

INDUSTRY SOLUTION

Digital Acceleration in the Midstream Oil & Gas Industry

While leading corporations in the midstream oil & gas industry try to seek market and shareholder differentiation in sustained growth and efficiency, this is extremely difficult to accomplish. Current levels of growth are nowhere near historical levels. But even if it were, growth by itself isn't enough – it must be combined with improved asset utilization.

Digital Transformation is one of the core innovations being used by leading midstream oil & gas corporations to increase asset utilization through improved recovery, accelerated production, higher efficiency, and reduced downtime, capex, and regulatory events. For larger midstream oil & gas corporations, a key challenge is accelerating the value; finding and using methods to transform operations faster than the competition.

Introduction - Digital Acceleration

Digital Transformation Trends

The digital wave is beginning to significantly impact the midstream oil and gas industry. Looking across the midstream sector of the oil and gas industry, it is evident at top level that storage operations seem digitally ahead of other midstream operations; with terminal operations being the most mature. Deloitte attributes this digital maturity to its focus on safety and efficiency; whereas the other operations may be restricted by a legacy asset base and upstream volatility, thus preventing them from reaping the full benefits of digital technologies.

Stages \ Phases		Gathering & Processing		Pipeline		Storage	
		Gathering line systems	Processing facilities	Truck lines	Metering/pumping units	Terminal Operations	Tank Management
Physical to digital	Mechanize						
	Sensorize	○	○	○	○		○
	Transmit	○	○	○	○		○
Digital	Integrate	○	○	○	○	○	○
	Analyze	○		○			
	Visualize					○	
	Augment					○	
Digital to physical	Robotize						
	Craft						
	Virtualize						

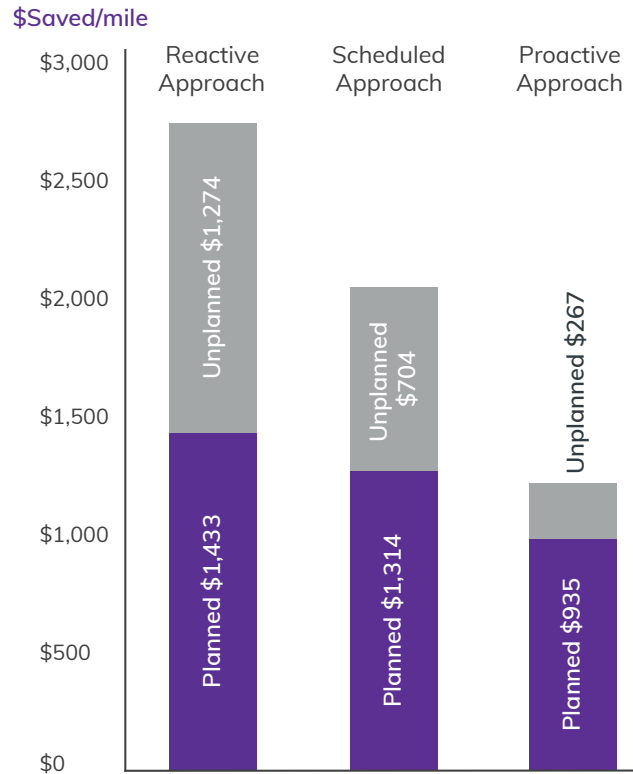
○ Current maturity ● Digital leap (2-3 years)



Value Drivers for Digital Acceleration

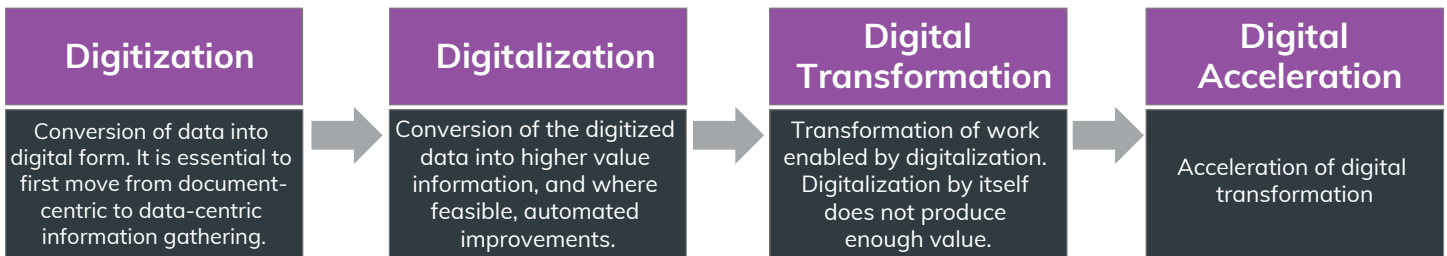
There are several key value drivers for accelerating digital transformation across the midstream oil & gas industry. Leading corporations are implementing digital transformation faster than others, and as a result, these leaders are disrupting their market segments. Fast and correct information about pipeline operations becomes more valuable to win and grow business from their key customers.

There are a range of economic benefits from digital acceleration strategies but the core objective remains the same: Move from a reactive or preventive approach to a predictive asset management/maintenance practices to ensure asset integrity and avoid downtime. This can be accomplished through efficient, reliable forecasting and meeting gas demand. Accurate accounting can minimize measurement errors and losses, and enable real-time control. Monitoring networks of dispersed assets and stream-lining field-tech response to alarms/upsets drives both safety and profitability.



Digital Acceleration Journey

Digital Transformation is a transformation of work, enabled by “digitization”. It is helpful to consider the differences between four commonly-used phrases used in the “digital” conversation and reflect where you may be on this journey.



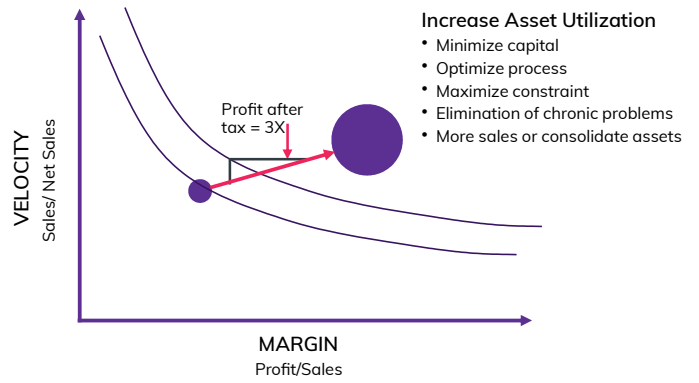
Digital transformation changes work in the following ways:

- **Waste**—minimizes “waste”, such as, manual calculations, time to find and verify information
- **When**—earlier, often before situations or opportunities arise
- **Where**—includes remote, mobile workers
- **Who**—optimize the experts’ participation (so that they can focus on improvements)
- **How**—planned, proactively guided, and tracked teamwork

AVEVA focuses on all components to achieve Digital Project Execution excellence using a holistic approach which empowers all project personnel with the right enabling technologies and training to TRANSFORM WORK.

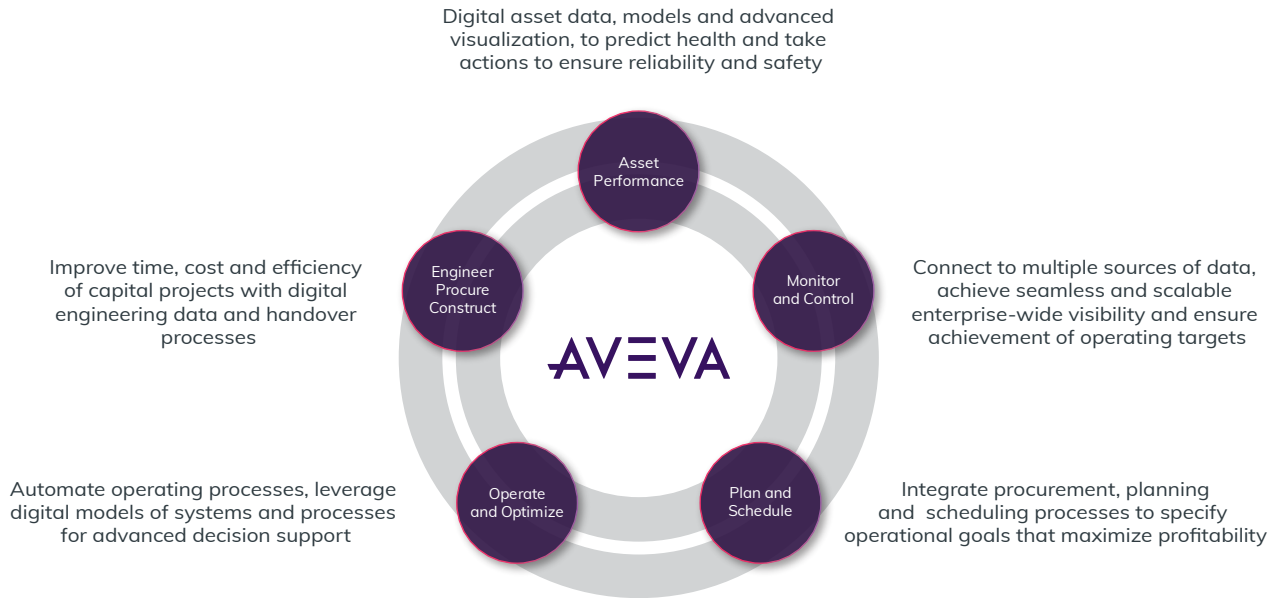
Digital Acceleration is an acceleration of this journey, and it must be driven from the top of the organization. Senior management make and drive decisions across silos to establish the “new way of working”. The impact on corporate performance and shareholder returns is significant.

For more than two decades, AVEVA has been enabling power corporations to sustain and improve their return on net assets (RONA). Sustained improvement in manufacturing availability has a significant effect on RONA.



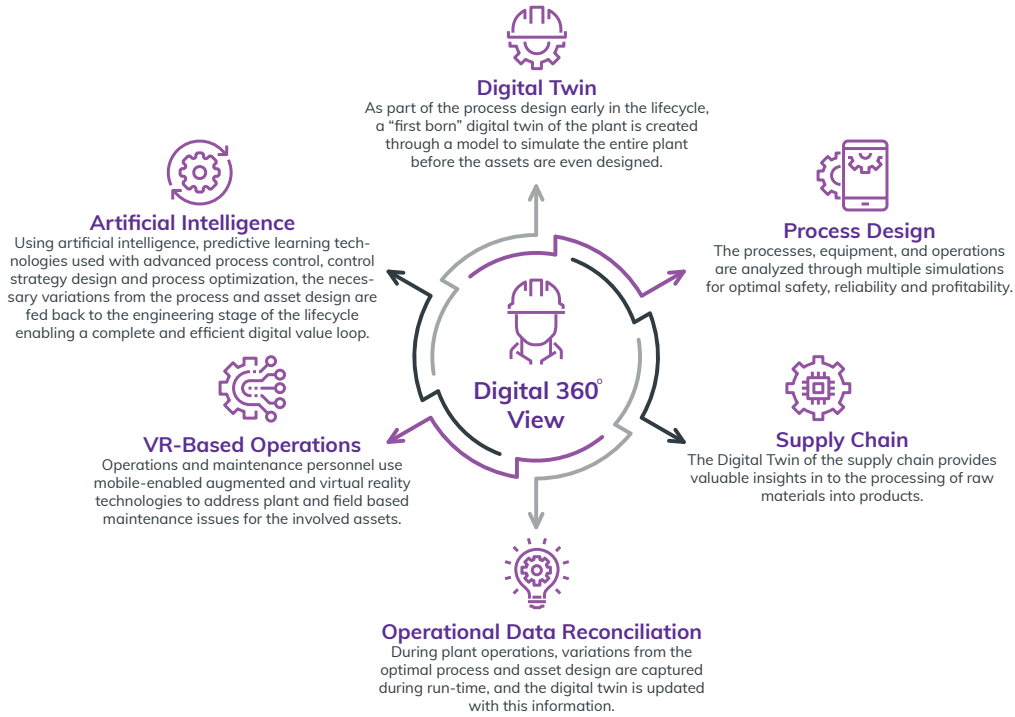
Two Lifecycles of Pipelines

AVEVA contributes significantly to our customers’ RONA by transforming the performance of designing, constructing and operating pipelines. In our perspective, midstream oil & gas companies have two lifecycles: (1) the Asset Lifecycle which includes design, procurement, construction, maintenance and revamps, and (2) the Operations Lifecycle which includes monitoring and controlling, planning and scheduling, and various methods of production optimization.



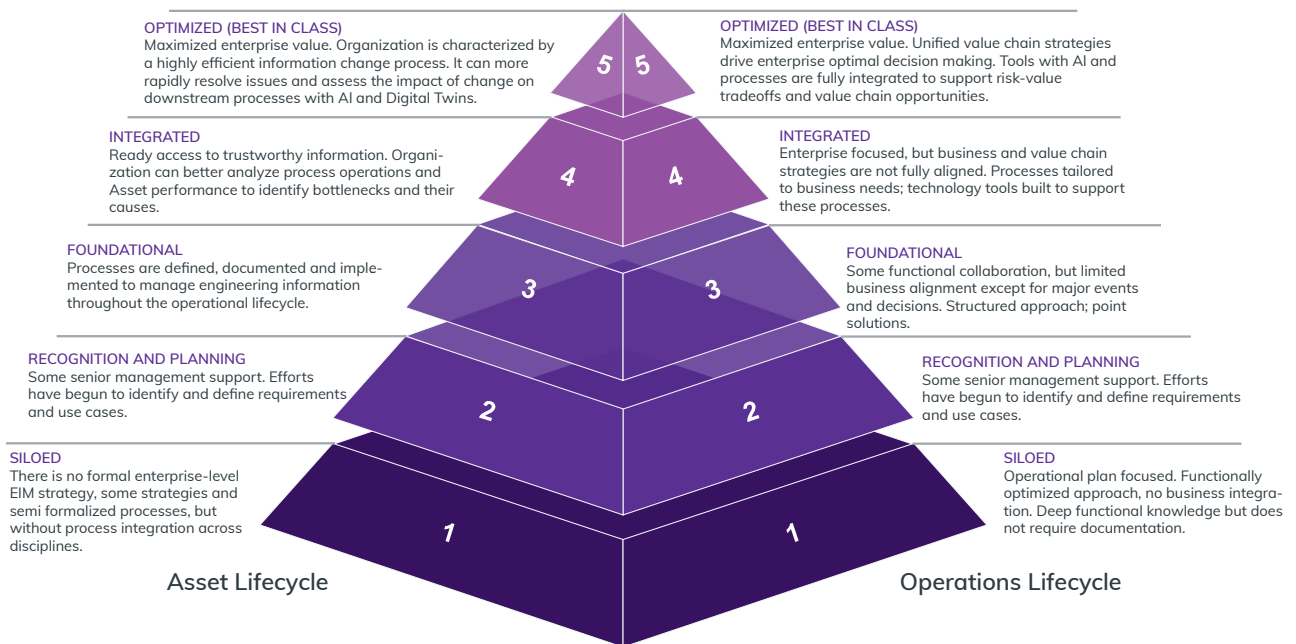
A Complete Digital Twin

AVEVA's technology enables you to bring the Digital Twin from Engineering into Operations, thus providing the work to the worker and allowing a 360° digital view of the plant. It drives collaboration, consistency and the elimination of "wasted work".



Digital Maturity Model

To be successful, the concept of "digital maturity" is extremely important. Transformed work and digital acceleration are limited by a corporation's ability to collaborate across organization silos. Organization silos are necessary, but the ability to collaborate is a key requirement. AVEVA's Digital Maturity Model is derived from industry analyst maturity models and our unique combination of experience in both lifecycles. The midstream pipeline enterprise can have various levels of digital transformation maturity for the asset and operations lifecycles. A key objective is to steadily increase this maturity.



One of the highest contributing factors to the success of digital acceleration is the rollout of the implementation. A successful rollout approach implements holistic combinations of transformed work, technology, strategy and culture change. Task groups can be operational areas within plants or work teams within the broader corporation.

23+ Years of Digital Acceleration

AVEVA has more than 50 years in industrial software innovation and 23 years of experience in digital acceleration. During this time, we have learned what predicts successes over failures.



Digital transformation efforts failed because:

- They started as technology projects
- They were implemented as technology roadmaps
- There was insufficient culture change management
- There was either insufficient or too much innovation
- There was insufficient integration of people, work process, strategy and technology



Digital transformation succeeded because:

- They started as work transformation projects
- They were implemented as holistic combinations of people, work process, strategy and technology
- Senior management actively and constantly sponsors the “new way of working”
- They applied best-practice methods for culture change
- They developed methods to maximize end-user adoption

AVEVA's Rules for Successful Digital Transformation:

1

Make Digital Transformation a business priority, not an IT project.

2

Start the transformation by creating a strategic digital roadmap, visibly supported by Executive Leadership.

3

Think BIG but start small – create a proof of concept with high ROI in selected area.

Digital Acceleration Success Powered by AVEVA

AVEVA contributes significantly to our customers' RONA by transforming the performance of designing, constructing and operating plants.



A Sempra Energy utility®

- Asset lifecycle optimization
- Lower cost engineering, procurement and construction



أدنوك
ADNOC

- Value chain optimization: increased plant-to-plant transfers, reduced electricity costs
- Improved emergency response
- Visual management > 700X faster



- Optimization of operations and maintenance processes
- Increased safety and reliability
- Reduced costs through transformation and standardization

Executives of leading midstream oil & gas corporations know that they must drive strategies to accelerate the digital transformation of their pipeline operations to increase profit and stay competitive. There are many ways to increase profit: optimize process operations, improve recovery, accelerate production, reduce capex, regulatory events, and energy cost, etc. Tremendous value can be derived along the digital acceleration journey—in both the Asset and Operations Lifecycles.





Digital Transformation Partner

Why Partner with AVEVA for Your Digital Acceleration?

As you begin your digital acceleration journey, you will need to partner with a company that can provide both business and technical advice, and ensure that your strategic roadmap for digital acceleration will be successfully implemented. After helping you create the complete digital acceleration roadmap, AVEVA will continue to help implement the processes needed to transform work, streamline the work processes, and reduce the wasted work. We use a holistic approach that integrates both horizontally and vertically within your organization, making us best suited for this initiative.

AVEVA is trusted by global industry leaders as the leader in digital transformation of process manufacturing companies. As we connect people with processes and technology, we deliver comprehensive Value Chain solutions for the process industries. We work with a global partner network that is focused on the complete digital acceleration journey.

Our Differentiators

	Where We Add Value <ul style="list-style-type: none">• More competitive<ul style="list-style-type: none">• On a \$1B capital project save \$100M• Save \$90M-\$320M/yr implementing asset performance, planning & Scheduling and optimization• Higher digital maturity and combined value across the asset and operations lifecycles		Our Understanding Of Your Challenges and Needs <ul style="list-style-type: none">• Stay competitive in the digital age-make better decisions faster• Keep pace across the oil & gas industry
	Our Credentials <ul style="list-style-type: none">• 23+ years in Digital Transformation• 70% of the America's pipeline mileage• More than 900K miles of pipeline• 36 of China's major pipelines		Our Approach to Digital Transformation <ul style="list-style-type: none">• People, Process & Technology-in that order• A holistic approach which empowers all personnel with the right enabling technologies and training to transform work

AVEVA is uniquely focused on digital transformation in the engineering, procurement, construction, and operation of pipelines. We are trusted partners with the world's leading integrated, national and independent pipeline companies.