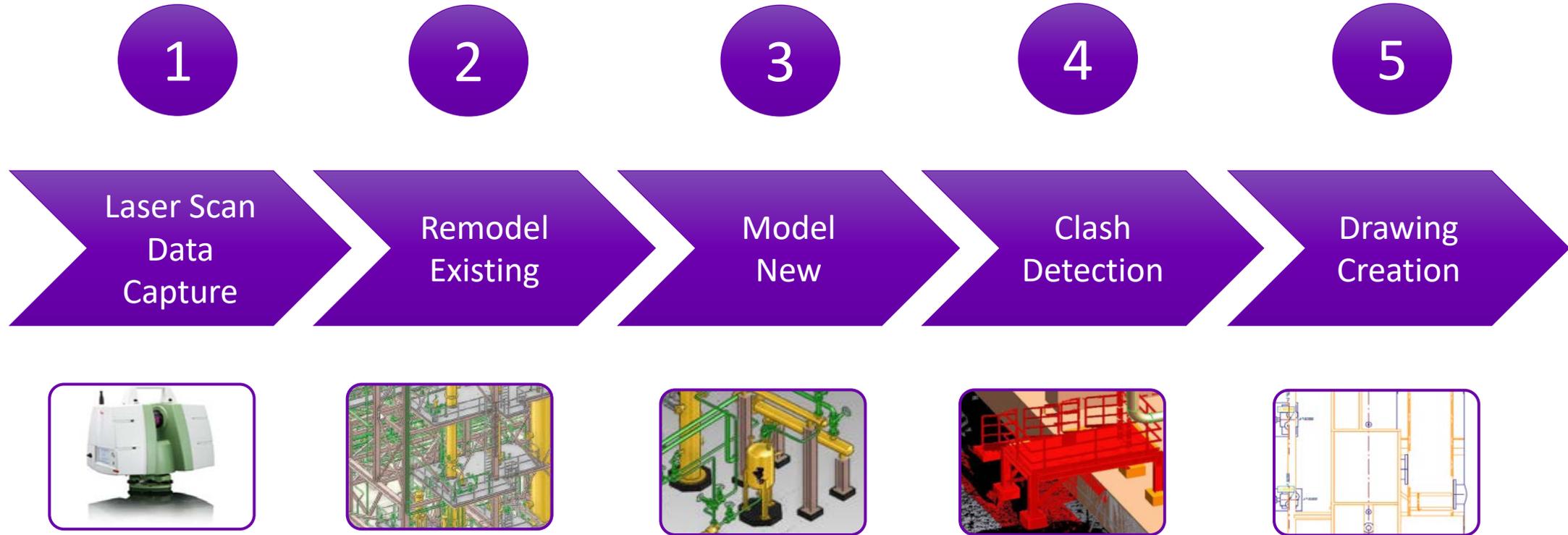


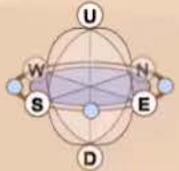
## 4. Brownfield Engineering

### The Problem

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- Naming conventions for scan jobs varied throughout group

# Typical Brownfield Project Workflow





GENERAL SHIPS | SHIP | Model - AVEVA Everything3D

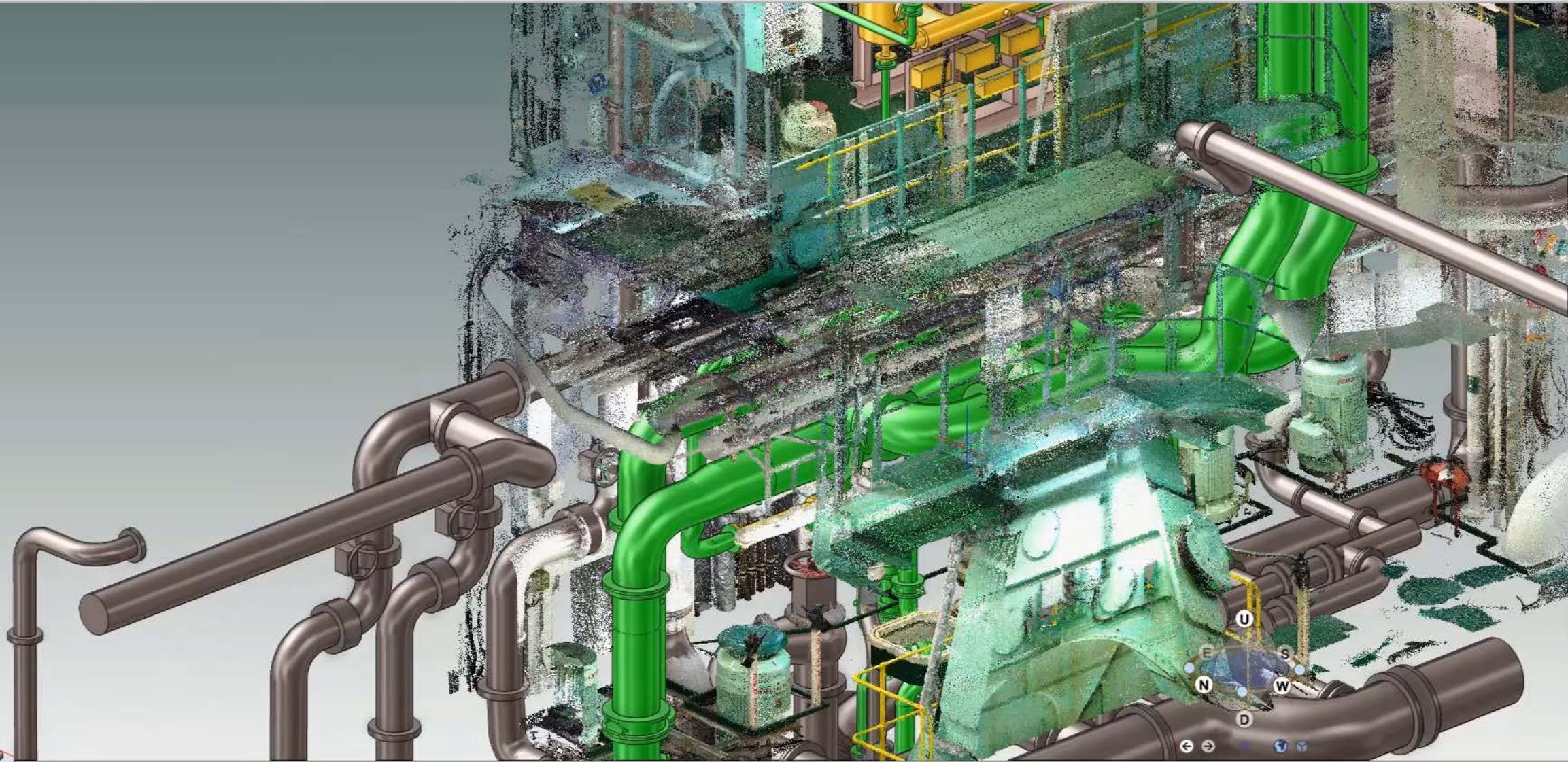
HOME VIEW TOOLS MANAGE DESIGN AIDS GENERAL ADMIN

Graphics Colour: Copy Auto-Colour Solid New Monochrome Edges Grid Plane Views Settings

Look Zoom Limits Save Restore Copy Image Centre View Control Walk Mode Fly Mode

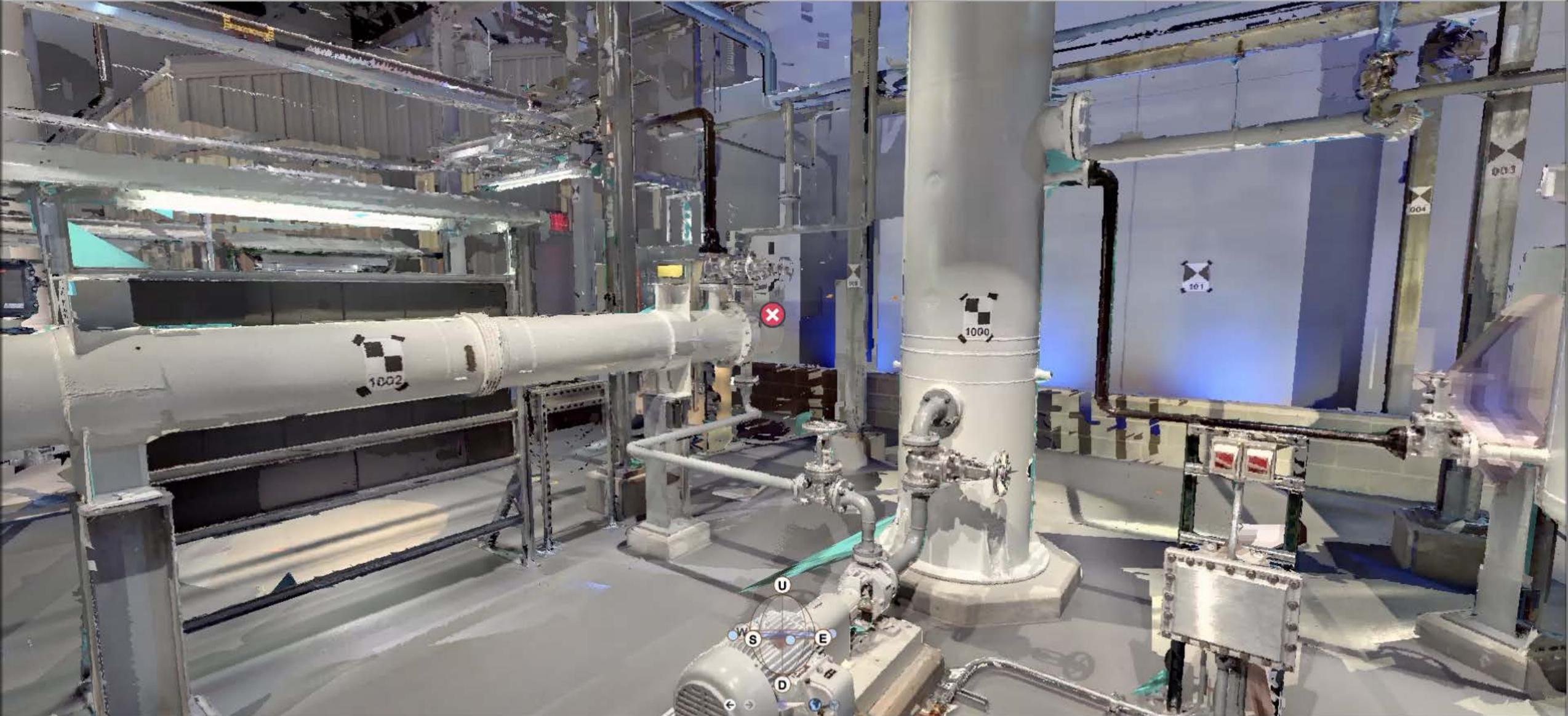
Draw List Remove Hide Content Add CE Hide World Current Element Coordinate System Create Clip Add Within Clip Modify Cap Annotate Annotations Dimension Aids Grids

Bubble Display Low Density Detail Laser Highlight Mask HyperBubble Show Annotations Terrain Contours

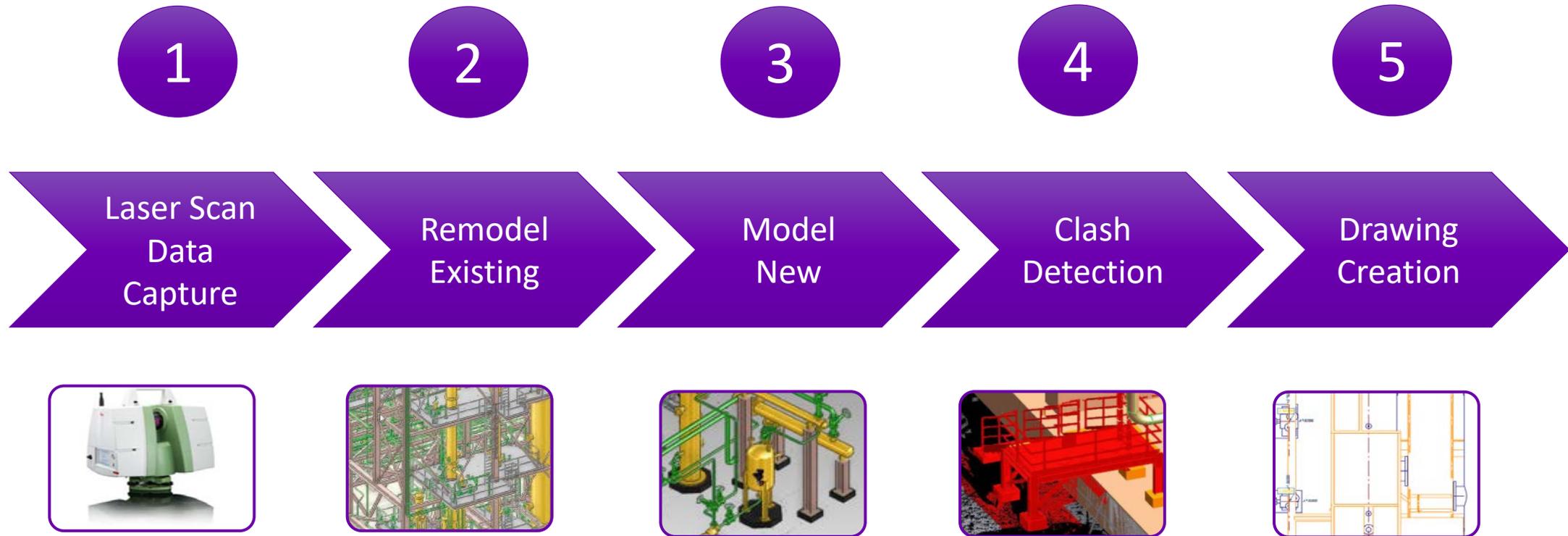


3D View(1) - Drawlist(1)

Navigation icons: Home, Back, Forward, Rotate, Zoom, Pan, and other standard 3D view controls.



# Typical Brownfield Project Workflow



# AVEVA Point Cloud Manager

Asset Visualisation

3



Digital Twin



3D CAD

4

Brownfield Engineering

Scalable and Secure

1

AVEVA Point Cloud Manager on Connect

Secure, Scalable and Open Point Cloud Data Processing, Storage & Management Platform



Agnostic to Scanning Device and File Format

2

Open and Flexible

AVEVA

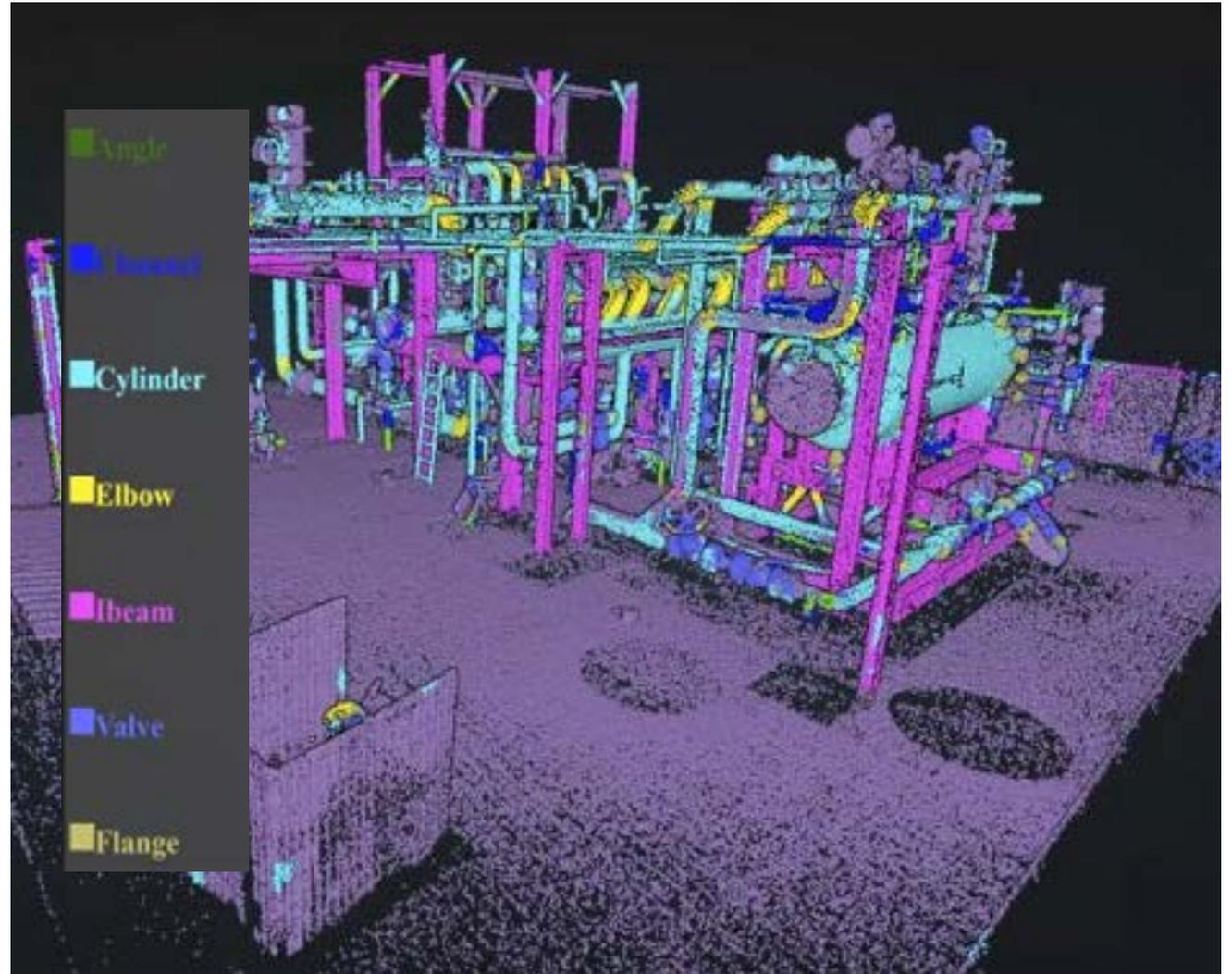
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# From the Lab

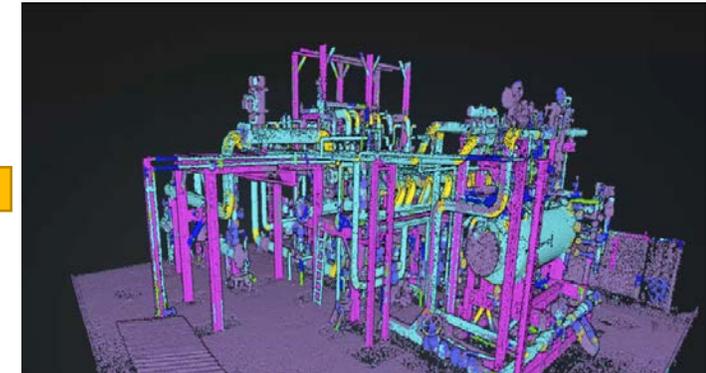
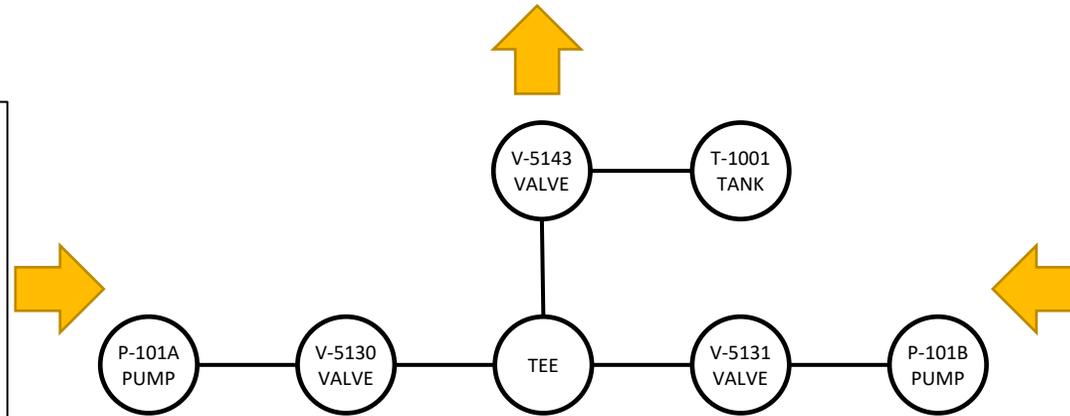
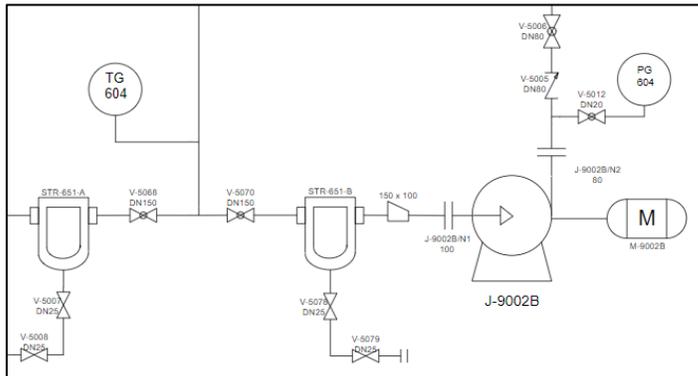
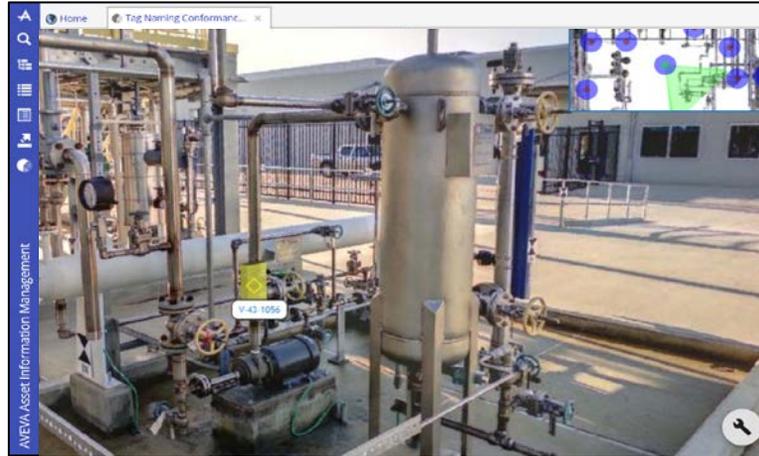
**AVEVA**

# From the Lab: AVEVA's Vision for Intelligent Pointcloud

- Automated classification and tagging of objects identified in 3D point clouds captured from laser scanning an asset
- Intelligently unlock the content of 3D data
- Achieved through “Artificial Intelligence as a Service” which will trawl through Point Cloud data
- Eradicates the pain of manually locating and tagging key items such as vessels, pumps, pipes, valves, etc.



# From the Lab: AVEVA's Vision for Intelligent Pointcloud



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# Summary

# AVEVA Point Cloud Manager

## EFFICIENCY



“AVEVA PCM on AVEVA Connect can help us to save almost **14,000 hours** on our 400 modification projects per year”  
- **Global EPC**

## ACCURACY



“Construction times cut by **25%** through using laser scanning to ensure **accurate retrofit**”  
- **BLOM Maritime**

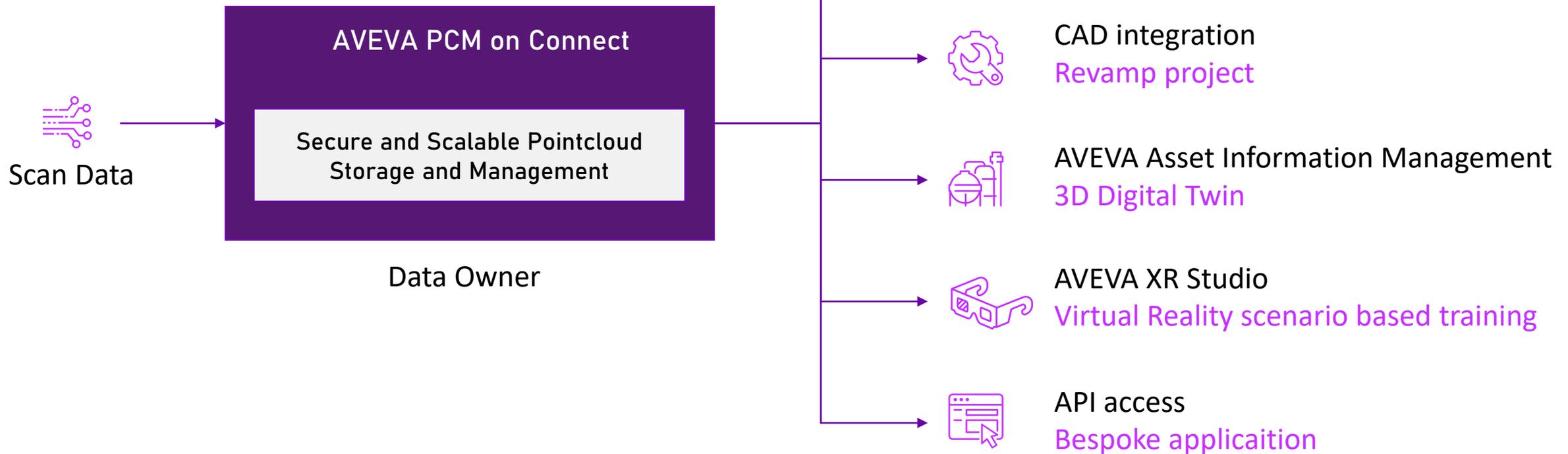
## FLEXIBILITY



“With several **hundred TBs** of data our infrastructure is reaching its capacity limits. AVEVA PCM removes this challenge with its **unlimited scale**”  
- **Global Chemical Company**

# Stakeholders Environment

## 3D Data & Reality Capture



# Questions?

Please wait for the microphone

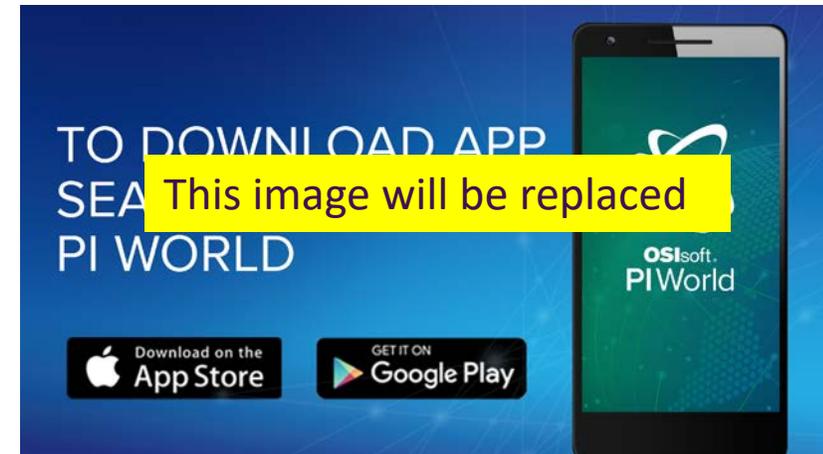
- State your name and company



# Please remember to...

Complete the survey!

- Navigate to this session in the mobile agenda for the survey



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 GRAZIE  
 МАХАДСАНИД  
 GO RAIBH MAITH AGAT  
 БЛАГОДАРЯ  
 GRACIAS  
 ТИ БЛАГОДАРАМ  
 TAK DANKE  
 RAHMAT  
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 PAKKA PÉR  
 HATUR NUHUN  
 PAXMAT САГА  
 CÁM ƠN BẠN  
 WAZVIITA  
 謝謝  
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 KEA LEBONA  
 БАЯРЛАЛАА  
 MISAOTRA ANAO  
 WHAKAWHETAI KOE  
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 TAKK SKALDU HA  
 GRAZZI  
 PAKKA PÉR  
 ありがとうございます  
 DI OU MÈSI  
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 TERIMA KASIH  
 UA TSAUG RAU KOJ  
 TI БЛАГОДАРАМ  
 СИПОС  
 KÖSZÖNÖM  
 GRACIES  
 HVALA  
 MAHADSANID  
 MALEMINDERIT



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Learn more at [www.aveva.com](https://www.aveva.com)