Change Management in Oil & Gas:

Steps to Ensure Your Digital Transformation Sticks

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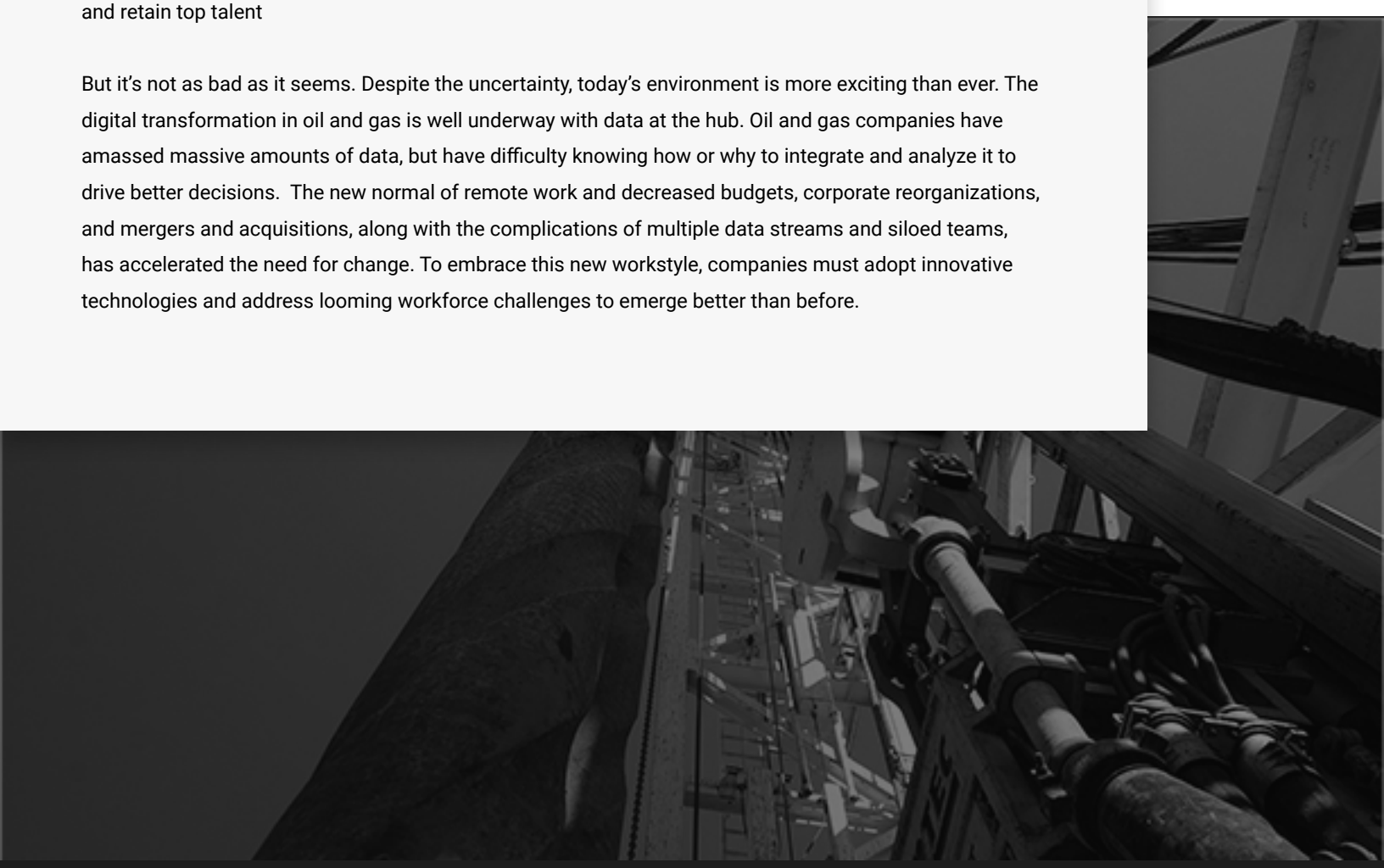
The Inflection Point for the Oil and Gas Industry

The oil and gas industry is at a turning point. Between downturns in 2014 and 2016, the COVID-19 pandemic, and the great crew change, the industry is facing unprecedented challenges. Mounting environmental and political headwinds surround the industry, resulting in a downward trend in petroleum demand that has caused investors to shy away from the sector. According to Rystad Energy, an estimated 120,000 oil and gas jobs were lost in 2020 alone, taking significant knowledge away from the industry. A rising challenge is that the next generation of engineers and geoscientists are increasingly less attracted to careers in oil and gas.

Market dynamics caused by supply and demand uncertainties have forced companies to respond quickly, either shutting in wells or ramping up production as prices oscillate above and below breakeven thresholds. Companies must be more cost-conscious than ever to survive the current market. Simply put, today's oil and gas workforce must get more done with less, and must develop innovative ways to attract and retain top talent

But it's not as bad as it seems. Despite the uncertainty, today's environment is more exciting than ever. The digital transformation in oil and gas is well underway with data at the hub. Oil and gas companies have amassed massive amounts of data, but have difficulty knowing how or why to integrate and analyze it to drive better decisions. The new normal of remote work and decreased budgets, corporate reorganizations, and mergers and acquisitions, along with the complications of multiple data streams and siloed teams, has accelerated the need for change. To embrace this new workstyle, companies must adopt innovative technologies and address looming workforce challenges to emerge better than before.



A New Era in Oil and Gas

The oil and gas industry is (and always has been) an industry of doers–folks who rise to the challenge and achieve amazing results. Over the decades, exploration and production has evolved from conventional land wells to deepwater, remote Arctic regions, and horizontal shale wells in the U.S. The industry has adapted to each industry cycle, fostering abundant and reliable energy to stimulate economic prosperity and power the world.

In each business cycle, there is a convergence of critical technologies that enable transformation. Today, critical technologies like Artificial Intelligence (AI), Machine Learning (ML) and cloud computing are accelerating the digital transformation. Online tools such as video conferencing, chat, and document collaboration and data sharing are bringing the global oil and gas industry closer together, while enabling teams to work more effectively at a higher rate of output. Engineers and geoscientists in the industry have the unique opportunity to leverage data and advanced algorithms to be part of the solution to today's challenges.

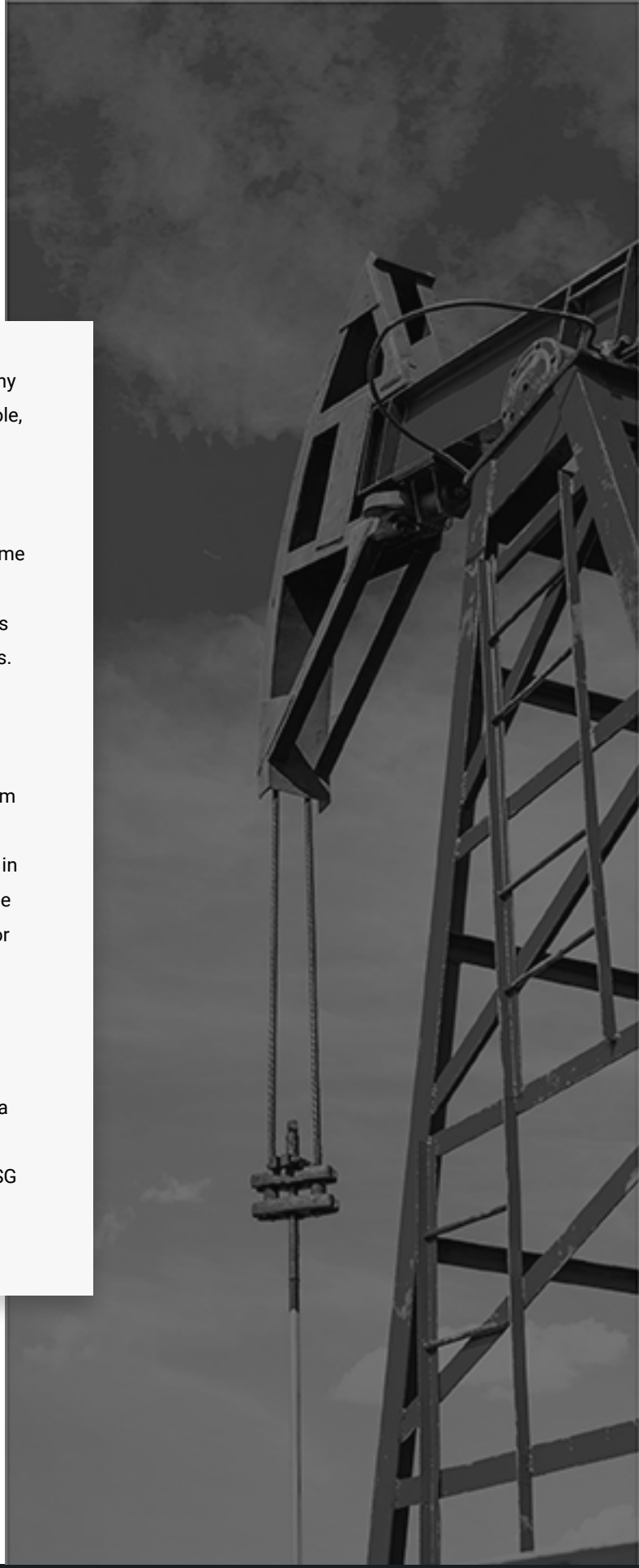
Integrating critical data is the first step of digital transformation. The information universe is massive, with data from different disciplines, teams and systems all influencing the project. When teams collaborate and integrate all critical data and analyses into one actionable platform, they can identify bottlenecks or optimization opportunities across the entire project ecosystem. Viewing all critical data from a project ecosystem–from geology to wells, surface equipment, and facilities–breaks down silos and clearly shows how one process affects another.

Once data is integrated in a common platform, engineers can use ML algorithms and AI for calculations, physics-based models and large-scale data analytics. ML and AI augment an engineer's ability to run calculations that were originally done by hand or with multiple systems.

Engineers are often skeptical of closed, or black box, software, where they have little information about how the program actually works. Today's software is becoming more of a glass box, open and adaptable, allowing engineers to modify algorithms and scripts to get the quickest and most accurate answers. Engineers can incorporate their expertise and intuition into the workflows and algorithms, enabling each user to apply best practices and their personal competitive advantage.

Automated workflows allow engineers to analyze vast quantities of data and make better decisions. With AI and ML, users can quickly analyze and high-grade entire assets or fields. Then, teams can dedicate their technical efforts to the highest-value areas. This is particularly beneficial in situations where teams have limited time to evaluate multiple opportunities, including evaluating for potential M&A, or integrating proprietary data from public sources. Unconventional assets typically have hundreds of horizontal wells, which are often drilled in multiple stratigraphic intervals. Engineers can use AI and ML to consider multiple variables, evaluate completion designs and optimize a drilling schedule across an entire asset. Automated workflows reduce the amount of time spent on manual calculations and analysis, so engineers can spend more time making critical technical and operational decisions while evaluating their financial impact.

Embracing the Digital Transformation



The oil and gas industry is built on tradition and long-term careers. Many engineers have worked for the same company, and even in the same role, for 25 or 30 years. Teams are accustomed to working in silos, where a single individual may have all the knowledge and is responsible for all the answers. These days are gone. Retirements and continued layoffs have forced domain experts out of the industry, often with little or no time to transition and pass on their knowledge to younger, less experienced coworkers. Oil and gas projects are more complex than ever, and teams must collaborate across disciplines in real time to meet their objectives. Companies that leverage and operationalize the digital transformation will emerge stronger than before.

Oil and gas companies are already seeing positive business results from the digital transformation, according to a recent article in the Houston Chronicle. In 2020, energy supermajor Royal Dutch Shell saw $2 billion in profit margin increases, cost savings and production increases because of its digital technology initiatives. The company has used AI to monitor the efficacy of their carbon capture and storage facility in Alberta, Canada, and to quickly analyze seismic, drilling and geologic data. These positive benefits are not only for the super majors but are being realized by U.S. independents and smaller players alike. In their latest sustainability report, Pioneer Natural Resources details how digital data and analysis is being used to lower methane emissions, reduce flaring and improve vapor recovery. This helps the company meet stringent ESG requirements more quickly than required by new regulation.

Creating an Effective Change Management Program

According to The Boston Consulting Group (BCG), companies that want to endure must be skilled at transformation. Companies that fail to transform will not survive. For example, devices that were once at the forefront of the smartphone revolution, like PalmPilot and Blackberry, failed to keep up with changing consumer demands and ultimately became obsolete. Often, the failure is not due to the lack of vision, but the result of poor execution.

A well-implemented change management initiative is critical to the success of the digital transformation. Change management refers to the activities of preparing, equipping and supporting individuals to transform. Transformation includes adopting new workflows and new technology.

The SPE Digital Energy Technical Section's Digital Transformation Subcommittee defines a five-phase change management framework:

- Project Initiation
- Requirements and Alternatives
- Design and Develop
- Deploy
- Support and Sustain

Communication, engagement and training for managers, employees and stakeholders is critical at each phase.

Steps to Ensure a Successful Digital Transformation

In his article on Change Management in Oil and Gas, Frank J. Wyatt cites a stark figure: only one-third of change management projects meet their stated goals. Projects fail for many reasons, but the most common is neglecting to sustain the change after it has been implemented.

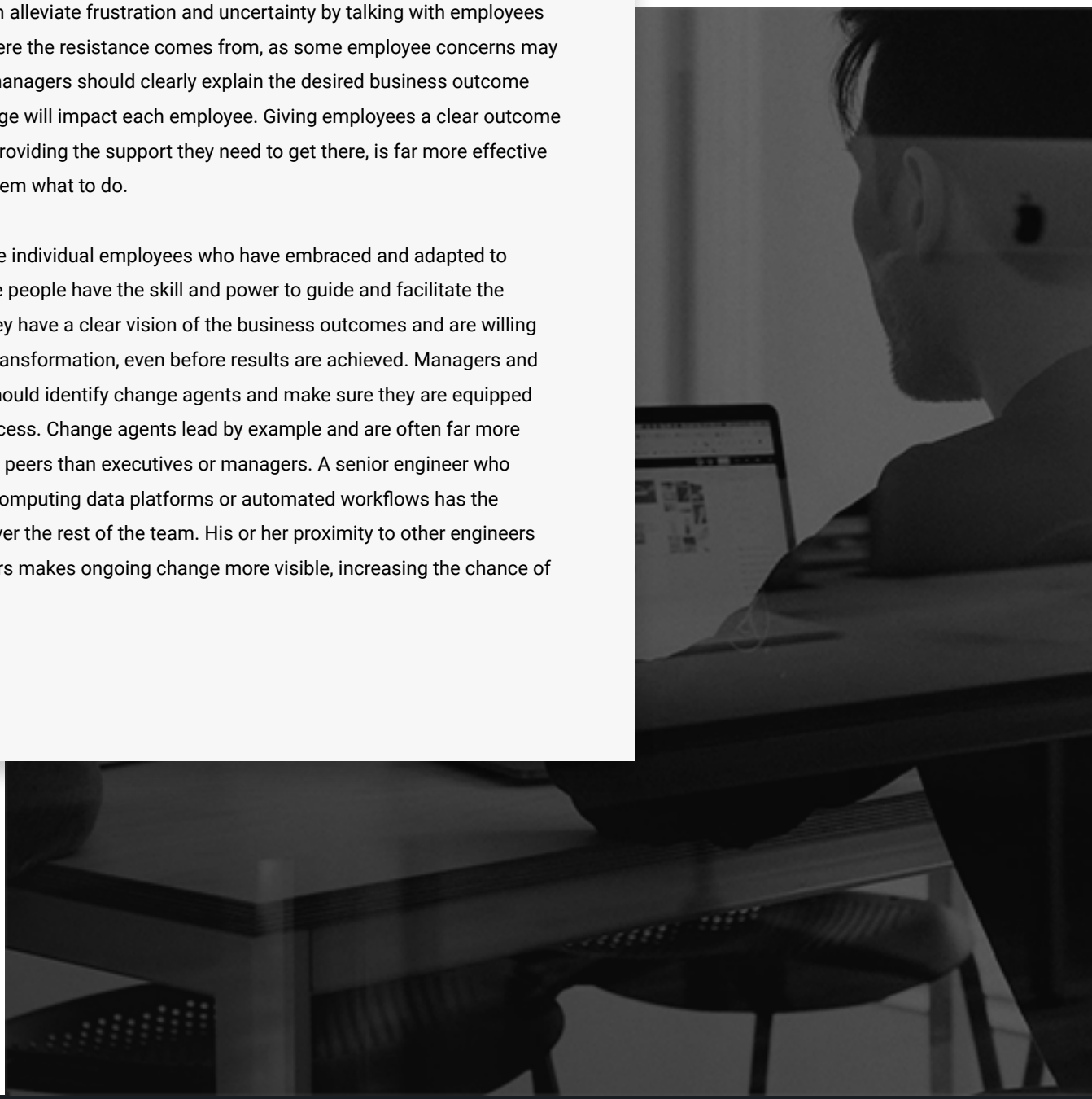
What can project leaders do to ensure success?

- The right team: The change management team should be internal, small and senior. Experience and diversity go a long way. The team should model the behaviors they expect to see and empower employees to execute the change themselves.
- Communication: Companies must clearly communicate the change to employees with consistent messaging. Communication should be personal and two-way, so employees feel heard and understood.
- Buy-in: Employee buy-in at all levels is critical, particularly at the middle manager level, according to organizational behavior professor David Buchanan. Middle managers have more influence on employee behavior and daily operations than executives, giving them the ability to champion innovation and facilitate change.
- Change agents: Identify someone within the most resistant group who has embraced the change. This person can act as a change agent, leading by example and influencing their peers to adapt new behaviors and workflows.
- Adaptability: There is no cookie-cutter solution to change management–each project is unique and requires a different organizational structure. Centralized change management teams involve a small leadership team that guides the entire organization through the change. In a decentralized organizational structure, lower-level management is responsible for the change management initiatives. Executives and the change management team must adapt their roles over time as the project progresses.
- Quick wins: Successes come in small increments. It is important to execute and celebrate quick wins that are material and tangible. This will show the team that results are achievable and that progress will be rewarded.

Understanding Individual Impact and the Need for Change Agents

Many employees resist change because they don't understand why the change is necessary or how it will impact their daily work processes. In today's competitive market, people want to prove their value instead of allowing a computer to do their job. Managers can alleviate frustration and uncertainty by talking with employees to understand where the resistance comes from, as some employee concerns may be valid. In turn, managers should clearly explain the desired business outcome and how the change will impact each employee. Giving employees a clear outcome to focus on, and providing the support they need to get there, is far more effective than just telling them what to do.

Change agents are individual employees who have embraced and adapted to the change. These people have the skill and power to guide and facilitate the change effort. They have a clear vision of the business outcomes and are willing to stick with the transformation, even before results are achieved. Managers and change leaders should identify change agents and make sure they are equipped for continued success. Change agents lead by example and are often far more influential on their peers than executives or managers. A senior engineer who embraces cloud-computing data platforms or automated workflows has the potential to win over the rest of the team. His or her proximity to other engineers and team members makes ongoing change more visible, increasing the chance of lasting success.



Change Management Lessons from Agriculture

The oil and gas industry can learn valuable lessons from other similarly traditional industries. Like oil and gas, agriculture is in the midst of a digital transformation and offers similar challenges. Where farming used to be a labor-intensive process full of trial and error, automated farming equipment, drones, sensors and big data analytics are now commonplace. Digital farms are more cost-effective, efficient and sustainable than traditional farms. But it can be hard to get farmers to adapt–digitizing a farm requires installing new technology, learning how to use it and understanding the business improvements that can be gained.

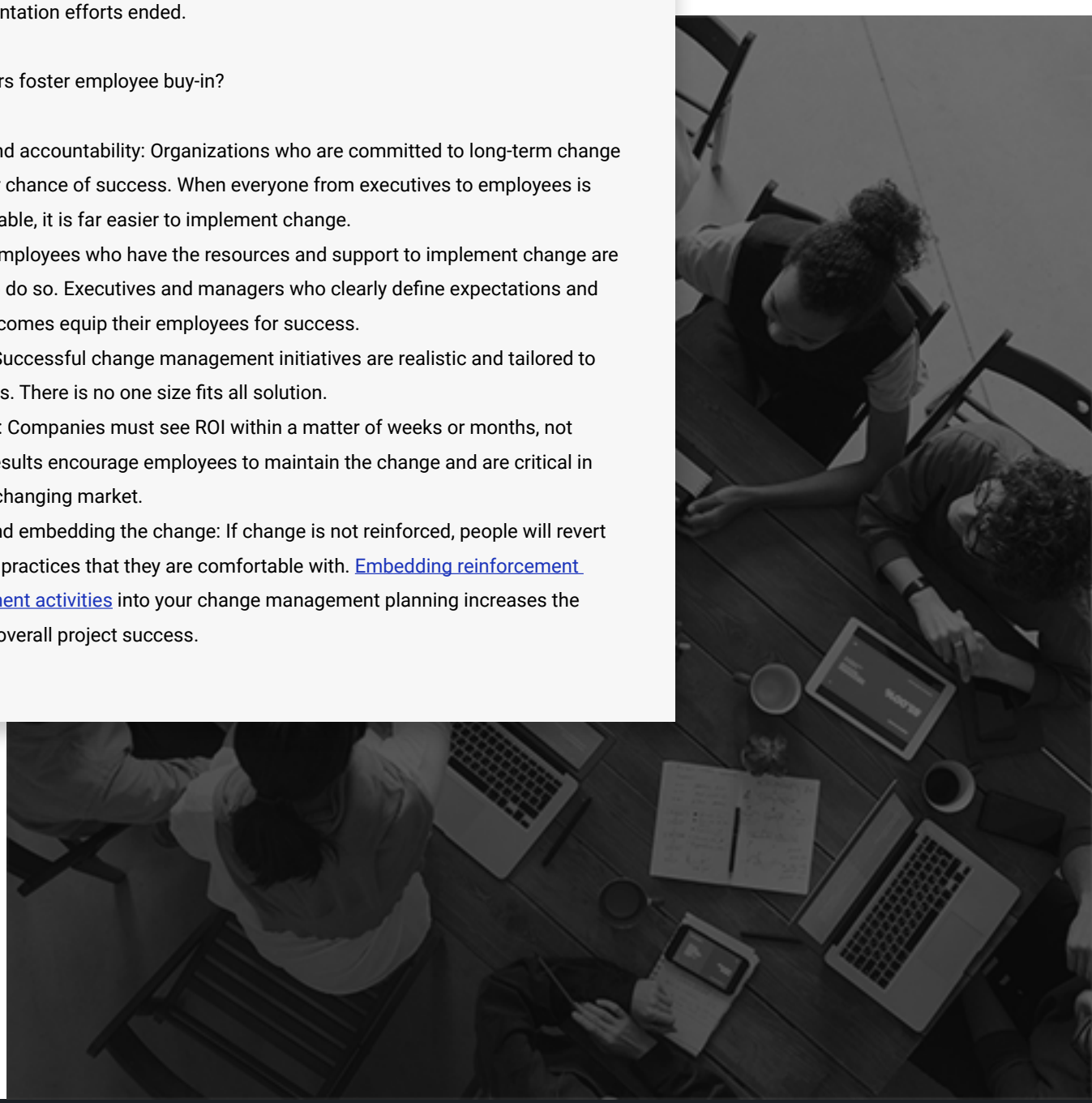
As an example, the father and son team who run Crafton Farms in Tennessee now use satellite imagery to see which areas of the farm need attention. Previously, farmers would examine rows of crops individually to detect problems or crop damage. With satellite imagery, they can quickly identify the problems areas and take action to fix them. This eliminates the manpower-intensive work of physically walking around a field. Farmers can spend more time thinking critically about how to address crop damage and prevent it in the future. In oil and gas, reducing manual calculation time by automating workflows gives engineers a similar advantage.

Successful Projects Start and End with Employee Buy-in

A McKinsey survey of more than 2,000 executives shows that well-implemented change management initiatives sustained twice the level of financial benefits compared to poorly implemented projects. The survey included executives from 900 companies across industries and measured the financial benefits of change management projects two years after the implementation efforts ended.

How can managers foster employee buy-in?

- Ownership and accountability: Organizations who are committed to long-term change have a higher chance of success. When everyone from executives to employees is held accountable, it is far easier to implement change.
- Resources: Employees who have the resources and support to implement change are more likely to do so. Executives and managers who clearly define expectations and business outcomes equip their employees for success.
- Practicality: Successful change management initiatives are realistic and tailored to each business. There is no one size fits all solution.
- Quick results: Companies must see ROI within a matter of weeks or months, not years. Fast results encourage employees to maintain the change and are critical in today's ever-changing market.
- Sustaining and embedding the change: If change is not reinforced, people will revert back to work practices that they are comfortable with. Embedding reinforcement and sustainment activities into your change management planning increases the likelihood of overall project success.



Sustaining Change for Future Success

Big data in oil and gas is complex, but the digital transformation doesn't have to be. Every engineer–from a new hire to a 40-year industry veteran–has unique experience, knowledge and intuition which a software program simply cannot replicate. The role of big data and cloud-based software platforms is not to replace engineers; rather, it is to help them do their jobs better.

Automating repetitive time-consuming tasks allows engineers to spend quality time making decisions and evaluating their financial impact. Data-driven analytics expose a project's risk, support better business outcomes and improve capital efficiency. Agility and cost-efficiency are a considerable competitive advantage in today's market. With these work practices, deciding where to invest Capex and Opex is supported by the best possible technical analysis.

Change is not a quick fix, nor is it a temporary solution. For change to be effective, it must be an integral part of a long-term business strategy and tied to quantifiable results. Companies must communicate with employees and provide the resources they need to adapt new technologies. Long-term change is sustained by employee buy-in, with the help of change agents and support from all managerial levels.

In the new era of oil and gas, companies must stay focused on optimizing their business and executing projects. Ultimately, the industry will reward individuals and companies that embrace the digital transformation.