

# Applied Intelligence:

Revealing hidden skills in your energy workforce

**Headlines abound covering the need to transition to clean energy. Very few, though, cover a key business issue for oil and gas (O&G) companies as they seek to transform: their workforce.**



**Yet, addressing the workforce issue is essential for success. We have observed that most business transformations fail because of the inability to execute the change with people.**

New workforce skills are essential to help O&G companies with more than just the energy transition. As O&G companies shift away from legacy technology and into the modern digital infrastructures necessary to remain competitive, they will need a workforce that brings digital savvy to all aspects of their operations. Add to that society's demand for environmental accountability, a growing scarcity of talent and investor apathy. The result is an energy industry tasked with an agenda for business transformation—change that requires a highly skilled, engaged workforce.



We see a shortage of skilled talent across industries, but O&G has been particularly hard hit for two reasons. First, it's a highly skilled and niche workforce filled with specialized engineers filling complex roles in geophysics, petrochemistry, petroleum geology, drilling, reservoir simulation and artificial lift systems and more. These roles are in even tighter supply than less complex roles in other industries like retail salesperson or foodservice worker.

Second, the energy industry competes for the digital talent it will require with industries like high tech—industries that workforces view as more exciting options. As younger generations continue to make up a large portion of the workforce, they also look for companies who are actively addressing environmental, social and governance (ESG) issues. Energy companies will need to show shared values with this generation and those to come in order to attract and retain a qualified workforce.

# Reskilling the workforce

**Given the shortage of O&G talent and companies' responsibility to their current workforces, reskilling and new-skilling existing employees may be the answer to filling the talent gap. It's also less expensive to skill existing employees versus hiring from the outside. Our research and experience have shown that when companies use our proprietary skills ontology approach to upskill employees, they see **6x cost savings** versus hiring new workers.<sup>1</sup>**

Energy companies employ large internal workforces filled with people who know their company, its culture and its ways of operating. They will need these workers to help them fill emerging roles, which according to our analysis currently account for 34% of all roles.<sup>2</sup> For instance, as electric vehicles become a larger portion of light-duty and heavy-duty vehicle fleets, operators are anticipating the need to re-skill existing retail fuel salesforces to broader category marketing specialists, inclusive of traditional gas, diesel, jet plus renewable fuels and electricity. Many O&G companies are anticipating the need to reskill existing retail fuel salesforces to enable them to become broader category marketing specialists. Many energy workers are eager to continue to further their careers, using their industry expertise. If O&G organizations can retain these workers and reskill them for a more sustainable, clean energy future, they will have a win/win.

The good news is that with applied intelligence—a combination of artificial intelligence, data and analytics—energy companies can map out the new roles and skills required far more easily than in the past. Applied intelligence also allows them to easily update skill and role repositories in real time as the business changes. Data science and skills analytics enable energy executives to map their existing workforces from declining roles to emerging ones, using skills proximity analysis.

More good news—many of the skills needed in the future are grounded in the skills of today. By capitalizing on these skill adjacencies, O&G leaders can help their workforces transition more easily to a new career path.

Our analysis suggests that **35-55%** of existing petrotechnical skills are close to the skills needed not only for the energy transition, but also for new digital operations.<sup>3</sup>

**Reskilling can fill the gaps.**



# Applied intelligence adds greater accuracy, speed and scale

**As energy companies incorporate machine intelligence and automation into their operating models, machines will handle some of the more repetitive tasks previously done by humans, enabling leadership teams to point their workforces toward more intellectually fulfilling and sustainable roles. Applied intelligence will help them do so more accurately, rapidly and at a scale previously not possible.**

Based on robust skill proximity analytics, existing O&G workers have clear career pathways to new, more sustainable roles so they can thrive beyond the energy transition. For instance, our analysis suggests that a **traditional petrotechnical professional has at least three potential paths to fill the emerging energy transition roles.** Organizations who understand emerging roles, articulate opportunities to their workforce, and support workers' reskilling throughout, are more likely to retain and attract the talent needed to succeed.



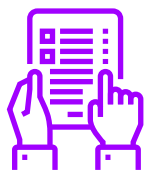
**Our analysis shows that skills are not only shifting in core operations roles, but also in enabling functions supporting the O&G industry.**



### **Core operations shifts:**

Movement away from specialized skills such as deep expertise in petrotechnical areas to broader strategic and analytic capabilities with the ability to optimize across value chains.

**Example:** Process engineers can optimize operations and economics not just for a refinery but for a fuels value chain (e.g., from sourcing crude to racks/terminals).



### **Supply chain skill shifts:**

Increasing emphasis on skills such as manufacturing resource planning (MRP), advanced inventory management systems, and logistics analysis versus traditional skills such as commercial driving, material flow management and operations analysis.

**Example:** As operators diversify their portfolios, they will create more complexity in the underlying materials needed for construction, maintenance and repair, requiring better visibility and insights to maintain inventory levels and minimize working capital impacts.



### **Data and analysis skill shifts:**

Increasing emphasis on skills such as data science, machine learning (ML) and conceptual data modeling versus traditional skills such as manual data analysis.

**Example:** As emissions management becomes a core capability, operators need the ability to integrate Internet of Things (IoT) technology, build the platforms and write the analytics to measure emissions.

# How a global energy company is transforming its workforce strategies to drive growth

**A global O&G company recognized that to stay relevant, it needed to go “all-in” on a digital strategy. The idea: equip workers and managers with new digital skills while creating a culture of learning and development that empowers people to respond with agility to changing market dynamics and drive business results.**

The company’s CEO saw developing employees as key to accelerating innovation, with enterprise-wide digital skilling central to realizing the company’s vision of transforming the workforce—a transformation that would help it better identify and pursue new business opportunities.





Accenture and a core client team co-created a unified digital talent strategy from the ground up, so skill gaps could be identified and addressed across all areas of the business in more than 100 job families. The team created learning paths tied to specific digital focus areas (data analytics, artificial intelligence and machine learning among them), as well as initiatives aimed at fostering cross-functional collaboration.

The digital talent strategy is driving an enterprise-wide culture shift focused on continuous learning, innovation, agility and transparency. In the first 12 months of the program, more than 20,000 employees enrolled in personalized skilling at scale; one-third earned digital badges; and nearly 1,200 employees spent five hours in training. Thus far, employees have spent 18,000 hours completing 112,000 courses.

The initiative has set a clear expectation and understanding of how employees progress in the organization through building and using digital skills to create value. The company will continue investing in the development of digital talent, with a clear view to further unlocking the potential of its people, its business and its opportunities for future growth.





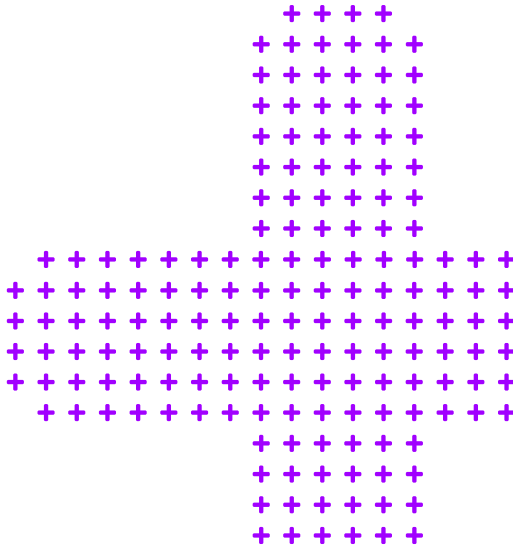
# Adopting the science of applied intelligence

**Applied intelligence allows us to put science to what used to be far less precise and subjective. It allows energy leaders to make workforce planning and skilling an essential, impactful element of an O&G company’s business strategy. For example, in a recent cross-industry pilot, when people were asked to identify their skills on a numeric scale where lower rates were associated with less transferable skills, they assigned themselves an average of 11, regardless of roles.<sup>4</sup> But when their skills were assessed using applied intelligence, that number jumped to 34.<sup>5</sup> It’s a far more complete and unbiased assessment, allowing them and their company to better map them to new roles.**

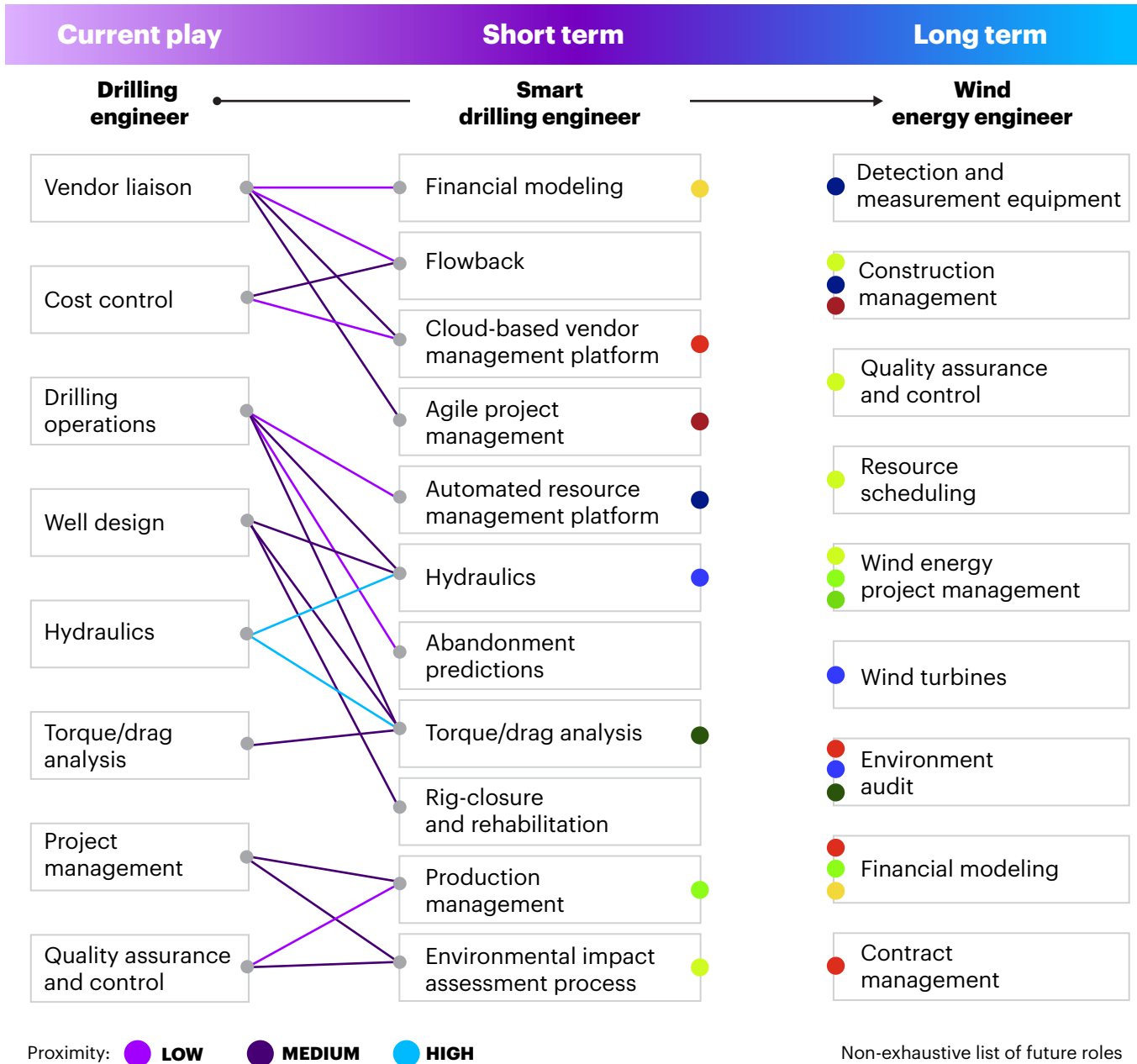
With applied intelligence energy companies can create skills maps and skills pathways to move workers from what they do today to what they can do tomorrow based on the workers’ current skills and the company’s unique workforce needs. Consequently, they can provide employees choices for the roles they’d like to move to, as well as presenting the training and education they need to get there.

We assign a numeric score based on the adjacencies or proximity of skills from one role to another. This allows us to further use applied intelligence and analytics to map people more accurately from their existing role to the best future roles, based on their interests and current skills. See Figures 1 and 2 for vastly simplified examples.

In our work helping O&G companies plan their future workforce (see “How a global energy company is transforming its workforce strategies to drive growth”), we use our skills ontology tool, which creates a repository of relationship or proximity scores amongst various skills across business domains.



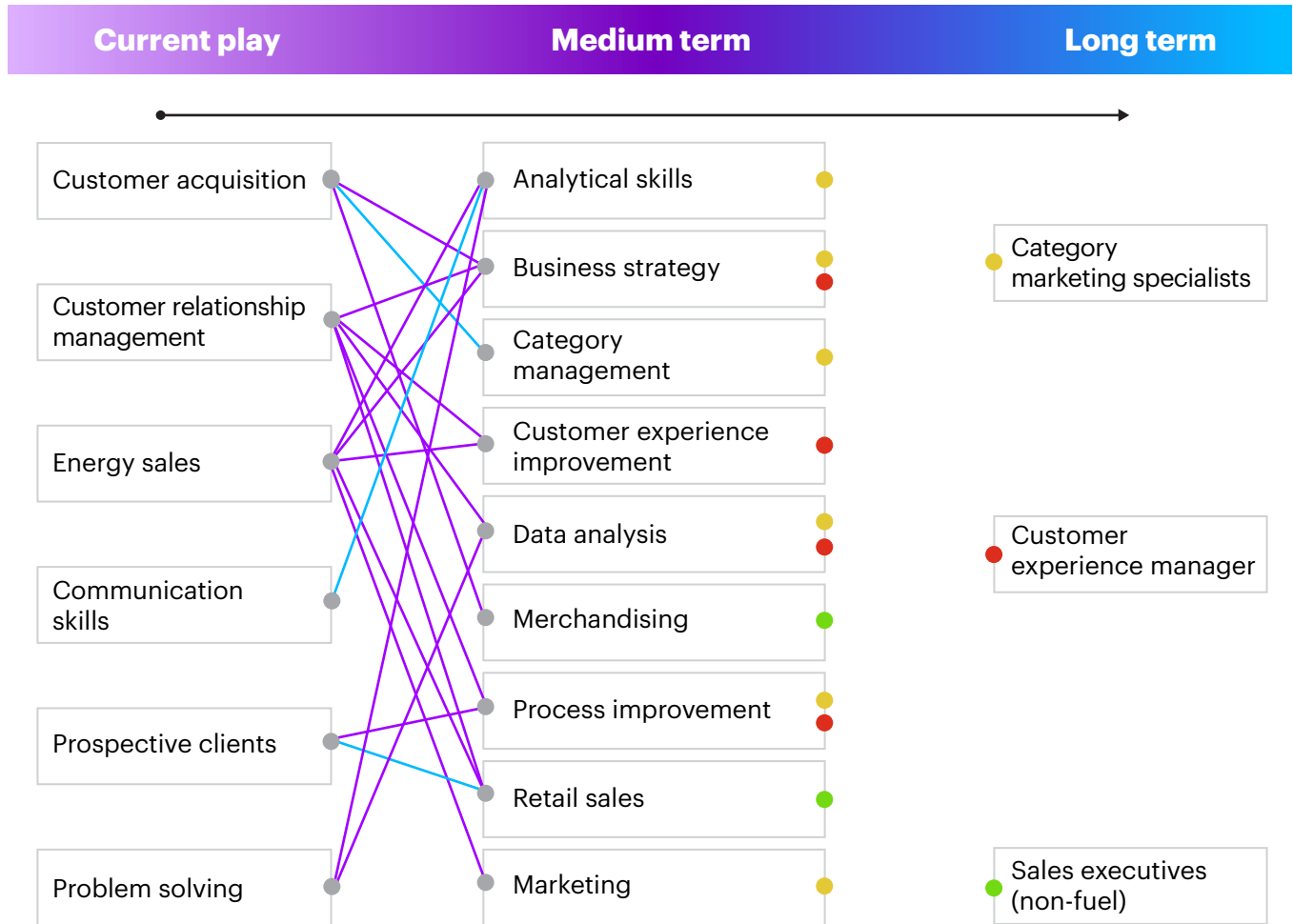
**Figure 1.** Skill pathways in action: Drilling engineer to three emerging roles



Source: Skills proximities and pathways analysis by Accenture Solution.AI, 2020

Accenture analysis suggests that the skill set of drilling engineers provides a good basis for several energy transition roles such as geothermal, hydraulic and wind engineers. These roles require traditional drilling engineering skills like torque and drag analysis, complemented by environmental impact planning and analysis skills.

**Figure 2.** Skill pathways in action: Retail fuels sales executive to emerging roles



Proximity: ● LOW ● HIGH

Non-exhaustive list of future roles

Source: Skills proximities and pathways analysis by Accenture Solution.AI, 2020

*As energy companies become more customer-centric, there is a clear mandate to enhance their retail capabilities. For example, [Accenture's Oil and Gas Reinvention Index](#) survey suggests that 62% of leading operators are personalizing products and experiences for their customers. Employees who specialize in customer experience will be essential.*

Moving people to the medium-term requires transparency. They need to understand the “why” of the shift and how acquiring new skills is necessary not only for sustainable employment, but for the company’s survival. Considering their interests and aptitudes when making the shift will help ensure they’re not just changing jobs but mapping a career that will continue to engage them.

# Even stable roles will evolve

**Throughout the value chain, even roles that are not transforming or in rapid decline will need to evolve. For example, declining demand for exploration activity and reserves replacement will decrease the need for geologists. Yet, given their core skills, geologists have multiple opportunities to shift to energy transition roles—our analysis suggests 60% of geologists current skills are stable—geologists can transition to broader geotechnical engineering roles, as well as environmental engineering roles, by leveraging existing skills in agile project management, geo-modeling tools and software, and general geologic processes. New skills would need to be developed in areas such as advanced modeling, environmental impact analysis and construction management.**

The trader role is a good example of one that will move away from human decision-making toward machine intelligence. Accenture analysis suggests that 44% of a trader's current skillset is in decline.<sup>6</sup> However, the role of the trader itself is not in decline. For example, refined products traders will continue in the industry but will need to shift from focusing on developed markets to developing markets and new products that require stronger analytics skills.

For operators shifting further downstream toward the customer, there is an opportunity to transition product traders into power traders.

Currently, the power trading market is highly digitized so those making the transition will need to augment existing skills with digital capabilities.

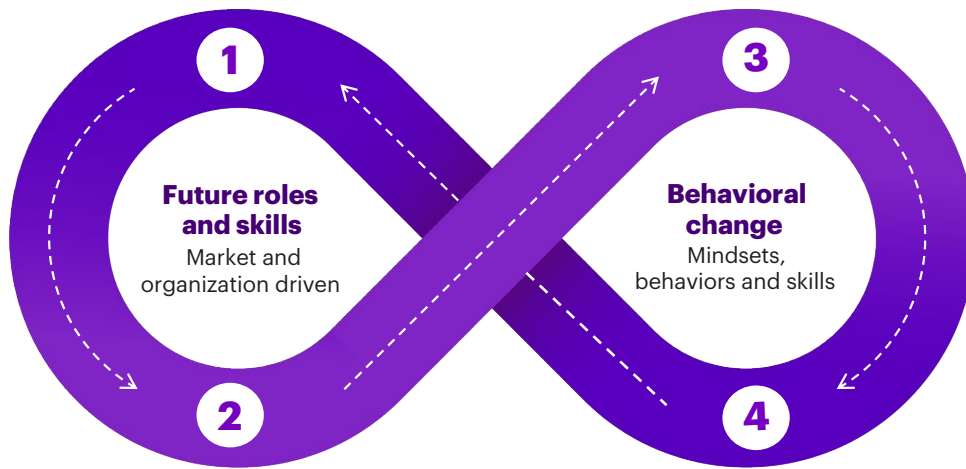
Finally, traders who want to broaden their skills outside of traditional trading could move into the role of portfolio management specialist or risk specialist. They will need, however, to acquire and leverage skills in data visualization, economic modeling and risk management.



# Tomorrow's modern workforce begins today

O&G companies can design tomorrow's workforce today by using applied intelligence to map the transition while creating a modern learning experience for existing employees. A few first steps (see Figure 3) can help energy companies start on the right track.

**Figure 3.** Transforming talent for the future of work



**1. Define**

Understand your context and define future talent needs

**Who are you?**

Business strategy, industry and geography

**What do you need?**

Future technical, functional power skills and behavior needs, future roles and workforce plan (build, borrow buy and bot)

**2. Assess**

Understand your skills landscape and gaps

**Who are you?**

Current talent profiles and organizational digital skills proficiency

**What do you need?**

Skill gaps, capacity gaps and skill adjacencies

**3. Accelerate**

New skill and upskill existing workforce

**What do you need to do?**

**Optimize workforce mix:** Acquire talent, borrow talent and build existing talent

**New skill and upskill:** Personalized learning, curated learning content, blended, multi-channel learning experience and learning cohorts and coaching

**4. Apply**

New skill and foster continuous learning

**What do you need to do?**

Skills application on the job, job proficiency tracking, customized learning pathways and continued content creation

**Energy leaders can start to build a more sustainable tomorrow by collaborating with their workforces to understand the skills of the future.**

**Applied intelligence allows them to maximize the value from their existing workforce data, building on it to ensure people's interests, skills and abilities are taken into account. They can help their people map new career pathways fit for the future of the energy industry, with more speed and precision than ever before.**

## About Accenture

Accenture is a global professional services company with leading capabilities in digital, cloud and security. Combining unmatched experience and specialized skills across more than 40 industries, we offer Strategy and Consulting, Interactive, Technology and Operations services—all powered by the world’s largest network of Advanced Technology and Intelligent Operations centers. Our 537,000 people deliver on the promise of technology and human ingenuity every day, serving clients in more than 120 countries. We embrace the power of change to create value and shared success for our clients, people, shareholders, partners and communities.

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1. “Learning programs ease a return to the workplace,” Accenture, November 19, 2020
  2. Skills proximities and pathways analysis conducted by Accenture Solution.AI, 2021
  3. Ibid
  4. Future Skills Pilot Report, Accenture in collaboration with Unilever, Walmart, the World Economic Forum and SkyHive, 2021
  5. Ibid
  6. Skills proximities and pathways analysis conducted by Accenture Solution.AI, 2021

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