EXECUTIVE VIEWPOINT

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Assessing well delivery scheduling capabilities

For an operator, the critical value chain at the heart of the company is focused on well delivery, which is the sequence of operational activities that takes a well from concept to hydrocarbon production. In today's complex and fast-moving drilling programs, creating the schedule of activity sequences, and managing it on an ongoing basis for a large set of wells, is key to success.

Over the last decade at Actenum, we've seen many unconventional operators move from simplistic scheduling using MS-Excel spreadsheets to more sophisticated software applications that are developed specifically for the upstream sector. And no wonder! In areas like the Permian, it's no longer wise to attempt to schedule by simply opening a spreadsheet and listing the resources assigned to sets of well-based activities, along with associated dates. The drilling environment is so busy, resources are scarce, and multiple operators are working close to one another, so this approach can lead to major problems: 1) rigs assigned to drill more than one well simultaneously in different locations; 2) wells scheduled for completion before they have been drilled; 3) frac crews arriving at a pad to find drilling either not started or still in progress; and 4) unexpected shortages of frac water and other critical materials.

As companies strive to use capital more effectively, reduce cycle times, and respond rapidly and reliably to operational disruptions, they must schedule in a manner that accounts for program costs and budgets, lease obligations, the potential for well interference, well production, rig and frac crew utilization, and availability of water and other materials. Capturing information about these issues in one application that provides an integrated view of operations, and warns of possible problems, boosts scheduling efficiency, which translates into operational efficiency.

So, what are the capabilities to look for in a well delivery scheduling application?

An underlying model that's specific to upstream operations. Scheduling activities on wells means taking into account planned and actual costs, geographical location (for surface and bottom holes), lease expirations and continuous development periods, proximity of other wells, production curve data, water and other material requirements, well milestones, permits, plans and AFEs. Considering using a scheduling tool that doesn't capture lease data, for example? Forget it! Every time the schedule is updated (which happens every day), you'll have to spend a considerable amount of time trying to determine how lease obligations will be impacted.

The right resource, in the right place, at the right time. It should be possible to schedule any type of resource on any type of activity, subject to any sort of constraint, and ensure that deadlines or other date targets (such as earliest start) are met.

Optimization to align the schedule with business goals. Having a built-in optimizer, particularly one that harnesses the power of AI, to rapidly assign the sequence of activities, and then resequence as changes are needed, means that every link in the well delivery value chain is working toward the same goals.

Linkage to key performance indicators. Creating and managing a schedule is rudimentary, but fully understanding the "quality" of the schedule, in terms of KPIs, and how those KPIs are impacted as the schedule is updated, is another. And, KPIs should be user-definable, so that any aspect of operations that is deemed important can be tracked.

Integration of all schedule information. With one application to capture all operations information, the scheduler is relieved of laborious manual tasks, correlating information between multiple spreadsheets and applications, and trying to ensure that they're all synchronized. Employees can spend more time with colleagues focusing on making decisions about what to do, as operations proceed.

Ability to ask, "what if?" questions. Our customers in the Permian all create and evaluate multiple scenarios on a continual basis. Being able to see how the impact of adding a rig, switching frac crews, or incorporating new acreage enables effective and streamlined decision-making. Outcomes may be examined in real-time and tracked back to the source quickly.

Easy linkage to external applications. Is type curve data in ARIES? Prespud workflow in Generwell? Well data in OpenWells or Wellview? The scheduling application should have a fast and reliable way of exchanging data with any other application, to ensure that it's accurate and a complete repository of all information about a schedule, or a "single source of truth."

Collaboration features to keep everybody on the same page. As the schedule is updated, there are many people on the team—besides the scheduler—who need access to the latest version. Sending out PDF reports every day, or storing them on a shared server, is not only inefficient but increases the risk of looking at out-of-date information. A better way is to enable web-based access to the latest published schedule, so that it can be retrieved from any device, anywhere, at any time.

Paradigm shift. In my time in the upstream sector, I've seen attitudes toward well delivery scheduling evolve from *"Who cares if it's not efficient? We're making money!"* to a perspective that it's crucial to success. Instead of a process where important decisions are made with little concrete insight into outcomes, operators are putting in place more agile and sophisticated scheduling processes, backed-up by applications that provide reliable input into decision-making. By ensuring that operations are always aligned with business objectives, operators are being rewarded with substantial economic benefits, maximized asset ROI, and reduction of risk. **WO**

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