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The Digital Oilfield Culture
Transformational Value for the Organizational Ecosystem

By one account, the Digital Oilfield global market is forecasted to grow from $20.10 billion in 2016 to $27.10 billion by 2022. Value is expected to be realized from enhanced production, workflow process optimization and significant reductions in unplanned downtime.

Much has been written regarding opportunities for value, including by this author. In the June 2018 edition of this publication, our article *System of Systems Asset Lifecycle Performance: The Internet of Things Meets Augmented Reality* articulates four areas of value that operators can realize from digitalization:

- **Digital Platform** – Potentially enabling innovation exponentially faster at one tenth the cost
- **IT – OT Convergence Across Ecosystems** – Up to 25% increase in automation and productivity
- **Predictive Analytics** – Potential for 30% improvement in asset availability and process optimization
- **Augmented Reality** – 30% to 50% improvement in human efficiency

These numbers are staggering and the potential enormous. The energy sector is struggling with a long-term low commodity trading range and disruptive changes with its workforce as well as societal pressures, *aka* Safety, Green, etc. Successful implementations of Digital Oilfields (including cyber security) is imperative. This may be the difference between strong Balance Sheet supported by good margins and the organization's demise.

However, many digitalization initiatives do not deliver expected returns. There are many reasons for these failures including poor project management and unrealistic goals coupled with poor metrics, etc.

The consulting firm McKinsey writes, "Most digital strategies don't reflect how digital is changing economic fundamentals, industry dynamics, or what it means to compete." In other words, this is a cultural metamorphosis – very different from the ERP rollouts of the past.

Cultural Transformation

Change management initiatives fail at similar frequencies as IT projects. Often the two are tied together as management seeks to use new tools enabling the long-sought value believed available.

Many transformational efforts are actually simple change management. One can argue that the adoption of a new technology may only be changing the way we interface with a machine.

A case in the recent news. Sears Roebuck is the original Amazon. Readers received a catalog of goods, made their selection and mailed their order and payment. Sometime later, the package would be shipped and received.

Essentially, this is the same business model used by Amazon today. Work processes are faster and their organizational cost structure lower; however, the fundamentals are basically the same.

So why did Sears fail? Why did IBM lose the PC operating system to Microsoft? The list goes on as all economic actors have access to the same technologies, yet some are winners and others, losers. Management misses the point when it attempts to change the way we do business from only a process perspective.

An organization's culture can be defined as, its "Who We Are." The culture must be transformed as well.

Culture is a set of shared values and beliefs often evolving over many decades or even longer. As such it has a certain level of resiliency or tendency to 'snap back' to its stable state.

Cultural transformation changes the '*Who We Are*' part of the equation

So, what is a Digital Oilfield Culture?

An environment where humans oversee the digitalized enterprise is different from one where humans make decisions from data and information generated by machines. There are no instances of a full upstream digitalized ecosystem at present. However, there are business models that are appropriate to adopt for this new era.

High Reliability Management has been widely adopted by critical infrastructure sectors such as medicine. That sector defines these five HRM principles for providing world class health care:

- **Preoccupation with Failure** – Good judgment is critical to provide patients with the best care and absent-mindedness can lead to death

- **Reluctance to Simplify** – Understand that organizations and processes are complex and be careful not to over generalize as patient health depends on these capabilities
- **Sensitivity to Operations** – Focus on understanding the rationale behind policies and protocols and look for ways to improve performance in healthcare delivery
- **Commitment to Resilience** – Respond to setbacks and consider them opportunities for improvement in patient care
- **Deference to Expertise** – Contribute evidence-based expertise when you can and defer to those whose knowledge is greater as necessary for the best patient care

One example of HRM in healthcare is the Ebola crisis of 2014. Readers may recall that there was fear of a pandemic in the USA following the arrival in Dallas, Texas of an individual from Liberia. The pandemic never happened and in this writer's opinion, that sector followed these five principles and contained the outbreak.

HRM requires a robust organizational governance model. We have coined the term Strong Bond Governance to define the role of senior executives and the Board of Directors in the critical infrastructure sectors required by High Reliability Organizations.

The upstream sector has been slow to adopt HRM. However, these principles are well suited for an organizational ecosystem where its members depend on digitalization to enhance their Bottom Lines. Markets are competitive with little expectation of help from higher commodity prices.

We have previously defined a Safety Culture and adapt that definition as follows for the Digital Oilfield Culture.

Internalizing the New Culture

Missing in most discussions about the Digital Oilfield is how do you sell it to employees, customers, suppliers and other stakeholders. Management must answer the **"What's in it for Me"** question!

From a marketing perspective, creating and sustaining Digital Oilfield Culture is all about branding. A branding strategy provides an organization with a sustainable competitive advantage that differentiates the organization from its competitors. This is exactly how most see their organization's culture.

As part of a branding strategy, organizations often develop a Brand Wheel. Its construct is very straightforward and encapsulates both the hard 'Fact" side as well as the more emotional "Personality" of the product or solution. The process of going through this procedure is usually best done through a series of workshops.

Input can come from focus groups and/or other input from end users, employees, management, the public, regulatory agencies and other stakeholders. We define these individuals as 'ME.' It is important to

> Systemic Digital Oilfield Culture can be defined as the Core Set of Values and Behavioral Economics of ALL participants of the extended organization and its Enterprise Risk Management strategy that reflect a Strong Bond Governance commitment to behaving as a High Reliability Enterprise Ecosystem in a Safe and Environmentally responsible manner.

understand that the constituents are *people* and not their organizations – people buy from people!

Around the core "Brand Promise" (Digital Oilfield Culture) readers will find answers to four questions:
Facts & Symbols
- What the Product (or Solution) does for **ME**
- How **I** would Describe the Product (or Solution)
Brand Personality
- How the Brand makes **ME** look
- How the Brand makes **ME** feel

For example, BMW brands their automobiles as, "The Ultimate Driving Machine." This answers the question, "What's in it for Me" very clearly. A Digital Oilfield Culture must be this understandable for its stakeholders as well.

The following figure depicts this approach towards branding the Digital Oilfield. It addresses all needs of participants in the ecosystem. Interested readers are invited to customize it to their situation.

Space precludes a detailed review of the components named below but all of them are discussed herein. While it may appear to be complex, working through the process is straightforward. Moreover, developing the construct is interactive but when the first version is finalized, it will set the stage for a successful transformation.

This model helps management assure that stakeholders 'Buy In' to the new culture, thus removing the 'Snap Back' resiliency. Since most change management models do not include this process, success becomes fleeting. It is worth the time and energy required to complete the exercise.
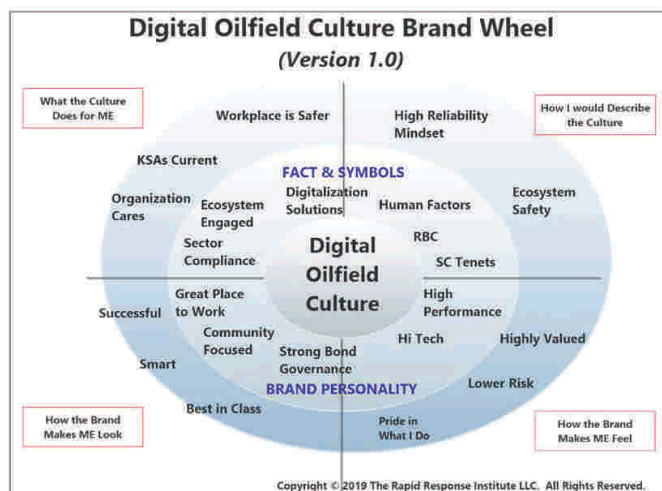
Implementation Guidelines

The Digital Oilfield is all about the relationship individuals in the ecosystem have with each other and the technology automating field operations, among other tasks. However, a new or different Relationship is dependent on changing Behaviors and situational Conditions.

Human relationships are a function of the environment one finds themselves in and the behaviors of others in that environment. For a Digital Oilfield, management needs to understand that humans will also have new/different behaviors with machines.

Conditions will be different when digital decisions are made independent of human operators. No amount of change management processes will be effective unless organizations understand and train personnel for their new behaviors in this new condition or environment.

This **R B C** construct must overlay any implementation approach. Failure to understand these dynamics will most likely negatively impact the initiative.

Digital Oilfield Culture Brand Wheel (Version 1.0)

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Most importantly when individuals interact with digital devices and processes, Human Factors need to be addressed. In the Digital Oilfield context, this is defined as how humans behave physically and psychologically in relation to particular conditions, digital tools, or processes. If this issue is not actively adopted, Digital Oilfield cultural transformation may be sub optimal.

Knowledge, Skills, Abilities

An automobile with an automatic transmission is easier to drive than one with a standard transmission. Moreover, today's drivers assimilate and process information while rapidly navigating crowed highways. Yet the automobile has not materially changed in 100 years other than the continued advancement of conveniences and safety devices.

Most likely, a driver from the era of the Model T would have trouble dealing with the everyday driving all of us face. As the industry becomes digital, Digital Oilfield individuals' KSAs will need to evolve as well. Those on a technical track will need to stay current. Those in management will need to understand new work processes and technologies very well. This includes top management – Strong Bond Governance.

One example; humans will need to understand when a highly automated process must be interrupted manually, i.e., taking control from a driverless automobile. What if he or she is mistaken in that decision? As with the Safety Culture Tenant quoted below, there needs to be no negative repercussions for honest mistakes. "A work environment is maintained where personnel feel free to raise safety and environmental concerns without fear of retaliation, intimidation, harassment, or discrimination."

Overseeing the automated and complex processes of digitalization requires additional KSAs from those used to manage today's process control systems – HRM is a better construct. Individuals will still drive the Digital Oilfield automobile, but it may then be the ultimate driving machine!

Final Comments

To put things in perspective, if the Digital Oilfield market forecast is correct, in 2022 the upstream sector will spend almost as much as ConocoPhillips' 2017 revenue or approximately 10% of ExxonMobil's in that period. Troubling; by some accounts more than 70% of IT projects are perceived as failures.

While the promises of the Digital Oilfield are attractive, history suggests that unless something changes rather dramatically, the destruction of shareholder value may approach appalling levels. Certainly, the promised greater Earnings Per Share (EPS) and Competitive Advantage will not materialize.

The approach towards cultural transformation described herein will help assure every individual in the ecosystem will have a good '**What's in it for Me**' experience. This will then be reflected in a strong, sustained Digital Oilfield organization culture – *Who We Are*.

In an era of low commodity price points the organization's culture is key to not just thriving, but surviving. Management owes all stakeholders (include employees every step of their careers) no less than successful transformations to this business model and new ones that will undoubtably be forthcoming. As the saying goes, "the only constant is change." 🅿️

About the Author

Dr. Scott M. Shemwell, Managing Director of The Rapid Response Institute is an acknowledged authority and thought leader in field operations and risk management. He has over 30 years in the energy sector leading turnaround and transformation processes for global S&P 500 organizations as well as start-up and professional service firms. He had been directly involved in over $5 billion in acquisition and divestitures as well as the management of significant projects and business units. He is the author of six books and for over a decade, he and his firm have helped clients adapt to the dramatic changes impacting global energy and heavy industry sectors. www.theRRinstitute.com