Viewpoints on Innovation

Surviving in the New Normal: Digital Tactics for Oil & Gas Leaders

by Chris Barnes and Sagar Asalapuram

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At Kalypso, we regularly publish objective, pragmatic advice for business leaders seeking to improve results from innovation. In these unprecedented times, priorities have shifted, and companies need ways to reduce near-term risk and transform to deal with the impacts – both today and tomorrow. Despite rapidly changing external factors, you still need to run your business and take actions to adapt and survive.

Thinking ahead, when the crisis of today is behind us, our world (and our businesses) will look different. As companies, industries and economies recover, coping with that change and continuing to adapt for the future will become more important than ever.

We hope you find this article useful as you think about what you can do to reduce your risks today and prepare for the future. When you're ready to move forward, we're here for you. In the meantime – stay calm, stay safe, and focus where it counts.

> "It requires a better type of mind to seek out and to support or to **create the new** than to follow the worn paths of accepted success."
>
> John D. Rockefeller, Sr.

There's no denying that the oil & gas industry is facing unprecedented challenges. Both the supply and demand sides have seen extraordinary shocks with the COVID-19 pandemic depressing demand and a global price war for market share limiting supply cuts. Many operators have cut CapEx 30+%, job losses are estimated to top one million, the EIA is revising price projections downward with every monthly update, and this week marked an

unimaginable first in the oil futures market – a brief period of negative WTI pricing. The word of the day in this crisis is survival, and companies are focusing on how they can make it to the other side.

But this industry is resilient. It constantly adapts to changing market conditions to survive down-cycles.

There will be an 'other side' to this crisis.

While we're focused on survival today, we also need to be looking forward. The strategies of old may not work in the new normal. The right question to ask now is… what survival tactics will give us the competitive advantage to thrive in an uncertain future?

In response, leading businesses question inefficiencies in the status quo and take action to secure sustainable operational improvements. In the near-term, they ask how to adapt to ensure employee health and safety while productivity continues. Looking forward, they ask how the business needs to look different, and what should be done now to prepare for the future. And along the way, they look to digital technology for the answers.

'Create the New' with Digital

The oil & gas industry has always innovated in an increasingly demanding physical world: seismic interpretation allowed us to visualize the subsurface; hydraulic fracturing amplified potential from low-quality ro--ck; horizontal drilling enhanced our contact with the reservoir.

In the new normal of heightened market uncertainty, companies need to continue innovating to learn how to operate on slim margins with low prices. Cost-cutting realized through staff reduction provides immediate decrease in capital employed; but to achieve sustainable, high-value returns in the long run, companies also need to look at transformational ways to redeploy capital. The World Economic Forum estimates that digitalization has the potential to create $1 trillion of value for oil & gas firms through 2025. This is the time to shift priorities toward digital transformation and unlock the power of data.

Companies can leverage data from their connected devices in the internet of things (IoT) to push innovation forward – they can survive today with remote monitoring capabilities, and they can prepare for tomorrow with big data analytics, machine learning (ML) and artificial intelligence (AI). With the insights gained from these connected operations, a marginal field can become economic.

But a successful digital transformation is a journey, and here are three key actions to help get there:

- Convert infrastructure from **physical to digital**
- Change mindsets from **reactive to predictive**
- Embrace new business models and **lead as change agents**

Empower a Digital Workforce

This industry benefits immensely from technologies that improve productivity and worker safety. In a digital workplace, repetitive tasks are automated and visibility into operations is clear, workers are freed up to do more with less, and operations teams can shift to higher-value priorities.

These advancements are realized today as digital innovation accelerates the accessibility of affordable sensors and connected networks that provide higher volumes of operational data much faster. Insights from these data lead to more accurate real-time decisions that drive operational efficiency improvements to reduce cost, enable sustainability and maintain a performance edge.

Here are a few common tactics to empower a digital workforce, and what these tactics look like in action.

Tactics	In Action
Remote monitoring and automation systems help limit physical exposure to production sites	Automated systems for production chemical injection maintain flow assurance while minimizing windshield hours and site visits
Transparency in operations enables workers to make more rapid decisions with higher accuracy	Digital dyna cards can be evaluated to help diagnose the root cause of a pump failure
Fully virtualized **digital twins** accelerate the learning curve with minimal investment by allowing for validation and optimization tests of changes to equipment in the field, prior to implementation in the production environment	Production engineers can test well performance changes on IPR/OPR curves to optimize gas lift allocation prior to making the change in the field
Cyber-physical asset tracking reduces waste in supply chains and enhances inventory management	Eliminate parts that 'grow legs,' and reduce downtime with real-time information on critical components

Augment the Workforce with AI

We need to re-engineer our business models to become AI-first organizations. Augmenting operational transparency with predictive and prescriptive analytics shifts the mindset from reactive to proactive.

While connected sensors afford greater visibility and faster decision-making, the transition from reactive to predictive requires an injection of AI into the IoT. It means combining subject matter expertise with computational horsepower to understand multivariate relationships in the data. Advanced analytics, AI and ML help companies tap into the industry's vast troves of information to uncover actionable insights. Digital leaders are finding step-change operational improvements from condition-based maintenance programs and prescriptive optimization of control systems.

Here are a few of those tactics and how they come to life.

Tactics	In Action
By identifying leading indicators of equipment failures, **predictive algorithms** can alert personnel and prescribe changes to operating conditions to minimize unexpected downtime	AI-enabled compressor stations notify the control room prior to failure and allow operations personnel to take mitigating actions that minimize or eliminate the downtime event
Augmenting physics-based models with AI, **optimization algorithms** learn from operational data to prescribe control parameters that maximize asset performance	Leveraging AI in drilling operations enables faster and more consistent ROP while maintaining safer operating conditions
Image analysis and pattern recognition can automate manual evaluation of unstructured data sets	Faults, fractures and structure can be more quickly and accurately mapped by combining AI and ML with human expertise, improving sub-surface understanding and optimizing hydrocarbon exploration and development

Beyond Digital: Preparing for the New Normal

In this increasingly data-rich industry, we need to rapidly scale capabilities and escape proof-of-concept purgatory. Enterprise scale and value requires commitment from leadership.

Most oil & gas companies have started their digital transformation and have built (or are in the process of building) a foundation for connected supervision and control systems. Many AI-enabled use cases have been identified, built and validated. But successes so far have largely been siloed within business units.

To sustain and thrive in the new normal, we need to harness opportunities with digital across the organization. This starts from the top – with CXO's as change agents. With the right tactics and a focus on business outcomes, digital leaders can leverage solutions and methodologies across platforms to efficiently scale up enterprise-wide deployments.

Here are a few areas for focus:

- **Enhance usability.** Ease of use starts with smart data governance and permeates through user experience design. Putting the right tools in place can maximize the value of data.
- **Foster innovation.** Encourage an agile culture of rapid experimentation and product delivery. Support teams in creating the new, rather than anchoring to a specific approach.
- **Business-oriented development.** Don't lose sight of the business value. Identify needs and prioritize digital solutions for faster, more impactful business outcomes.
- **Consider partnerships.** Strong outcome-based relationships can accelerate value realization while maintaining focus on core operations.

Conclusion

While this crisis feels like an unprecedented difficulty, we expect the oil & gas industry to endure the same as it has in the past. Rather than the challenge, let's focus on the opportunity.

With continued ingenuity and expanded use of digital technology that's in the field today, this industry can learn to survive on $20 oil and thrive with $30 oil. Actions taken now in preparation will reap rewards on the other side.

What opportunities are you going to seize in these challenging times to **create the new**?

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About the Authors

Chris Barnes

Chris is a Manager at Kalypso with seven years of upstream oilfield experience in Operations and Engineering. Chris is passionate about helping companies realize sustained operational results though data-driven insights, organizational change and digital transformation.
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Sagar Asalapuram

Over 12 years experience assisting clients attain sustainable results through successful implementation of transformational business process and organizational change with a focus on Industrial IoT and Machine Learning technologies.
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