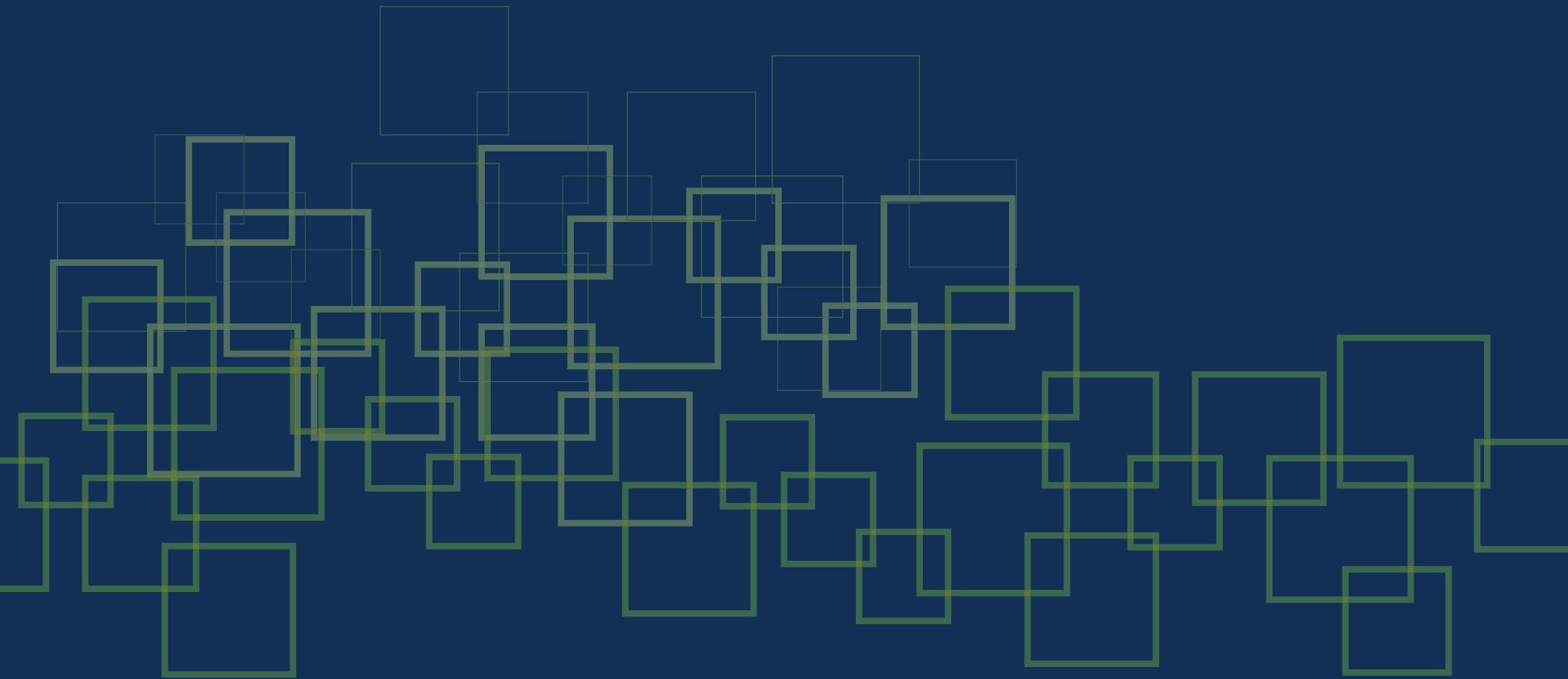


## Improve Engineering Efficiency and Boost Operating Margins With Digital Excellence Solutions

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## Market Leaders AspenTech and Hexagon Partner to Deliver Digital Transformation Solutions for the Process Plant Lifecycle

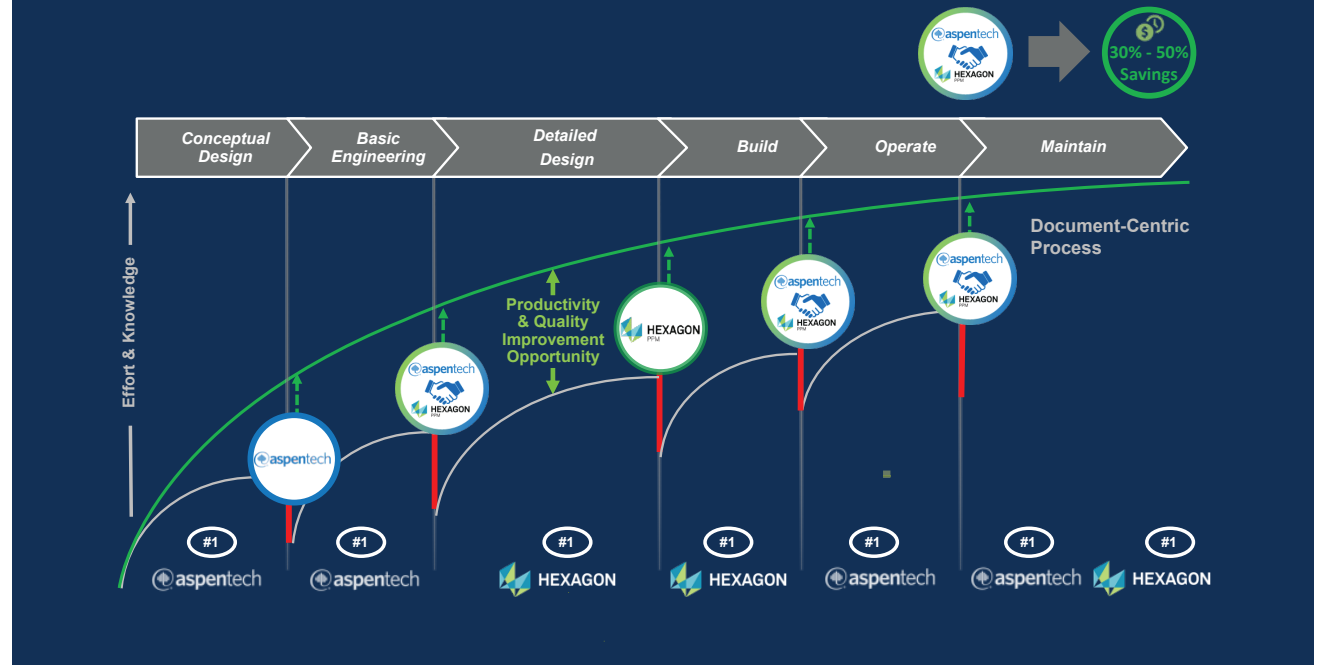
The process industries are being reshaped through digital initiatives, with the overall intent to become more proficient in designing, building and operating process plants. Aspen Technology (AspenTech) and Hexagon are working together to help engineering firms and plant owners realize their digitalization journey.

Through digital transformation, these firms can achieve faster, higher-quality project delivery — with efficiency gains of 30-50% — and more agile, profitable operations that significantly increase operating margins.





# Industry Challenge: Silos Across the Asset Lifecycle



## Industry Challenges

### Document-Based Design & Handover

When project team members use a document-based engineering approach, the process may be slow, error-prone and ill-equipped to accommodate the inevitable project changes. Workflows tend to be siloed and disconnected, and collective knowledge about the project can be lost as the project evolves. Data from previous project phases or another engineering specialty is often entered manually, introducing errors and omitting valuable information. Instead of overall project wisdom increasing, it is often lost or left behind and not available to inform a broader design, construction, startup, handover and operations efforts. After handover, the documents can quickly become out-of-date and are often not available to add value to operations.

## Change Management

Change is inevitable — and it can be both costly and disruptive. The ability to adjust quickly and efficiently can save considerable time and money for both the project owner and their engineering firm. Yet, when teams lack the ability to collaborate through an integrated engineering environment and common project data, responding to changes can be onerous and slow, which increases the risk of overruns on budget and schedule.

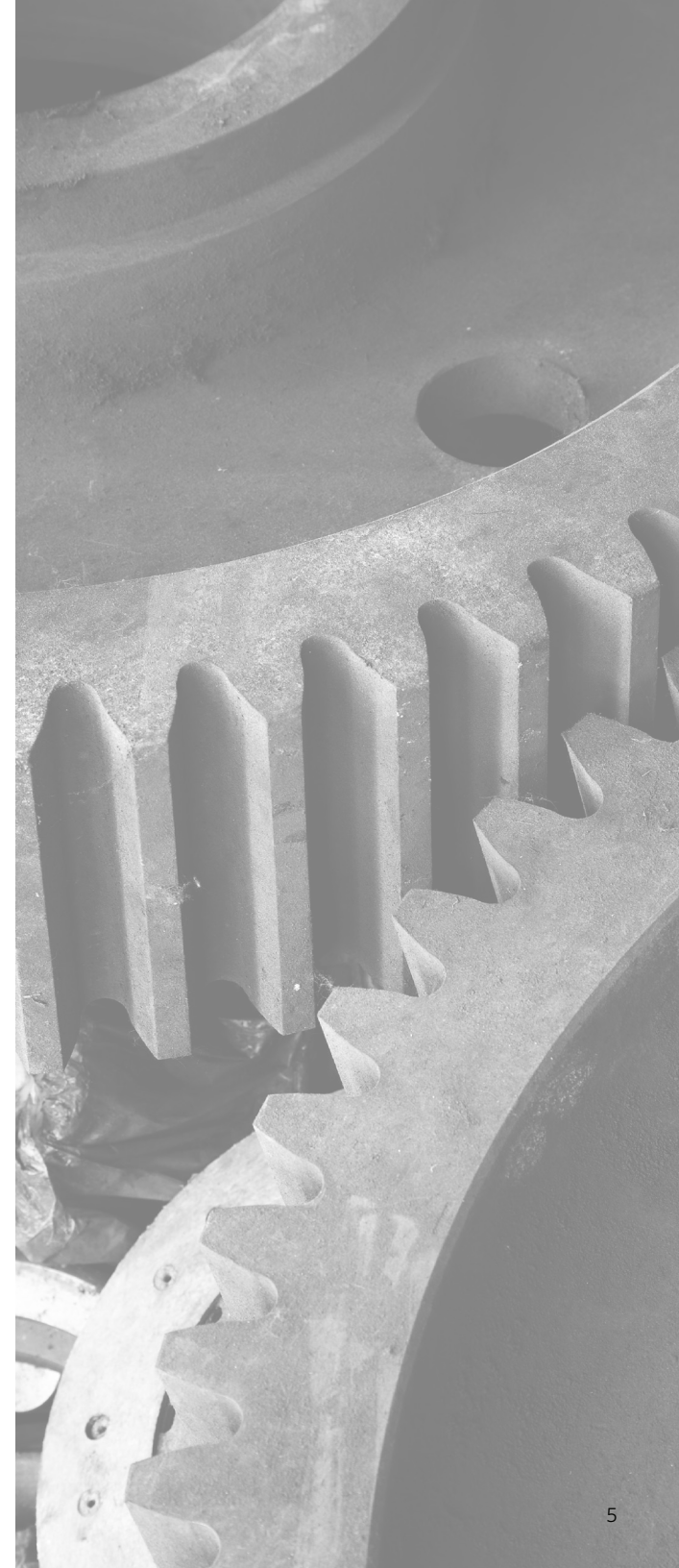
In the owner environment, design and engineering data provided by the EPC can quickly become out of sync with operational systems and conditions, preventing the use of a true, valuable, up-to-date digital twin for planning, troubleshooting and predictive maintenance. The data that is available often lacks the meaningful process and plant context needed to make improvements.

## Joint Solution Areas

Industry participants understand the benefits of the AspenTech-Hexagon partnership and have been providing significant input regarding our planned joint solutions. From a tighter connection between our plant engineering software to linking our estimating and project controls solutions, these capabilities will allow our customers to more easily integrate the conceptual, basic and detailed engineering phases. This will significantly reduce man hours and improve design consistency and quality. These connections will also help manage project controls, costs, construction progress and resource availability, ultimately increasing EPC margins.

There are also benefits from connecting the engineering data developed during design to the systems used to run the plant for faster, safer startup and operations. This data can be used for faster, more accurate configuration of training and operational systems such as operator training (OTS), advanced process control (APC), and planning and scheduling.

In addition, real-time data from operations can be displayed in 3D models and piping and instrumentation diagrams (P&IDs) — or associated virtual reality systems — making it easier to understand operational issues in the context of the physical plant. **Bringing together the process data from AspenTech with the physical infrastructure data from Hexagon yields a true digital twin for use in designing, operating and maintaining the asset.**



# A New Vision: AspenTech and Hexagon Partner for Digital Excellence in Plant Engineering and Operations

Working together, AspenTech and Hexagon can provide a complete digital twin that evolves with the plant and that can mirror both the physical asset and the physical and chemical processes occurring within that plant. Connecting our solutions also helps ensure that the digital twin will remain up-to-date and useful across the asset lifecycle, helping to increase return on investment (ROI) for the owner.

## Digital Excellence for Project Engineering

### **FEED to Detailed Engineering Solution**

The combined solution for front-end engineering and design (FEED) to detailed engineering relies on connecting Aspen Basic Engineering™ (ABE) and data generated from conceptual design through FEED with Hexagon's Smart® P&ID and Smart® Instrumentation software for development of detailed design and engineering work.

This direct link will help ensure continuity of design and engineering data and deliverables, while enabling design changes to be quickly reflected in related and dependent areas, allowing you to execute faster. And, with faster execution you can complete more studies quicker, resulting in better designs that reduce CAPEX and encounter fewer problems during construction and operations. Data can be reused throughout the lifecycle, reducing hours, errors, checking and re-work.

### **Project Economics and Controls Solution**

The combined solution for project economics and controls will bring AspenTech's estimating software (Aspen Capital Cost Estimator™) together with the EcoSys project controls software from Hexagon for tracking and managing project economics, from concept through handover.

The reuse of project estimating data to create a baseline budget for the project can help eliminate the "plan vs. perform" gap that often results in project overruns, thereby helping to keep projects on track and aligned with the plan. Actual project data from controls can be fed back into the estimating system to inform future estimates.



## Digital Excellence for Plant Operations

### **On-Demand Contextual Data**

To help our owner-operator customers run more safely and profitably, data from AspenTech's planning, advanced process control, operating and predictive maintenance systems will be visible through Hexagon's engineering and design solutions. This will provide real-time views of operating plans, conditions and potential failure signals in the context of the physical asset.

Operators will be able to more easily see dependencies and better understand the implications of potential decisions. Master data underpinning AspenTech's operational systems can be synchronized with Hexagon's master data, which is critical to supporting the entire plant lifecycle.

### **Management of Change**

Several of AspenTech's operational systems can infer improvements to the configuration and state of the process. For example, the dynamic optimization technology (GDOT) can track changing process parameters and manage changes to increase production, quality or efficiency. These can be passed into the digital twin and keep it calibrated to the current state.

Through the partnership, we will support the creation and use of an "evergreen digital twin" enabled by auto-updates to help ensure usefulness across planning, operations and maintenance.

### **Auto-Configuration of Operations & Maintenance (O&M) Systems**

The Operational Excellence solution, calibrated to the current state of the plant, is capable of auto-configuring other operational systems, which can enhance operations and maintenance capabilities. Examples include OTS, planning and scheduling, APC and analytics systems.

Additionally, rich operational, performance and reliability information can be used as feedback into future designs. This can improve the overall design of these systems while accelerating deployment and startup, increasing speed-to-market and ROI for the owner.



# Benefits

By delivering a single engineering and operational platform, engineering firms and their customers can capture numerous benefits for both green and brownfield projects. Beyond the efficient handling and movement of project data, this relationship brings together the technology needed to support the full lifecycle of the plant and create the smart enterprise.

- Make better decisions earlier
- Reduce errors
- Improve productivity
- Reuse data
- Auto-create deliverables
- Manage change
- Enable digital handover

**EPC**



- Faster time-to-market
- Fewer operational problems
- Fewer surprises
- Visualization of operating conditions
- Better-informed decisions

**OWNER**



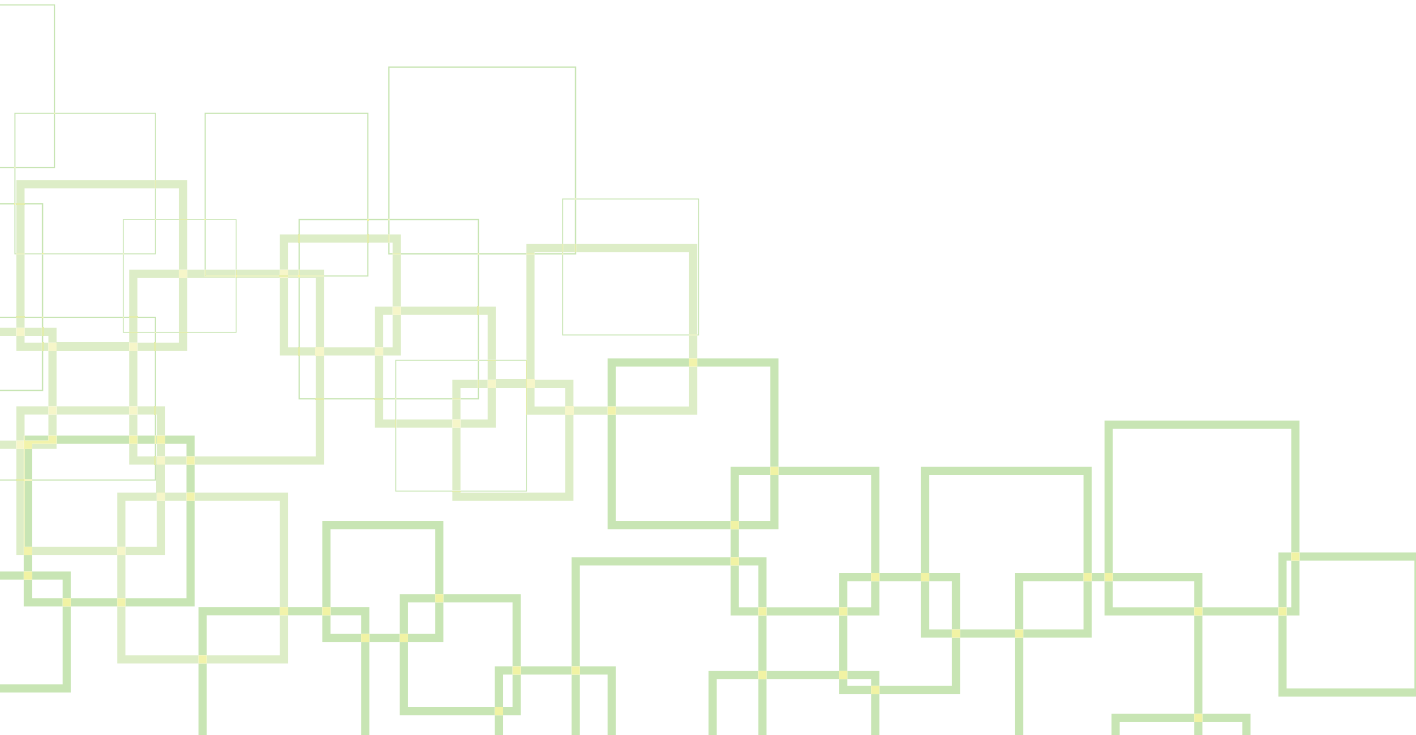


## A Unique Approach

This partnership brings together AspenTech's renowned process simulation software with Hexagon's industry-leading detailed design and engineering software. Combining these solutions with our established operations and maintenance solutions will provide capabilities that can significantly improve engineering workflows. Importantly, this will also be the only solution that incorporates integrated economics across the lifecycle, from concept through revamp.

## Getting Started

AspenTech and Hexagon have developed a customer engagement model and have partners that assist our customers with deployment, training and support. Please contact your local AspenTech or Hexagon representative for more information about the partnership and opportunities for improving your design and engineering processes.





Technology That Loves Complexity

### **About Hexagon**

Hexagon is a global leader in sensor, software and autonomous solutions. We are putting data to work to boost efficiency, productivity and quality across industrial, manufacturing, infrastructure, safety and mobility applications. Our technologies are shaping urban and production ecosystems to become increasingly connected and autonomous — ensuring a scalable, sustainable future. Hexagon’s PPM division empowers its clients to transform unstructured information into a smart digital asset to visualize, build and manage structures and facilities of all complexities, ensuring safe and efficient operation throughout the entire lifecycle.

### **About Aspen Technology**

Aspen Technology (AspenTech) is a leading software supplier for optimizing asset performance. Our products thrive in complex, industrial environments where it is critical to optimize the asset design, operation and maintenance lifecycle. AspenTech uniquely combines decades of process modeling expertise with machine learning. Our purpose-built software platform automates knowledge work and builds sustainable competitive advantage by delivering high returns over the entire asset lifecycle. As a result, companies in capital-intensive industries can maximize uptime and push the limits of performance, running their assets safer, greener, longer and faster.

Visit [AspenTech.com](https://www.aspentech.com) to find out more.





