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# EXECUTIVE BRIEFING: WHAT O&G DIGITAL MEANS TO IT

Michael O'Sullivan, April 2020

## Changing the game

Much has been said about what's been happening in the oil and gas industry. In the wake of the 2014-2015 downturn operators made the fundamental adjustments needed to survive in the "new normal" of considerably lower crude prices. But once they got out of the red, they found that the overall economics had changed and investors had new expectations.

Now in early 2020 we have more market volatility and a bigger push for cleaner and greener pursuits. As the pressure intensifies so does the need for innovation. In a short time the idea of digital strategy has gone from buzzword to bedrock in the reinvention of business models and operations in many sectors. Though lagging at first, oil and gas companies are now quite serious about digital transformation.

## What the business wants from digital

While the most seasoned leaders in any industry are cautious about technology trends, O&G people are especially well known for "boldly going where everyone has gone before" (John Gibson, former CEO Landmark Graphics, Halliburton Energy, Paradigm).

But the caution is for good reason. This is a business where a single decision can determine whether a billion dollars of capital is put to good use or put out the window. It's also an industry where decisions made today play out over a decade or more of hard work.

Against that backdrop, we now have oil companies embracing digital strategies as the way forward. From newly sanctioned deepwater projects to the consolidation of shale plays, many of these digital initiatives require similar IT computing capabilities:

- **Advanced analytics** - Harnessing real-time data to derive insights, close loops and optimize operations across the E&P lifecycle.
- **Autonomous operations** - AI-driven functions from drilling and processing to pipeline and refining, especially in remote, high-risk environments.
- **Digital twins** - Modeling entire assets to simulate complex scenarios and make decisions that dramatically reduce risk and improve outcomes, both now and years out.
- **Global collaboration** - For any given asset, disparate teams working faster with better results across disciplines, geographies, and even companies.

## What digital wants from IT

Many of these digital initiatives are still in the lab — PoCs, prototypes, and the like. As these projects become reality, many smart people work long and hard on the computing and data storage requirements for each particular solution. To be sure, new IT innovations make it possible to do things that were long aspired but never possible.

While these advances hold great promise, the method for operationalizing them is a separate matter. In a recent survey of companies pursuing digital transformation, 70% of respondents said the progress of these efforts has already slowed or stalled — and of those 38% stalled during scaling[1] .

As digital initiatives gain momentum, the implications for IT are non-trivial, especially in a complex, highly technical industry where cycle times span years. For most O&G companies so far, the digital transformation of core capabilities has been largely piecemeal and not applied holistically[2]. And while rapid prototyping works in many sectors, capital-intensive businesses cannot afford the trial-and-error approach or simply to invest in multiple technologies to solve the same problem[3].

To overcome the stall and begin to realize business value, IT organizations must rise to the occasion. And they must do so at the speed of business.

What this means in practical terms:

- Moving data intelligence across functional silos where there is virtually no similarity of data format or context.
- Bi-directionally connecting IT and OT systems and networks (historically difficult if not impossible).
- Deploying, securing, and operating these solutions across complex environments at scale, over time, with many more actors and far more data than ever before.
- “Distributed everything” architecture — especially challenging with highly technical applications, geographically dispersed facilities, and harsh environments.

1. McKinsey & Company,How to restart your stalled digital transformation, March 2020
2. Accenture,Fueling the Energy of the Future, 2019
3. Deloitte, From Bytes to Barrels, 2017

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There is plenty of good advice from consulting and research firms on how to pursue a digital strategy. One common theme is to use an iterative development approach that fits within an overarching global deployment plan. This is particularly essential for something as massive and fragmented as the E&P lifecycle. Agile development is the key to progress, while enterprise design is the key to sustainability.

## IT transformation, lessons from the past

Those who remember the IT boom of the 1990s also remember the chaos that ensued as enterprises adopted and deployed new technologies at a dizzying rate. A 1997 McKinsey article entitled "Escaping the IT Abyss" reads as follows:

There's a sense of despair these days in the boardrooms of companies struggling with IT. They are all too aware that information technology is vital to strategic success. Yet their application portfolios are inflexible and difficult to maintain. Their technology infrastructures are complex and hard to reconcile. And their IT organizations are overburdened, overstretched, and overwhelmed.

While it was certainly true twenty years ago, many IT groups today are again feeling the early symptoms of this condition. A few years later in 2001 an SPE article quoted a supermajor who had experienced post-ERP frustration:

In 1998 we implemented an enterprise resource planning (ERP) system. Although the ERP system brought greater functionality and some integration, we were still left with hundreds of legacy systems and inconsistent data practices.

From this jumble of applications and databases emerged the discipline of "enterprise architecture" — a set of standards, patterns, and best practices for creating a unified set of systems that could be effectively operated and supported at scale, over time.

We now need the next IT renaissance. Digital transformation is driving a new wave of innovation, where the first few years involved the usual amount of hype and perhaps no cause for alarm within a solid, well-running IT operation. But the business value is surfacing around a set of key objectives, and nowhere does this create more operational complexity than within the oil and gas industry. Without a well-planned enterprise approach, the overwhelming jumble will likely return at a time when oil companies are most dependent on these new technologies.

And so it follows that IT must again transform to deliver a platform on which all of these innovations can realize the intended business value. It's time to bring the concepts of enterprise architecture to the digital roadmap. This means planning and designing a modern computing and data management infrastructure as the underlying fabric for real digital transformation.

IT transformation also means rethinking organizational roles and skillsets, along with processes and methodologies for continuous delivery in a new paradigm. Today's most modern platforms reward the generalist because they simplify and abstract the

complications that traditionally require specialized skills. This enables IT groups to free up human capital for higher value activities, but it also requires people who are eager to retool and evolve their skills. IT groups must embrace new ways of working if they are to enable the same for the business.

## Why Nutanix

Digital success means you have to run these solutions after they come out of the lab. Once the prototype is done, how do you operationalize it to actually produce business results? To deploy and support at scale and over time, across disciplines and geographies, from the data center to the edge to the cloud — it's as important as the innovation itself. All the stakeholders — business, IT, and OT — must collaborate and design for the future.

This new world is one where the tried-and-true of the past is not sufficient. For a time, public cloud stood alone trying to solve the platform problem, but it was soon evident that public cloud is not the answer for everything. While some industries can rely almost exclusively on a cloud-based approach, oil and gas comes with a global complexity that requires the best each computing environment has to offer. And it all has to be planned and managed as a cohesive, integrated platform — something we at Nutanix call Enterprise Cloud.

While many innovators are solving specific functional challenges, Nutanix has the unifying platform. Our software portfolio creates a high performance, well-orchestrated foundation for all types of applications. Infrastructure becomes invisible. Deployment is fast. Data moves through a pipeline that is secure and connected — from the cloud, to data center, to the edge.

It's a perfect platform for the new wave of IT generalists who want to focus on activities that drive business value. Nutanix customers can get out of the weeds of traditional system administration and into a rapid rhythm of agile delivery.

Nutanix also enables a highly flexible deployment model, so IT leaders don't have to make multi-year decisions today about where to run what. Whether it be public cloud, HQ, or remote office, deploy now wherever it makes sense and start reaping the benefits. Then relocate workloads over time as things evolve and change, without major disruption and rework.

This is why Nutanix has a seat at the digital strategy table. We have the computing infrastructure of the future that can operationalize the digital solutions of the future.

## AUTHOR 'S BIO:

Michael is the Nutanix oil and gas industry lead based in Houston. His career spans more than two decades working with business and technology leaders to build capabilities across key operations. In recent years he lead teams of digital innovators in O&G technical disciplines such as seismic interpretation, reservoir simulation and subsea planning. He publishes a series of thought leadership articles on his LinkedIn Blog. and he can be heard on podcasts from the Oil and Gas Global Network.