AVEVA

Connected capital projects

Five reasons to take a data-centric approach from engineering to operations

aveva.com

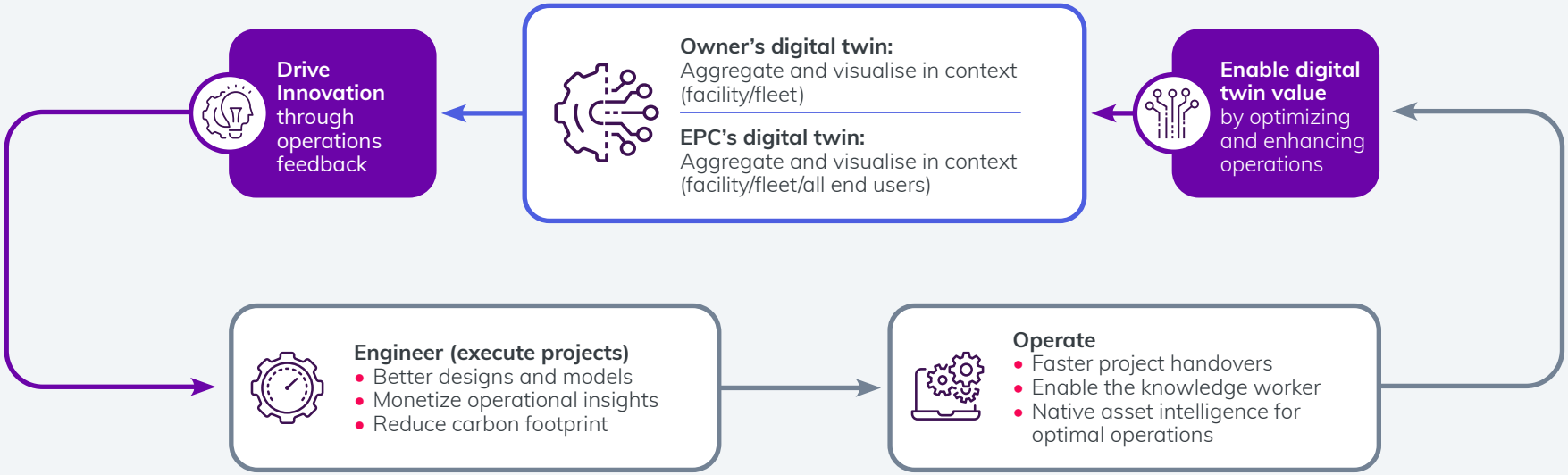
Table of contents

Capitalizing on engineering data

Industrial organizations that capitalize on engineering data can use it to create a feedback loop for continuous improvement. But in order to do so, organizations first need to take a data-centric approach to designing, building and operating facilities.

Because engineering software can form the cornerstone of a digital twin, engineering data is a critical part of understanding how well a facility is operating and if it's operating as designed. This understanding becomes fundamental to informing facility updates and future builds.

Using engineering data throughout a facility's life cycle creates value



What this looks like in practice

A digital thread from engineering to operations

In typical, traditional project asset life cycles, engineering hands off to operations in a series of gated, distinct events, and the facility remains operational until decommissioning. It's a segmented linear timeline. A well-formed digital twin built on verified engineering data offers the opportunity to turn this process into a feedback loop.

A digital twin created in the design phase enables operators to use that multi-dimensional representation as they are building the facility. This means operators could use the digital twins to identify potential design flaws, optimize layouts and improve overall functionality. Different departments or external partners can collaborate in real time when accessing and reviewing project data using the digital twin.

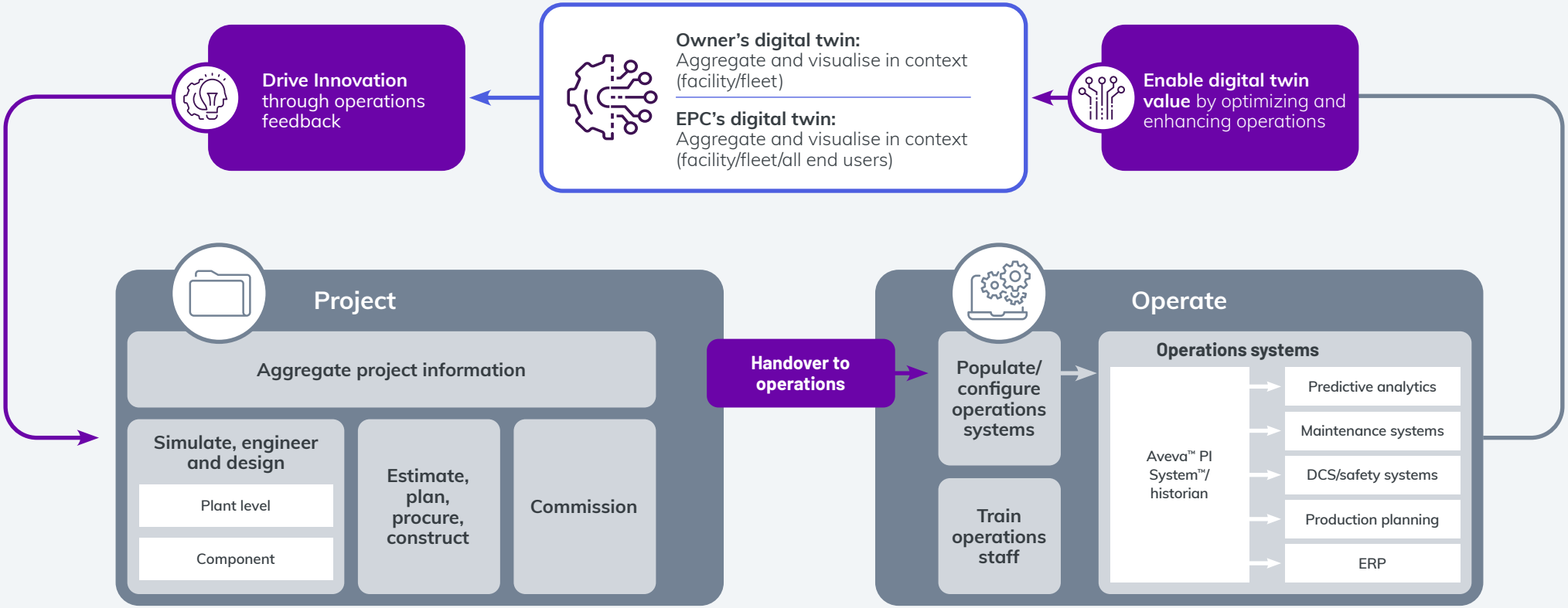
Simulating the construction process with a digital twin can help identify the most efficient construction sequence, taking information directly from design to minimize delays. Furthermore, operators could use it to **analyze potential risks and challenges during construction,** allowing for proactive planning.

Utilizing the digital twin to monitor the usage and movement of construction equipment enables optimized deployment strategies. Operators can also use the living data to **simulate the facility and train operators** to operate it—before the construction even finishes.

Beyond construction, the digital twin can continue to be valuable for maintenance and operations planning. It can **provide a comprehensive view of the facility,** setting the operator up for predictive maintenance and optimizing operational workflows.

As a dynamic and interactive model, a digital twin of the facility **empowers engineers to make informed modifications throughout the various stages of its life cycle.** This process can involve simulating different scenarios within the digital twin to understand the potential impact of modifications. Or it can even be used to simulate the impact of new regulatory requirements on the facility. Engineers can then propose modifications to ensure compliance with updated regulations.

This data-driven approach to industrial projects allows organizations to make informed choices for ongoing construction activities and future projects. Engineers can use the digital twin to iteratively design and optimize the layout, structure and systems of future facilities.



Top five reasons organizations take a data-centric approach from engineering to operations

1 Improving project efficiency

A digital thread enables proactive problem-solving, identification of bottlenecks, and continuous improvement, which leads to enhanced facility performance.

2 Reducing handover costs

With seamless data transfer from engineering to operations, data is verified as accurate and up-to-date, and it's readily accessible to all stakeholders. This minimizes errors, improves communication, and enables collaboration across project phases.

3 Getting to nameplate capacity faster

By utilizing pre-collected and analyzed data to proactively address potential operational challenges, a data-centric approach accelerates commissioning and time to nameplate capacity.

4 Creating an engineering feedback loop

By systematically comparing actual performance to design intent, engineers can identify discrepancies, analyze root causes and iteratively refine future designs based on operational insights.

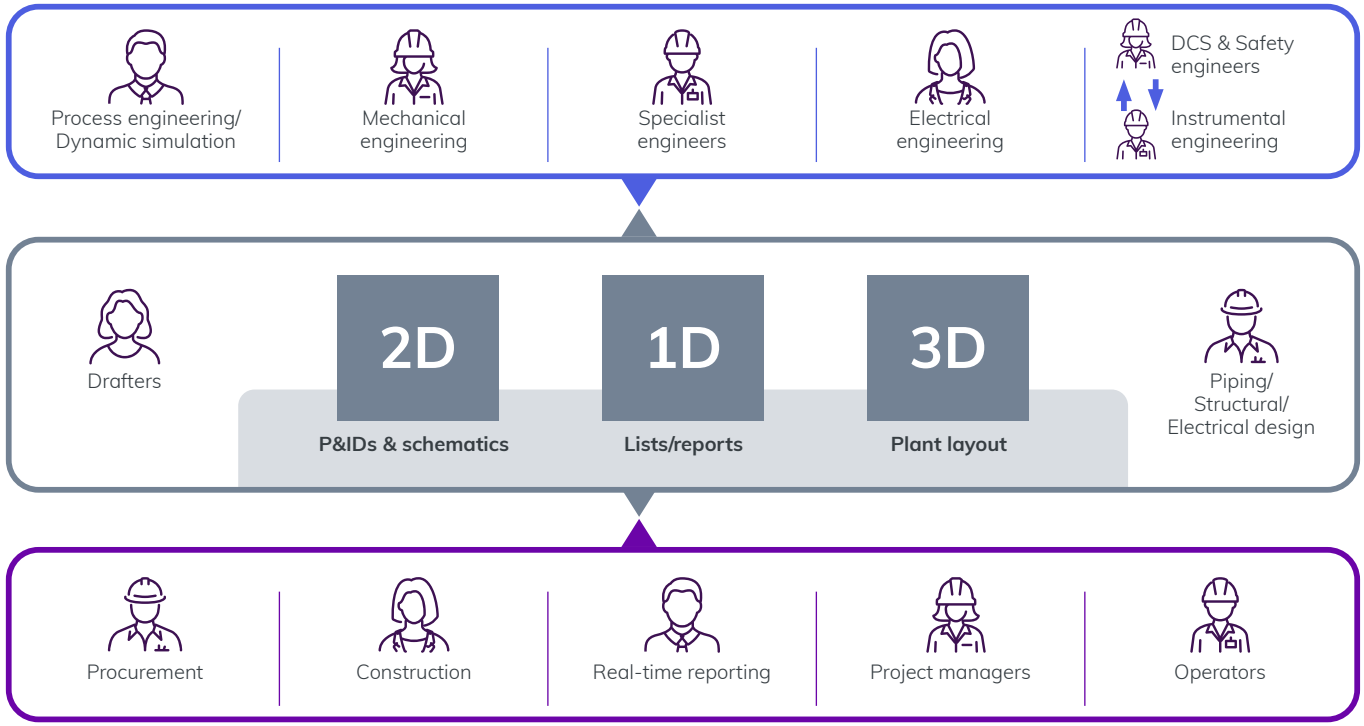
5 Improving change and configuration management

A data-centric approach enhances traceability and overall management of facility changes, promoting better decision-making and more accurate records across the entire life cycle of the facility.

AVEVA's engineering portfolio

AVEVA engineering tools allow organizations to simulate a facility and then engineer that information into a 1D, 2D, or 3D space. We've designed our software to enable a digital thread that spans the capital expenditure process into operations and create the foundation for a digital twin.

Users with varying needs can access information in the form most pertinent to them.



> "As an example of the potential power of digital tools, our clients have reported that they have seen cost reductions in the order of 80% when moving their engineering tag data across into their project's operations phase."

Greg Pada
Vice President and Head of Engineering Business at AVEVA

AVEVA™ E3D Design is a 3D plant design solution that enables designers and engineers to create and manage detailed plant models. It supports the entire design process, from concept to detailed engineering.

AVEVA™ Engineering is a comprehensive solution designed for the efficient management of engineering data throughout the entire project life cycle. It facilitates collaboration among engineering disciplines and enhances project visibility.

AVEVA™ Diagrams is an effective tool for creating and managing technical services diagrams and fully integrating them within the central project database.

AVEVA™ Unified Engineering is an integrated solution for global, multidisciplinary engineering teams. It provides a unified environment for streamlined project execution.

AVEVA™ Electrical and Instrumentation provides tools for electrical design and documentation. It allows engineers to create and manage electrical schematics, panel layouts and other electrical design and instrumentation elements.

AVEVA™ Process Simulation is a software solution that enables dynamic modeling and simulation of industrial processes. It supports process design, optimization and control system testing, allowing engineers to analyze and enhance the performance of complex industrial processes.

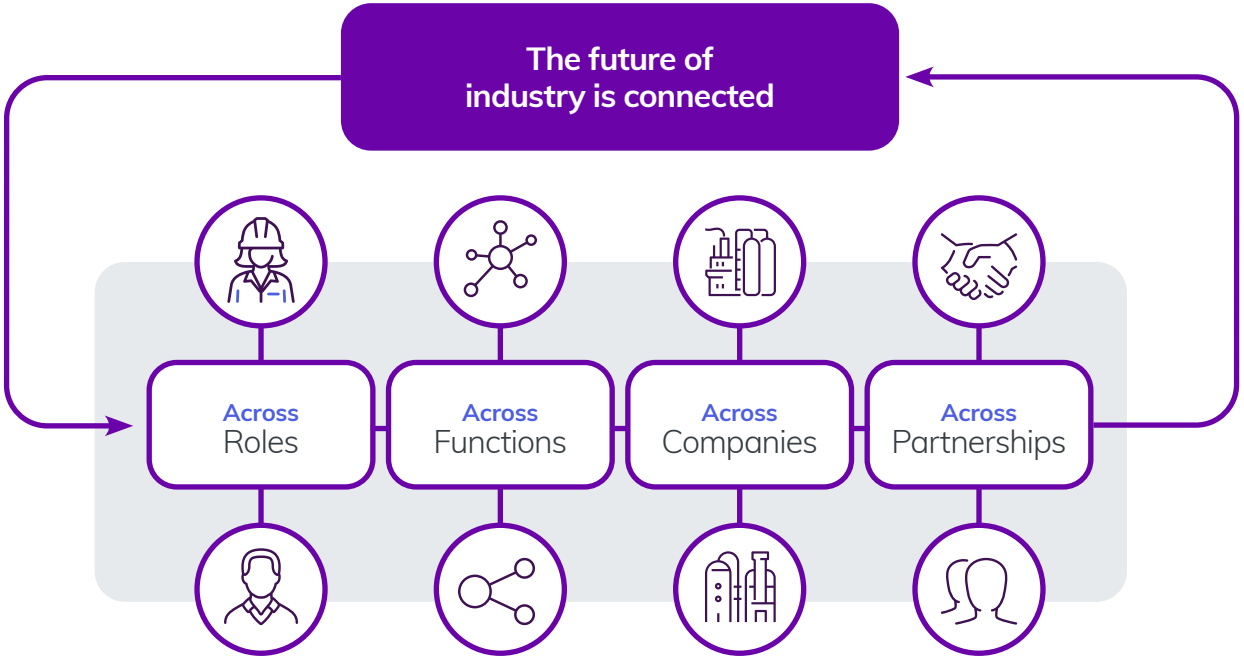
AVEVA™ P&ID is a solution for creating and managing process and instrumentation diagrams (P&IDs). It helps in capturing and maintaining P&ID information throughout the project.

Creating value at every step of the asset life cycle

For facility owners, taking a data-centric approach provides an unprecedented view of how a facility is operating against the engineering designs that preceded it. Operators can get a facility up and operating faster to provide time to value, avoid wasted effort transferring data between documents, and create a feedback loop to continuously improve engineering designs.

Ready to learn more about AVEVA's engineering solutions?

Speak with an AVEVA expert today



For more information, please visit:

aveva.com

linkedin.com/company/aveva

@avevagroup

About AVEVA

AVEVA is a global leader in industrial software, driving digital transformation and sustainability. By connecting the power of information and artificial intelligence with human insight, AVEVA enables teams to use their data to unlock new value. We call this Performance Intelligence. AVEVA's comprehensive portfolio enables more than 20,000 industrial enterprises to engineer smarter, operate better and drive sustainable efficiency. AVEVA supports customers through a trusted ecosystem that includes 5,500 partners and 5,700 certified developers around the world. The company is headquartered in Cambridge, UK, with over 6,500 employees and 90 offices in over 40 countries.

Learn more at www.aveva.com