

A black and white photograph of an oil pumpjack field. In the foreground, a worker wearing a cap and jacket is looking at a tablet device. The background shows several pumpjack structures against a clear sky. A large blue circle is overlaid on the left side of the image, containing text. Several colored dots (yellow, blue, red, green) are scattered across the image.

Destination: Transformation

A path forward for upstream oil
and gas businesses with a
passion for reinvention



We live in exciting times. Oil and gas companies have achieved measured success through the first generation of integrated operations and digital oilfield (IO/DOF) solutions and the promise of new forms of innovation are ready to help them take production and drilling operations to the next level. How can they prepare for the journey ahead?

Economic realities have taken their toll on the industry—long-lasting price pressures have compelled companies to re-schedule projects, restructure their businesses, re-organize portfolios, and reduce workforces. Talent exits due to the downturn or workforce retirements have placed the industry in a challenging situation. Meanwhile, emerging technologies in automation and machine learning are poised to bring step-change to decision-making and other business processes. Companies are asking—how can we best help our lean organizations effectively drive innovation forward?

The journey so far

The journey started in the early 2000s with the delivery of new IO/DOF solutions built on increasing availability of real-time data: new sensors captured more data; IT infrastructure was installed to communicate and manage that data and make it available to engineering, and new applications and solutions were designed and implemented to use that data to improve performance. Surveillance, visualization and analysis capabilities are now commonplace in today's oil and gas assets.

Companies continue to deliver value by building on this foundation. Integrated operations centers blend engineering, production, logistics and planning teams in a collaborative hub. Real-time, dynamic situational awareness solutions remove the need for the generation of reports or status meetings, thereby freeing up time. Predictive analytics are generating insights in the areas of drilling, unconventional wells and machinery monitoring.





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Looking forward

New possibilities are here and the industry is positioning for the next generation of transformation. Examples include:

- Automation that drives work across organizational silos, locations, time, transactions and data sources
- Predictive and prescriptive analytics that learn well or equipment failure patterns and recommend corrective action, considering maintenance and operating history and real-time conditions
- Artificial intelligence advisors or chatbots for monitoring well performance or providing contextual information about a problem—similar problems that have occurred and their resolution, information relating to the problem, equipment diagrams, etc.
- Increased use of mobile devices in the field to allow operators to access experts and information relating to field equipment and performance
- Taskbots for completing routine inspections, rounds or tasks, and suggesting actions when exceptions are noted
- Surveillance of assets by robots and drones
- Tiny sensors in refineries, rock formations or installations

Being ready

Lessons that have been learned over a decade can offer oil and gas operators valuable guidance for the digital journey ahead.

Tap your experts: Enlist your experts in the design thinking required to bring new possibilities to life. Continuously look for ways to build trust and interaction between centers and field teams through rotations or periodic co-location. Third parties can offer another level of support.

Tap your data: Many companies are sitting on vast volumes of production or drilling data. Analytics can help companies uncover the correlations, causation and relationships that can help drive optimization and prediction.

Take small, smart steps: Encourage the innovators in your business to grow results organically. Encourage them to find high-value, low cost ways to deliver value. Establish governance to avoid overlap and redundancy, and to ensure appropriate focus and standardization.

Create knowledge sharing habits: Use simple learning tools to capture, store and share insights and solutions among users. Knowledge management does not require a huge investment. A five-minute after-action review

that gets written down, stored, and made accessible to others can help share knowledge simply.

Define success: Know what you are trying to achieve—increased production, efficiency gains, cost savings, avoid rework, improved availability/reliability, avoid lost production or some other goal. Then determine how to measure and make results visible.

Add integration to automation: For new workflows to be automated, consider how they should integrate to be most effective to the business—across transactions, disciplines, locations, time.

Do not take on too much at once: Consider designing an initiative, then cutting objectives in half. This puts expectations in a more realistic context.

Create action-oriented habits: When new decisions are supported by analysis, the final action step must be carried out for value to be achieved. The organization must know what those actions should be, and recognize and reward those who carry out the actions.

In summary, the path ahead holds a wealth of potential. Upstream businesses that build on existing success and solutions, remember key lessons, and leverage new and emerging technologies are well-positioned to reshape their future.



About the author

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Helen Gilman is an Integrated Operations (IO) and Digital Oil Field (DOF) subject matter expert within Wipro's global oil and gas industry practice. She has been helping clients in the industry with the strategy and delivery of

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