



Five Ways AI Will Change Upstream Business in '26

*By Ron Beck,
Sr. Solution Marketing Director,
Aspen Technology*

AI will begin making big impacts in upstream in 2026. Here are some insights into how AspenTech is using AI to empower upstream companies in new ways.

1. Automate Upstream Workflows With Agentic AI

Upstream workflows today are manual and time-consuming! They involve multiple datasets, extensive data-quality and reasonableness checking and handoffs between individual G&G specialists. These crucial workflows needed to develop production plans, optimize production, make better exploration and appraisal decisions and reduce risk can be automated with agentic AI.

Multidisciplinary in nature, they all involve heavy manipulation of data. The value here is time, accuracy of results and better fact-based decision-making. When automating workflows based on a company's best practices and approved approaches to each producing formation, more information can be brought to bear faster to drive a fact-based and comprehensive approach to making decisions.

Early adopters of the new [AspenTech Subsurface Intelligence™ \(ASI\)](#) environment are seeing this benefit today. AspenTech is revolutionizing the adoption of these workflows via **Aspen Virtual Advisor™ (AVA)** embedded in the cloud-native ASI. The value delivered is

concurrent, faster and more transparent decisions for both asset development and prospect evaluation.

2. Simplify Your Multi-Vendor Digital Portfolio

For upstream companies, it's a multivendor world. Legacy domain-specific apps are used by different groups across disciplines and they need to work better together. Specifically, new AI capabilities are needed to work seamlessly with these legacy domain apps.

In 2026, AI will make a big impact in improving the effectiveness of these multivendor environments. For example, ASI brings together domain-specific agents (for geophysics, formation evaluation, petrophysics, geomodelling and reservoir engineering) with AI capabilities. This is the breakthrough offered by industrial AI for subsurface: combining decades of subsurface science with new AI breakthroughs. The domain knowledge acts as guardrails for the AI capability, making the AI apps trustworthy.

Coupling domain-specific agents with generative AI will change the game here in 2026. Value is created by bringing together AI and best-in-class domain software, which enables better production strategies in complex formations and operating situations. It decreases uncertainty and increases accuracy for better capital allocation.

3. OSDU Comes of Age

AI value for upstream is inexorably tied to access to vast quantities of high-quality subsurface data. With the fragmentation of data creation and storage between owners and their service contractors and between datasets created by discipline-specific applications, companies face a challenge in fully gaining business value from AI in the subsurface.

OSDU, the Open Subsurface Data Universe, is a key to solving this challenge. OSDU comes of age in 2026, with leading companies moving from the testing phase to the implementation phase of OSDU data. With that, the full value of the data your organization has paid to develop, no matter which service company or digital application was used to create it, will be unlocked.

4. New Strategies to Upskill the Next Generation

Generative AI large language models (LLMs) offer an exciting opportunity for the new generation of subsurface engineers and scientists to rapidly accelerate their expertise levels. The crucial breakthrough here is to feed a private instance of AI (such as AVA) the full software documentation, the extensive technical support body-of-work that has been developed around these best-in-class software products and the user organization's documented standards and best practices for use of software products. Together these

provide an extremely powerful and intuitive "just in time" way for next-generation users to gain expertise.

AVA can identify the most fruitful ways to solve a technical challenge in the user's workflow. It can propose and then automatically perform a workflow to solve a problem, including which data to select and which analytical "agents" to apply in the workflow. This reduces the time needed for a new technical worker to reliably perform expert work from years to months.

5. Leverage Cloud-Native Multidisciplinary Environments

Cloud-native environments will become a superior way to deploy AI and multidisciplinary work processes across upstream organizations. The advantages of cloud-native deployments for multidisciplinary, multi-location teams and the next-generation workforce will greatly outweigh cybersecurity and data ownership concerns, and will force the rapid development of strategies to minimize those risks.

Cloud-native environments provide the ability for multi-location and multi-discipline teams to share and work on the same project information. They provide flexible access to high-performance computing, and they enable the execution of concurrent technically challenging workflows to provide large-scale sensitivity analysis. In short, they will enable the four digital capabilities described above to be deployable and to create organizational value in 2026.

AspenTech began developing the cloud-native ASI environment five years ago, and in 2026 it is coming to maturity. It drives value by dramatically increasing the ability of multidisciplinary teams to work together, achieving transparency of data to make better and faster decisions.

Whether oil and natural gas prices go up or down, the upstream business will change—and is changing—dramatically in 2026. In every region and in every practical scenario, hydrocarbons continue to play a crucial role in the global energy picture.

The three key drivers of value in 2026 that the above five trends will achieve are:

- **Efficiency:** performing exploration, development and production tasks faster and more comprehensively with fewer technical experts.
- **Quality:** improving the information upon which decisions will be made.
- **New insights:** achieving new solutions to complex challenges by automating workflows that were too complex to be considered in the past.

AspenTech Subsurface Intelligence is already being used by companies to rapidly advance the five key areas mentioned above. [Contact me](#) to discover how they are creating value and to learn more about our Subsurface Science and Engineering product strategy.



About Aspen Technology

Aspen Technology, now part of Emerson, is a global software leader helping industries at the forefront of the world's dual challenge meet the increasing demand for resources from a rapidly growing population in a profitable and sustainable manner. AspenTech solutions address complex environments where it is critical to optimize the asset design, operation and maintenance lifecycle. Through our unique combination of deep domain expertise and innovation, customers in assetintensive industries can run their assets safer, greener, longer and faster to improve their operational excellence..

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