WHITEPAPER

The benefits of moving to cloud unified engineering

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Executive summary:

Seventy percent of major capital projects are 40% over budget and delivered 20 months late, which negatively impacts ROI. Our cloud-based unified engineering solutions are helping owner-operators and EPCs deliver projects 20% faster, increasing engineering efficiency by 50%, and lowering TIC by 5%, with a 40% reduction in man-hours and a 5% reduction in rework, due to fewer errors. Because the cloud allows you to use a shared server, you can reduce energy consumption and carbon emissions by up to 30%.

You can deploy AVEVA™ Connect in just five days and have it fully operational in one month. Offering pre-configured functionality, it comes ready to adapt to specific project needs and adds near-instant value. AVEVA is pioneering new software solutions that use the cloud to improve collaboration between engineering disciplines.

AVEVA™ Unified Engineering provides a unified cloud-based platform to compare data points relating to process, control, utilities, flare, and hydraulics, among others. The implementation of AVEVA Unified Engineering increases efficiency, minimizes risk, and maximizes return on investment.

Introduction

As the world faces unprecedented environmental challenges, businesses are turning to technology to help address these concerns. For the sake of sustainability and efficiency, the imperative to undertake a digital transformation has only grown by the day.

The challenges facing contemporary industries extend well beyond sustainability mandates. Aging workforces and a shortage of skilled workers create instability in labor markets. Disruptive markets and technologies intensify cost-squeezes. To thrive in today's competitive environment, businesses must embrace digital technologies or risk falling behind. In the past 20 years, 52% of the Fortune 500 has disappeared due to disruptive technologies.

Cloud-based computing can solve many of these problems, but not all cloud-based solutions are created equal. To fully optimize its operations, a business needs to undergo a complete digital transformation, rather than simply moving old processes and software to the cloud—sometimes known as 'lift and shift'—which, more often than not, results in overcomplicated, costly IT architectures.

The number of enterprises that have adopted cloud computing has increased exponentially, with cloud-specific spending growing at more than six times the rate of general IT spending through 2020. Organizations that have successfully implemented specific software-as-a-service (SaaS) solutions or adopted a cloud-first strategy for new systems derive more value from their businesses. Enterprises that have been slow to embrace digitalization, on the other hand, have fallen behind.

A cloud-based platform's full value truly comes into focus when it's deployed as part of a holistic, enterprise-wide digital strategy. As a company undergoes its digital transformation, it can unlock additional benefits to drive innovative business solutions, growth, and innovation in the rapidly evolving marketplace.

Benefits of moving to the cloud

In today's world, speed and ease of use are essential. Cybersecurity is paramount. Because the cloud is faster, more flexible, and more secure, it allows for a host of collaborative possibilities, all while increasing operational efficiency and lowing energy consumption.

AVEVA™ Connect empowers customers to select and deploy tools independently. It used to take days to provision software, but with cloud deployment, the whole process takes mere minutes.

Fast – deploy quickly

Cloud computing reduces or eliminates the need to purchase expensive equipment and operate data centers, making it significantly less expensive than traditional IT approaches. Without the need for on-site servers, software, and staff, businesses' IT budgets stretch that much further.

Cloud-based workflow and file-sharing applications improve collaboration between disparate teams, as team members can make real-time updates, follow one another's progress, and communicate seamlessly. With the benefit of the cloud's collaborative power, you can deploy customer solutions in a fraction of the time. What once took months to deploy can be accomplished in just weeks or days.

Flexible – scale to your needs for true agility

Most cloud computing programs and applications—including AVEVA's full range of solution suites—use a subscription-based model. This allows businesses to scale up or down according to their needs and budget, and it eliminates the need for major upfront capital expenditures.

Cloud-based services are ideal for businesses with growing or fluctuating demand. If your needs increase, it's easy to scale up your cloud capacity. Likewise, should the need arise, it's easy to scale back down. This level of agility gives businesses an advantage over competitors who don't use cloud-based platforms. It's not surprising that businesses identify operational agility as a key reason for cloud adoption.

Secure – take advantage of the built-in security layers in the cloud

Hosting systems and storing documents on the cloud provide a safeguard in case of an emergency. Manmade and natural disasters can damage equipment, shut off power, and incapacitate critical IT functions. Supporting disaster recovery efforts is one of the important advantages of cloud computing for companies.

As cyber threats become increasingly frequent, it's vital to protect your data with proper security and backup measures. The cloud keeps your business safe and secure. AVEVA is a member of the Cloud Security Alliance (CSA) and complies with ISO and SOC 2 guidelines, which designate the highest level of standards for information security.

Remote – unlock unprecedented collaboration

One of the advantages of cloud computing for businesses is how easily team members can work from anywhere. This is particularly valuable in an era when employees desire flexibility in their schedules and work environment, and public health safety measures impose strict restrictions. Businesses that operate on the cloud can provide staff with options to work on the go or remotely from their desktops, laptops, smartphones, and tablets, unlocking an unprecedented level of agility and real-time collaboration.

Sustainable – the cloud improves sustainability

The cloud allows for unmatched scalability, which reduces overall cost and increases efficiency, especially when it's used to replace locally operated on-premise servers. Cloud-based platforms reduce energy use and carbon emissions by more than 30% when compared to corresponding business applications on-premise. In the case of small deployments, energy savings can reach upwards of 90%.

Several key factors enable this:

- **Dynamic provisioning:** by scaling server capacity to real-time demand, you can use computer resources more efficiently.

- **Multi-tenancy:** because the cloud enables many organizations to share a single platform, peak loads flatten out.

- **Server utilization:** servers operate at higher utilization rates.

- **Data center efficiency:** cloud-based platforms reduce power loss through improved cooling and power conditioning.

Rethinking your entire digital strategy can compound the benefits of the cloud. It facilitates and unifies workflows and processes across all stages of a project, decreasing costs and boosting efficiency. This is especially true for engineers. AVEVA's pioneering Unified Engineering solution can quickly break down information silos, delivering great value to both EPCs and owner-operators alike.
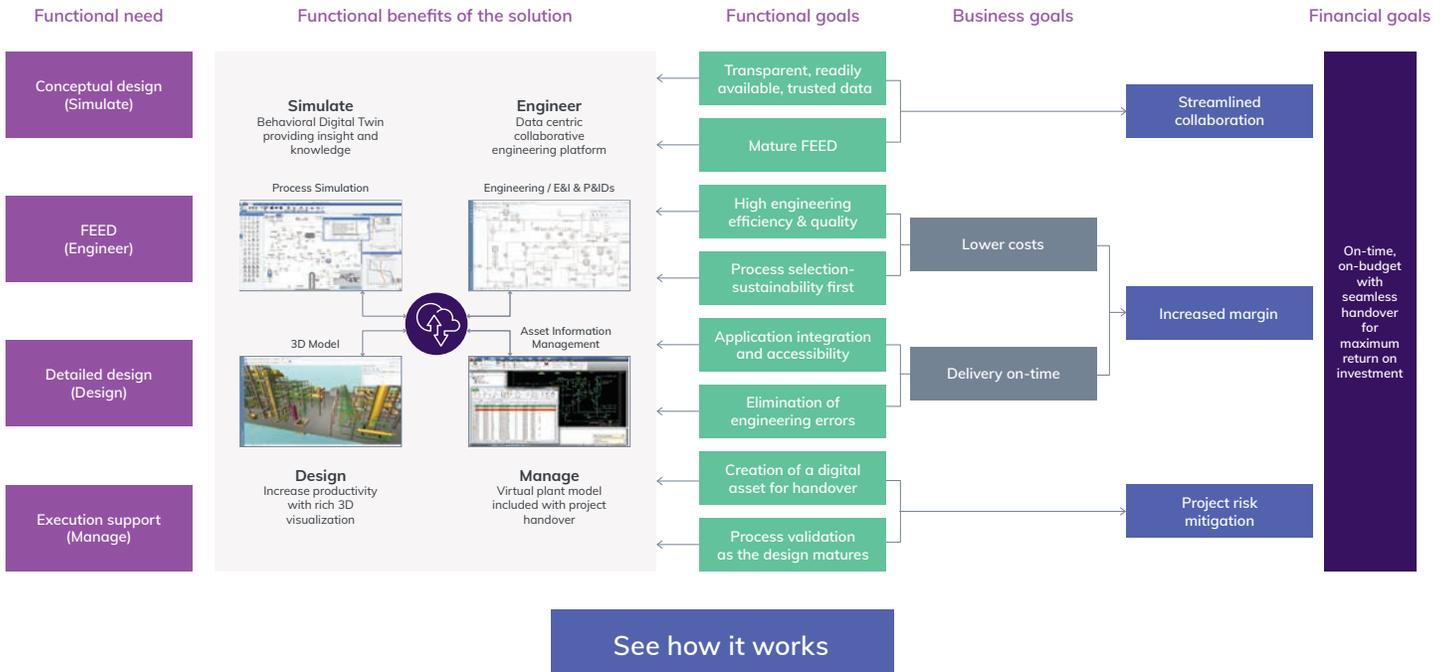
Unified engineering in the cloud

70% of major capital projects are over budget by 40% and delivered 20 months past schedule. Engineers waste 20-30% of their time passing information between team members and up to 50% of their time looking for and validating information, instead of focusing on more vital tasks.

AVEVA Connect and AVEVA Unified Engineering bring unprecedented capabilities to answer these challenges.

The unique cloud solution

Addressing the broadest challenges in engineering

| Functional need | Functional benefits of the solution | Functional goals | Business goals | Financial goals |

See how it works

Process simulation validates design and quickens operator training

AVEVA Unified Engineering seamlessly links process simulation with engineering design for better coordination and faster design cycles, keeping process simulation and engineering (1D, 2D, and 3D) data on a single, data-centric platform. Automated workflows and update notifications keep engineers from all disciplines connected. A live cloud feed, which aggregates engineering data, achieves a higher maturity level of deliverables at each project stage.
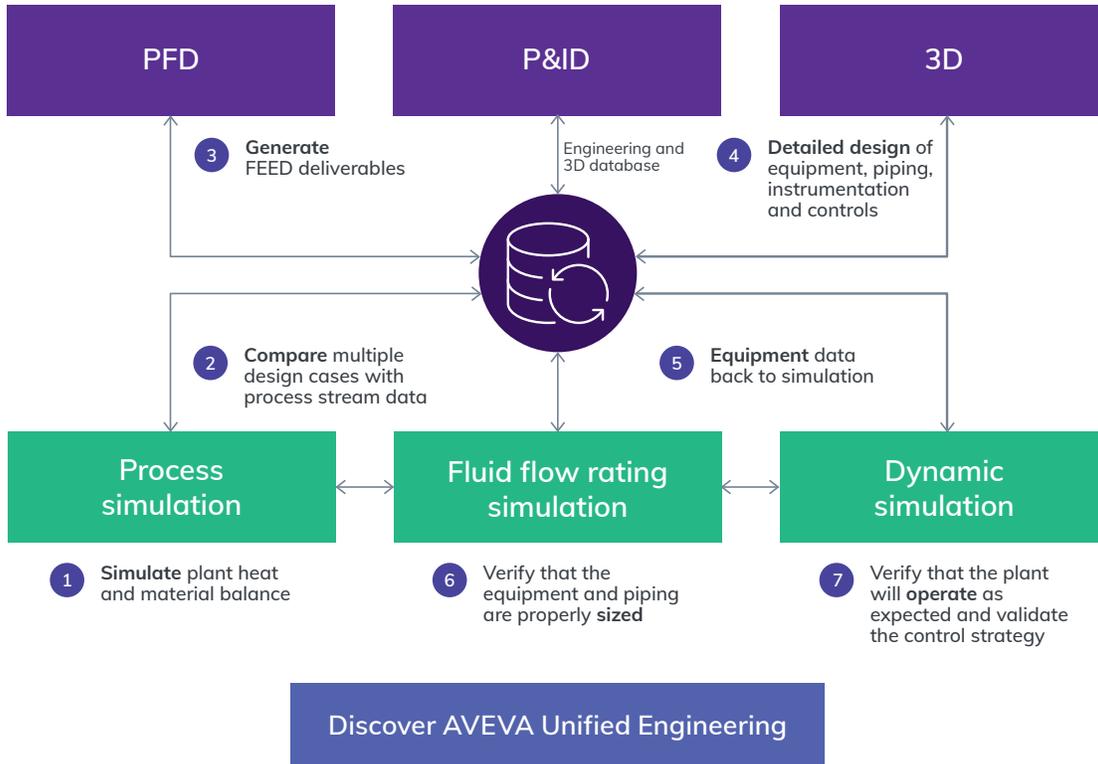
Eliminate manual processes with data-driven project execution

One of the best ways to maintain your competitive edge is to move beyond manual tracking processes. By adopting one unified, data-centric system, you can automatically flag updated information and store it in a central place for consistency.
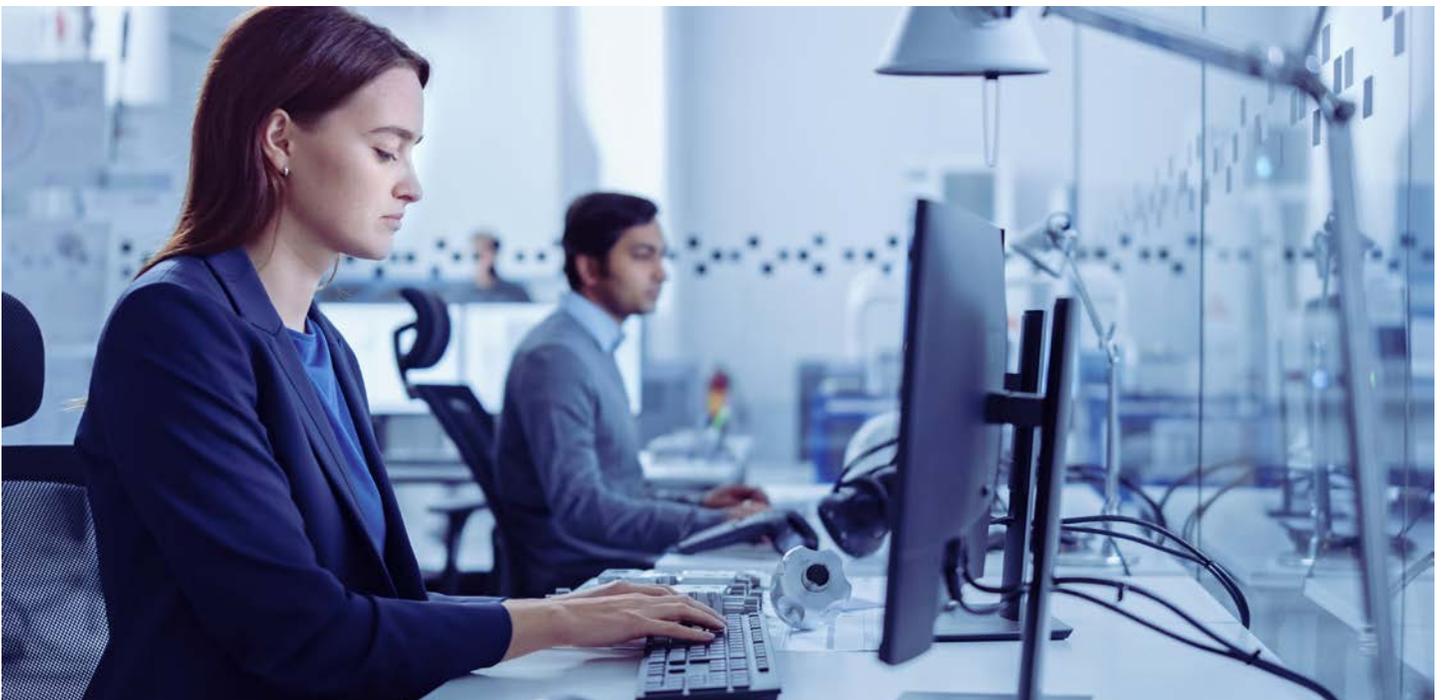
A single, secure platform gives companies the ability to keep all their data in one, easily accessible place, break down silos, enable remote working, and scale solutions both quickly and efficiently. This centralized platform eliminates the risks of information falling through the cracks on handover, without the overhead of installation, deployment, version control, and hardware maintenance.

AVEVA Unified Engineering

The physical asset + process behavior side of your Digital Twin

PFD	P&ID	3D

3 Generate FEED deliverables

Engineering and 3D database

4 Detailed design of equipment, piping, instrumentation and controls

2 Compare multiple design cases with process stream data

5 Equipment data back to simulation

Process simulation	Fluid flow rating simulation	Dynamic simulation

1 Simulate plant heat and material balance

6 Verify that the equipment and piping are properly sized

7 Verify that the plant will operate as expected and validate the control strategy

Discover AVEVA Unified Engineering

AVEVA's cloud solutions and unified engineering suite are already bringing value to a wide range of customers in multiple industries, such as energy, power, chemicals, mining, and shipbuilding. The results speak for themselves – these companies have drastically increased efficiency across their entire operations.

Success stories and customer thoughts

A leading innovator in the global fight against climate change, Aker Carbon Capture (Aker CC) helps enterprises in carbon-intensive industries like cement, steel, and oil and gas mitigate their carbon dioxide and greenhouse gases (GHGs) emissions. To aid companies in their overall sustainability goals, Aker CC designs and builds carbon capture facilities.

Aker CC relies on AVEVA's Unified Engineering in the cloud to complete these important projects with optimal planning and results. Because Aker CC's engineers are dispersed across multiple time zones and need to work on the same project concurrently, a cloud-based solution is a necessity for collaboration and offers the added benefit that designs are easy to duplicate for future projects.

After it adopted AVEVA's Unified Engineering, Aker CC saw overall engineering hours per project decrease and the cost of medium-sized offerings go down by 90% from the cost just nine years prior. It saw improved operational efficiency and more than a 50% increase in time to market. With AVEVA's help, Aker Carbon Capture has been instrumental in helping many companies in carbon-intensive industries develop and realize sustainable infrastructure projects.

"Using AVEVA E3D Design [a key part of AVEVA Unified Engineering] has been a super important part of our engineering process. We have found that it improves efficiency in terms of how we work together. It's a modular process, so that makes it easy for us to adjust to client needs. There are also clear benefits in terms of cyber security."
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David Phillips
Head of UK & Investor Relations at Aker Carbon Capture

Another customer, Veolia Water Technologies (VWT), likewise achieved outstanding results using AVEVA Connect. VWT connected 260 global engineering teams, which sparked creativity, collaboration, and sustainable best practices across its global water business.

These innovations led to a 20% increase in IT efficiency enterprise-wide, improved project transparency, more cross-team collaboration, and seamless engineering integration throughout the project lifecycle.

As a result, VWT can proactively address customer needs and respond to changes in demand. Its engineers have rapid, secure access to trusted project information, even when working remotely. By unifying its data to pinpoint opportunities for resource efficiency, energy savings, and streamlining supply and demand, each drop of water VWT produces is done so sustainably.

"AVEVA's cloud-based and data-centric engineering enables our teams all around the world to work remotely, together, on one platform that spans all of our engineering data. It is fundamental for our staff to work in a collaborative way, in real time, all along the design and build phases. Efficient access to data is key to boosting operational performance and achieving our strategic objectives."
–
M. Thomas Cheylan
Project Performance Director, Veolia Water Technologies

"In our experience, we found moving to AVEVA Connect was not a 'Big Bang' or dramatic switch from how we'd used AVEVA software previously. It did not require a major shift in our mindset to make it a success. AVEVA's engineering software in the cloud is the evolution of how our teams will use engineering software, and it will be transformative for our business."
–
Veolia

During these times of unprecedented disruption, AVEVA's cloud-based solutions help owner-operators and EPCs stay ahead of the competition through innovative thinking. Our EPC 4.0 strategy allows for greater flexibility and timely, efficient project completion, not to mention complete transparency.

Our technology is available on AVEVA Connect, our common cloud platform, which enables engineers, suppliers, and clients to collaborate on a unified platform that spans the entire project lifecycle.

Our data-centric, cloud-based technology will help you realize your digital strategy and stay ahead of the curve across the asset lifecycle from capital projects to operations to maintenance.

For more information about AVEVA's Engineering portfolio, please visit: aveva.com/en/contact

Source listing

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About the author

Davina started her career in the media industry, working with many blue-chip clients. Moving to Adobe, she was leading a go-to-market strategy for central Europe to drive revenue in the mid-market segment. Under her leadership, Adobe delivered the strongest results in this area. She then moved to London to build the practice for FSI and Travel across EMEA in the newly founded Digital Strategy Group. Advising C-level on their transformational journey, developing roadmaps across technology, digital talent and organizational setup she was able to apply her passion for strategy and digital at scale. Joining AVEVA – a global leader in industrial software – Davina is now driving the next transformational journey for both AVEVA and its customers as Director Cloud Sales EMEA, supporting and inspiring clients to reimagine, redefine, and transform their businesses to stay competitive in the new normal.