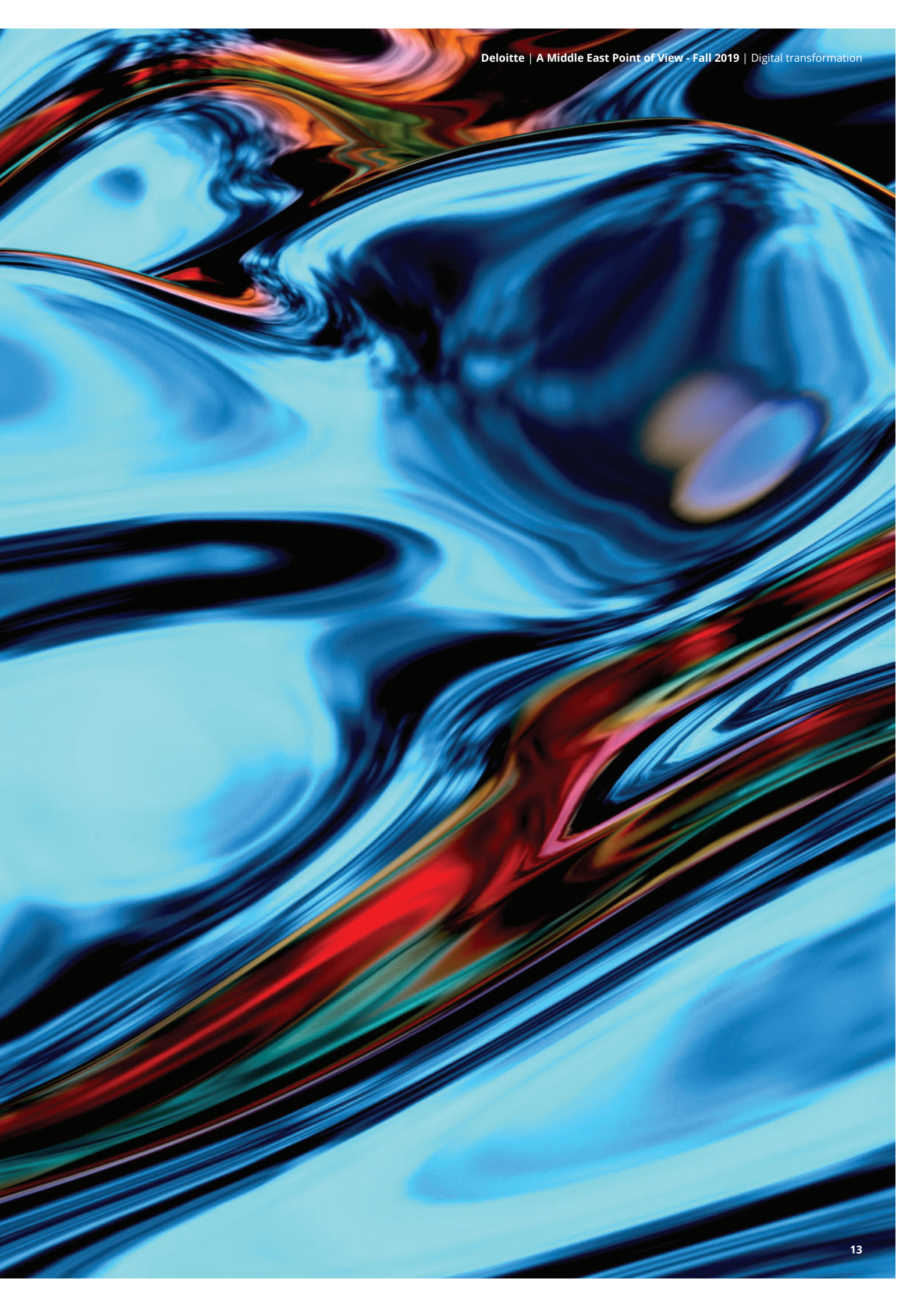


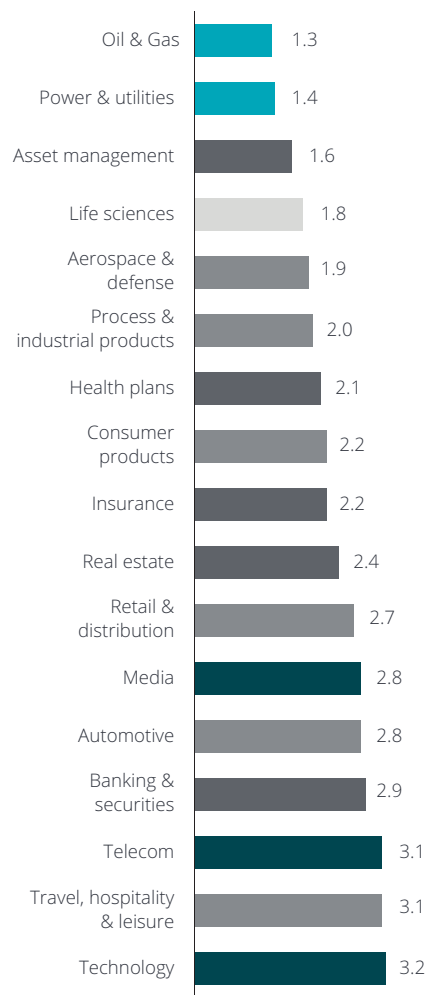
# Standing still is not an option

The oil and gas industry is potentially losing trillions of dollars by not fully embracing digital.



The entire world seems to be going digital, yet according to Deloitte's *Digital Maturity Index*, the oil and gas industry scored a mere average of 1.3, placing itself lowest on the spectrum compared to all other sectors. With technology becoming ever more pervasive and complex and external forces putting pressure on revenues and costs, operating within a traditional and conventional mindset is no longer a viable recourse for upstream oil and gas companies. Standing still is not an option.

**Average digital maturity by sector**



- Tech, media & telecom
- Financial services
- Consumer & industrial products
- Life sciences & health care
- Energy & resources

While some operators have adopted point solutions, such as agile processes or hiring a Chief Digital Officer, failing to fully embrace digital—with a combination of technical and people solutions—is costing the oil and gas industry trillions of dollars in potential revenue.

**Digital and analytics: two faces of the same coin**

We are standing at an inflection point in digital technology. Costs of sensors, data storage and processing are falling. Algorithms are more sophisticated, and processing power is increasing rapidly. The future is driven by data and analytics due to the need to better understand the market, the products, the customers, and the wider society. Digital technology allows for more sophisticated artificial intelligence (AI), which in turn can create data-powered, platform-enabled, cognitive business models, acting as a catalyst for subsequent digitalization opportunities.

Seen from the lens of innovation, digital and analytics go hand in hand. With an estimated 4,300 percent increase in annual data generation by 2020, the opportunities to make use of data differently are prevalent. Insights such as public sentiment analysis, weather data, government and market information, are being combined with AI and cognitive technologies to better analyze and predict demand and introduce new efficiencies that were previously not possible.

Digitalization can revolutionize the entire oil and gas value chain, from exploration to production and onto customers. With an emphasis on data powered by analytics, digitalization can be leveraged for the full automation of production rigs, the consistent monitoring of the flow of

crude and its composition, greater certainty in the discovery of new reserves, visual interaction with virtual representations of the field, and the continuous processing of data with automated decision-making capabilities. Not only does a digital transition improve operational activities, it can also minimize human involvement in high-risk activities across the field, integrate supplier and operator ecosystems to deliver more economical outcomes, and reprioritize activities by using intelligent systems that use real-time, dynamic analytics.

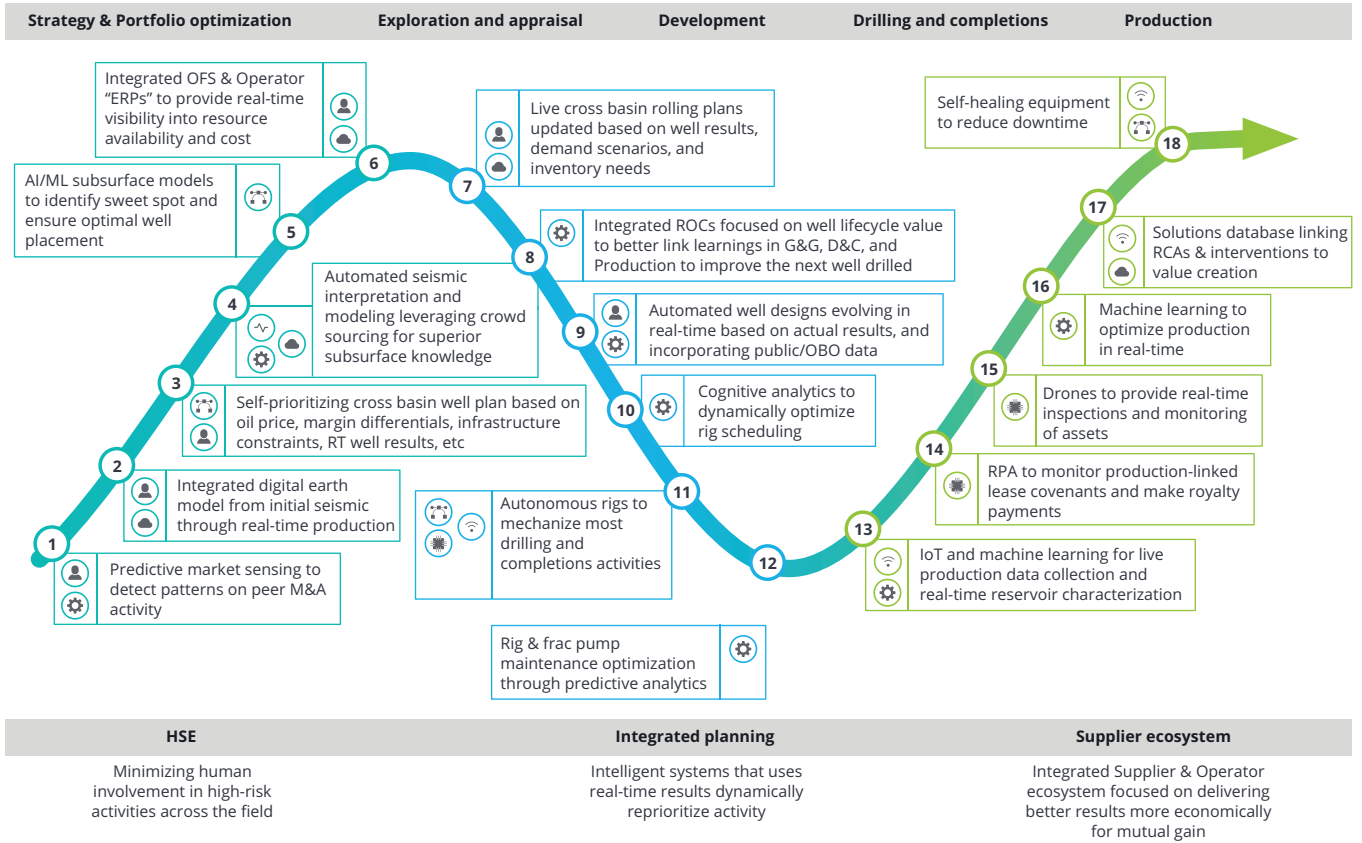
Operating within a traditional and conventional mindset is no longer a viable recourse for upstream oil and gas companies.

**Evolution**

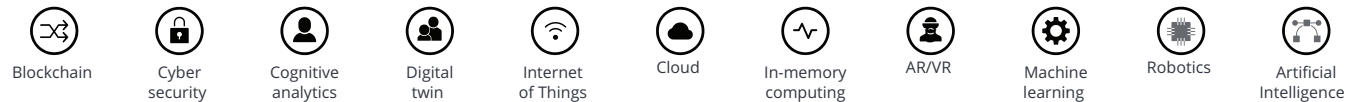
The structure of the industry is being challenged by internal and external forces including pressure on revenues from price volatility, an accelerated energy transition due to demand for lower carbon alternatives, and increased complexity in technology and global trade flows. In light of these structural changes, there is now a need for, among others, pervasive visibility and insights on cost and production, agile field development, and an integrated supplier and operator ecosystem to drive returns.

Yet the sector seems to be biding its time. In its conservative approach to adopt new technologies, it is missing out on the true benefits of digitalization—such as reduced costs, improved margins, and increased revenue, further

Re-imagining how works gets done across the entire value chain of the oilfield...



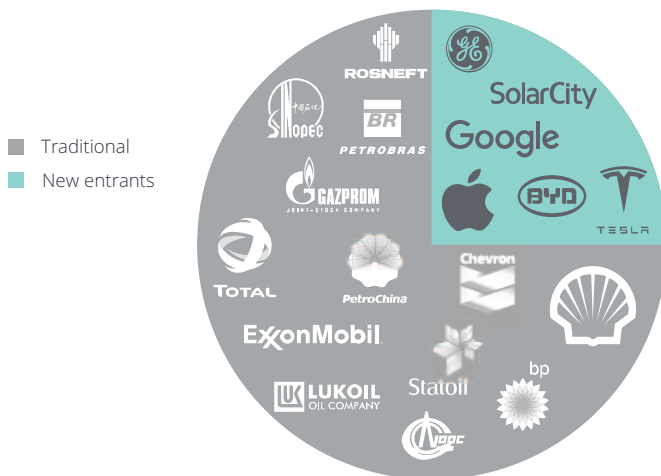
Enabling technologies



exposing oil and gas organizations to external pressures affecting the industry.

**New players, enabled by digital technologies, are rapidly entering and reshaping the industry by disrupting parts of the value chain**

Meanwhile, new, disruptive players are rapidly entering and reshaping the industry through their use of digital technologies. Google, for example, has invested approximately US\$6 billion in third-party energy and mobility-related technologies. Depending on what your vantage point is, these new entrants can be seen as either a threat or an opportunity for partnership and collaboration within the extended ecosystem. ➔



### Are we there yet?

Just as analysis of current market segments or operational processes can reveal opportunities to change the status quo, so too can innovative approaches to analytical solutions help to ensure all data sources and predictive indicators have been built into the model.

Some oil and gas companies have already jumped on the train of digital evolution as they have fundamentally re-imagined and changed how operations are conducted and managed across the entire value chain. Shell has been employing analytics and AI to predict when maintenance is needed on equipment, helping steer drill bits through shale deposits and leveraging real-time data to help geologists chart a more accurate course for the well, boost productivity and reduce drill wear-and-tear. Saudi Aramco has also been employing digital surface and subsurface technologies to optimize field development and operations and has also developed the Reservoir Engineering Integrated Environment tool, designed to help engineers better plan and manage fields and reservoirs.

Operators are at different points on the digital organization spectrum. While some have explored the benefits of digitalization, by leveraging traditional technologies to automate existing capabilities, they have done so with little change to the organization. Other operators have moved towards business, operating and customer models that are optimized for digital and are profoundly different from prior siloed and unsynchronized models.

But when it comes to transforming towards digital intelligence in the oil and gas industry, point solutions don't work. A technical solution that only focuses on digital technologies and agile methodologies while ignoring the people factor, or vice versa, cannot lead to a quick adaptation of, and capitalization on, the gains of digitalization.

**These don't work**

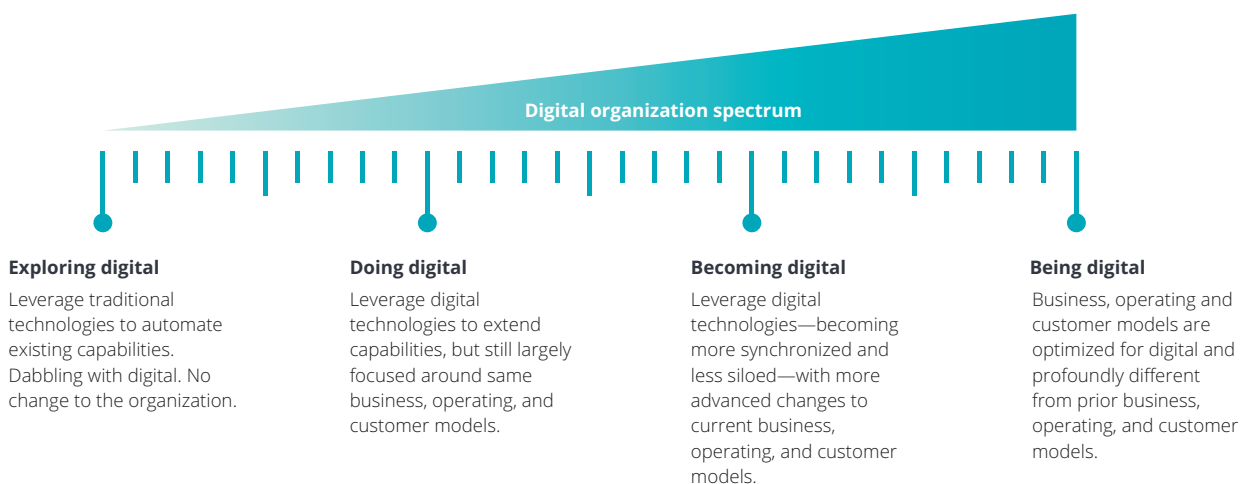
**Immediately jumping into "technical solutions" only...**

- 📊 Focusing only on digital technologies
- 🚀 Hoping implementing agile methodology will be all they need
- 🔄 Calling processes agile but still really operating in waterfall
- ⚡ Declaring digital success based on isolated victory or bursts of activity

**Immediately jumping into "people solutions" only...**

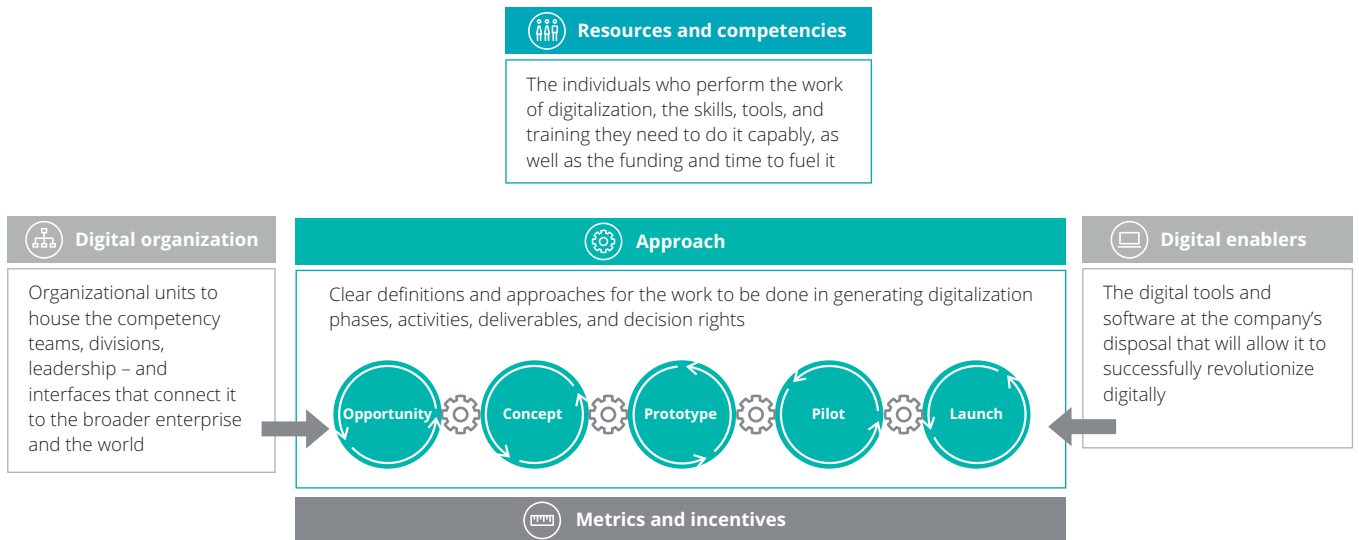
- 👤 Trying to "org design" their way to digital and agility
- 👤 Just telling people to be more agile and innovative
- 👤 Hiring a Chief Digital Officer to solve everything
- 📄 Buying digital skills without also training existing talent

### Operators are at different points on the journey to becoming digital



**Five components of a winning digitalization operating system**

The journey to digitalization is challenging and needs to be driven by a clear strategy and by a combination of a phased and agile approach. Such a winning digitalization system is built on five components:



**Revolution, not evolution**

The oil and gas industry needs to fundamentally re-imagine and change how operations are conducted and managed across the entire value chain and do so without constraint.

As a starting point, organizations within the industry need to define a specific strategy for digital transformation, allowing for an integrated view of where digital delivers value across the business, rather than placing emphasis on the implementation of tactical digital solutions for incremental gain. More importantly, with investment in the right mix of skillsets, upstream oil and gas companies can accelerate and sustain digital transformation in the long term.

With efficiency still the focus, oil and gas companies should be bold and strive to create a culture of experimentation where the model is driven by a “fail fast and learn faster” mindset. A digital

strategy based on strong digital leadership, combined with skilled and capable resources, and an effective operating model, can then allow organizations to harness the full capabilities of digital and generate significant value for all stakeholders involved.

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