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DIY OR BUY?

How software advancements are giving in-house builds a run for their money—and bringing the digital transformation into clear view for oil and gas operators

You have countless edge devices. You have mountains of data. You have SCADA and BI tools. But do you have a true understanding of your well site performance?

For many oil and gas companies, that question is the Holy Grail of the digital transformation. And for most of them, the answer is a hard "no." Far too often, they attempt to bridge the gap between data and actionable insights with DIY

solutions. In theory, these in-house builds send data from field sensors to a back-office solution in a way customized to a company's operational needs. In reality, they can create an entirely new set of issues for organizations already struggling to overcome the digital divide.

Here's the good news: Cloud-based software solutions are rapidly accelerating and, in the process, transforming industries like oil and gas in ways that a DIY approach could never compete with. Whether you're currently experiencing the growing pains of an in-house solution or considering whether to "build or buy," the route to true oilfield automation has never been more clear—if you're willing to leave behind the status quo.

Data rich, knowledge poor

The oil and gas industry is no stranger to technology. Drilling advancements are helping producers reach new levels of efficiency. The industry delivered key leaps forward in supercomputing, enabling advanced 3-D imaging and reservoir modeling widely used today. But when it comes to automation, oil and gas has a reputation for being behind the curve. As the aviation and automotive industries actively turn the "digital transformation" buzz into clear ROI, oil and gas companies are struggling to simply **manage the tremendous volume of E&P data** — let alone utilize it to optimize operations. A single oilfield platform The oilfield is rich in data; it's just poor in knowledge.

The World Economic Forum's **Oil and Gas Digital Transformation Initiative** lays out a clear picture for understanding how the industry got to this digital

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crossroads. It's an evolution that workers in the industry have seen firsthand. In the 1980s, companies were just beginning to adopt digital technologies. These earliest solutions were mostly concerned with enhancing health and safety and gauging a reservoir's production potential. Digital adoption continued through the next decade, culminating with the last oil price crash in 2014. That served as a wakeup call for production and midstream companies, which finally understood the need for digital technology to operate remote assets more efficiently.

Unfortunately, these early solutions didn't deliver on the promise of the digital transformation. Instead, they ended up creating more inefficiencies than they resolved. Most provided little more than data collection. Field workers had limited, if any, visibility at the well site, and integrating edge data back into BI tools was an uphill battle. These challenges created a cottage industry of sorts for DIY solutions, which are still "business as usual" today—despite the rise of powerful cloud-based software.

In 2020, producers will **continue to walk the fine line** between reducing CapEx and investing in digital technologies that have the potential to lower their cost per barrel. The key difference? Digital technology has rapidly accelerated since the days of those problematic early solutions. The **operational changes taken between 2014 and 2016** put companies in the ideal position to embrace this new generation of cloud-driven software solutions—if they're ready to leave behind the status quo.

The pitfalls of DIY solutions

Anyone who has spent time in the oil and gas industry knows these DIY solutions far too well. You've put a number of automation assets out in the field without a system for getting that data to people who can actually see it and, ideally, use it to optimize operations. Doing so requires well site-specific features and configurations that you don't think any "off the shelf" solution could deliver. So your organization decides to build one itself instead.

Whether you hire a vendor to build the platform or travel the long, bumpy road of recruiting a workforce with the expertise to do so—another critical challenge facing the oil and gas industry—the home-grown route essentially lands you at the same point. You install middleware and your backend SCADA hosting system. Then, you attempt to connect everything with an approach akin to spaghetti code. But because the oilfield is inherently heterogeneous, you end up with a mishmash of parts and layers, each one requiring maintenance, coordination and an additional line item in your budget. Every part has a fee associated with it, and the more data you pull, the higher your costs overall. What once seemed like the most logical approach quickly becomes a case of runaway CapEx.

But the monetary cost of DIY solutions is just the tip of the iceberg. A far greater cost is the seemingly endless potential for data errors. When data from disparate devices gets pulled from DIY middleware, its integrity is often jeopardized. This triggers a chain reaction. BI tools receive data riddled with holes rather than the accurate, complete visibility needed to make meaningful optimizations in the field. Simply put, each point of communication among the field, middleware and back office is an opportunity for more data errors. This issue is exacerbated by connectivity lag times, which wipe away any chance for fast-loop control.

Integrating new systems and configurations opens up a whole new challenge. Say, for example, you've had Configuration A out in the field for awhile across 1,000 sites. You need to implement Configuration B, which is similar to A but with at least one element that's different; maybe it monitors a process that the current system doesn't. Without clear communication and coordination, everyone from the field team to the enterprise could feel the impact of erroneous data. Identifying the wrong place from which to pull the data. Forgetting to tell someone a new configuration is required. Each of these common scenarios poses yet another hurdle for data integrity and, as a result, drives up costs.

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in value for oil and gas companies and their customers.

In today's oil and gas landscape, the speed of digital adoption is faster than ever before. Developing and deploying a home-grown system can take years—precious time for your competitors to gain the upper hand and your productivity to languish. Once deployed, DIY solutions also require ongoing IT support and management. Never-ending requests for enhancements and significant time spent on upkeep can quickly outweigh the perceived benefit of a custom build.

Advancements in cloud-based software

In the early days of digital, oil and gas companies took a DIY approach for one simple reason: it was the only option available to them. But advancements in cloud-based software are now delivering capabilities far beyond what's possible to execute in-house. Simply put, the days of choosing between a costly home-grown solution and a cloud-based software platform that's merely "good enough" are long gone.

Today's cloud-driven software solutions are redefining their "off the shelf" label, giving companies the ability to achieve new levels of automation without sacrificing flexibility. The most advanced software solutions developed for oil and gas industry are open and configurable, requiring no programming to deploy customized workflows once only thought possible through in-house builds.

By opting for a cloud-based SaaS solution, companies can avoid the most costly pitfalls of DIY development while enhancing operational efficiency. To tackle the well site's heterogeneous nature, enterprise platforms are using powerful edge historians to capture existing sensor and SCADA data regardless of manufacturer—no spaghetti code required. This approach allows oil and gas operators to maximize the value of legacy field assets without compromising the quality of their automation solution. Leading solutions integrate seamlessly with ERP, accounting and BI tools using APIs, minimizing data errors that plague home-grown solutions.

As edge computing continues to drive advancements across the industry, the most robust cloud-based software solutions now deliver real-time access to field data and analytics from anywhere and any device. In a market where competition has made the cost per barrel more critical than ever before, fast-loop control delivers a clear business advantage. These benefits are further compounded when you consider that they're all achieved using a single seamless platform—not than a mishmashed system that, even with rigorous coordination, fails to deliver the data integrity and visibility necessary for optimizing production.

By essentially cutting out middleware, a hotbed for data errors in most DIY solutions, cloud-driven software platforms automatically pull, synchronize and analyze data. Then, they get it into the hands of the people who need it, when they need it most. This is a significant departure from home-grown solutions, which traditionally require you to ask for data when you need it. Many cloud-based software solutions also come equipped with innovative features such as bandwidth-friendly reporting on exception, one-second data trending and the ability to analyze operations for all, a collection or a single node.

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The benefits of the SaaS model

The common SaaS model replaces unpredictable DIY cost with a transparent fee structure. These software platforms typically forego development or up-front licensing costs, instead charging lower monthly subscription fees. SaaS providers absorb development costs, spreading them across their entire customer base. This, in turn, minimizes the need for the staff and ongoing maintenance costs of DIY solutions. By foregoing the cost- and labor-intensive internal development route, operators can avoid the overhead of hardware, software, network infrastructures and the space required to house a new system.

It's no secret that the oil and gas industry has struggled to recruit top technology talent. According to **a major Accenture Strategy study**, E&P alone could face a shortage of 40,000 engineers and other technology professionals by 2025. Among midstream companies, **90% of new jobs** over the last eight years were in construction, materials movement and maintenance—a sign that digital capabilities have not made their way to in-house teams. By partnering with a SaaS provider, companies benefit from a breadth and depth of technology expertise nearly impossible to recruit for internally. These software partners are also experts at operating, maintaining and upgrading their solutions—making costly data errors and coordination issues a thing of the past. With the rise of oil and gas-specific software solutions, these teams are becoming even more highly specialized in industry use cases that may not exist within your organization.

Many oil and gas companies embrace cloud-based software solutions to achieve full control of well site performance. Automation done right can enhance oil recovery, minimize safety risks, eliminate manual data capture errors, enable response and control by exception and much more. With the right partner, these solutions are quickly implemented in phases or across the enterprise, and can scale with an operation's needs.

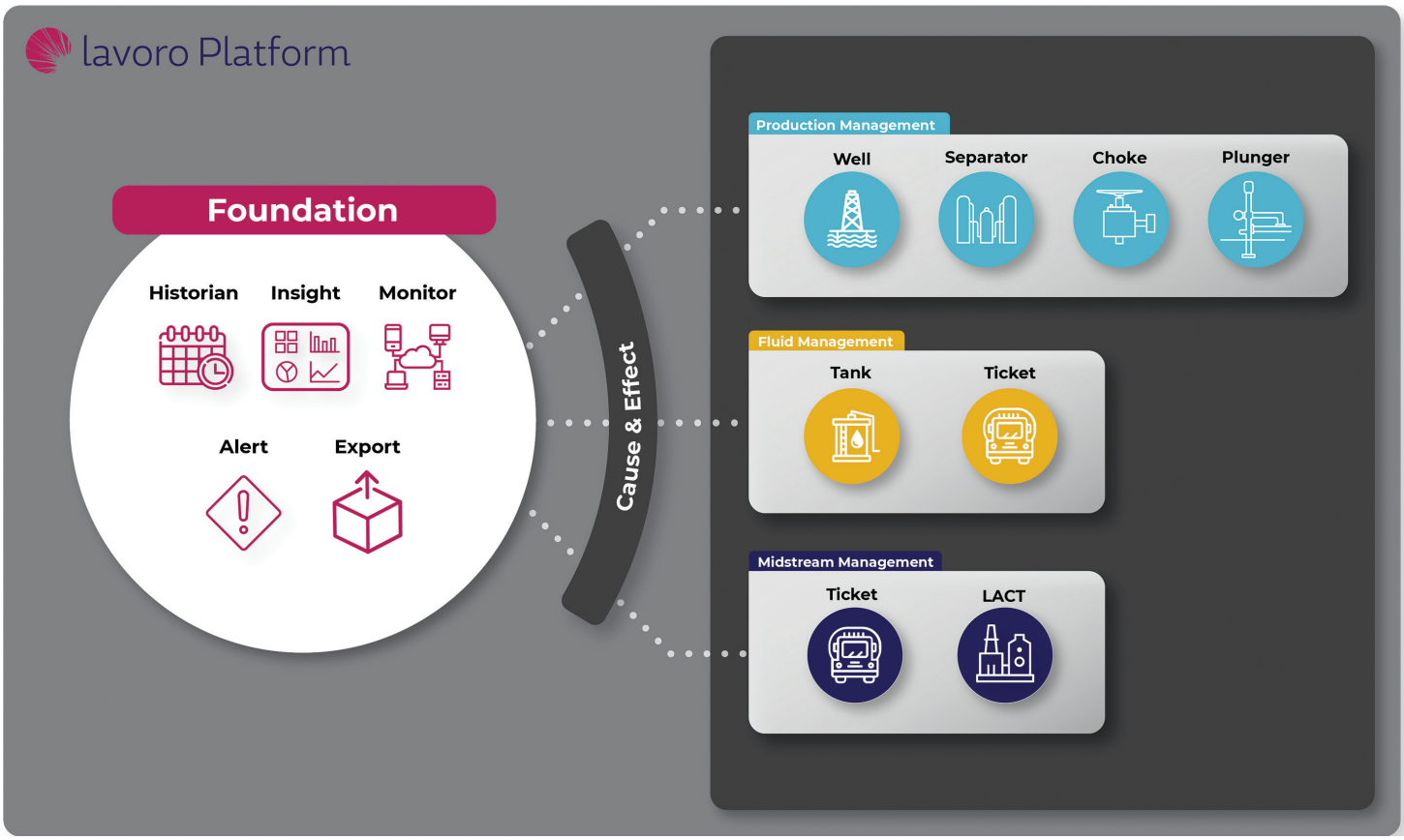
The true costs of the status quo

Coordination issues. Runaway spending. Incomplete data. The demands of ongoing management. Add in connectivity lagtimes, and you're left with an obvious question: Why are oil and gas companies still "doing it themselves" at a time when cloud-based software solutions are more powerful than ever?

The oil and gas industry is in the midst of an accelerated pace of development and adoption, delivering automation platforms unlike anything we've experienced before. As new IT leadership enters the oil and gas workforce, the desire for the same data visibility and accessibility that we experience in other areas of our lives is compelling more companies to embrace advanced technology—the kind nearly impossible to achieve through home-grown solutions. Industry projections show that harnessing the digital transformation **can unlock $1.6 trillion in value** for oil and gas companies and their customers. Meanwhile, leading companies are already using cloud-based software solutions to drive powerful optimizations. From automating tank ticketing to optimizing cause and effect, these platforms are lowering the cost per barrel through the power of the edge and the cloud.

Lavoro's solution

Lavoro Technologies is the oil and gas industry's leading SaaS solution provider. We're disrupting the status quo by giving operators more data visibility, automation and optimizations than ever before—all with a single connected platform proven to lower the production cost per barrel.



An “industry first” fully integrated, sensor agnostic, cloud and edge SaaS solution, the Lavoro Platform empowers operators to leverage data to its full potential. We’ve designed our platform to give operators all the customizations of an in-house build, without the limitations. The Lavoro platform integrates seamlessly with existing automation assets, SCADA and BI tools to help operators make the most of their existing investments. Our robust historian and open APIs deliver insights to the right person at the right time—opening the door for full visualization and optimization. With Lavoro, operators can easily define thresholds that trigger actionable insights in a single well, field, basin or across the enterprise.

When the Lavoro Platform fully launched in 2017, oil and gas customers quickly embraced its easily scalable, sensor-agnostic approach to automation, optimization and data visualization. Today, Lavoro customers are using the platform to automate the liquid transfer process, optimize artificial lift and turn inefficiencies into better margins per barrel. And they’re achieving all this through a SaaS model that eliminates costly CapEx and leverages our team’s specialized oil and gas software expertise.

The bottom line

There was once a time when DIY was the only way. But with the acceleration of cloud-based software platforms, holding fast to these solutions is more about inertia than business sense. It’s the “if it ain’t broke, don’t fix it” approach—only in this case, the current approach actually is broken.

Today’s cloud-based software solutions are making it easier than ever to take control of your well site performance. The

oilfield of the future has arrived. Upstream and midstream operators have two choices: leave behind the status quo or get left behind.

ARE YOU READY TO ACHIEVE THE DIGITAL OILFIELD OF THE FUTURE, TODAY? LET'S TALK ABOUT WHAT THE LAVORO PLATFORM CAN DO FOR YOUR OPERATIONS—NO SPAGHETTI CODE OR CAPEX REQUIRED.

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