

AVEVA

Digital twins:
Transforming
industrial data into
real-time value



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Introduction

No matter which industrial sector you're in, you've likely encountered this reality: As your operational footprint expands, so do your challenges. Fragmented systems prevent a unified view of operations, increased data volume demands storage and processing capacity, delayed insights lead to unplanned downtime or catastrophic failure, increased maintenance costs impact the bottom line, and multi-site operations require new data control and safety standards.

To succeed, industrial operations must identify new ways to process, share, and leverage insights to improve decision-making, operational efficiency, and safety.

Enter digital twins. Digital twins aren't just a tech evolution. They're a new way for businesses to create value—and industry is taking notice.

The global digital twin market is projected to¹:

- Grow at **47.9% CAGR** from 2025 to 2030.
- Have a market value of USD **149.81 billion** by 2030.



Introduction

Why? The results speak for themselves:

50%

reduction in product development times²

20%

reduction in unplanned downtime³

15%

reduction in energy consumption⁴

The question is no longer **if or when** to adopt digital twins, but how to implement them at scale and with lasting impact.

Read on to learn how to:

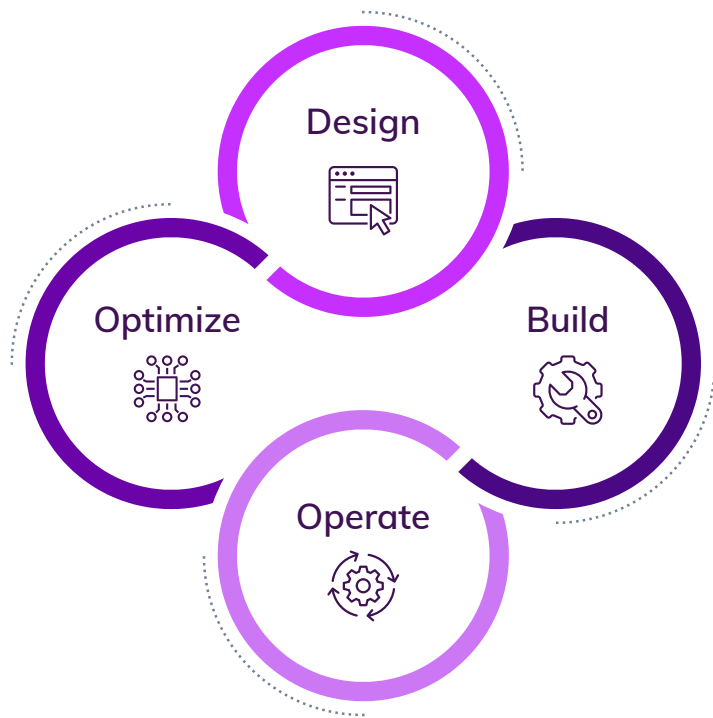
- Create a scalable, single, AI-driven, and governed digital twin built on validated, trusted industrial data—and ready to offer predictive insights and reduce downtime.
- Connect, design, build, operate, and optimize for faster collaboration and smarter decisions across the enterprise.

Industrial digital twin: Overcoming industry's top challenges

An industrial digital twin harmonizes data, analytics, and insights from a variety of systems and sources, in context, to form a digital representation of a system, plant, or piece of equipment.

With industrial digital twin technology, users can process, visualize, and share insights to optimize operations and overcome key challenges.

CONNECT, AVEVA's industrial intelligence platform, forms the basis for AVEVA's industrial digital twin. An open and neutral platform, CONNECT empowers industrial organizations to build a unified industrial ecosystem.



What can an industrial digital twin do? CONNECT empowers industrial organizations by:

- Harmonizing ET, OT & IT data in context, without creating new silos.
- Turning insights into action with embedded AI and analytics.
- Supporting what-if scenarios, modeling, and risk-free optimization.
- Scaling from a single site to global operations.
- Establishing a trusted, standards-based data foundation.
- Ensuring full data ownership via a secure hybrid deployment.
- Evolving across the entire lifecycle.

Driving results across the industrial value chain

While many of the challenges EPC firms face are beyond their immediate control, we can trace most process frictions back to one core difficulty: Siloed information, workers, and data.

Use cases	Benefits achieved
From capital project inception to handoff: Create replicas of plants or heavy assets during design, building, commissioning, and handoff to operations, enabling collaboration between internal teams and EPCs, and owner/operators.	Anticipate problems and reduce risk, minimize costs, and adhere to schedules.
Asset reliability management and predictive monitoring: Combine streaming, real-time data and smart analytics (AI/ML).	Detect anomalies earlier, prioritize maintenance workflows, extend equipment life, and prevent unplanned downtime.
Production and process optimization: The industrial digital twin contextualizes unstructured and structured data—such as planning documents, operating specifications, real-time process streams, and analytics—to simulate and analyze operational scenarios for continuous improvement.	Optimize process design, identify value leaks, monitor results, and reduce costs while revealing efficiency gains, reducing waste, balancing performance versus sustainability, and increasing yield.
Achieve sustainability targets: Track emissions, energy consumption, and resource efficiency using a continuously updated asset model.	Make better decisions, reduce environmental impact and operating costs, and reduce site visits and associated travel and emissions costs.

Real-world impact: Digital twins in action



SCG Chemicals

To improve plant performance, drive decision support, and streamline operations, SCG Chemicals⁵ implemented a Digital Reliability Platform to increase real-time visibility into its plant. Using AVEVA™ Predictive Analytics, AVEVA™ Asset Performance Management, AVEVA™ Asset Information Management, and CONNECT, the company integrated its big data, AI, machine learning, and predictive analytics into a single digital twin, giving workers end-to-end visibility into plant operations. Teams used this information to predict equipment health, monitor performances, visualize KPIs, and more, increasing plant reliability from 98% to 100%, saving 40% on maintenance costs, and achieving a 9x project ROI within six months.



Bruce Power

Bruce Power⁶ modernized its engineering and project delivery to scale safely for future clean energy expansion. Using an integrated industrial digital twin built on AVEVA Asset Information Management, AVEVA™ Point Cloud Manager, AVEVA™ Unified Engineering, AVEVA™ PI System™, and CONNECT, Bruce Power unified over 1.7 million engineering documents, 720,000 equipment records, and real-time operational data into a single trusted environment, eliminating manual data checks and reducing the need for hazardous physical walkdowns. With an industrial digital twin, Bruce Power strengthened grid reliability, improved operational safety, and supported nuclear life extension and future isotope production, resulting in 50% faster engineering change closeouts, 15% fewer repeat field verifications, 30% execution savings from improved design quality, and 1,000+ crew-hours returned to higher-value work.

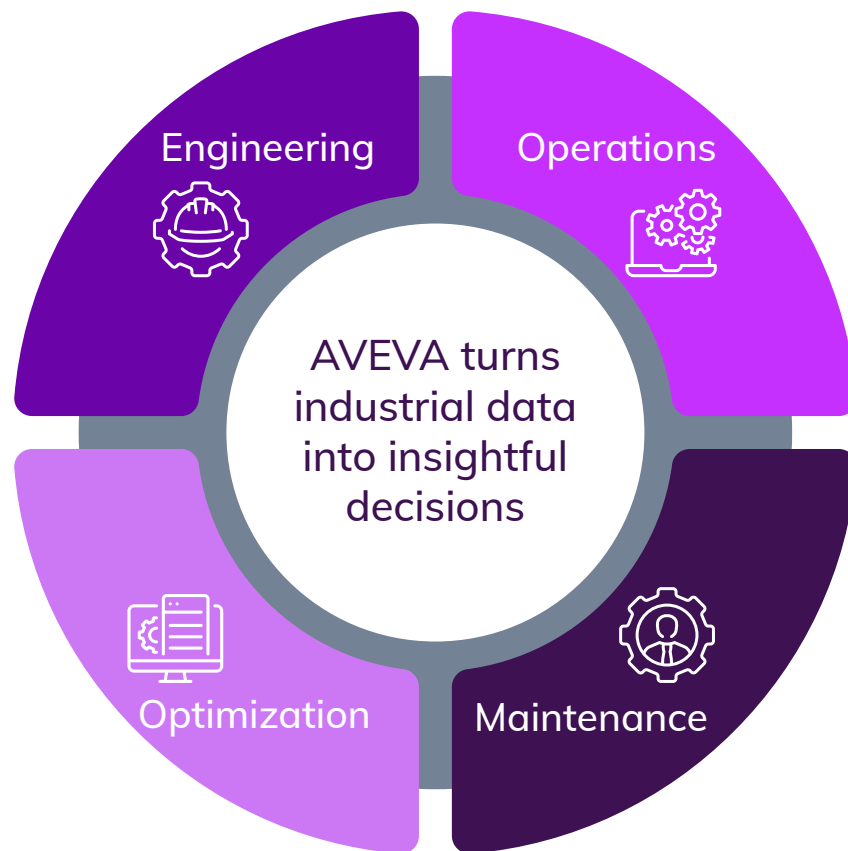


ACCIONA

ACCIONA⁷ deployed an AI-powered industrial digital twin to optimize energy usage, reduce chemical consumption, and increase water production efficiency. By unifying operational data from AVEVA PI System, AVEVA™ System Platform, and AVEVA™ Advanced Analytics in CONNECT, ACCIONA can now monitor and optimize assets across multiple water facilities in real time. Machine-learning “virtual pollutant meters” predict water quality parameters instantly, reducing reliance on manual lab testing and enabling more precise chemical dosing. With real-time digital performance modeling, ACCIONA reduced high-pressure pump energy consumption by 4.6%, increased production throughput by +16 m³/hour, and improved visibility and decision-making for operators and customers — all contributing to more sustainable water operations and lower total operating cost.

Why AVEVA?

At AVEVA, we have more than 50 years of experience supporting more than 20,000 industrial operations in regulated, safety-critical environments with proven delivery at enterprise scale. Our industrial digital twin is used in production, not just in innovation labs.



Benefits of AVEVA's industrial digital twin:

- Trusted, compliant industrial data
- Hybrid architecture for secure flexibility
- An open and interoperable platform
- Operational intelligence with embedded analytics, predictive models powered by AI
- Scalable visualization and usability
- Global service and support
- Industrial cybersecurity readiness and compliance leadership
- An open and neutral data foundation to build an industrial ecosystem

Getting to real-time intelligence: Are you ready to master your data strategy with AVEVA's industrial digital twin? Get in touch.


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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

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