

**OIL & GAS**  
**HOW DO YOU**  
**COMPETE**  
**WITH FREE?**

As described in Accenture Strategy's "**The writing's on the well,**" oil demand is expected to peak in the next 20 years. Hydrocarbons' dominance in the energy mix is expected to fall from 80 percent today to near 50 percent by 2060.<sup>1</sup>

**In some scenarios, energy costs—like data storage costs—will ultimately trend to zero. If that happens, oil priced at \$70 or even \$40 per barrel won't stand a chance.**

Leading oil and gas companies are on high alert. More than half (54 percent) of industry executives believe their growth strategies are at risk.<sup>2</sup> The rest are less concerned, in part because they believe their digital investments will protect them.

To be sure, digital investments have given oil and gas players a leg up. But most companies have only scratched the surface of digital's potential. More than a third (38 percent) recognize that technology is still a barrier to realizing growth ambitions.<sup>3</sup> These companies are right to be concerned. They've invested in digital. But most aren't using their new digital technologies to do new things. And while 87 percent consider themselves data-driven organizations,<sup>4</sup> our experience suggests they actually use just a fraction of the data now at their disposal.

The good news is there is a tremendous opportunity for oil and gas companies to multiply the value of data. It is there for the taking—and just waiting to be turned into actionable insights that can reduce the cost of supply, increase operational responsiveness, and open the doors to new and profitable business models. Our analysis suggests that applied intelligence, driven by analytics, has the potential to shift the P&L equation with double-digit gains in efficiency, productivity and cost savings.

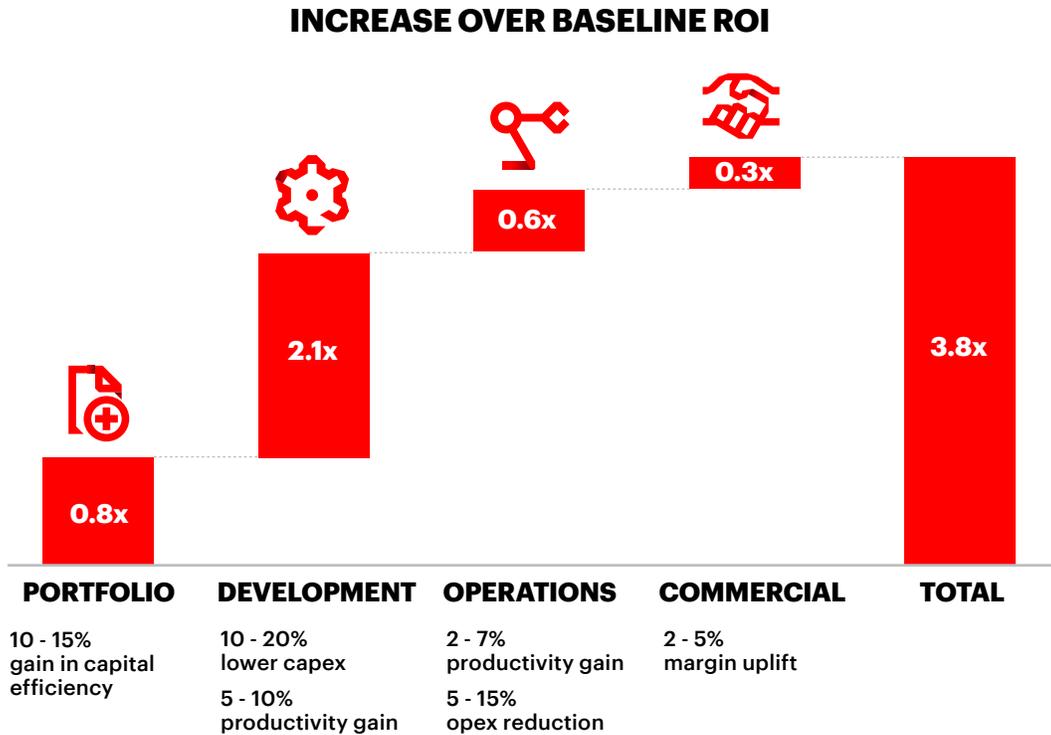
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**As hydrocarbons' dominance plummets and energy costs trend toward zero, 54 percent of industry executives believe their growth strategies are at risk.**

# THE ANALYTICS ADVANTAGE

Advanced analytics are now available to help oil and gas companies make data-driven decisions and solve issues across the value chain—from portfolio management, development and operations all the way to commercialization—that have long been considered unsolvable. The degree of impact and the analytical mechanisms used to drive value will be different across these domains and shift over time. However, the cumulative impact is significant: **A return on investment that is almost four times the baseline (see Figure 1).** ROI becomes even more pronounced when analytics are used in tandem with new technologies, such as artificial intelligence or machine learning, to optimize performance within each area.

**Figure 1. Advanced analytics can drive ROI increases across domains**



Source: Accenture Startegy analysis. Note: Net Present Value/Initial Capex was used as a proxy for ROI. See notes section for further chart details.



## PORTFOLIO

**In portfolio management, a 10 to 15 percent improvement in capital efficiency is possible.**

With economics and portfolio options constantly changing, companies struggle to determine which assets to monetize, unlock or buy, and in what sequence. Dynamic risk-return assessments based on multiple data sources, from seismic data to performance data from other wells, can predict the likely evolution of an asset's financial performance. When coupled with machine learning, these analytics-based insights can help companies identify the best targets, thereby reducing capital investments and boosting productivity. Better yet, companies that apply machine learning to sift through large volumes of data to recognize causal relationships can move away from a siloed approach to asset management. Discipline, rigor and a scientific approach enable a truly integrated portfolio view.

## How can advanced analytics create value?

- Granular risk-return assessments enable dynamic capital allocation
- Insights enable assessment of likely evolution of asset economics

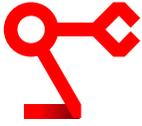


## DEVELOPMENT

**In asset development, companies can lower capital expenditures by 10 to 20 percent and achieve a 5 to 10 percent improvement in productivity.**

Companies are often unsure which development plan will yield the greatest value and reduce the latency time from final investment decision (FID). Advanced analytics can make an integrated and efficient approach to field development possible by pinpointing optimal well locations, informing design decisions, and identifying and remediating project risks.

- Optimal well location and development concept selection
- Risk management and productivity



## OPERATIONS

**In operations, companies can boost their productivity by 2 to 7 percent and reduce operational costs by 5 to 15 percent.**

Despite their moves in digital, many oil and gas companies manage their operations with reactive and manual approaches. It is difficult for them to know what interventions are needed at the wellhead, refinery or other facilities to maximize throughput, while minimizing costs. Continuous measuring and monitoring reveal valuable insights into how to reduce nonproductive time and pull production forward. Machine learning and artificial intelligence can be used to not only ensure that actual production always matches or exceeds expected production, but also more accurately predict equipment failure or the need for intervention.

## How can advanced analytics create value?

- Predictive maintenance increases asset uptime and reduces costs
- Granular cost/margin visibility enables more control
- Supply chain optimization through collaboration



## COMMERCIAL

**When it comes to commercialization, a 2 to 5 percent margin uplift is possible.**

A major conundrum for companies involves determining how to maximize the netback on the molecules sold. Until now, upstream companies have been content selling molecules at the wellhead. Going forward, the greater value will lie in dispatching (and even block chaining) molecules to the end-user who is willing to pay the most. For example, utilities, petrochemical plants, fertilizer companies or even carbon fiber manufacturing laboratories may all have an interest in natural gas. Advanced analytics can help companies identify the most profitable plays—not just at the wellhead, but across the value chain.

- Revenue uplift
- Margin improvement
- Inventory reduction
- Customer retention and lifetime value optimization

# ANALYTICS AT THE CORE. ANALYTICS IN THE NEW.

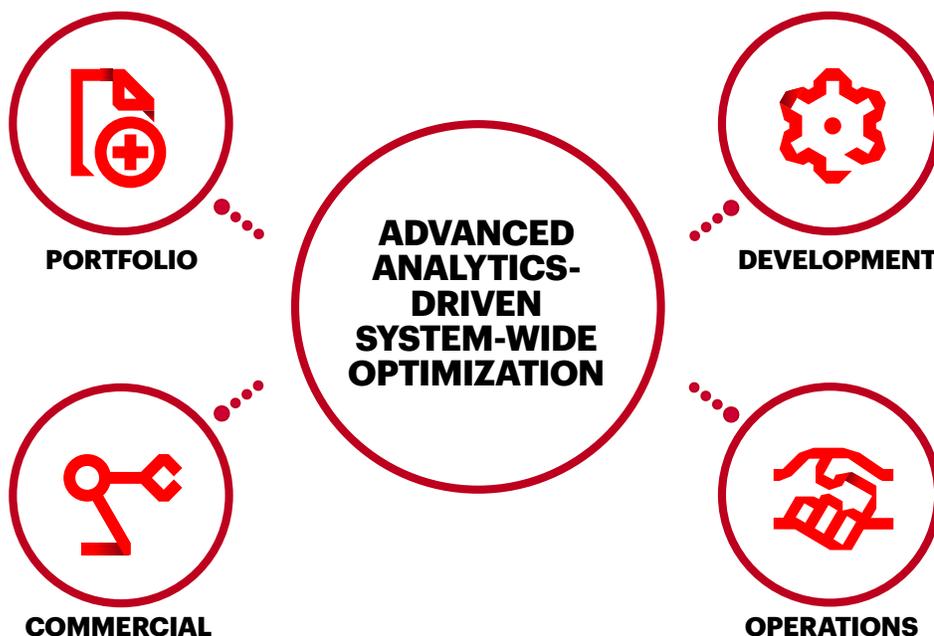
Oil and gas companies that apply advanced data analytics can slash their exploration and production (E&P) costs by up to 30 percent. That translates into approximately \$4.5 trillion over the next ten years.<sup>5</sup> Leading companies won't be satisfied with that outcome. They will use analytics to create an integrated end-to-end view by casting a system-wide data net and then identifying (and redefining) causal relationships between domains. By securing immediate feedback in decision loops, companies will not only be able to dissolve boundaries and eliminate stranded value pools, but also work in concert in a way that optimizes the whole system (see Figure 2).

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## Insights in Action

**Accenture helped a leading oil and gas company use advanced analytics to quantify the effect of market supply and demand shocks on the bottom line. Analytics also facilitated the integration of commercial, finance and operations groups and contributed to a \$15/bbl improvement in gross margin.**

**Figure 2. Additional value from advanced analytics can be unlocked by linking domains to enable system-wide optimization**



## **PORTFOLIO**

Create feedback loop with development & operations

Provide visibility into learning curves & enable acceleration; incorporate into portfolio decisions

Integrate commercial & infrastructure considerations with capital allocation

## **DEVELOPMENT**

Feedback loops with supply chain and commercial functions. Close collaboration with suppliers

Visibility into impact of development decisions on operational cost and portfolio risk-return profile, to enable improved operational and portfolio decision-quality

## **OPERATIONS**

Link with commercial to enable dispatch of molecules to highest value customer (improved netback)

Granular visibility into costs and economics to enable improved portfolio and capital project decisions

## **COMMERCIAL**

Enable asset portfolio and product mix decisions to ensure high margins

Provide real-time feedback to operations, based on expected customer behavior

**Beyond transforming their core operations to operate as a connected system, industry leaders will re-imagine the future roles they will play within emerging energy ecosystems.**

Advanced data analytics help companies pivot to new business models in three ways:

- By enabling a better understanding of consumers' needs and behaviors.
- By determining the relevance of different models to consumers, as well as the potential long-term value associated with each.
- By helping companies rethink the role and placement of each molecule to maximize bottom line impact. In these ways, analytics help companies identify what they will sell in the future, how they will sell it, and to whom.

# CONNECTING THE DOTS

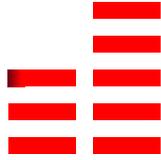
To be competitive in an era of “free” energy, companies will need to use the power of data and advanced analytics to optimize operations and decision-making within and across domains. This will involve addressing four elements of their operating models:



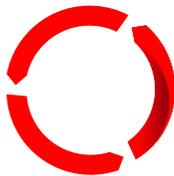
**People.** The roles of geology and geophysics (G&G) professionals will increasingly be filled by image processing experts from other industries such as high tech or health care. Welcoming talent from other disciplines is an important way to improve speed and decision-making. Yet, at this point, only a third (34 percent) of oil and gas companies are open to external talent.<sup>6</sup> This will certainly change as they realize that expertise triumphs over industry experience.



**Processes.** Oil and gas companies need to shift the focus of traditional processes from managing capital risk to managing the speed of decision-making. Rapid advances in technology and analytics make it possible for companies to develop new processes that not only reduce latency by connecting all components of the system, but also enable the right risk-return trade-off among competing investments.



**Platforms.** It's time to push the limits of automated decision-making. Companies should take advantage of more computing power, more reasonable storage costs, and advances in data science to optimize all system modules and apply automated solutions to consider all aspects of the system in a matter of seconds.



**Ecosystems.** To compete with free, companies need to shift their focus to providing a service, not selling a commodity at the wellhead. To enable this transition, the entire ecosystem must evolve to ensure molecules are dispatched to end uses that exhibit the greatest demand. Expanding collaboration and risk-sharing across ecosystem partners, all the way to the customer, will be key.

In theory, industry executives understand this imperative. Our research found that 74 percent of them agree that ecosystems will allow their organizations to grow in ways that are not otherwise possible. And 83 percent believe ecosystems will bring in at least 50 percent of the company's revenue within five years.<sup>7</sup> Their actions tell a different story, however. Only 33 percent of oil and gas companies (the lowest of any industry group surveyed) are actively seeking ecosystems or new business models.<sup>8</sup> This means opportunities abound for forward-thinking companies that make ecosystem participation a priority.

# **From volatility to opportunity**

For years, industry pundits have been sounding the alarm for oil and gas companies. Now, with the cost of energy hurtling toward zero, many are suggesting the days of oil and gas are finally coming to an end. Companies unable to adapt to the new energy reality will likely fail. But others—namely, those that are able to unlock the value hidden within their data—are poised to shine. For them, advanced analytics and data-driven insights are paving the way to a future that is even brighter than the past.

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## Notes

- <sup>1</sup> Accenture Strategy analysis, 2017.
- <sup>2</sup> Accenture Strategy Revenue Growth Research, 2017.
- <sup>3</sup> Ibid.
- <sup>4</sup> Accenture Strategy Ecosystems Research, May 2018.
- <sup>5</sup> Accenture Strategy Analysis, 2018.
- <sup>6</sup> Accenture Strategy Ecosystems Research, May 2018.
- <sup>7</sup> Ibid.
- <sup>8</sup> Ibid.

The chart on page four shows the improvements in return on investment that advanced analytics can deliver over baseline expectations. In the area of portfolio management, companies can expect an 8 to 10% gain in capital efficiency, which translates into a baseline ROI improvement of 0.8x. In the area of development, a 10 to 20% reduction in Capex spending and a 5 to 10% gain in productivity translates into a baseline improvement of 2.1x. In the area of operations, reduction in Opex spending and productivity gains translate into a baseline improvement of 0.6x. And finally, in the area of commercialization, a 2 to 5% margin improvement brought about by advanced analytics translates into a baseline ROI improvement of 0.3x. In total, these financial and productivity gains translate into a system-wide baseline ROI improvement of 3.8x.

## About Accenture

Accenture is a leading global professional services company, providing a broad range of services and solutions in strategy, consulting, digital, technology and operations. Combining unmatched experience and specialized skills across more than 40 industries and all business functions—underpinned by the world’s largest delivery network—Accenture works at the intersection of business and technology to help clients improve their performance and create sustainable value for their stakeholders. With approximately 442,000 people serving clients in more than 120 countries, Accenture drives innovation to improve the way the world works and lives. Visit us at [www.accenture.com](http://www.accenture.com).

## About Accenture Strategy

Accenture Strategy operates at the intersection of business and technology. We bring together our capabilities in business, technology, operations and function strategy to help our clients envision and execute industry-specific strategies that support enterprise-wide transformation. Our focus on issues related to digital disruption, competitiveness, global operating models, talent and leadership helps drive both efficiencies and growth.

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