



OIL & GAS

**DIGITAL AGILITY:
MOVING FROM
HIGH HOPES
TO HIGHER VALUE**



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Oil and gas companies are scrambling to become more responsive to the supply and demand disruptions turning the energy industry on its head.

Most are looking to digital technologies to deliver the agility that is now needed. They've placed their digital bets to streamline operations. To rein in volatility. To boost cash flow or productivity. To turbo-charge growth. And to underpin the sustainable business models that will carry them into the energy future.

Unfortunately, many are finding that the digital promise remains unfulfilled. These companies haven't invested in the wrong digital solutions. Nor have they set their digital sights on the wrong objectives. They just haven't applied the right approach to unlock digital value. In short, they have digitized. But they haven't become digital.

NOW IS THEIR CHANCE.

Business agility is theirs for the taking if oil and gas companies correctly orchestrate their digital transformations. The right cadence will make their digital dreams a reality.



BEING DIGITAL DOES NOT MAKE YOU AGILE

Digital solutions now offer oil and gas companies everything from integrated views of operations to new platforms that streamline processes, cost models and organizational structures. Yet, 82 percent of oil and gas players still rely on legacy systems to improve their business agility. ¹

Even energy companies that have digitized their operations are failing to realize digital's potential. System-wide efficiencies haven't materialized. Speed, visibility and cross-functional collaboration are still lacking. And financial goals remain largely unmet.

It's no surprise that 58 percent of energy company leaders—the highest percentage of any industry group—admit that they don't know how to keep pace with technology innovations.² They shouldn't be so hard on themselves when it comes to technology selection. They should, however, be critical of their execution. They fall flat at extracting value.

The truth is that digital technologies on their own aren't enough to create the business agility that's now needed. What's needed is a systems approach to transformation—one that looks beyond incremental value of point solutions. Additionally, companies need to follow a defined cadence when introducing, sequencing and integrating their digital enablers. This kind of digital orchestration allows companies to rethink their traditional domains, redefine boundaries, and ultimately redesign their organizations and operating models for sustainable success.

LESS THAN A QUARTER OF COMPANIES

that embark on a digital transformation achieve superior financial results versus their peers.³



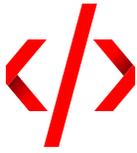
RETHINK DOMAINS

When considering their use of digital technologies within one of six domains—exploration, development, production, midstream operations, refining and marketing—companies first need a clear understanding of the desired future-state of that domain’s operations. Creative approaches can help.

For example, when it set out to digitize portions of its value chain, one integrated oil and gas company grounded its domain vision on key archetypal elements—all enabled by digital solutions. These included a business brain that optimized market information and identified advantaged crudes; a connected worker augmented with rapid analytics; and a fully automated self-healing plant. Armed with this archetype-based vision for change, the company reimagined its underlying capabilities and processes to make its vision a reality. Its five-year journey, which is now well underway, is expected to unlock over \$1 billion, which represents a more than 30% increase in EBITDA.⁴

In addition to having a clear understanding of its future state, it’s also important to identify the challenges and constraints within/across domain boundaries, as well as the opportunities that can be addressed within that domain’s sphere of influence. Those insights can help companies determine which digital technologies to implement.

Finally, it is important for oil and gas players to understand the key decisions that are made in each domain—and whether those decisions are based on short-, medium- or long-cycle time horizons. Different technologies can accelerate cycle times and enable companies to come to better, more informed decisions faster.



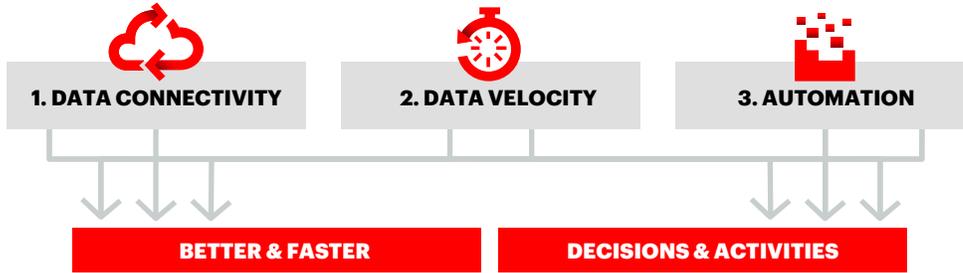
REDEFINE CONNECTIONS BETWEEN AND ACROSS DOMAINS

Once they have an understanding of how digital can optimize decision-making at the domain level, companies should start thinking systemically. This means identifying issues that cannot be resolved within traditional domain boundaries. It also means understanding that an accelerated decision-making process in one area of operations will cascade to others, thereby making end-to-end processes and ultimately the entire operation run faster (see page 6, Figure 1).

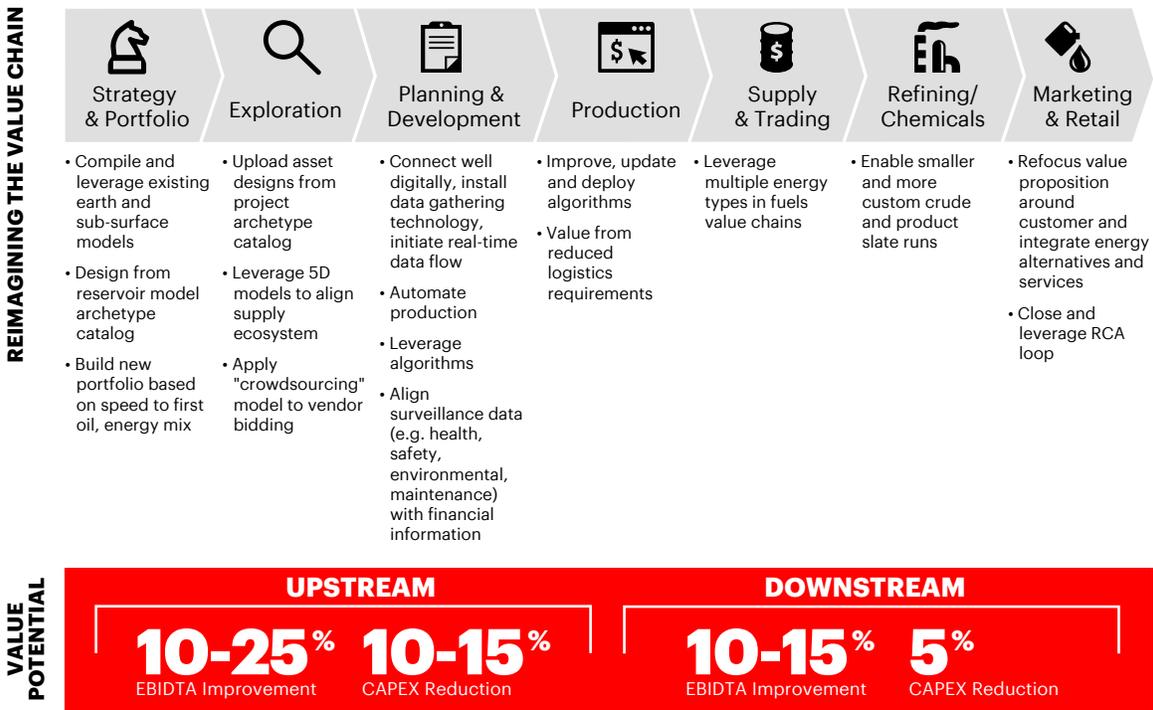
One company believed connecting decision-making across demand planning, sourcing and procurement, warehousing and logistics would make its supply chain more agile and responsive. It set out to deploy solutions like smart contracting to manage suppliers, analytics to predict and identify stock-outs, and Internet of Things (IoT) devices to monitor trucking capacity. The company quickly realized that it could generate even greater value by tapping into available production data via its supply chain/operations interface and replacing its annual supplier audit process with a real-time solution to gauge how each supplier was performing in the field. The resulting monthly pulse checks changed the relationship between the company's supply chain and operations, and also eliminated frictional losses between the suppliers and the company.⁵

FIGURE 1. Transforming the Oil & Gas value chain through digital

DIGITAL IMPROVES & ACCELERATES VALUE CHAIN DECISIONS AND ACTIVITIES THROUGH 3 LEVERS



The energy company of the future will need to reimagine how to play in each part of the value chain

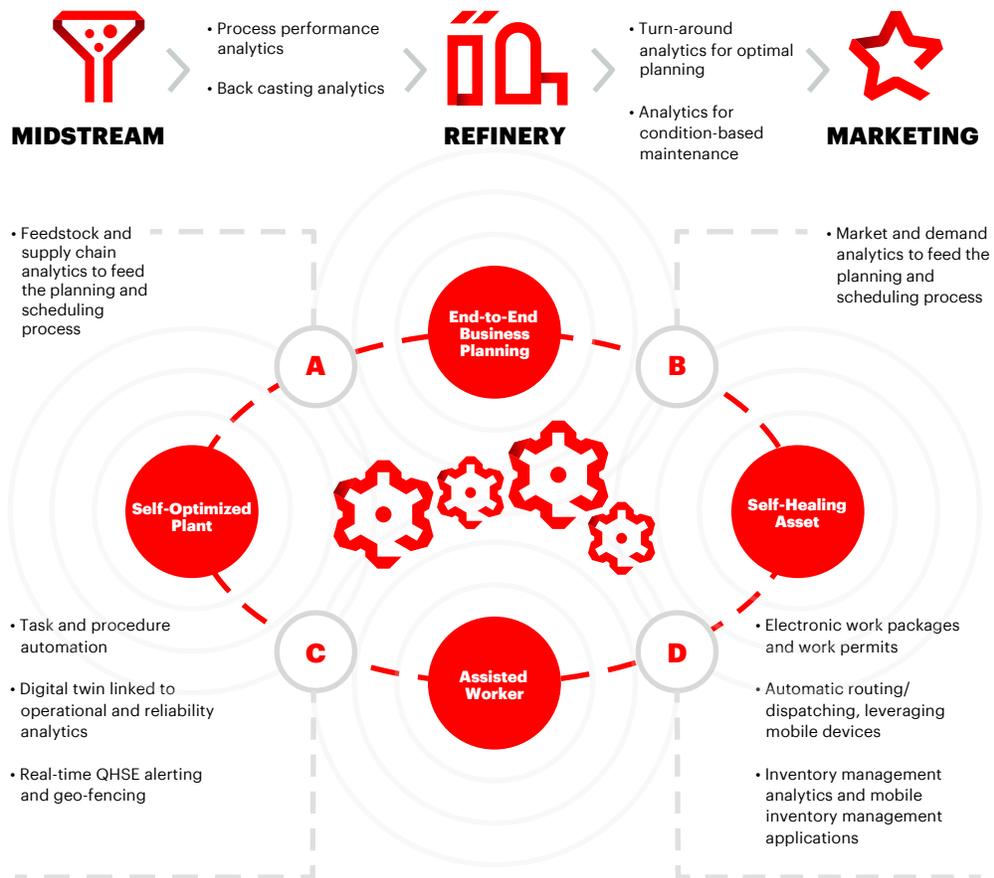




REDESIGN THE ORGANIZATION FOR MAXIMUM IMPACT

The process of digital transformation culminates with reimagined workflows across the organization. Being able to share information across the value chain makes organizations more connected, responsive and unified. In this stage of transformation, new operating models and implementation roadmaps are crafted that take risk, cost/value trade-offs, incentives, governance structures, employee roles, technology and data into consideration (see Figure 2).

Figure 2: Redesign the operating model



Consider the downstream space, where many companies have applied traditional linear programming models to optimize refinery operations. Now, they are realizing they can apply advanced analytics to optimize all aspects of refinery operations—from demand management to crude procurement—across a portfolio of lubricants and petrochemicals on a scale that was previously hard to imagine. Applying this new approach leads to governance and structure changes, since most refinery-focused organizations aren't suited to such optimization. When combined with potential changes to energy mixes, the value of redesign expands rapidly across the hydrocarbon supply chain and other energy sources.

Ecosystem partnerships also play an important role in this type of transformation. One unconventional player used the strength of its ecosystem to identify technology that could fundamentally transform it. Its vision was dramatic: To achieve 30+ percent reduction in costs over a five-year period (after the cost deflation of 2014-2016). The centerpiece of this program, however, was not technology, but an integrated view of its current processes and a reimagined delivery of unconventional wells.⁶

1+1+1=30

When oil and gas companies rethink, redefine and then redesign their businesses, the true value of digital technologies—and the agile business models they enable—is revealed.

A 30-35 percent EBITDA improvement is possible. This financial benefit stems from upstream and downstream improvements. Specifically, digital can help unlock 10-25 percent EBITDA improvement and 10-15 percent Capex reductions in upstream activities. Downstream, companies can expect up to a 15 percent EBITDA improvement in capital employed.⁷

One company used systems thinking and analytics to improve the margins of its high-cost bitumen production processes. Rather than simply trying to optimize bitumen and raw material costs, the company looked at costs and availability of products, production requirements, the state of blending operations, and long-term price forecasts.

Armed with these insights, the company was able to optimize the end-to-end bitumen lifecycle, potentially boosting profitability by approximately 30% or more than 600 million USD—along the way.⁸

WELCOME TO THE ERA OF BIG THINKING

To create agile business models that take advantage of digital's full value, we advocate that oil and gas companies keep four things in mind.



WALK BEFORE YOU RUN.

Changing an organization's operating model takes time. Start small, using digital to improve efficiencies, performance or productivity in specific domain areas. Then think holistically across domains and develop a roadmap that will lead to the agile target state.



RETHINK. REDEFINE. REDESIGN.

Unlock value by reimagining how work is executed and business objectives are achieved across the value chain. Aim to solve complex problems that cut across traditional organizational silos.



RUN LEAN. THINK BIG.

Embrace analytics to understand how causal relationships influence decision-making and organizational agility. Establish small teams that can work at speed to drive digital outcomes.



MAKE CHANGE STICK.

Couple digital investments with investments in people and culture. Invest in tools and training to create an environment of collaboration and experimentation. Build excitement with a top-down view of digital's potential.

AGILITY STARTS HERE

Oil and gas companies have digitized many aspects of their operations, from exploration and production to development to marketing and sales.

These point solutions have produced efficiencies and improved operational performance within specific domains. But they haven't enabled the organization-wide shift to agility that is now needed.

It's time for leaders to unlock the real value of their digital solutions by rethinking their investments at the domain level and then extending the digital reach across boundaries to achieve systemic change. An orchestrated approach will enable them to move beyond digitization and become the truly digital enterprises they are destined to be.

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Notes

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