



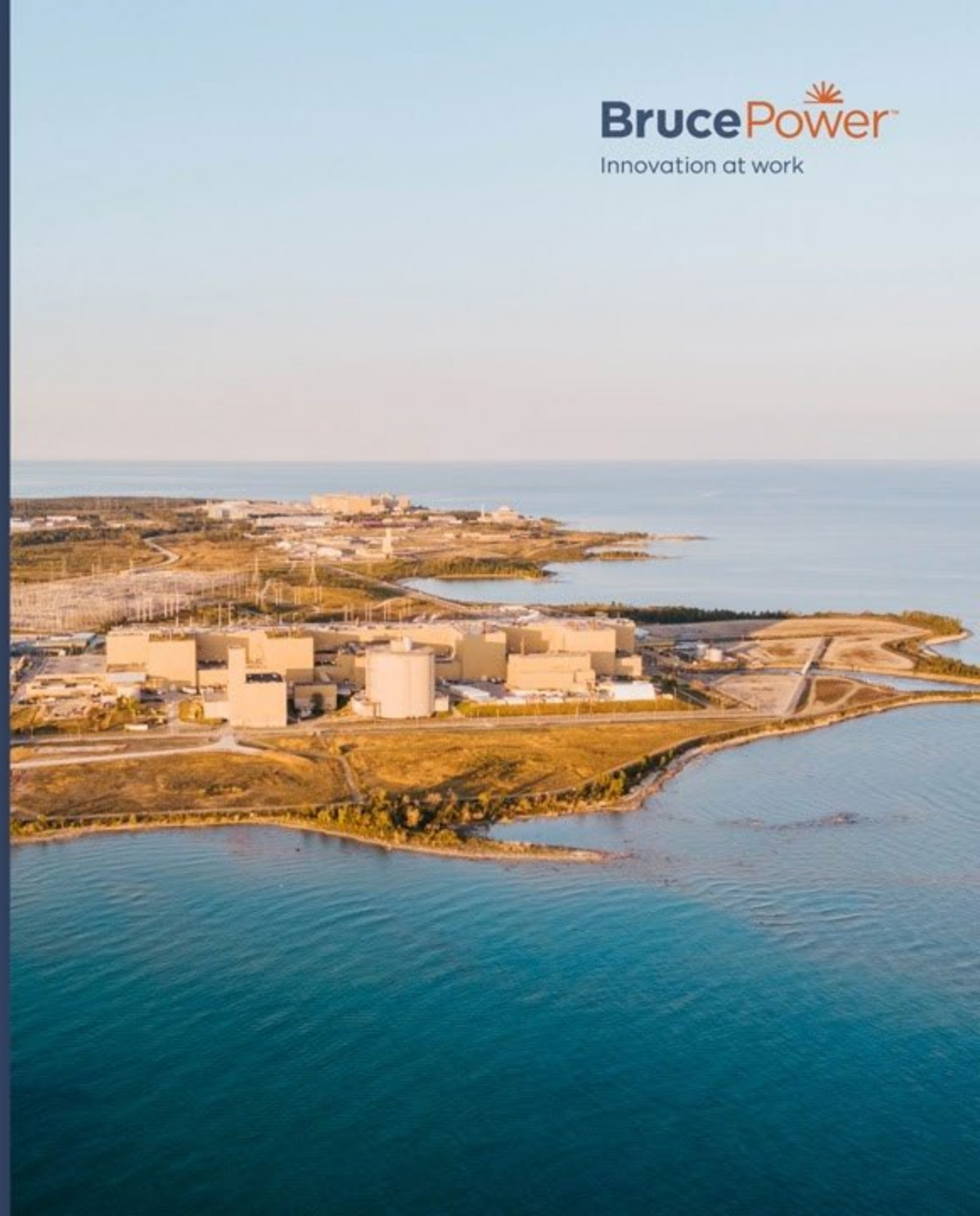
**AVEVAWORLD**  
PARIS

# Bruce Power

# Powering the Future with *AVEVA*

AVEVA World 2024

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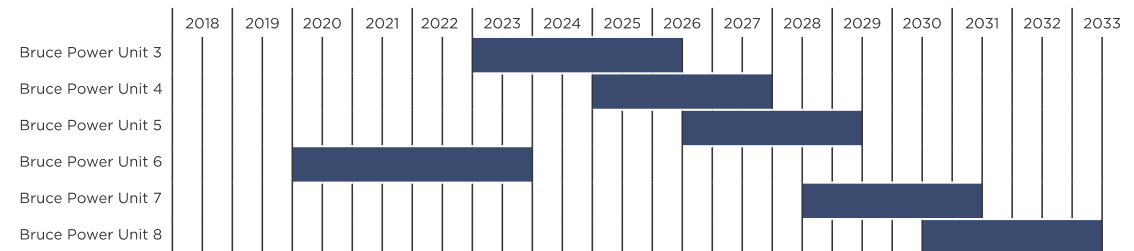
# What is Bruce Power

Bruce Power generates up to 6,550 Mega Watts (MW) from eight CANDU units **to power 30 per cent of Ontario**

Through the Life Extension program six units are undergoing refurbishments to provide **clean energy for decades to come**

Fighting cancer through the production of medical isotopes Lutetium 177 and Cobalt 60, **used against prostate cancer, brain tumors and more**

Exploring a new opportunity for another large nuclear station on the Bruce Power site



# Securing our future

- Bruce Power's future is only secured if we operate safely, reliably and deliver each Unit's refurbishment faster and more affordably than the last
- So, Bruce Power is moving to data centric processes using modern, industry best solutions. **A digital transformation**

## Targets

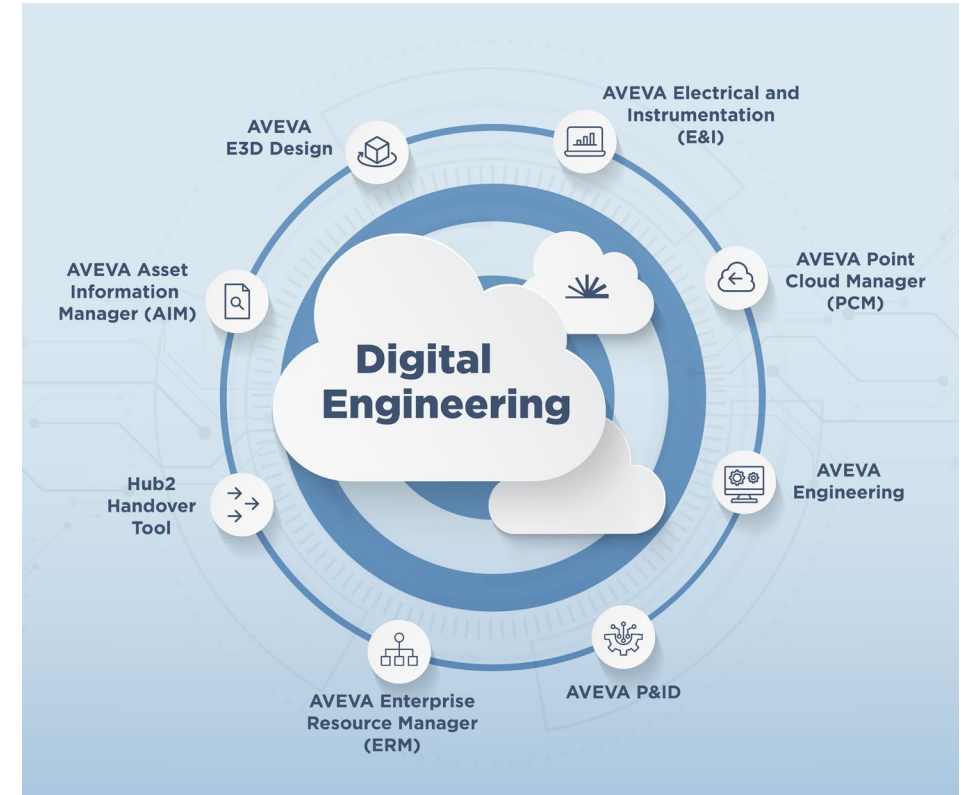
- ✓ *50% Data retrieval savings*
- ✓ *25% Engineering modification savings*
- ✓ *10% Field execution (installation) savings*
- ✓ *80% Project handover / turnover savings*

The Unit 6 refurbishment took thousands working 24 million hours to complete on time and on budget



# Our strategy

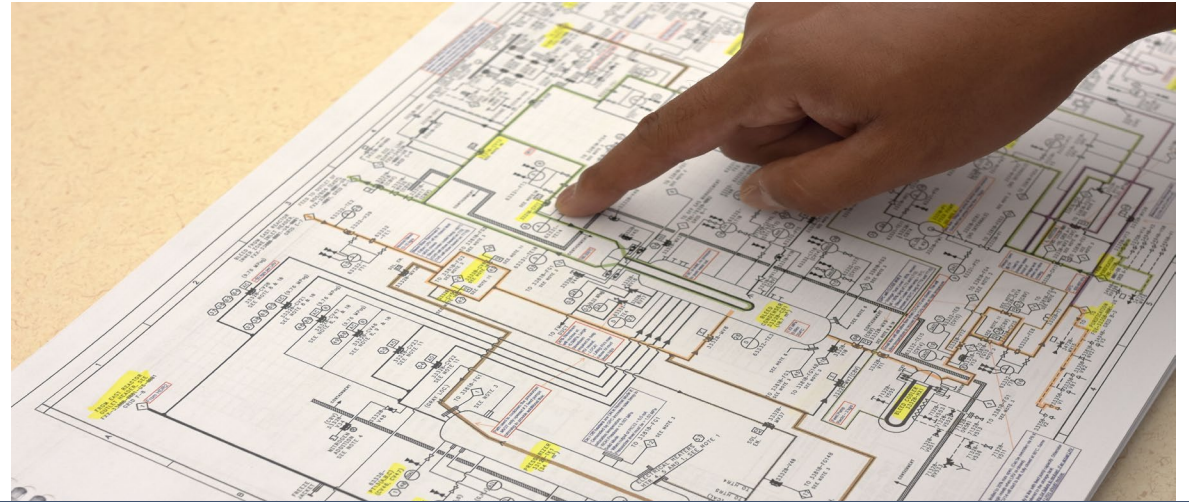
- Bruce Power needed a standard solution and a **partner that can help our digital transformation journey**
- Started with deploying **AVEVA Asset Information Management (AIM) and Point Cloud Manager (PCM)**.
- Benchmarked with existing AVEVA partners
- Configure the AVEVA Unified Engineering tools and focused on transitioning project specific data first
- Move 1D data to AVEVA Engineering, move subsets of 2D data to AVEVA P&ID and Electrical & Instrumentation, enabled Everything 3D for projects to manage 3D models
- Validated new work-flows and configuration through execution of pilot projects with key Engineering Vendors



# Deploying AVEVA AIM – Setting the Foundation

## Key features we leveraged from Asset Information Management (AIM):

- Class Library and hierarchy built within data model in Information Standards Manager (ISM)
- **Data Extractor Gateway:** Document scraping to create document-to-tag relationships
- **AutoCAD 2D Gateway:** Digitize flowsheets, enabling interactive drawings to support plant status control and data retrieval
- **Registers Gateway:** Push multiple data sets from current Enterprise Asset Management
- **Enhanced search capability:** search across multiple systems in one place
- Create new relationships to provide new insights

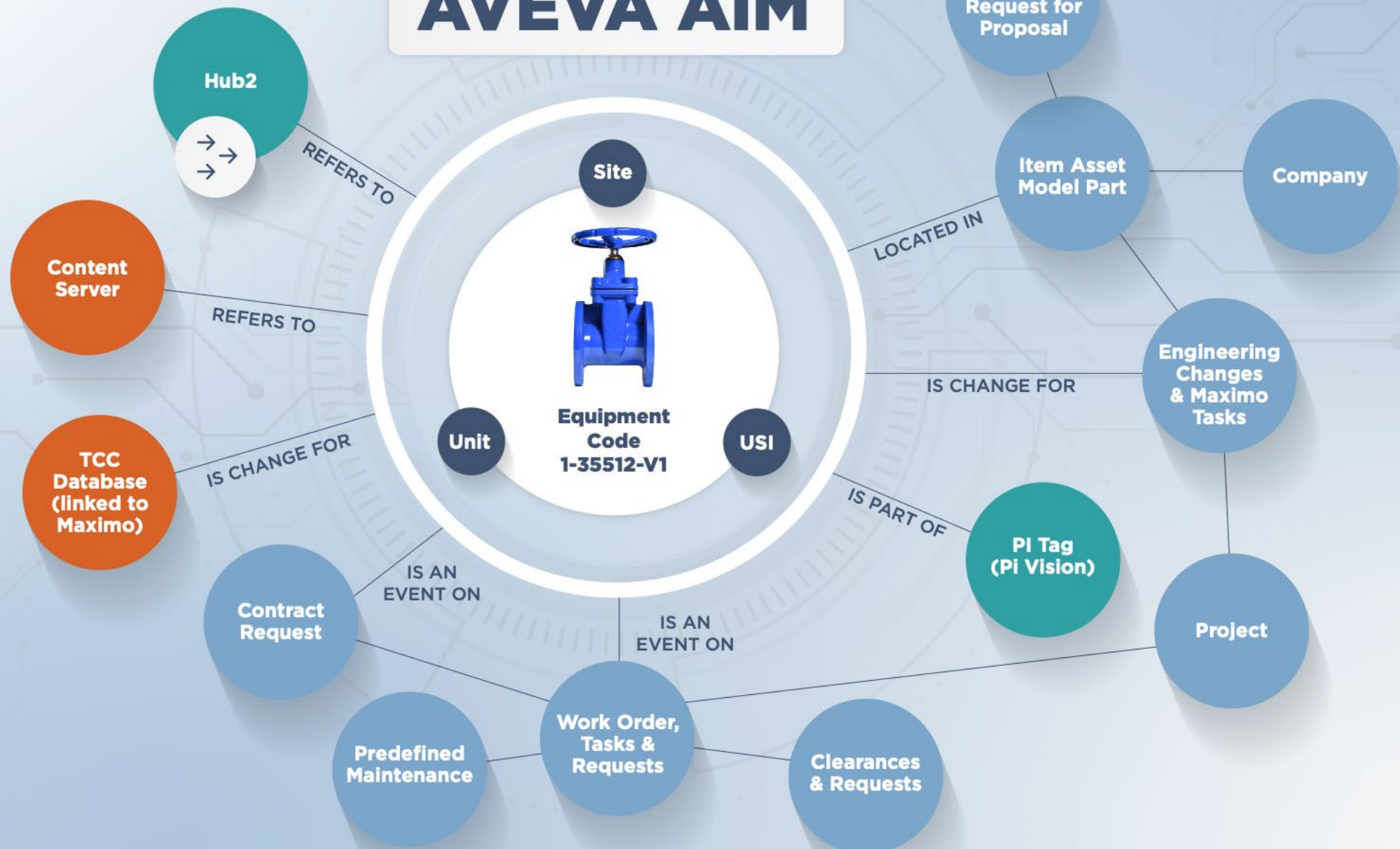


## Deployed AIM for Enterprise Use Moved, digitized and integrated:

- **720,000 equipment codes** (i.e., tags)
- **4,000 operational flowsheet drawings**
- **750,000 documents** (drawings, technical specifications, manuals, reports)
- **1,000,000 + records**
- **30 + data sets** including work orders, work protection, catalogue data
- **40,000 Plant Information tags**

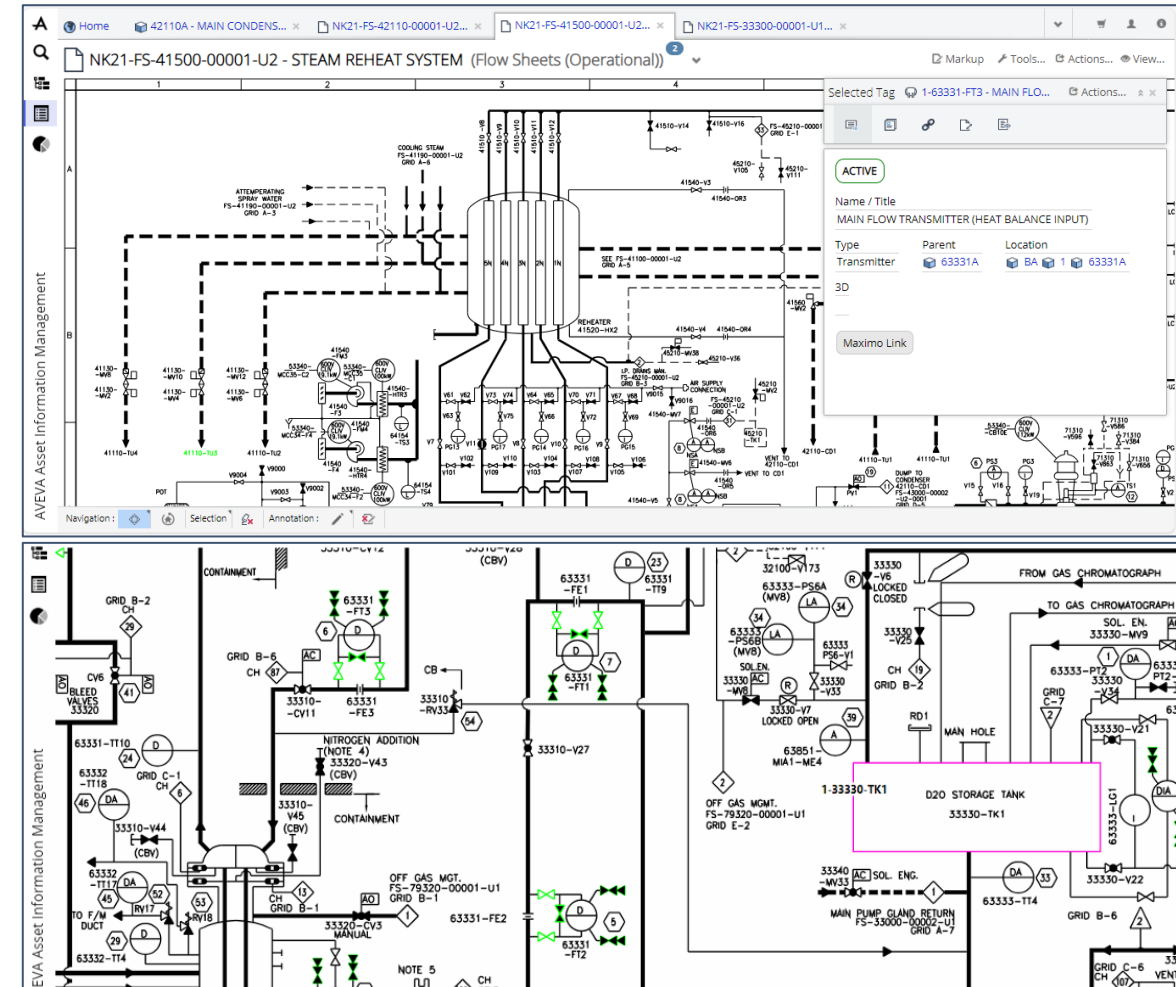


# AVEVA AIM



# Results of AVEVA Asset Information Management – Early Wins

- More than **1800** unique users, **1050** repeat users to save more than **1000** hours to date
- Connects information from **five** systems into one
- Digital flowsheets act as a key entry point into finding data in the tool. **Tag hot-spotting** at approximately **60 to 80%** across all **Flowsheets**.
- Automated document-to-tag relationships to remove a manually intensive process, **> 50%** savings on cost and schedule at Engineering Change close-out





# Results of AVEVA Asset Information Management - People

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## Change agents

During the rollout of Asset Information Management (AIM) we found numerous 'change agents' within our organization who've taken it upon themselves to advocate for the search tool.

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# Results of AVEVA Asset Information Management - Summary

## Highest value:

- Document-to-tag
- Digital Flowsheets
- Search
- Link to Plant Information for real time process data

## What's next with AIM:

- Markup feature to support training, engineering, and projects
- Integration with Point Cloud Manager for physical plant visualization
- Project data from AVEVA Unified Engineering

The screenshot displays the AVEVA Asset Information Management (AIM) interface. On the left, a process flow diagram shows various components including pressure transmitters (PT13, PT12), level transmitters (LT1), and a pressurizer (33120-TK1). A red box highlights a path used to cool down the pressurizer, with a note: "Path used to cool down the pressurizer -MV37 only opened if 2 feed pumps running to provide additional flow." On the right, a detailed view of a selected tag (6-33320-CV22 - STEAM BLEED VALVE) is shown, indicating it is active and pneumatically operated. Below the diagram, a table provides details for a PI Tag (1-CST#CCWA@dt0163 - COND OUTLET TEMP [MEL:1-42110-CD1]).

Attributes	
Filter	
Expand All	
Details (3)	
Description	COND OUTLET TEMP [MEL:1-42110-CD1]
Location Code	BA 1-42110-CD1
Site ID	BA
PI Tag Data (37)	
Archiving	1
Changer	BNPDWMCCORMGE
Compressing	1
Compression Deviation	0.08
Compression Deviation Percentage	0.199999988
Compression Maximum	28800
Compression Minimum	0
Conversion	0
Creator	piadmin
Display Digits	-5
Engineering Unit	DEG C
Exception Deviation	0.04
Exception Deviation Percentage	0.099999994
Exception Maximum	600
Exception Minimum	0
Filter Code	0

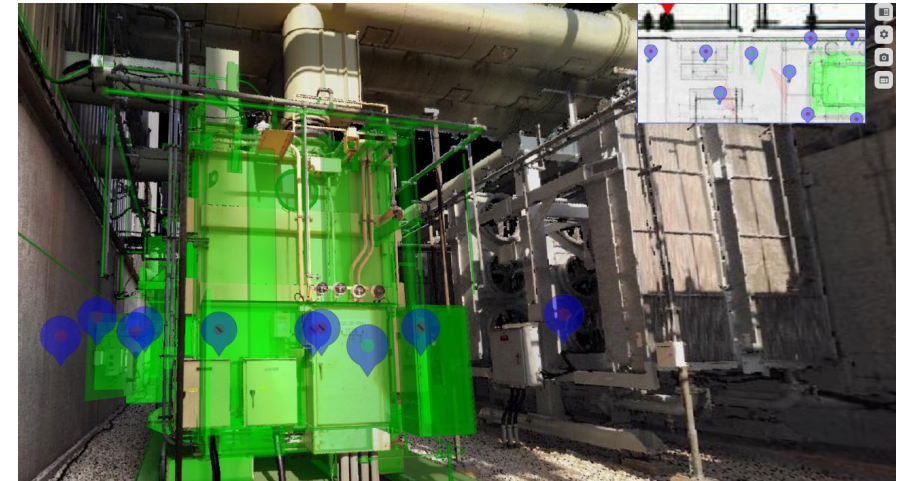
External Views: PI Vision

Display: Click Save Icon

9/19/2024 5:35:34 AM 7d 9/26/2024 5:35:34 AM Now

# Strategy for AVEVA Point Cloud Manager

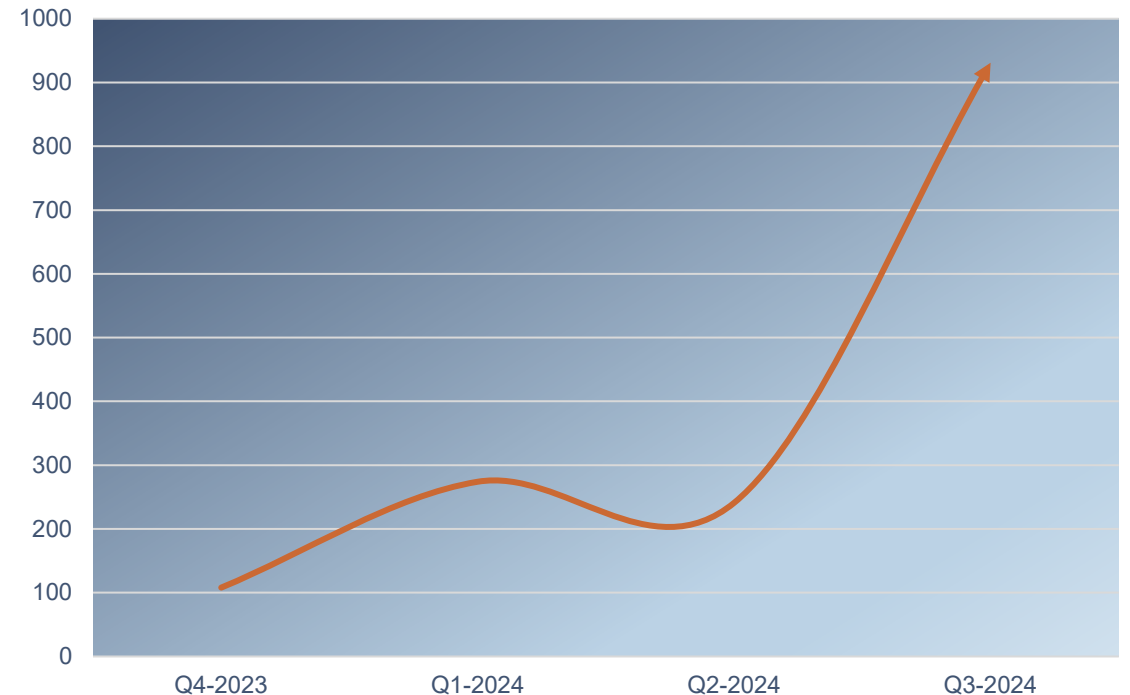
- Deploy AVEVA Point Cloud Manager (PCM) in CONNECT and 'thick client' for admins
- **Defined laser scanning standard**
- **Focused on the refurbishment projects**
- Defined equipment tagging standards in PCM for connection to AIM
- Finding and empowering change agents



# Results of AVEVA Point Cloud Manager

- In 6 months, 7 of 8 reactor units scanned and more than 15 projects have been uploaded and are in use in PCM through CONNECT. **Approximately 8.5TB of data**
- **900% increase** in usage over the last three quarters
- **30% savings** from repeat walkdowns and field checks
- **15% savings in execution** from improved design quality and assessing/project execution planning

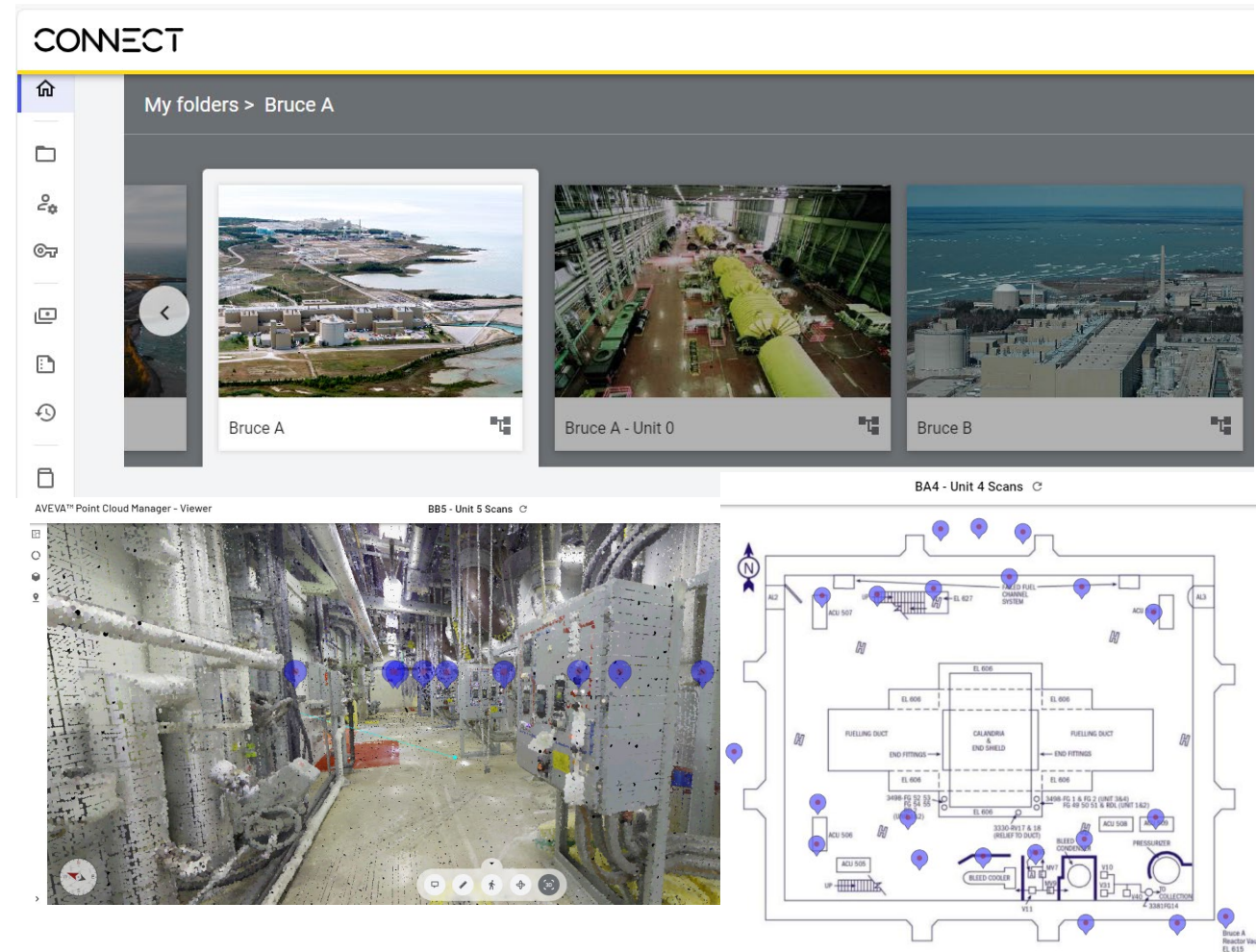
PCM Usage Metrics



# Results of AVEVA Point Cloud Manager – Early Wins

## Highest Value:

- **Access for all:** Enabled all Bruce Power access
- **Visualization of hazardous and difficult areas:** The tool saved a project engineer ~ a month by using PCM Centralized access
- **Consolidated laser scanning data removing potential repeat scans:** Five examples to date where repeated scans were avoided



# The impact on our people

- AIM and PCM are new processes, so it was **important to change behaviour**
- The **focus was on the value and benefits** of the new tools
- **Change agents** helped lead the design, build, and test phase of the project
- Multiple communication channels were used: drop-in sessions, meetings, videos, newsletter stories and emails.
- **A standardized change management process** supported an effective roll-out



# Bruce Power saves time to help secure its future

## Challenge:

- Need to deliver each of the six-unit refurbishments faster and more affordably than the last
- Lack of modern, industry best tool and processes necessary to deliver this work

## Solution:

- Deploying AVEVA AIM, AVEVA ISM and AVEVA PCM at an enterprise level for improved visualization and tag centric data and AVEVA Engineering, P&ID, AVEVA E3D and AVEVA ERM to promote full workflow of engineering changes and projects to brownfield data.

## Results:

- Saved employees **more than 1000 hours** from data retrieval and connected data through implementation of AVEVA AIM. Saved **half the time** of close out processes by automating doc-to-tag relationships.
- Delivered the seamless integration of AVEVA PCM for almost 1000 employees to realize a **900% growth in users** over the last two quarters. **Shaved 15% off the execution of projects** through AVEVA PCM's ability to improve design quality, assessing and project planning





Questions