



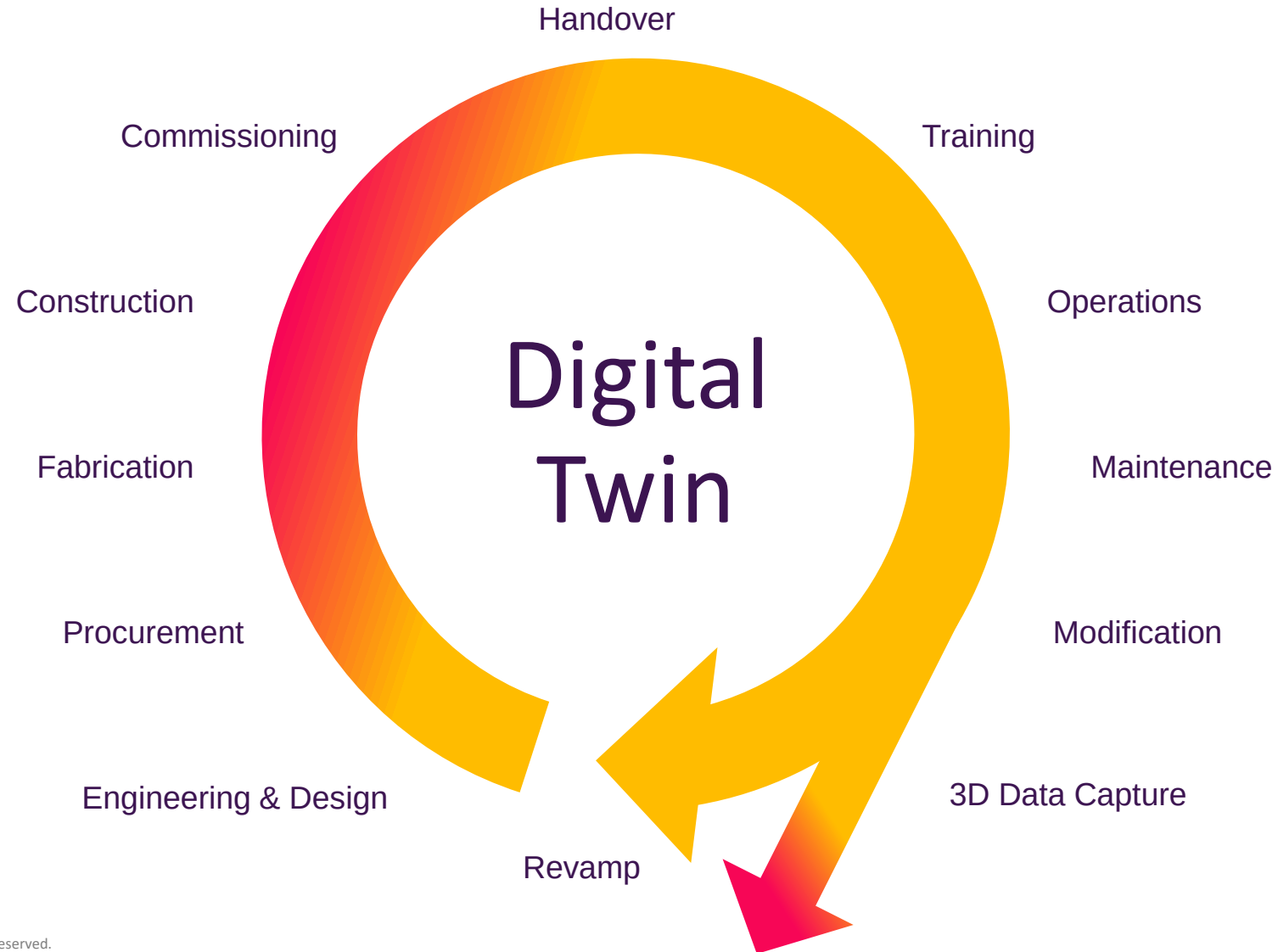
AVEVA Asset Information Management

AVEVA

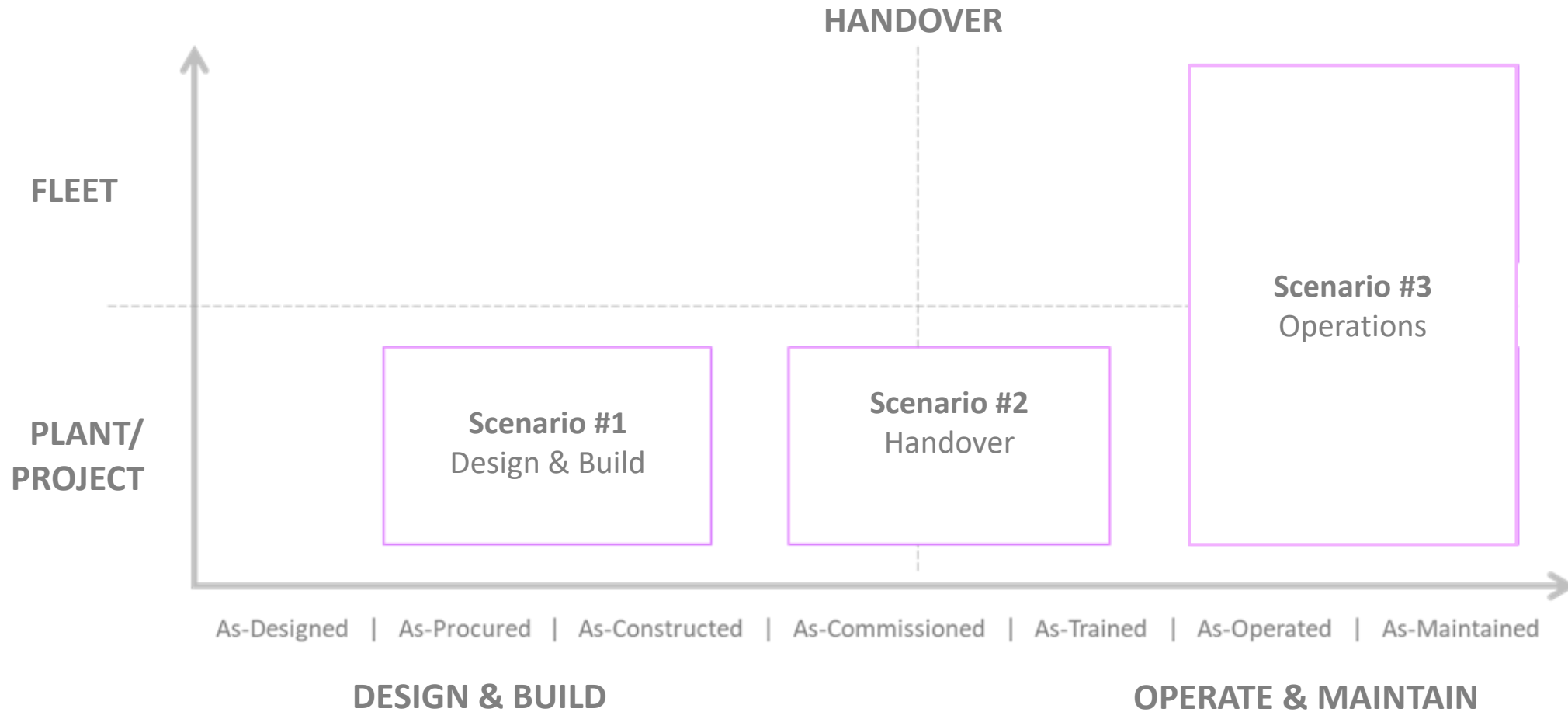
DESIGN, BUILD (& MODIFY)

HANDOVER

OPERATE & MAINTAIN



Typical Scenarios

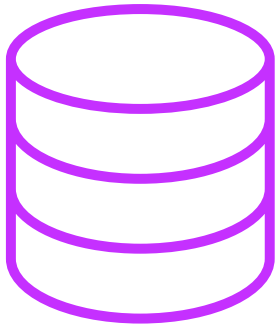


Scenario 3: Operations

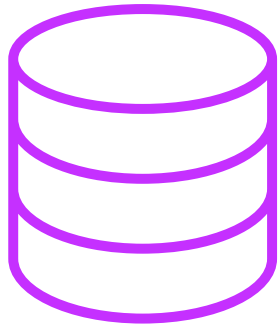
Data silos

Disconnected information in multiple systems and formats

- Different user experiences/training
- Time to find and aggregate
- Alignment/trust



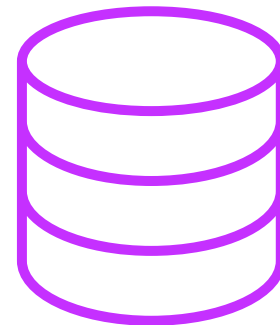
Drawings and schematics



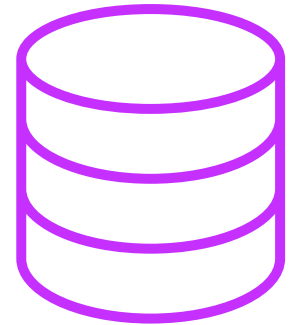
3D models



Operating procedures



Vendor data



Maintenance records



Trusted information

Accurate decision making relies on being able to find the correct information, at the right time

- “Once a perception that data quality is poor has been established, it can be a very difficult perception to correct.”

Ref. IAM Institute

Asset Information, Strategy, Standards and Data Management SSG

- Businesses with poor asset information management processes are found have total business expenditures up to 5% higher.

Ref. IAM Institute

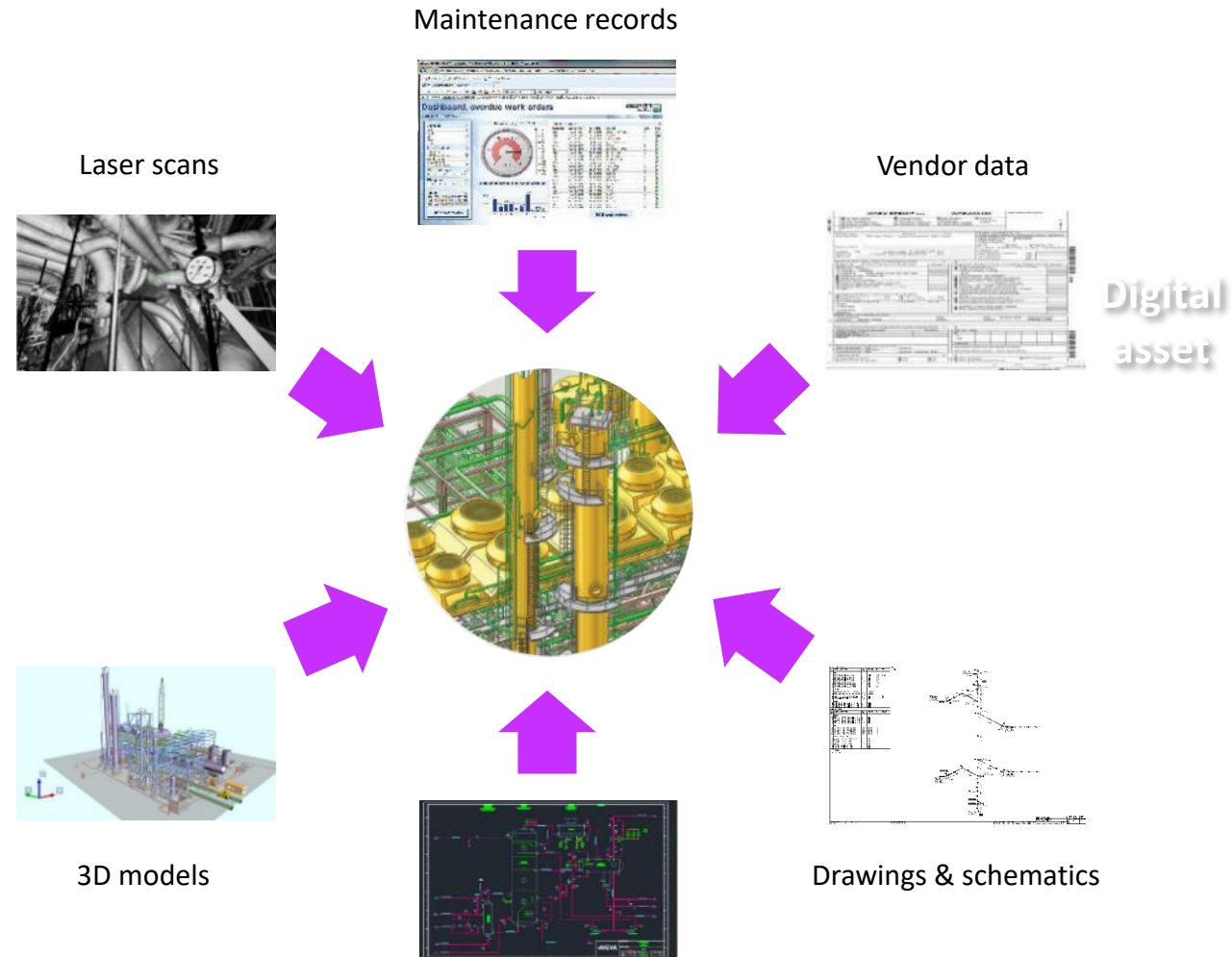
Asset Information, Strategy, Standards and Data Management SSG

- “The cost of poor asset information equates to 1.5% of sales revenue p.a.”

Ref. NIST Study / SAP-Centric EAM

Information standards

Lack of standardization undermines the ability to correlate different data sources and get actionable insights





Solution overview



Mission

Deliver actionable, contextualized information to transform your ability to make faster and more reliable decisions, and improve your operational safety, asset integrity and reduce your project risk



Enterprise scalable, managed and secure



Rapid access to trusted asset information



Aggregate and maintain



Visualize context



Ability to remediate information

Creating the Digital Twin

From

Disconnected information in multiple systems & formats

Maintenance records



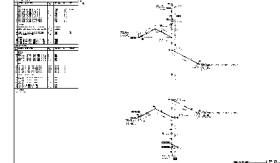
Vendor data



3D models



Drawings & schematics



AVEVA IE&D



To

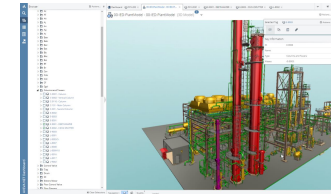
Connected, digital, asset information



Enabling

Fast, easy access to connected asset information at any time

- Browse
- Navigate
- Search
- View
- Check



Capabilities



Cloud and SaaS enabled

Secure and simple access via a subscription



Fast time to value

Quick to deploy and minimal configuration required



Scalable and performant

Deploy at scale across your fleet, not bespoke for each facility



Empowered teams

Transparency and 360° view of data is the bedrock of collaboration



Aggregate information

Eliminate data silos and make information available in one place



Visualization in context

View your data, documents, and 3D models via a web browser, whatever the source



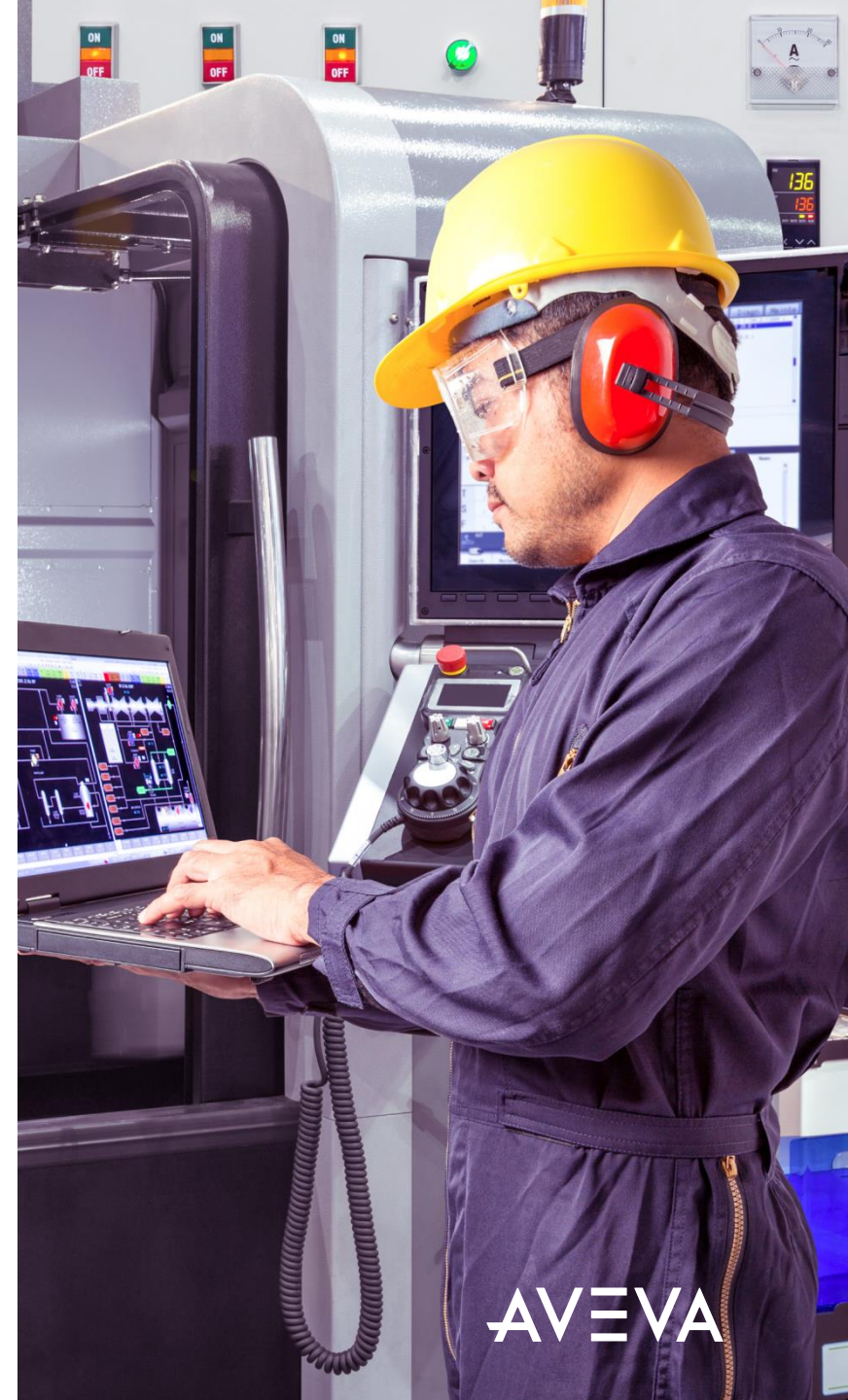
Data driven approach

Adapts to the data you have rather than force you to adapt your data



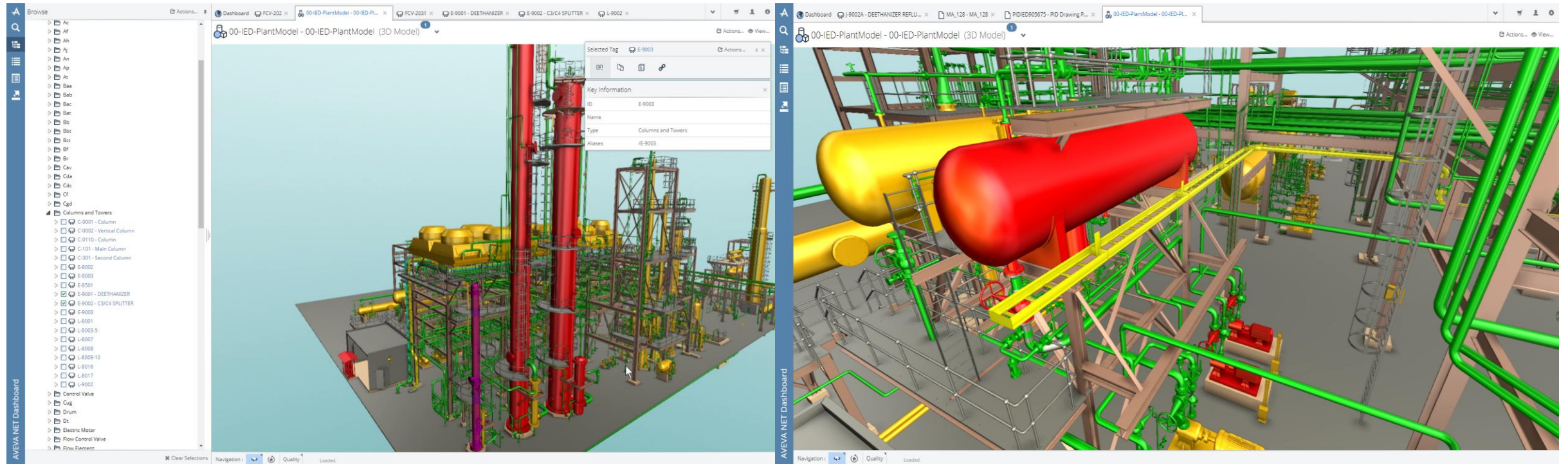
Discovery of insights

Discovery of connections in your data helps uncover new insights





3D Visualization



Powerful search capabilities

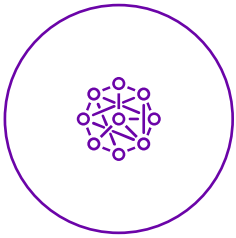
The screenshot displays the AVEVA NET Dashboard interface, highlighting its powerful search capabilities. The dashboard is divided into several sections:

- Search Panel (Left):** Features a search bar and filters for Type (All), ID, Name, ID and Name, and Add Filters (Attribute, Lifecycle Status, Related Item).
- Asset List (Top Left):** A table showing 28 results for Asset Visualization (RED) and Asset Visualization (RED) AG. The table includes columns for ID, Context, Description, and Type.
- Shift Handover Communication Log (Middle):** A table showing a log of shifts, including columns for Time, Task, Status, and Remarks.
- Asset Details (Right):** A detailed view of the selected asset, showing its location (Facility, Area, System), details (Manufacturer, Model Number, Control), and connections (Pumps, From, To).
- Class Attributes (Bottom Left):** A table showing attributes for the selected asset, including Name, OS, Asset Visualization, Calculated Hours, Comment, ID, and Control.
- Grouped Attributes (Bottom Right):** A table showing grouped attributes for the selected asset, including Tag/Equipment/Technical (J0002A (25)), Tag/CD/Name (J0002A (25)), Tag/CD/Name (J0002A (25)), and Master Devices (J0002A (25)).

Business value



What does this mean to your workforce?



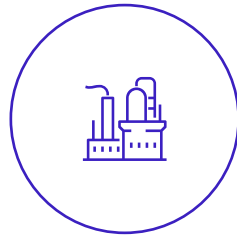
COLLECT

Aggregate information
from different sources



DISCOVERY

Automatic detection of
relationships and
associations in your data



VISUALIZE

View data, drawings,
documents, and 3D. With
the context and
connections between
them clear



REPORT

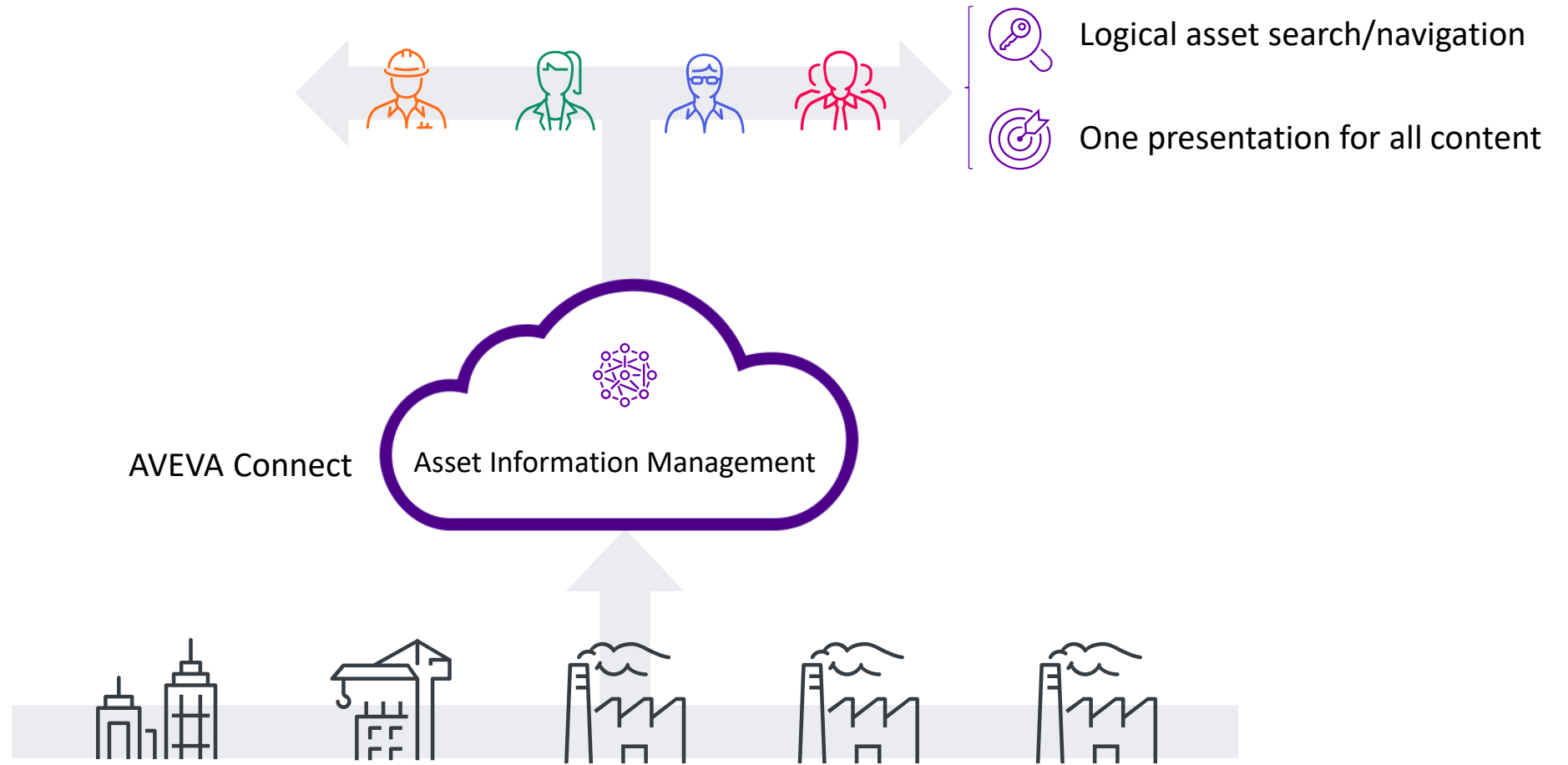
Discover information gaps
and report on project
evolution



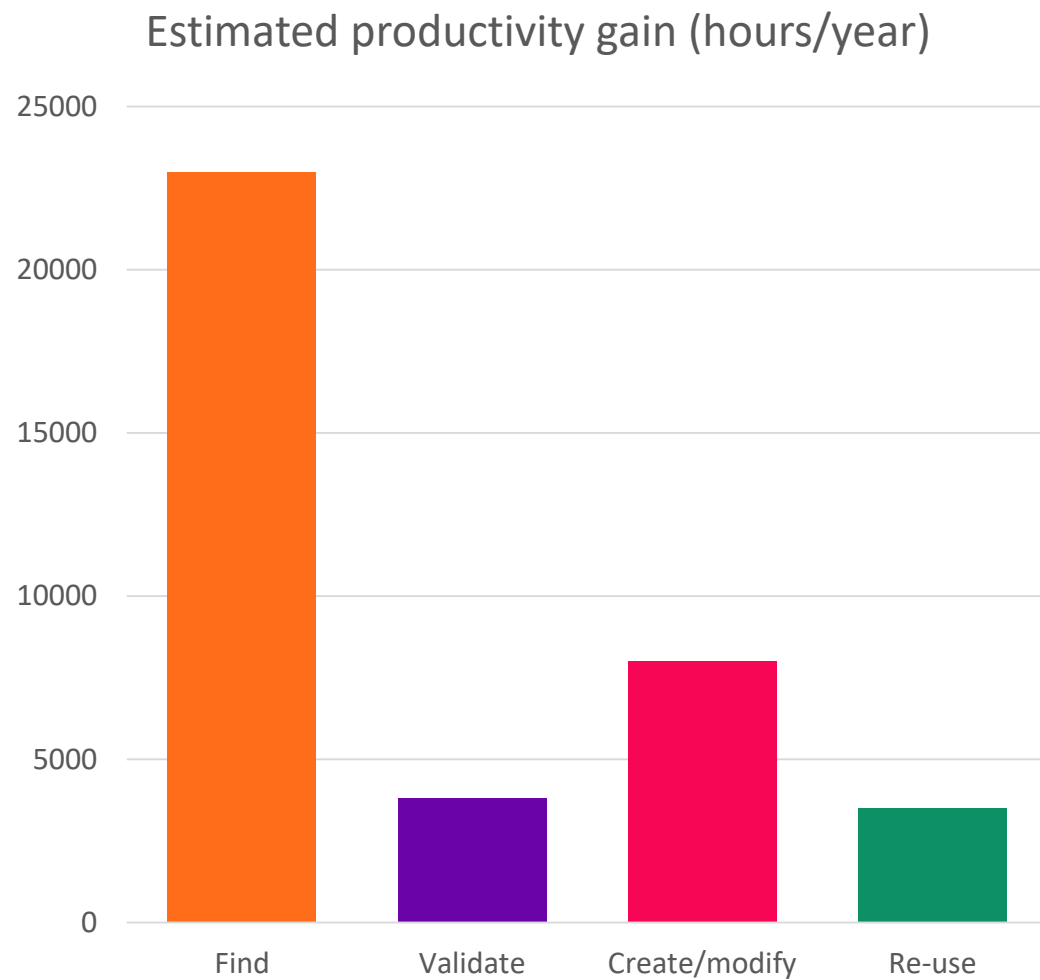
INSIGHTS

Gain the insights necessary
for informed, good
decision making

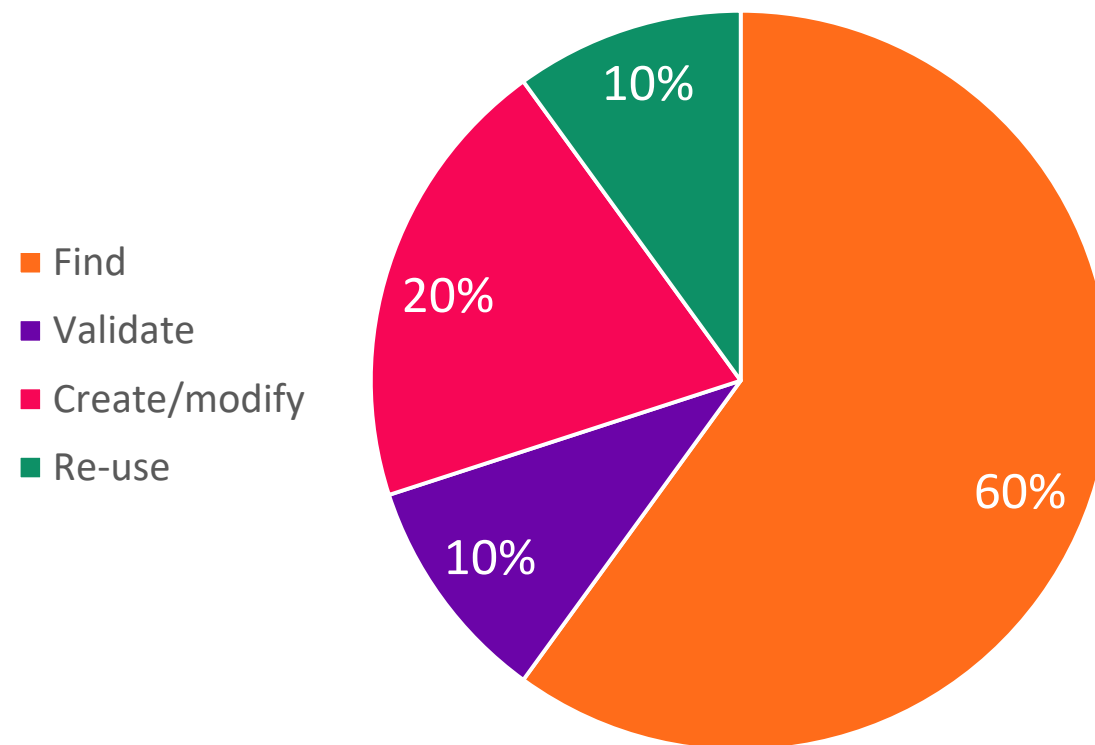
Unlocking isolated information



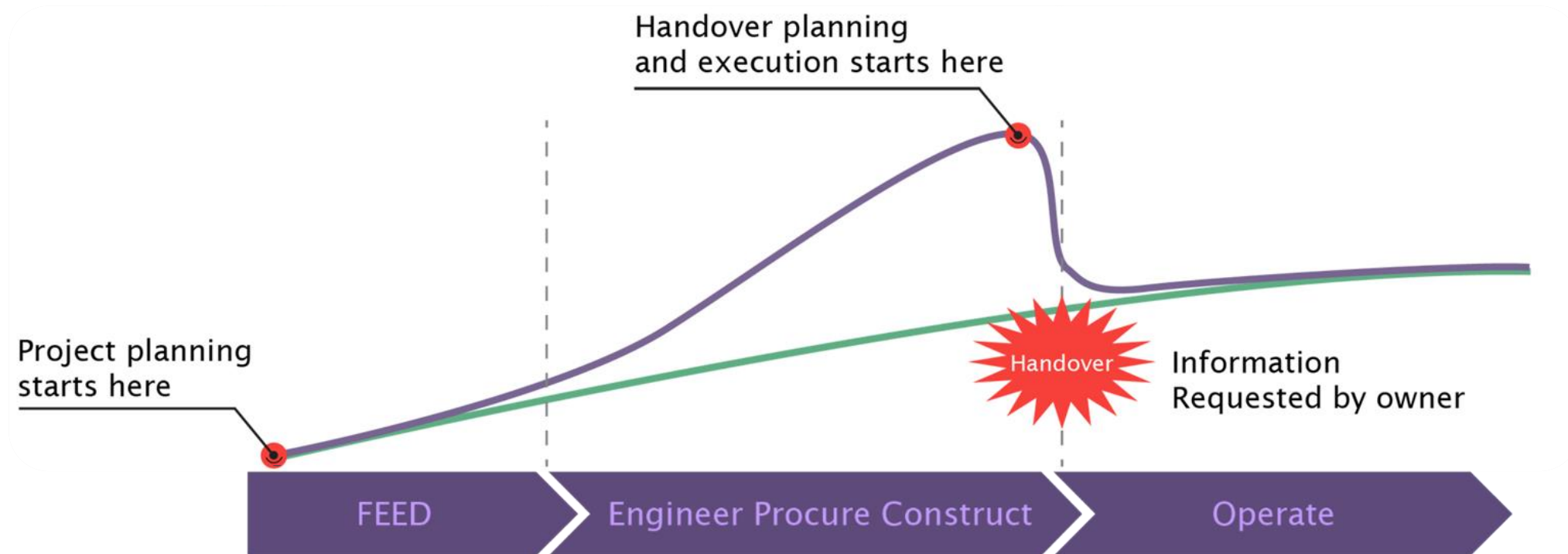
Returning time



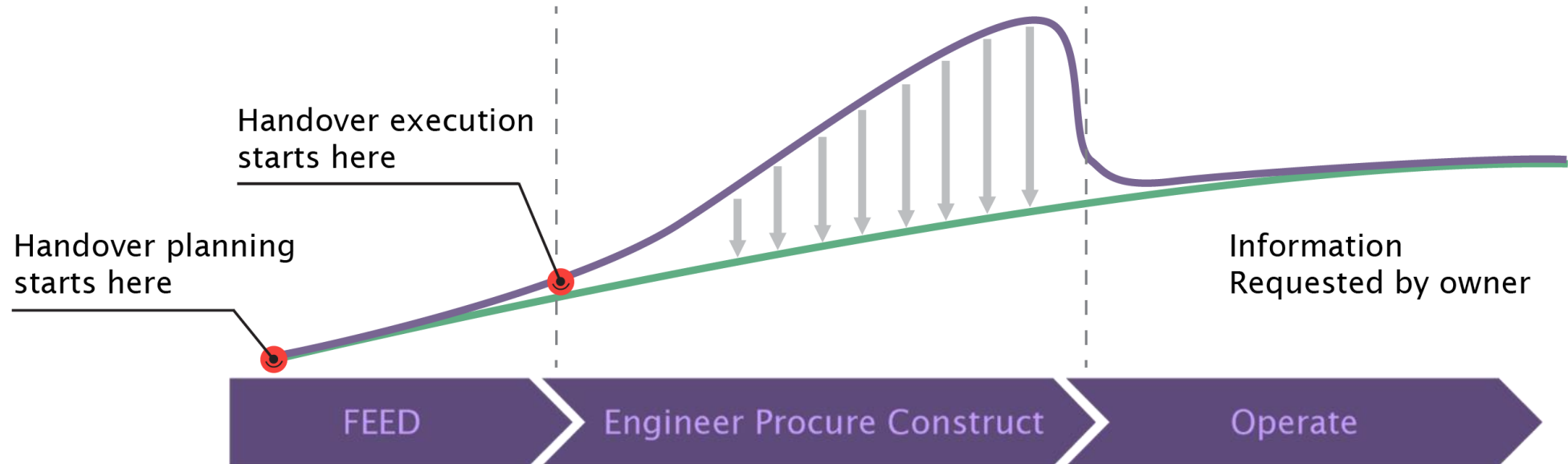
Value of a digital twin in information management



Traditional Handover

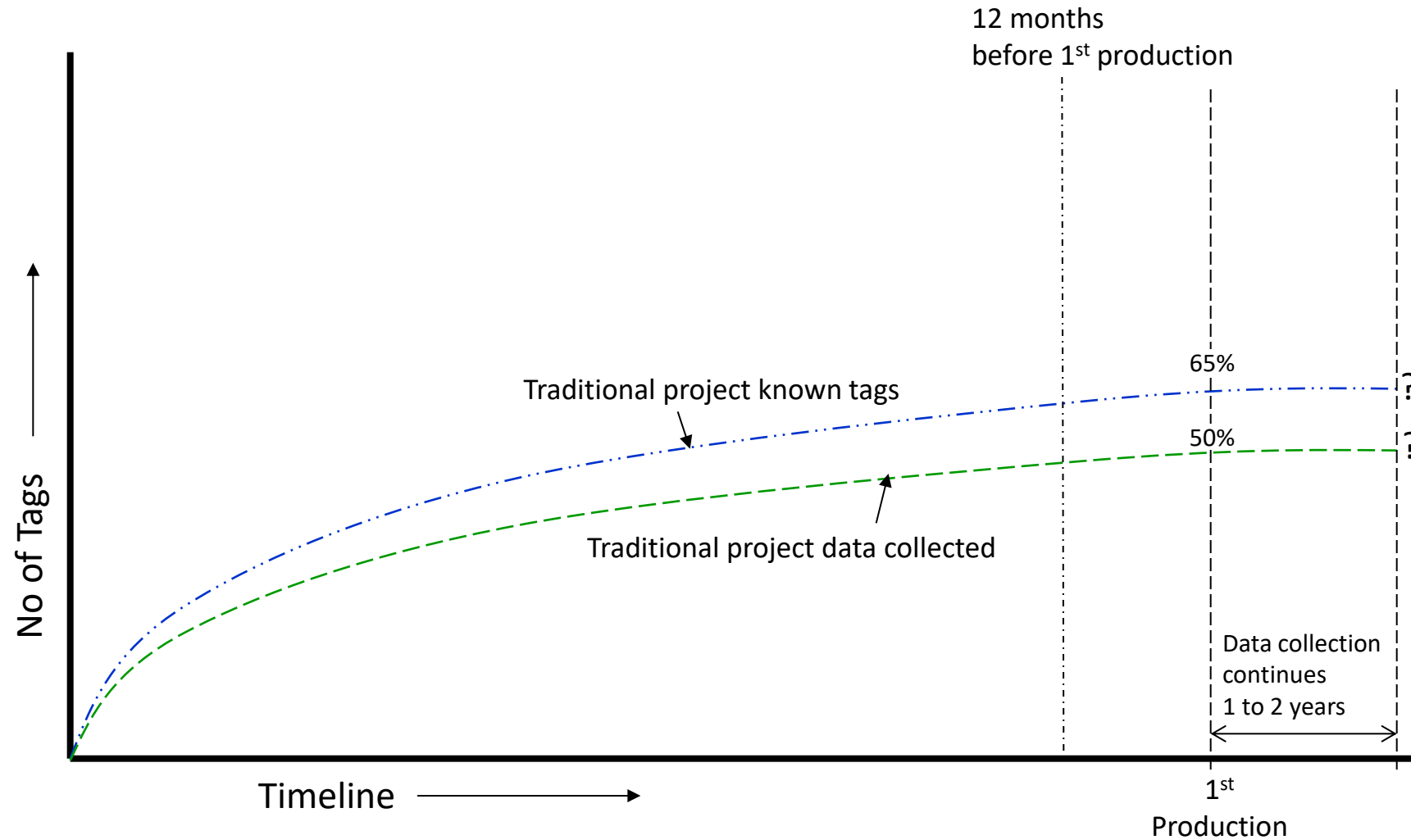


Progressive Handover

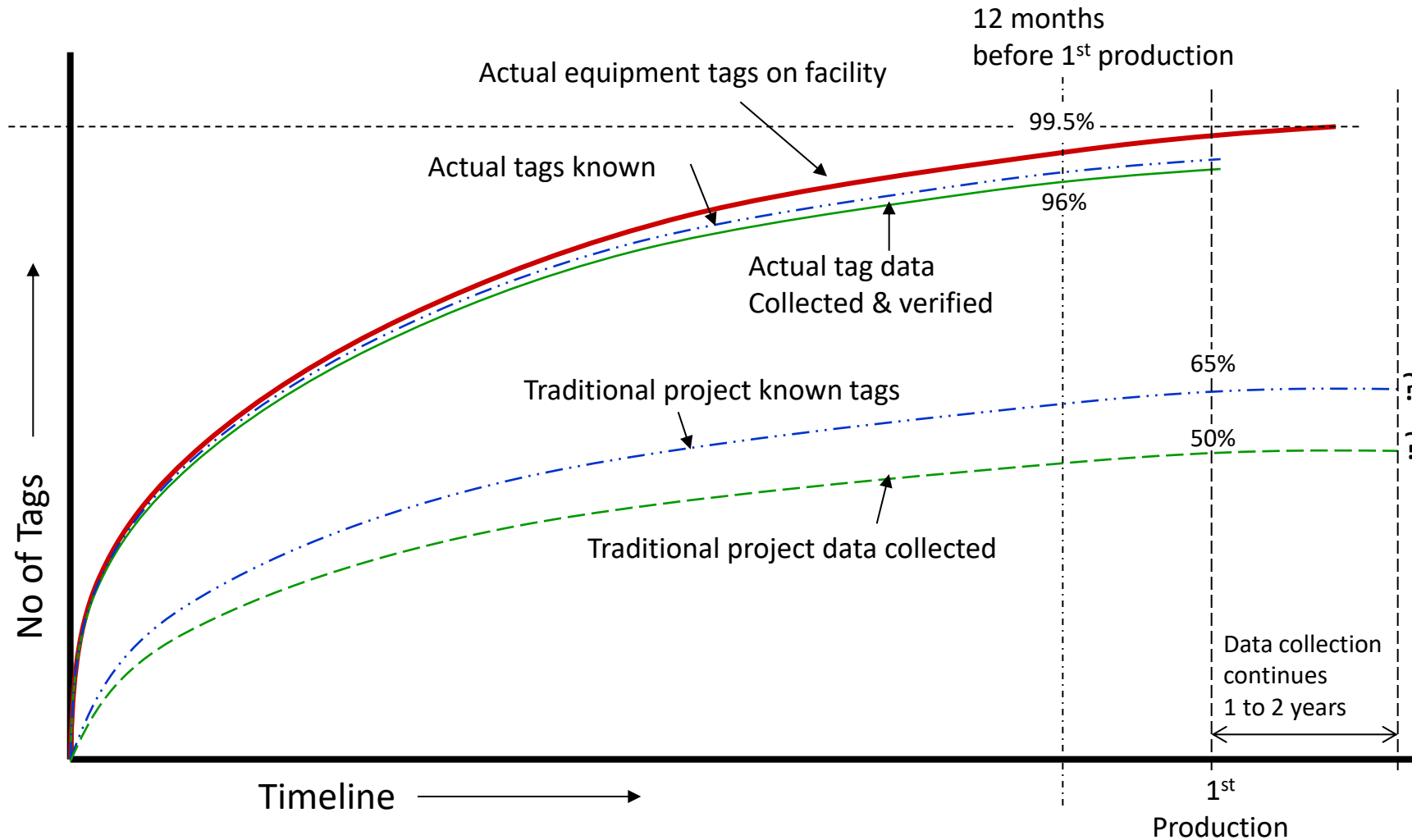


“Incremental handover” based on data maturity and quality
Progressive monitoring of information quality standards

Progressive Handover – Completion Analysis



Progressive Handover – Completion Analysis





Major Capital Projects - Commission & Handover

From **50%** of project
data collected at first
production

To **95%** of Tag data
collected and verified

AVEVA is the leader in information management

-  Proven and reliable solutions with REAL results
-  Long-term mission un-wavered with continued investment in product development towards cloud
-  An established and broad customer base
-  Successful project execution at enterprise scale
-  Open, information agnostic technology delivered through our proven global delivery network

Case studies



Damodar Valley Corporation



Challenges

- Absence of digital information about their operating plants, resulting in serious problems in accessing plant engineering information for operations
- Overriding need to build a Digital Asset for their existing assets

Solution

DVC is using AVEVA Asset Information Management for:

- Ensuring information integrity and robust version control as designs progress
- Handling interface engineering between civil/structural, electrical, mechanical, control and instrumentation disciplines
- Collation of all information from different source systems and other third parties for increased project efficiency and operational control
- Enabling capture and recording of historical information on failures and leakages for risk assessment

Results

- Expanded new technology to new build scenarios → 15-20% lead time/cost reduction
- Unplanned outage reduced by 38%
- Information retrieval period was 24-48 hrs for skilled person. Now, information is accessible in real-time to 300 people, across 6 locations

“The AVEVA solution is a perfect integrated solution for engineering, operation and services for the plant.”

*Mr Hiranmoy Chatterjee, DVC
Executive Director, Engineering*



8.6 GW Generation Capacity



Unplanned outage
reduced by 38%



15-20% reduction
in lead time/cost

Petroleum Development Oman



Information management returns time to workers

Challenges

- Poor information management: laborious and slow searches for information were holding back operational performance.
- Critical information stored in a wide variety of formats, among various repositories and systems across the organization.
- Hard to keep as-built drawings updated after the completion of modification work on a plant which had obvious safety implications.
- Avoid potentially poor decisions that could endanger both the plant and its personnel.

Solution

PDO is using AVEVA Asset Information Management for:

- Enabling accurate and detailed asset information visualization across the organization.
- Providing users with access and navigation across a digital version of their plant.

Results

- Engineers can quickly search for a tag and find all its related information, such as process drawings, manuals, specifications or maintenance history.
- 5% of total worker's time saved on searching for information = 10,000 worker days. This is the equivalent of finding an extra 50 skilled workers at no extra cost to the business.



Reduction of
10,000
Worker days



5% of total worker's time
saved on searching
information



Equivalent of extra
50 skilled workers
at no extra cost

Supermajor O&G company partners with AVEVA

Global digitalization of operating assets

Challenges

- Information silos have made it difficult to find trusted asset information in a timely manner which has hampered decision making
- Asset portfolio ranges from mature and rudimentary to brand new and very sophisticated
- 325+ Assets | 9+ Business Units | 10,000 users expected

Solution and Benefits

- Standard, templated approach can be applied consistently to Upstream, Downstream and Refinery assets
- Rolled out at a Business Unit level rather than at the asset level
- Continuous deployment of new capabilities with no disruption to end users

Results

- All assets have been brought up to a minimum baseline Digital Twin state
- Users have achieved higher levels of situational awareness and have been able to make decisions faster by accessing information in context
- Inspections and maintenance activities can be remotely planned and reviewed with readily access to contextualized Operational and Engineering information, in 3 minutes or less
- All assets in the current deployment are ingested with new data every day
- Five Business Units have been digitalized



“Actionable asset information must be located in 3 minutes or less”



Full Business unit deployed in under two months



\$300M p/a savings
In predicted annual savings for 10,000 users

Woodside



Breakeven 3.4 years after commencement

- Challenges

- Improve the quality of facility engineering information
- Reduce handover costs
- Increase productivity

- Solution

Woodside is using AVEVA Asset Information Management for:

- Early identification and compliance with documentation and handover requirements
- Effective communications both within the team and with interfacing parties
- Efficient management of new and legacy engineering data

- Results

- Improved quality of facility engineering information and access to it
- Better quality of data prevents workplace accidents and unplanned shutdown
- Better knowledge retention
- Improved regulatory compliance

“ The portal gave access to all engineering, maintenance and operations information and allowed for two views, a project view and an operations view. ”



Reduction of

AUD 16.8 MM

in anticipated handover costs



Increased staff

productivity

by **10%** per year.



Total accumulative benefit of
over **AUD 20 MM**

Origin

Seamless handover of information assets



- **Challenges**

- Handover of a vast number of documents from acquired assets.
- Transfer operations and engineering data accurately and completely.
- Avoid safety risk and substantial costs during handover process.

- **Solution**

- Origin used AVEVA Asset Information Management to safely complete the transition of the Otway Gas Project within a short timeframe, allowing staff quick access to crucial project information.

- **Results**

- More than 100,000 individual documents integrated into Origin's new systems, without interference on operations.
- Documents successfully cross-referenced, allowing information to be easily organized and accessed from its new location.
- Easy access to the data structures of the entire plant's operations enabling safe and effective operation

“ Through the use of AVEVA Asset Information Management , we completed the transition within a short timeframe, allowing staff quick access to crucial project information across the Otway Gas Project...”



Completed the transition of the Otway Gas Project within a short timeframe



Almost
4,000 employees



Top 20 listed companies on the Australian Securities Exchange (ASX)

Promon Engenharia



Information management challenges in a complex engineering environment

- Challenges

- Complex engineering environment – need of only one source of information, with a unique database for all engineering information.
- Eliminate costs and points of failure by reducing interfaces that need to be maintained for each separate project.
- Enhance workflow between different engineering disciplines and comply with clients' requirements regarding engineering systems.

- Solution

- Promon is using AVEVA Asset Information Management to create an enterprise data warehouse (EDW) environment, the single source of engineering information

- Results

- Ease of sharing engineering information with the procurement, construction, enterprise data and document systems.
- Ability to allocate materials to projects, and the integration of AVEVA Asset Information Management with Promon's planning tools, Enterprise Data Management (EDM) and ERP systems.
- High quality of information and reduced rework on site.

“ Promon has a complex scenario in which we use software from different vendors; with AVEVA Asset Information Management, we are able to integrate all of these applications. ”



Reduced engineering worker hours with accurate and rapid access to information



Promon Group employs **over 1,600 people**



Diverse project portfolio, including oil refineries, maritime terminals, power plants steel mills, and others.

Yamal LNG



Digital collaboration enables delivery of major \$27 billion LNG project

• Challenges

- Avoid delays that push work into the arctic wintertime
- Get all employees to adhere to the same standards
- Checking documents manually every 3-4 months was time-consuming and error prone.
- The climate made all set-backs dangerous and costly.
- With so many partners, documents were hard to keep up-to-date and approved by all.

• Solution

- Yamal LNG and YUZHNIIGIPROGAZ, a design and project engineering institute, are using AVEVA Asset Information Management to ensure project efficiency and stick to the demanding schedule, adopting a progressive approach to manage information transfer.

• Results

- Consistent, compliant approach to engineering information across the project.
- Moving to a data-centric approach mitigated challenges at every stage of design and construction
- Using common systems between teams cut time out from between 'ready for startup' and full operation
- Six months' worth of savings in preparatory work

“ It is impossible to overestimate the importance of standards. The more thoroughly you work on the standards you use and implement at the very beginning of your working relationship, the easier your life will be at later stages. ”



Revenue of **\$236 MM** (2017), with total capacity of **16.5 million tons** of LNG per year



Saved around **6 months' work** on site.



Total assets value of **\$27.6 billion** (2017)

Shangai Laogang

Transforming the design, construction and delivery of the world's largest waste-to-energy plant

- **Challenges**

- Deliver project on time and on budget
- Poor collaboration between the engineering and design teams working on the plant
- Communication gaps between EPC and plant operator
- Conflicts between various work programs
- More than 200 construction clashes detected and avoided

- **Solution**

- Shangai Laogang, the world's largest waste-to-energy plant, is using AVEVA E3D and AVEVA Asset Information Management to ensure project efficiency and stick to the demanding schedule

- **Results**

- Faster, more efficient and higher quality engineering and design
- Reduced errors and rework in construction
- Reductions in project cost and schedule
- Improved collaboration and information sharing between all engineering, construction & owner operator
- Faster, more effective digital handover to operations & maintenance
- Improved access to reliable information for operations and maintenance

“ AVEVA's solutions enabled our engineering and design teams to complete their tasks more quickly and efficiently than ever before. They also eliminated many of the construction and inter-disciplinary collision problems at the design stage, reducing waste and rework during the construction phase. ”

Mr. Yue, Vice President of Shanghai Environmental Group



Savings of over **RMB 5 million yuan (\$700k)**



Annual power generation around **900 million kWh**



Capacity of **3 million tons per annum**



Delivery models



AVEVA Asset Information Management

On-premises solution

What is the on-premises solution?

- Comprises of a full, on-premises deployment of AVEVA Asset Information Management
- Agnostic, end-to-end solution, that can ingest data from several different systems and data sources

Benefits of an on-premises solution?

- Highly customizable and adaptable to different scenarios
- Powerful search and reporting capabilities to display KPIs for the project
- Information standards management to enforce data validation and assurance to engineering standards
- Agnostic and non-invasive approach provides the means to bring in content from other tools



AVEVA Asset Information Management Advanced

Information standards driven cloud solution

What is a standards driven solution?

- Comprises of a deployment a with repeatable standards driven cloud-based template, keeping the configuration of the overall solution in lock step with the information standards
- Agnostic, end-to-end solution, that can ingest data from several different systems and data sources

Benefits of a standards driven solution?

- Is more easily repeatable, upgradable and maintainable
- Agnostic and non-invasive approach provides the means to bring in content from other tools
- Provides many of the benefits of an on-premises system with the ability to deploy rapidly
- All configurations are handled from a single place, allowing customers to easily take over and manage a solution in line with constantly evolving information standards
- Reduces the total cost of ownership; especially in a multi-asset deployment scenario

AVEVA Connect: Your Digital Transformation Hub

<https://connect.aveva.com>



Engineering
Efficiency



Operational
Excellence



Enable New Ways
of Work



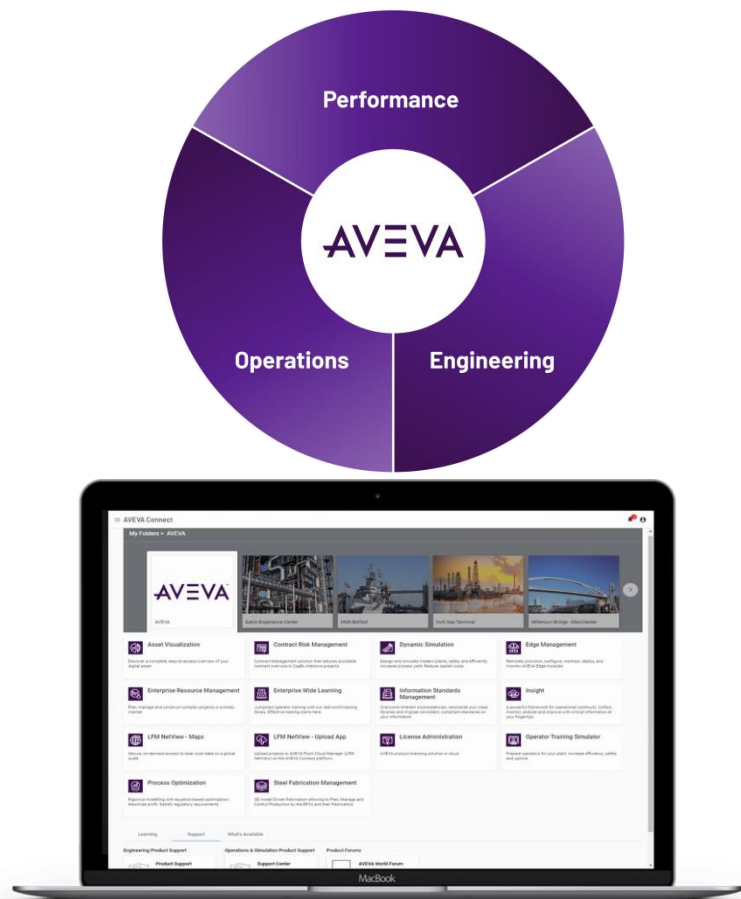
Advanced Digital
Services



Architected for
Security

Part of AVEVA's growing cloud portfolio

Start anywhere, go everywhere. Take your engineering, operations and performance to the cloud.



AVEVA Connect

Our common cloud platform to transform faster, reduce IT costs, scale up and down with flexibility and securely consume our portfolio.

Engineering

Deliver capital projects to operations efficiently, on-time and on-budget

Operations

Eliminate value leaks, increase operational efficiency and maximize collaboration

Performance

Balance operating expenses and risk to optimize the supply chain, production and asset performance

Conceptual Design

Front End Engineering Design

Detailed Design

Procurement and Construction

Operations Training

Project Handover

Operations Control

Operations Visualization

Operations Information

Operations Execution

Supply Chain Performance

Production Performance

Asset Strategy

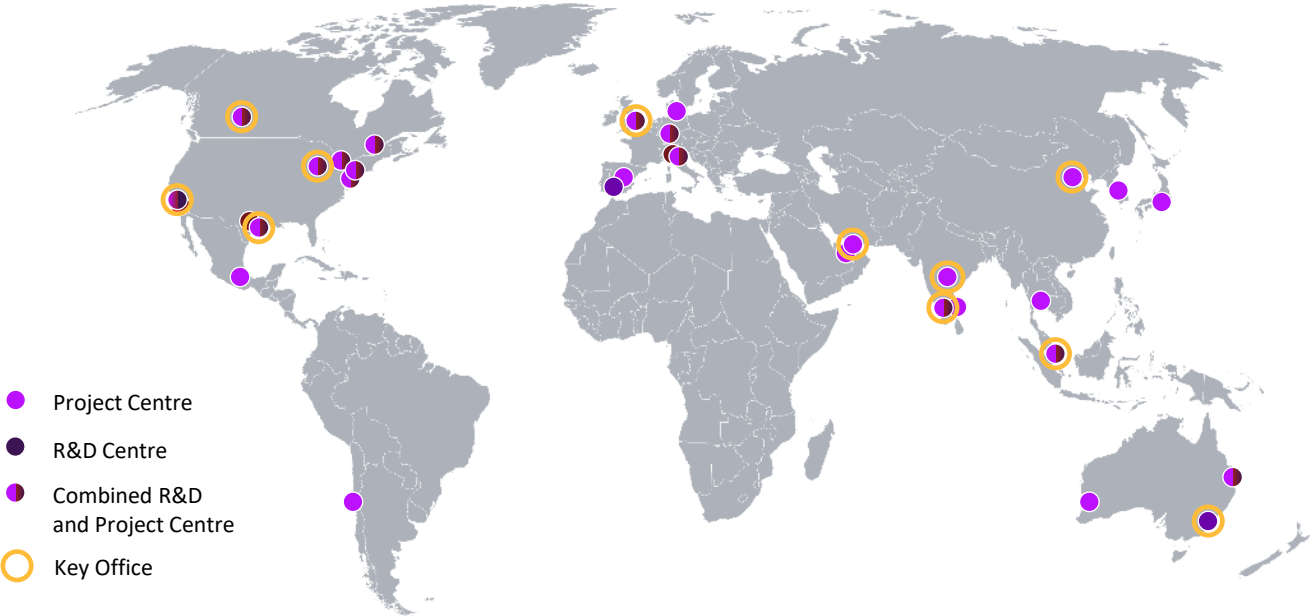
Asset Performance

AVEVA Connect is used by more than 2,500 customers already

Working with
2,500+
Cloud customers globally

Per week more than
75,000
Unique user logins

Seeing at least
20%
efficiency gain by moving to Cloud



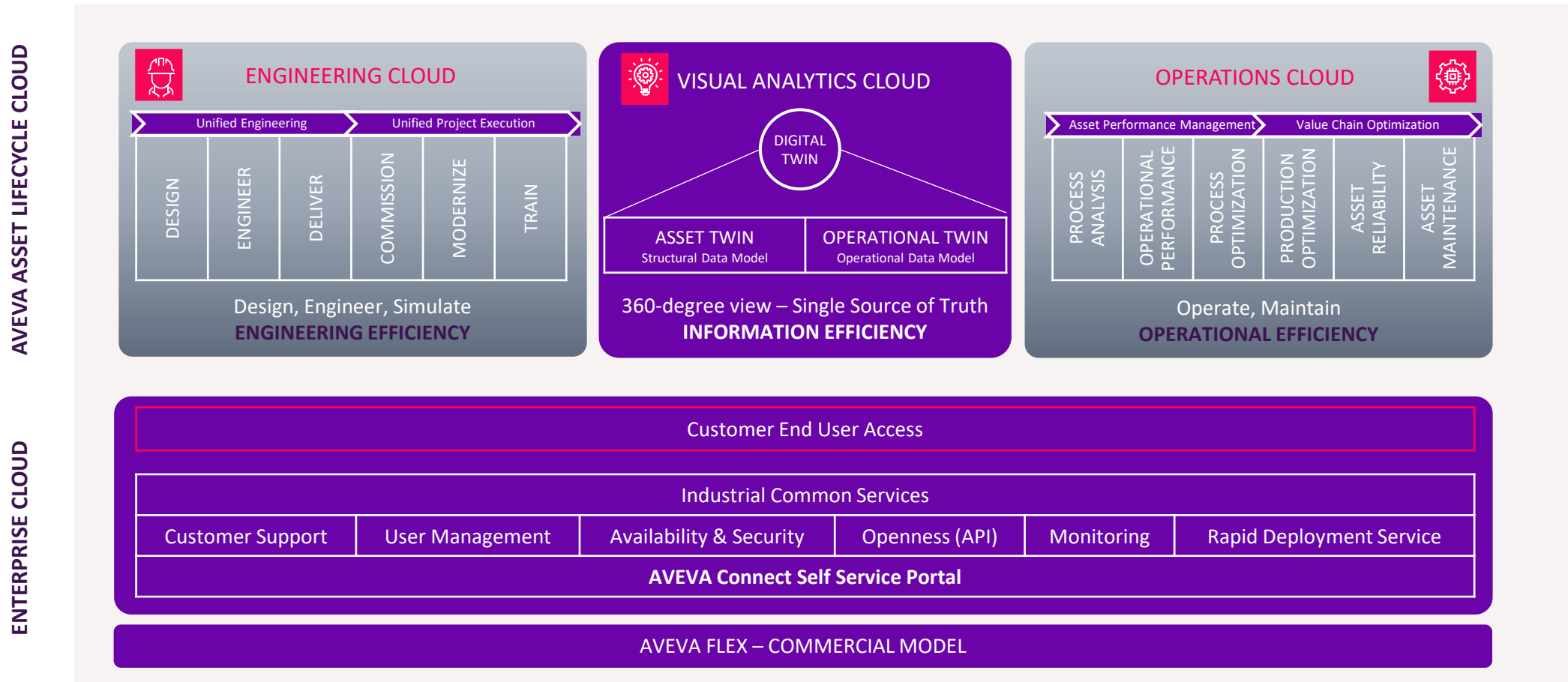
More than
16
Solutions Available

Working on a fully integrated
Single
cloud platform

Provisioned across 5
Global
Data centers



The AVEVA Cloud Platform allows the optimization across the entire Asset Lifecycle Management



This presentation may include predictions, estimates, intentions, beliefs and other statements that are or may be construed as being forward-looking. While these forward-looking statements represent our current judgment on what the future holds, they are subject to risks and uncertainties that could result in actual outcomes differing materially from those projected in these statements. No statement contained herein constitutes a commitment by AVEVA to perform any particular action or to deliver any particular product or product features. Readers are cautioned not to place undue reliance on these forward-looking statements, which reflect our opinions only as of the date of this presentation.

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ABOUT AVEVA

AVEVA is a global leader in engineering and industrial software driving digital transformation across the entire asset and operational life cycle of capital-intensive industries.

The company's engineering, planning and operations, asset performance, and monitoring and control solutions deliver proven results to over 16,000 customers across the globe. Its customers are supported by the largest industrial software ecosystem, including 4,200 partners and 5,700 certified developers. AVEVA is headquartered in Cambridge, UK, with over 4,400 employees at 80 locations in over 40 countries.

[aveva.com](https://www.aveva.com)