OCTAVE

WHITE PAPER

The business value of Octave for industrial projects and project execution

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Executive summary

Octave is a leading global software company. We help industrial organizations design, build, operate and protect critical assets through a unified digital platform. Consolidating industry-leading technologies across engineering design, asset lifecycle intelligence, operational performance and safety management into a single SaaS ecosystem.

This white paper outlines the business value of Octave across the project lifecycle. Planning, design, construction and operations. Plus, the impact of AI-driven capabilities on industrial project performance is significant.

1. Introduction: Who is Octave?

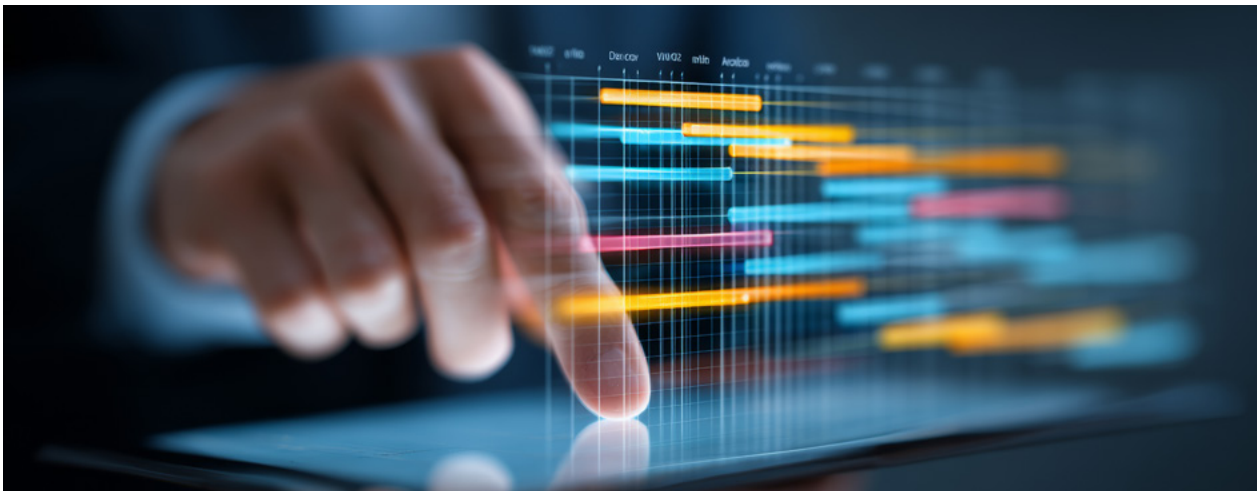
Our industrial software platforms are helping organizations design, build, operate and protect the world's most critical assets. That's decades of engineering, operations, asset management and safety expertise combined into one integrated SaaS ecosystem.

The platforms bridge historically siloed functions. Engineering design, project execution, construction management, operations, maintenance, quality and safety. How? By connecting them through a consistent digital thread. This integration addresses one of the industrial sector's most pervasive challenges: the fragmentation of tools, workflows and data. These limit operational visibility, reduce reliability, increase project risk and slow digital transformation.

Across industries such as manufacturing, energy, chemicals, power generation, infrastructure and public safety, Octave enables organizations to move on from disparate systems. To reach a harmonized, intelligence-driven operating model.

2. Business value across the project lifecycle

2.1 Project planning phase



During planning, Octave accelerates decision-making with unified access to portfolio, project and engineering information. Access to real-time performance data enables stakeholders to implement more effective planning and identify risks early. This reduces uncertainty and empowers teams to pivot before investments
are locked in.

Key improvements include:

- **Enhanced collaboration:** Real-time platforms reduce communication delays between engineering teams, managers and external contractors. Everyone sees the same data, reducing misalignment.
- **Data-driven decision-making:** Integrated datasets across disciplines improve portfolio prioritization, resource allocation and schedule planning.
- **Risk mitigation and compliance:** Early scenario modeling helps organizations test responses to delays, material shortages and regulatory constraints—improving predictability and reducing cost overruns.

Savings in project planning using Octave's technologies include:

1. Avoiding schedule delays and associated cost overruns

Octave's planning solutions unify access to project and engineering data. This reduces uncertainty and improves scenario planning. By connecting data across the project lifecycle, Octave creates a data feedback loop. Data from each phase informs later or earlier stages. This keeps teams from flying with no visibility, ensuring every project professional has access to the right information. They are empowered to make the right decisions at the right time. Plus, early scenario modeling helps organizations test responses to delays, material shortages and regulatory constraints. This improves predictability and reduces schedule and cost overruns.

Schedule delays translate into:

- Extended construction labor
- Lengthy equipment rentals
- Contractor penalties
- Lost revenue

In capital projects, schedule overruns are frequently **multi-million-dolla**r exposures.

2. Improving resource allocation

Integrated datasets improve prioritization and schedule planning, which reduces overordering, idle crews and inefficient equipment use.

Better planning eliminates:

- Excess labor hours
- Unnecessary material stockpiles
- Redundant equipment rentals
- Contractor standby charges

These are direct, invoice-level savings.

3. Reducing upfront capital risk through proactive decisions

Better visualization, collaboration and data quality in early planning reduce the risk of costly downstream changes. Using real-time platforms reduces communication delays. Everyone sees the same data, minimizing misalignment. Teams are also empowered to pivot once a change or risk is identified.

Early decisions reduce:

- Misaligned engineering packages
- Change orders from contractors
- Procurement of incorrect or mis-specified equipment

Early-phase errors can compound into millions later. Octave's planning solutions significantly limit this exposure.

4. Reducing risk and inefficiencies through standardization and automation

Standardized processes and automated workflows reduce variability, eliminate manual errors, and ensure consistency across projects and teams.

By automating repeatable tasks and enforcing governed workflows, organizations improve collaboration, accelerate execution, and maintain alignment across stakeholders.

Standardization and automation help avoid:

- Errors caused by manual data entry or disconnected tools
- Rework due to inconsistent processes or miscommunication
- Delays from manual approvals and fragmented workflows

These are the areas that directly improve efficiency, strengthen data accuracy, and drive more predictable project outcomes.

2.2 Conceptual design phase

Octave supports conceptual design with capabilities that streamline the creation and validation of early models.

Enhancements include:

- **Immersive visualization:** Concept models help teams evaluate complex layouts and engineering alternatives.
- **Rapid prototyping:** Fast iteration tools shorten the cycle from concept to validated design. Teams can explore more options impacts to schedules.
- **Cross-discipline data integration:** Engineering teams can more easily identify conflicts and inconsistencies between mechanical, electrical and civil concepts.
- **Sustainability modeling:** Environmental impact analyses help organizations evaluate energy efficiency, emissions and operational sustainability from the earliest phase.

Cost savings in conceptual design using Octave's technologies include:

1. Reducing early-stage design errors and rework

Immersive 3D conceptual models enable teams to evaluate layouts, spatial relationships and engineering alternatives before detailed design.

Operational savings come from avoiding:

- Early design miscalculations
- Layout conflicts between mechanical, electrical and civil disciplines
- Rework required to fix conceptual errors discovered later

Because late-stage errors cost significantly more to fix, catching them during conceptual design is important. This is especially true for engineering hours and to avoid redesign packages.

2. Lowering engineering labor costs by faster iteration

Rapid prototyping reduces the iteration cycle time between concept options, validation and approvals. Fast iteration tools shorten the cycle from concept to validated design. Teams can then explore more options without any effect on schedules.

Financial savings result from:

- Fewer engineering labor hours per iteration
- Minimized back-and-forth redesign loops
- Lower external contractor design fees

Avoiding iterations early reduces billable engineering time. This is one of the largest controllable costs in early project phases.

3. Reducing multidiscipline conflicts

Cross-discipline data integration enables earlier detection of inconsistencies between engineering domains. Engineering teams can more easily identify conflicts and inconsistencies between mechanical, electrical and civil concepts.

Improved cost efficiencies include:

- Avoided redesigning multidisciplinary packages
- Fewer change orders downstream
- Reduced field rework during installation

Cross-discipline inconsistencies are a major source of hard costs, frequently leading to multimillion-dollar rework in later phases.

4. Avoiding sustainability and environmental redesign costs

Environmental impact analyses help organizations evaluate energy efficiency, emissions and operational sustainability from the earliest phase.

Cost savings come from:

- Avoiding reengineering due to environmental noncompliance
- Eliminating late changes to materials or equipment to meet sustainability targets
- Fewer permitting or approval delays requiring redraws

Environmental redesigns can be extremely expensive; preventing them early is a direct cost benefit.

These savings come from reducing engineering hours, re-design cycles, clash resolution and environmentally driven changes. All of these carry direct, quantifiable cost impacts.

2.3 Detailed design phase

In the detailed design phase, precision and engineering integrity are critical. Octave supports tightly coordinated design workflows.

Capabilities include:

- **Precision and accuracy:** Integrated 3D models reduce manual errors and prevent costly downstream rework.
- **Integrated workflows:** Multidisciplinary engineering teams work from the same source of truth, improving consistency and reducing late-stage surprises.
- **Real-time collaboration:** Designers, project engineers and external stakeholders always work from the latest approved data.
- **Lifecycle data management:** Rich data captured in the design phase flows directly into construction, commissioning and operations—preserving context and reducing information loss.

Spending reductions in detailed design using Octave's technologies include:

1. Reduced rework through higher precision and accuracy

Integrated 3D models reduce manual errors and prevent costly downstream rework. Octave's digital twin solutions Forte 3D and Forte 3DWorx with high-fidelity 3D visualization help teams identify design clashes and feasibility issues early. This prevents costly rework during design, procurement and construction. Stakeholders can interact with detailed 3D models to spot potential design clashes.

Cost impact:

- Avoided field rework
- Reduced demolition/reinstallation
- Fewer construction change orders
- Lower contractor re-engineering hours

These costs directly affect construction and engineering invoices and often total in the millions for large capital projects.

2. Eliminating multidisciplinary inconsistencies

Multidisciplinary engineering teams work from a single source of truth, reducing surprises later.

Cost impact:

- Reduced redesign of mechanical/electrical/civil interface points
- Fewer late-stage corrections because of conflicting drawings
- Avoided field clashes and engineering rework

Misaligned design packages are one of the top causes of late-phase construction overruns—this directly reduces contractor labor and redesign costs.

3. Lowering change order volume through real-time collaboration

Real-time data and collaboration ensure all designers and engineers work from the latest approved information.

Cost impact:

- Avoided change orders from outdated revisions
- Elimination of repeated design cycles
- Reduced contractor claims related to drawing discrepancies

Each avoided change order typically represents significant hard cost savings in engineering and construction.

4. Preserving lifecycle data to prevent information loss

Data captured in design flows directly into construction, commissioning and operations, reducing loss of information across the phases.

Cost impact:

- Fewer redesigns because of missing asset and engineering data
- Reduced commissioning delays
- Avoided procurement errors
- Lower QA/QC rework cost

Information loss between design and construction is a major source of cost, especially in materials, procurement and commissioning.

2.4 Supply chain phase

Complex capital projects often take place on different continents or across large distances. Octave plays a crucial role in modernizing and digitizing industrial supply chains before and during the execution phase of any project.

Key benefits include:

- **Real-time visibility:** Track material movement, equipment deliveries and logistics status to ensure alignment with the construction schedule.
- **Improved coordination:** All suppliers, contractors and site teams operate from the same system, reducing miscommunications and bottlenecks.
- **Risk management:** Data-driven insights allow teams to identify supplier risks early, evaluate vendor performance and model impacts of disruptions.
- **Cost and efficiency gains:** Automated procurement workflows reduce manual tasks, prevent duplicate orders and optimize spending.

Financial savings in supply chain phase using Octave's technologies include:

1. Reducing material over ordering, duplicate orders and procurement waste

Octave improves supply chain performance by providing cost and efficiency gains through automated procurement workflows that prevent duplicate orders, minimize rework and optimize spending.

Hard cost impact:

- Eliminated duplicate material purchases
- Reduced excess or incorrect material orders
- Lowered carrying costs for unneeded inventory
- Fewer rush orders (which typically carry cost premiums)

2. Lowering logistics and delivery delay costs through real-time visibility

Digital twin capabilities provide real-time tracking of materials, equipment and deliveries to all project stakeholders.

Cost impact:

- Avoided expediting fees
- Reduced demurrage and detention costs
- Fewer idle construction crews waiting on materials
- Better alignment of deliveries with schedule, reducing on site storage and handling fees

Delays in logistics frequently lead to measurable financial losses. These are prevented with unified supply chain visibility.

3. Reducing contractor and supplier claims due to better coordination

Octave ensures improved coordination across suppliers and site teams, minimizing bottlenecks and miscommunications.

Spending reductions:

- Fewer supplier change orders
- Reduced contractor and sub-contractor delay claims
- Lower re-handling of materials
- Avoided costs from reshipping or redelivery caused by incorrect specifications

These are directly quantifiable reductions in contractor and vendor billings.

4. Lowering risk-driven cost overruns through better supplier risk management

Octave supports risk management by using data insights to identify supplier risks and evaluate vendor performance.

Cost avoidance:

- Avoidance of cost increases from last minute supplier changes
- Fewer penalties from schedule delays caused by vendor failures
- Reduced emergency procurement costs
- Lower exposure to price volatility

This leads to measurable reductions in project contingency drawdowns. Bad news early is good news.

5. Reducing administrative labor and manual procurement costs

Automation of repetitive manual procurement steps reduces internal overhead and optimizes spending.

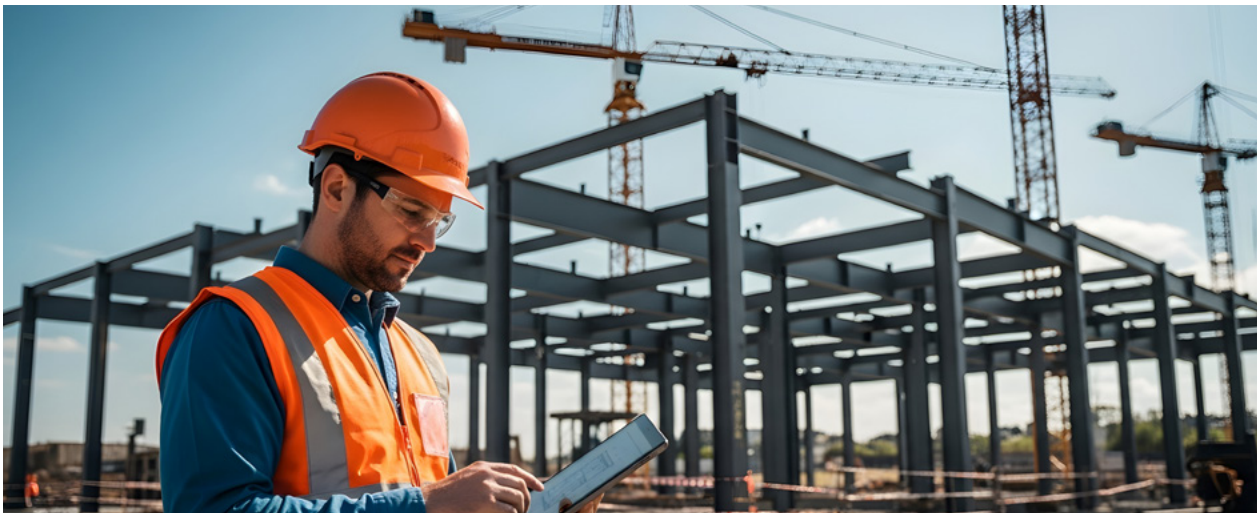
Cost impact:

- Fewer hours spent on contract management and manual purchase order creation
- Lower internal processing labor costs
- Reduced errors requiring administrative correction
- Less project management overhead tied to procurement coordination

These savings reflect real, invoice-level reductions involving materials, logistics, labor, equipment and supplier claims. Critical in industrial projects where supply chain issues drive some of the largest avoidable costs.

2.5 Construction phase

Construction is one of the most variable and risk-intensive phases of any construction project. Octave brings structure, predictability and real-time oversight.



Capabilities include:

- **Enhanced visualization and planning:** Construction sequencing tools help teams visualize upcoming work and avoid conflicts.
- **Accurate field alignment:** Digital models guide field installation, reducing rework and delays.
- **Resource optimization:** Real-time insights help match labor, materials and equipment with immediate needs.
- **Progress tracking:** AI-enhanced monitoring helps identify variances between plan and execution earlier.
- **Quality assurance:** Continuous monitoring improves installation quality and ensures compliance with specifications.

Cost saving during construction phase using Octave's technologies include:

1. Reducing field rework through accurate field alignment

Octave provides accurate field alignment using digital models to guide installation.

Hard cost savings include:

- Avoided demolition and reinstallation
- Reduced contractor rework hours
- Fewer material replacement costs

Field rework is one of the largest cost drivers in construction. Reducing it directly cuts contractor labor and material spend to keep the project on budget.

2. Eliminating sequence conflicts and productivity loss through better visualization

Enhanced construction sequencing tools and visualization tools help teams visualize upcoming work and avoid conflicts and clashes before they occur.

Financial savings include:

- Avoided schedule delays from sequencing conflicts
- Reduced equipment idle time (spend more time on tools)
- Fewer standby labor charges

When tasks are sequenced correctly, expensive downtime and rework costs are avoided.

3. Reducing schedule delays through AI-driven progress tracking

AI-enhanced monitoring detects variances early, enabling teams to maintain schedule alignment.

Cost savings include:

- Avoided overtime labor
- Avoided extended equipment rentals
- Reduced contractor delay claims
- Minimized cost impacts of missed milestones

Schedule delays typically trigger the most severe cost overruns in construction execution.

4. Optimizing labor, materials and equipment utilization through real-time insights

Real-time data helps match resources to immediate construction needs, aligning labor, materials and equipment.

Hard cost savings include:

- Reduced labor idle time
- Avoided overordering or unnecessary staging of materials
- Fewer redundant equipment rentals
- Lower site congestion and handling costs

These are direct, line-item savings across labor, materials and equipment budgets.

5. Reducing QA/QC and compliance failures through stronger quality assurance

Continuous monitoring improves installation quality and ensures compliance with specifications, all the way to handover.

Cost savings include:

- Automation eliminates manual processes and unproductive paperwork
- Fewer failed inspections requiring rework
- Avoided penalties tied to quality or safety violations
- Reduced cost of corrective actions (labor and materials)

Preventing defects during installation is significantly cheaper than correcting them after inspections or commissioning.

These are direct, measurable savings that hit construction invoices (labor, equipment, materials), contractor claims and schedule adherence costs. This represents some of the highest cost avoidance opportunities in capital projects.

3. Octave's unified SaaS value

3.1 Eliminating fragmentation:

Fragmentation, disconnected data, systems and workflows, has historically limited industrial performance. Many organizations still rely on legacy, on-premise tools that restrict visibility and limit modern analytics.

Octave addresses this by:

- **Centralizing data:** A unified ontology and SaaS environment reduces errors, duplicates and inconsistency.
- **Improving cross functional visibility:** Engineering, construction and operations teams access the same insights, enabling better decision-making.
- **Enhancing reliability and uptime:** Integrated data improves condition monitoring, predictive maintenance and asset health analysis.
- **Strengthening safety and governance:** Consistent data improves regulatory compliance and reduces safety risks.
- **Scaling AI across operations:** A unified data foundation is essential for deploying AI effectively across the enterprise.

4. Conclusion: Strategic business value of Octave

While this paper focuses on project execution, Octave delivers measurable value by unifying the full industrial asset lifecycle—design, build, operate and protect—into one cohesive platform. By eliminating fragmentation and embracing AI at scale, organizations can expect:

- Reduced operational and project risk
- Improved project predictability
- Faster project execution through automation
- Higher operational reliability and uptime
- Stronger safety and compliance performance
- A consistent digital foundation for future innovation

Octave positions organizations to thrive in an era where integrated data, intelligence and AI define competitive advantage.

Unlock the full potential of your data management processes by embracing Octave's AI-driven solutions. Transform your organization's data and integration efforts with enhanced efficiency, accuracy and scalability. By leveraging AI, you can automate tedious tasks, minimize errors and ensure high-quality data that drives informed decision-making. Don't let outdated systems hold you back. Invest in Octave's AI-powered solutions now to propel your business toward greater success and innovation. Contact us today to learn how we can help revolutionize your data strategy!

About Tom Goff

Tom Goff is an executive industry consultant with Octave with more than 30 years of experience across multiple industries (oil and gas, chemical and nuclear) in engineering, construction, project management, information/data management and process improvement. With Octave, Tom leads consulting initiatives with customers in their digital transformation journey. He has a BS and MBA from Capella University, is a certified PMP and LSS Black Belt and a veteran of the US Army.

About Octave

Octave is a leader in enterprise software, turning data into decisive action and intelligence into your edge. Our software solves for and simplifies complexity, from the design and build to operations and protection of people, property, and assets– for any scope, at any scale. For decades, we've partnered with customers to sharpen performance, elevate efficiency, and amplify results. From factory floors to entire cities, our solutions are tuned to scale up what's possible from day one onward.