Oil and gas megaproject development

Driving efficiency
Driving efficiency

i. Lean project development
A key factor behind the decrease in oil and gas project efficiency is the ingrained and often accepted process inefficiency that exists across the project development cycle.

The industry has been slow to leverage the collective learning from past projects to develop a standardized process management framework. As a result, project teams often lack an understanding of end-to-end processes, lean principles or leading practices from other industries, making key decisions with little appreciation for their implications at a macro project level.

The increased prevalence of JVs and the growing number of suppliers on projects means that despite greater technology systems capability, making decisions and completing tasks are hampered by conflicting project priorities or a misunderstanding of project goals. This misalignment often manifests as:

- Unnecessary waste
- Economically disadvantageous decisions
- Long consensus-building process
- Frequent scope changes
- Silo-driven behaviors

Oil and gas companies require a dramatic shift in their approach to how capital projects are run and managed. Too often projects adapt a “just in time” approach to process adoption – as a result, they rarely anticipate the protracted nature of implementation or the impact of not having an adequate process architecture in place.

Early in the development process, projects must identify critical processes, set up a process architecture, establish a project-wide governance model and instill a rigorous change management culture. Starting with a baseline of core project processes not only creates a stable working position, but also means that subsequent requirements for process change, as the project moves through the development cycle, can be better assessed and more quickly implemented.

Early identification of critical processes is essential, as they are not all equal in their impact on a construction project. Once identified, focus should switch to identifying and eliminating waste activities through a combination of traditional improvement techniques, such as lean management, and innovative digital solutions, such as robotic process automation.

The real opportunity – and skill in implementation – lies in applying these concepts in a unified way to capital projects. This requires a deep understanding of the effect that change in one area will have elsewhere, balancing macro-level project dynamics with micro-level work stream priorities.
ii. Standardization

The oil and gas industry lags behind other asset-based industries in adopting standardization. By treating each project as being largely unique, the industry misses opportunities to develop a common project management template or standards for equipment and components. This approach has led companies to develop expensive designs for new oilfields rather than identifying opportunities to replicate existing solutions.

Consequently, unnecessary complexity and duplication are widespread in the industry, and field development continues to face challenges related to long lead times for critical components, deteriorating workforce productivity, budget overruns and schedule delays.

In an era of volatile oil prices and extreme pressure on cost, the industry must embrace greater standardization as a tool to improve project development economics. This should include standardization of not only equipment and technology, but also:

- Project management practices
- Engineering and design approaches
- Data and monitoring methodologies

Industry standardization can develop standard project design templates and project management methodologies around which teaching and new technology can be aligned to reduce variance in delivery performance, improve the efficiency of maintenance and modification works, and, simultaneously, reduce the cost of equipment and technology.

Companies can achieve significant improvements through internal standardization initiatives. In fact, Wood Mackenzie report that, standardization has the potential to structurally remove 10% to 20% of project costs. But to fully realize the industry’s potential, companies need to work harder to collaboratively develop new standards. Sporadic instances of such collaboration exist – in July 2014, FMC Technologies announced a joint industry program with Anadarko, BP, Shell and ConocoPhillips – but to achieve meaningful scale, the industry needs to expand these initiatives much further.

Indeed, a leading independent oil and gas company was able to fast-track the engineering and construction of the floating production systems for two of its fields by standardizing topside facilities. This approach allowed the operator to:

- Accelerate time to first oil
- Leverage learnings from one platform to the other
- Save manpower
- Reduce procurement lead times
- Lower fabrication costs

Similarly, a leading operator in Norway was able to reduce project cost by around 20% and start production a few months ahead of the schedule partly by using a standard subsea template.

Realizing the full standardization opportunity within individual organizations and across the wider industry will take time, with greater work needed to drive collaboration and identify where to focus effort. However, standardization has the potential to drive a significant change in project economics, system reliability and lead times, and it should be considered as a measurable criterion of success for project teams as they progress towards FID.

At EY, our global capital projects teams offer independence, understanding of project development and demonstrable knowledge across the project life cycle. They can help oil and gas companies:

- Improve their oversight over the development of and delivery to performance targets
- Develop appropriate internal and supply chain capability to plan and execute
- Drive project efficiency through innovation, as EY supports the planning, sanction and execution of projects in the continuing era of depressed oil prices

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EYG no. 04349-174GBL
BMC Agency
GA 1005155
ED None

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