Microsoft

Microsoft Energy Core

Special Report

Industry Board Meeting - Q2, 2021

Energy Reimagined:
Effective Solutions to Accelerate Industry's Digital Maturity?

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Disclaimer: The quotes highlighted in this Special Report are not verbatim.

Chapter 1: Executive Summary

A myriad of economic, environmental, and social pressure points are overhauling the energy industry. From global pandemic-spurred economic strains, to societal pressures triggering radical changes in big oil's status quo, and greater momentum for a low carbon world than ever before…every month brings a degree of change that previously would have taken years to play out. And that means that the energy industry must work harder than ever to keep pace.

COVETED ALLIES

Yet digital transformations have continued to fuel the evolution of companies in the energy industry and beyond, driving greater transparency and efficiency than ever. What lies at the heart of this progress? Digital partnerships. Industry-to-industry collaboration is at a peak and there is a common understanding that no single company, university, nor government can achieve digitalization alone. And in turn, this means they cannot reap the benefits. To keep maximizing this golden window of opportunity requires an increasingly rapid and holistic response from all players in the field. This is especially true following the International Energy Agency's (IEA) recent statements that nearly half of the reductions in CO_2 emissions by 2050 need to come from technologies that are currently at the demonstration or prototype phase, while many more need to be created. Major innovation efforts – including digitalization – must take place in the near-term to bring these new technologies to market in time.

"We have seen two years' worth of digital acceleration crammed into two months."

Satya Nadella, CEO, Microsoft
Microsoft Annual Results, 2020

VALUE OF TALENT

Better utilizing a combination of subject matter experts – be they technologists, data scientists, or cloud solution architects, for example – from major corporates, small and medium-sized enterprises (SMEs), and entrepreneurs is also critical. The same applies to continually developing skills. For example, 76% of CEOs are concerned about the lack of digital skills in their companies, 22% are extremely concerned, and 23% are extremely concerned about the digital skills of their leadership team, according to PwC's 21st CEO Survey. Addressing these concerns is essential to creating a robust ecosystem of knowledge-sharing digital partnerships, which in turn spur innovation and sustainability – two core pillars of 21st century growth.

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LIFTING THE VEIL

An integral part of the success of digital partnerships – no matter how big or small, or where in the world – is the availability of high-quality data. This bolsters transparency, which then feeds into strengthening confidence and efficiency. But fully realizing the benefits of data means collectively learning how best to share data across organizational boundaries. This has never been more important. For one, the growth of data points has hastened, with the global datasphere expected to more than triple from 45 zettabytes in 2019 to 175 zettabytes by 2025, according to Seagate. Plus, nearly a third of the world's data will need real-time processing.

FOCUS ON OPEN DATA

Being able to smartly manage this volume means embracing open data by sharing knowledge in a safe and efficient manner. Working together is pertinent against a backdrop of the turbulence being caused by the global energy transition and Covid-19 – one positively disruptive, one very much not so. In this vein, platforms like the Open Subsurface Data Universe (OSDU) are designed to fundamentally change how data is stored, shared, accessed, and handled. For example, bringing information from oil, gas, wind, solar, and other energy sources – in what is an increasingly diverse global energy mix – into a single data platform can help energy companies address future demand. Having clear forecasts lies at the core of our collective goal: global energy security.

So, how best to leverage digital tie-ups to ensure an innovative and sustainable future?

What is Microsoft Energy Core?

A global initiative and center dedicated to digital transformation in the energy sector. Building on AI and cloud-based technologies, Microsoft Energy Core supports organizations to develop AI solutions that improve operational efficiencies, enhance sustainability, increase energy innovation, and drive workforce transformation. Based in Dubai, Microsoft Energy Core has global scope.

Source of Special Report

This focuses on the exclusive insights harvested from Microsoft Energy Core's webinar on the 9th June 2021. Its pressing questions on what is next for global trends and challenges reflect the opinions and brainstorming of the 27 high-level executives who dialed in from ten countries on three continents – the Middle East, Europe, and Asia. The Chatham House Rule applies, bar those featured.

Founding partners

ABB · BakerHughesC3.ai · AVEVA · accenture · MAANA · Schlumberger · Sensia · Honeywell · EMERSON · Rockwell Automation

The Energy Core: A Global Facility and Initiative

Harnessing the power of AI, cloud technologies and the IoT, organizations can transform their businesses, increase productivity, drive innovation and run more efficient and sustainable operations.

Program anchors on 4 key pillars:

1 Empowering Digital Transformation

Building on AI and cloud-based technologies, Microsoft Energy Core supports organizations to develop AI solutions that improve operational efficiencies, enhance sustainability, increase energy innovation, and drive workforce transformation.

2 Coalitions for Responsible Innovation

Microsoft Energy Core is an open initiative that incorporates energy operators, leading industry partners and academics to lead responsible innovation across the energy value chain.

3 Closing the Skills Gap & Enhancing Employability

Energy Core showcases Microsoft's investments in AI skilling, complemented by contributions from leading universities, educational institutions, and industry partners to deliver AI readiness programs tailored for the energy sector.

4 Sustainability & Societal Impact

Microsoft Energy Core has a mandate to create societal impact. Together with our partners, we are pursuing innovative solutions to solve the energy industry's most pressing issues on worker safety and environmental sustainability.

Microsoft Energy Core's Protocol of Engagement

- Microsoft Energy Core's industry board agrees to collaborate and exchange knowledge to accelerate innovation and digital transformation in the energy sector.
- Microsoft Energy Core's industry board members will attend quarterly meetings to establish an industry challenge to solve for using AI (see page 5). The identified challenge will move onto the ideation phase of the Center's integrated strategy where solutions will be brought to life through hackathons.
- Microsoft Energy Core Industry Board Members will be elevated as 'Featured Speakers' on a rotating basis for each quarterly board meeting.
- Microsoft Energy Core's industry board members will deploy at least one representative from their respective institutions to each hackathon to bolster the Center's posture and commitment to advancing digital transformation in the energy sector.
- Microsoft Energy Core's industry board will commit to qualify at least one minimum viable product that emerges from each hackathon and assess its viability to be deployed in a working environment. If the pilot phase of a minimum viable product proves to be successful, Microsoft Energy Core's industry board will strive to support further incubation and establish a strategy towards scaled roll out.
- Each quarter, Microsoft Energy Core's industry board members will deploy one representative from their respective institutions into the AI Academy to conduct a lecture on the practical applications of AI and the digital skills necessary for the future of work in the energy sector.

Accelerate Digital Transformation

31 Partners & 115 AI Solutions

ABB · accenture · AM² SYSTEMS · ARUNDO · AVEVA · BakerHughesC3.ai · Bentley Advancing Infrastructure · BEYOND LIMITS · DIGITAL ENERGY THE ART OF TECHNOLOGY · DNV·GL · EMERSON · esri · EY Building a better working world · FutureOn · HALLIBURTON · Honeywell · icertis Applied Cloud · ICONICS Make the Invisible Visible™ · MAANA · peloton well focused® · ptc · Rockwell Automation · Schlumberger · Seeo · sensia automation + Schlumberger · sphera Advancing Operational Excellence™ · StoneThree · 4subsea · SYMPHONY AZIMA AI · wipro · belmont

Panel Discussion: Bullish Sentiment Gains Momentum

- Ali Faramawy, Corporate Vice President – Digital Transformation & Partnerships, Microsoft
- Sayed Hashish, General Manager – UAE, Microsoft

Sayed Hashish: Ali, it is a pleasure to have you with us today. You have been involved with the Energy Core since its inception, so I would like to hear your thoughts on how you see the Energy Core contributing to the global energy narrative.

Ali Faramawy: I have been pleasantly surprised to see how the energy sector has embraced the idea of the Energy Core and been keen to drive digital transformations forward. Some of the most amazing and ambitious stories have come from this sector. I know that we have all long heard the words 'cooperation' and 'competition' in the past, but I honestly see more cooperation now than anything. Yes, companies are trying to build their unique competitive advantages, but everyone realizes that this is something that no one has mastered yet. So, we are all listening and sharing – we are learning together. When it comes to the UAE, the country has always done things differently. They have often laid the path, doing it quickly and in a coordinated manner. For example, the UAE has a Minister of State for Artificial Intelligence, Digital Economy, and Remote Work Applications – that degree of thought leadership is key.

Sayed Hashish: The UAE has a strong vision and I truly appreciate the pace and the speed of execution, both of which give the country a great competitive advantage. The announcement of the new minister for AI, as well as the Digital Economy and Remote Applications, had everyone both inside and outside the UAE asking: what is happening? We engaged directly with them, and we were impressed by the caliber of the team and the overall vision. Their vision was looking at how to infuse AI into every project, with a huge focus on skills and capabilities. This also applied to projects that may not yield results in three months, because they are so focused on the longer-term benefits. We helped them try to bridge the divide between what we call abstract AI and the real-life, real needs of the industry. How do we engage in proof of concepts? How do we engage in pilots? And other efforts that make these ideas far easier for people to understand and relate to. They have had an incredible journey so far and we are very privileged to be working with them.

"We must consider morality in our business strategies – the pros and cons and how it can be integrated into business. Within this, we also must consider that customers are increasingly voting with their feet. They will no longer just go for the cheapest or most available option – they have other considerations now."

Ali Faramawy, Corporate Vice President – Digital Transformation & Partnerships, Microsoft

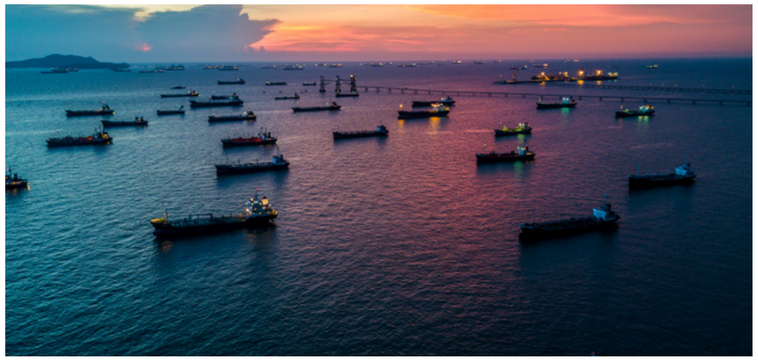
Ali Faramawy: We used to think that our role was to, in many cases, demonstrate or show thought leadership – and I am sure many others in our field would agree. But now we see our role more as building the tools, technologies, and capabilities that can help enable customers to think completely differently. In turn, this allows them to demonstrate their own thought leadership. A lot of boardroom conversations that I hear now are like the Adidas slogan: Impossible is nothing. Now there are ideas in boardrooms where there is a level of trust that someone will be able to bring it to fruition. Perhaps it is the combination of teams, or there is a consulting element, or another set up. Whatever it is, the board is looking at dimensions in their strategies that would not have been considered before.

Sayed Hashish: I cannot agree more with you, thank you Ali.

*Edited transcript

"I deeply appreciate the speed of execution when it comes to the UAE's visions – it gives the country a great competitive advantage. When we engaged directly with the newly-established Ministry of AI – now known as the Ministry of AI, Digital Economy, and Remote Working – we were very impressed by the caliber of the team and ideas."

Sayed Hashish, General Manager – UAE, Microsoft



Data and AI Gamechangers?

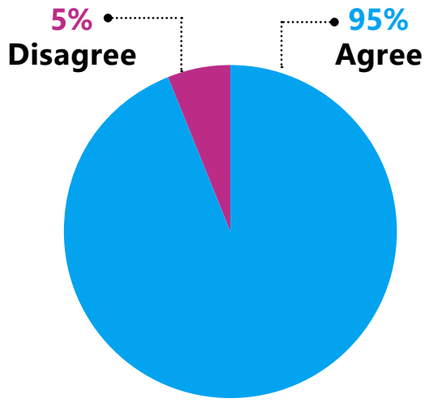
One example is in the mining industry, with one of the world's top five mining firms acknowledging that they needed to act to improve their optimization and reduce costs. As they started talking about the future, they decided to not wait to digitize old data. Instead, they opted to get it from whatever source they had and then blend in the technology innovation first, followed by digitization. So essentially, they did not build the base of the pyramid first; they went to the second step straight away. I am not advocating that as the only way to progress, but it worked for them. Another example is from a very large oil company in Europe which we worked with. As we are one of the world's top buyers of green energy, we thought that we were leading the way by enabling and showing them how to leverage AI and data, to support their sustainability. But when it came to the contract work, this company challenged us on our own narrative, encouraging us to increase our commitment and to become a better company that does work worthy of that kind of partnership. Of course, we are glad that this happened. It reflects the value of always listening to customers, to create an environment that benefits everyone.

Source: Ali Faramawy

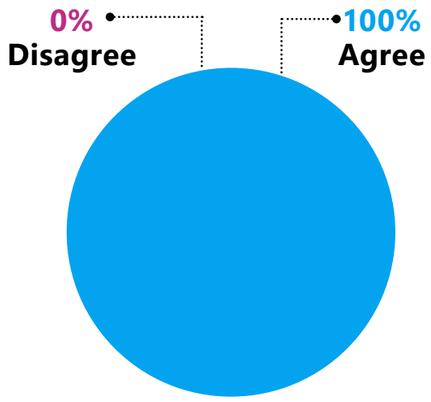
*Edited transcript

SURVEYS

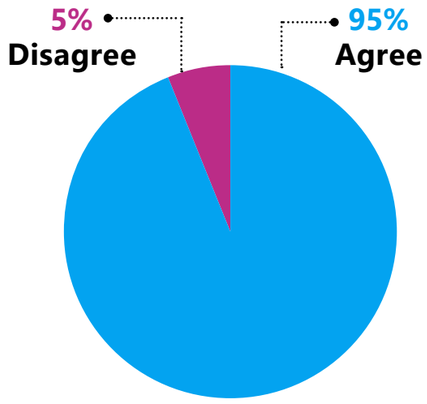
The industry's response to climate action is not at the pace and urgency that it needs to be.



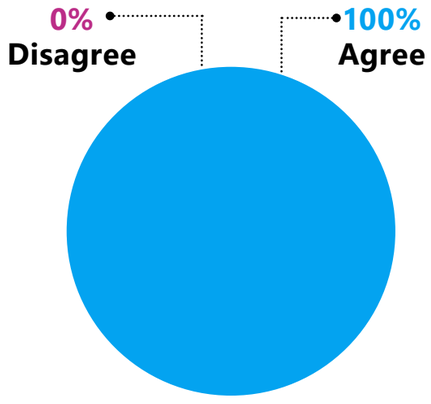
Industry-academia communication channels are still not seamless, creating a disconnect in the speed and depth of work on both sides.



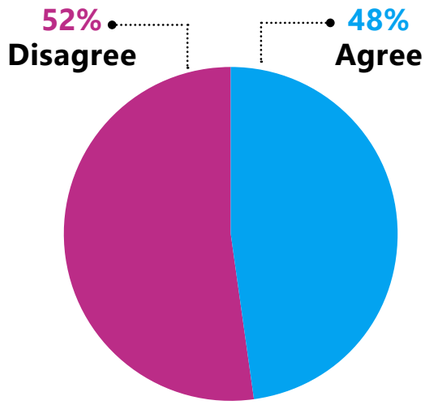
A high percentage of young graduates want to be in an agile and exciting environment, often not deeming larger energy companies as attractive enough.



Thriving digital culture encourages information sharing, collaboration with customers and partners, and delegated decision-making.



Energy companies cannot afford the time or finances to continually reinvent data utilization internally.



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Chapter 2: Industry – Academia

How to boost accountability of collaboration for a digitally enabled workforce?

- Frédéric Gimenez, Chief Digital Officer & Digital Factory Managing Director, TotalEnergies
- Sebastien Grau, VP Middle East – Turkey & Africa, Rockwell Automation
- Mounir Taleb, Vice President – Measurement Solutions, Middle & Africa, Emerson
- Dr. Steve Griffiths, Senior Vice President – Research and Development, Khalifa University
- Michael Mansour, Chief Learning Officer – Middle East & Africa, Microsoft

EXECUTIVE SUMMARY

It is easy to be enveloped in the day-to-day pressures of the radical changes that are impacting the energy market – so academia and industry need to keep pace, together. Because amid the surge of question marks lies one non-negotiable ingredient that both deeply rely on: the constant evolution of talent.

What has long been a complex and interlinked conversation between academia and industry is getting more complicated, especially due to Covid-19. For example, pre-pandemic, academia and industry's alignment focused on creating a robust, well-skilled pipeline of digitally able talent to support both the global energy transition and the 4th Industrial Revolution.

ANOTHER CURVEBALL

But now, mid and post-pandemic, both must also consider the aforementioned points as well as talent's desire to work differently – sometimes very differently. More than two-thirds (74%) plan to permanently shift employees to remote work after the Covid-19 crisis ends, according to a recent Gartner survey of Chief financial Officers (CFOs). Plus, a growing desire for contractual flexibility, such as consultancy contracts and project-based work, means that academia and industry must work even closer together to ensure that talent is able to perform well without oversight. The quality of emotional and adaptable intelligence – EI and AI, respectively – is greater than ever. Of course, there are also benefits, notably that employers have a greater choice of talent, as digital tools have made worldwide access a very workable route.

"Change is constant – industry and academia must continually adapt. If we want to inspire younger generations to eventually join the workplace, it is a long process. We are talking about many years, so it is an issue of time."

Frédéric Gimenez, Chief Digital Officer & Digital Factory Managing Director, TotalEnergies

"Connecting with the education sector is a key priority for us, so we have stepped up our engagement with regional universities. An important part of our strategy is to engage early – a necessity if the industry wants to have a ready-made workforce."

Mounir Taleb, Vice President – Measurement Solutions, Middle & Africa, Emerson

NIMBLENESS WINS

The points that top industry's pile of preferences when it comes to recruiting new talent are savviness, an ability to cultivate an innovative environment, and a strong multi-tasker, one participant summarized. As new technologies are being introduced to industry on a near week-by-week basis, talent must be able to quickly adapt their core competencies to new environments with little notice – while being able to promote new ideas. It is a tall order. But applying this equation to the talent pool in the Middle East is key, as participants point to the region's shortage of strong engineering talent.

"It is not enough to just understand a digital application. It is also vital to understand its importance for industry in terms of deadlines, behavior types, flexibility, and so on – these are key skills in our digital world."

Sebastien Grau, VP Middle East – Turkey & Africa, Rockwell Automation

TOP TAKEAWAYS

CAPTURE THE SPOTLIGHT

Intense competition continues to brew for the best digital talent. The energy industry must work particularly hard to capture talent's attention before technology players snap them up. Technology companies are known to pay very well, offer flexible contracts, promote a culture of innovation, and market themselves as environmentally friendly – all points that young graduates with digital know-how are keen to explore. In contrast, the '9-to-5 working week' that is common across the global energy industry is seen as old-fashioned, as is the industry's historical approach to environmental protection. So, in order to swivel the spotlight away from technology firms, the energy industry must be far more proactive in countering the view that it is a "sunset" industry. Instead, it must leverage the truth that innovation has long been a part of the energy world's bread and butter. This narrative must be far better communicated to plug the industry's brain drain – a push that academia can certainly support. The push by national oil companies (NOCs) and international oil companies (IOCs) for a more diversified energy portfolio includes a notable rise in renewable energy projects, and a greater focus on energy efficiency, water waste, carbon footprints, and so on. This certainly suggests that the industry's sun is still very much in the sky.

23%

compound annual growth rate (CAGR) in global data creation and replication is expected from 2020-2025, according to the IDC. Academia and industry need to know how to maximize the value of this surge in intel.

3

technologies tend to lead the way in academia and industry's engagement: AI, big data, and the Internet of Things (IoT), one participant shared.

70%

of the global workforce will work remotely for at least five days a month by 2025.[1] This will impact the skills that academia must emphasize in the classroom, notably accountability and self-organization, as well as the need for industry to invest more heavily in cybersecurity education.

RETHINK TODAY

There is a looming crunch point with the current workforce, especially those with decades of experience. Typically, they lack the digital skills and knowledge that are needed to master data management and to spur further operational innovation. Academia and industry must work far more closely to turn the tide and help upskill and reskill hundreds of thousands of process engineers into data scientists. This is especially worthwhile considering this is a workforce academia and industry have already long invested in and one that has coveted skills and wisdom; insights that cannot be bought overnight by hiring a digitally fluent graduate.

"Naturally, we get very wrapped up in the day-to-day mode of study and work and we do not often set aside enough time for ourselves to invest and build in our capabilities or achieve certifications. A change must increasingly permeate across both academia and industry – we must create time and space for learning."

Michael Mansour, Chief Learning Officer – Middle East & Africa, Microsoft

SIMPLICITY WINS

Most technology advancements must be "easy to use" for the masses, rather than just the digital elites. Industry and academia must find an intellectual and operational middle ground, so that students and workers alike can efficiently leverage existing tools, as well as those heading towards commercialization. Even if students and workers do not understand the intricacies of the technology, they must still know how to use it for maximum positive disruption and how it interlinks into other parts of the digital and operational value chain. This would herald a major step in the right direction.

BRAINSTORMING PAYS OFF

Industry is increasingly taking business cases into an academic setting to trigger a brainstorming exercise that can benefit both sides. Industry benefits as its problem is resolved and lessons are fed back into offices to help in-house teams and partners pin down the next best steps for other challenges. And it helps academia support learning by exploring new ideas in a relatively real-world setting. These collaborative efforts – which need to be scaled up – broaden the intellectual boundaries for all involved and are a valuable steppingstone to creating more multi-party, problem-sharing platforms.

"The energy industry needs to be good at public relations these days. With that capability, the industry can really start selling what those already working within it believe: that it is an exciting space to be in."

Dr. Steve Griffiths, Senior Vice President – Research and Development, Khalifa University

SPUR HOLISM

The gap between talent that is considered "pure operational technology (OT)" and "pure information technology (IT)" is still far too big. Employees who can understand both are still rare – a gap in the market that academia and industry need to collectively fill. Doing so would create far more holistic digital knowledge and applicational expertise. Some gaps are inevitably; one person cannot know everything. But the divide today is far too stark and industry's hiring processes are negatively impacted.

1 https://www.vox.com/recode/2019/10/9/20885699/remote-work-from-anywhere-change-coworking-office-real-estate

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Chapter 3: Innovation

Top actions to create a culture of digital innovation to reap near-term benefits?

- Rainer Ludwig, Global Director of Business Development Digital Solutions, Sensia
- Andreas Hartl, SVP – Cloud Strategy, AVEVA
- Julie Cranga, VP – Digital, Technip Energies
- Mohamed Mikou, Chief Operating Officer & CMO, Microsoft ME

EXECUTIVE SUMMARY

Innovation is a crucial engine that must be revved up more than ever to fulfil the potential of digitalization's role in the energy markets of tomorrow. But it requires energy companies to commit to ongoing cultural change and emotional and financial investment – a tall order that can truly pay off.

POTENTIAL ABOUNDS

For example, making use of advanced connectivity to optimize drilling and production throughput, and improve maintenance and field operations, could add up to $250bn of value to the industry's upstream operations alone by 2030, according to McKinsey. And offshore operators in the oil and gas sector could cut costs, including operational and capital expenditures, by up to 25% by relying on connectivity to deploy digital tools and analytics. Such savings would be extremely valuable at a time when oil companies' profit margins are being squeezed by low if stable oil prices and pressure to invest more heavily in green energy and low carbon markets intensifies.

MISTY CRYSTAL BALL

Unpredictability has long been a cornerstone of energy markets, but the degree of change today makes it harder than ever for industry to see what "the future looks like", one participant said. Increasingly nurturing a culture of innovation and investing in digital visibility helps employees and prospective employees have greater confidence that their company is progressing in the right direction and remaining competitive, even if they lack full visibility of the destination. For example, big data at Shell means its robotic subsea inspection videos exceed 7TB, its land seismic surveys are up to 20 petabytes, and its marine surveys range from 10-30 TB. To give an idea of scale, a terabyte is 500 hours of video. This means that each of the energy giant's physical assets – from refineries to wind turbines – generate hundreds of thousands of measurements per minute thanks to digitalization.

The equation is simple: the more innovative the company culture, the more confident the staff, the more creativity flows, thus resulting in more tangible innovation and greater success. But will every energy company fully commit? That is the question.

"Change management must be driven on multiple levels. It is not just enough that the CEO, CIO, or the CTO give regular speeches [about digitalization and market growth]. It should be an opportunity open to all levels of staff. We are all on the same mission to foster and support the digital transformation. I believe that the gap we currently see between leaders and laggards will balance itself out."

Rainer Ludwig, Global Director of Business Development Digital Solutions, Sensia

"Companies must give internal staff more confidence. We must think: how do I get the right incentive models in place, so everybody wants to participate in the company's digital journey and success?"

Andreas Hartl, SVP – Cloud Strategy, AVEVA

TOP TAKEAWAYS

FEAR FACTOR

A reluctance to embrace digital transformations due to fear remains a major sticking point when it comes to propelling innovation, despite the well-publicized benefits. This may be due to fear that digitally led advancements in efficiency will lead to loss of employment, or that the upfront financial cost of digitizing operations is too great. But participants agreed that the opposite is true; digitalization will create new jobs and open new pathways for what many may have been stagnated careers. Proactive and positive management lies at the heart of changing fearful attitudes towards digital innovation. It is not enough that the Chief Executive Officer (CEO), Chief Information Officer (CIO), or the Chief Technology Officer (CTO) provide regular rallying cries to staff. The change in culture must encompass the entire staff and value chain. The staff at the very top of the chain to those at the very bottom must feel confident sharing their ideas, knowing they will receive a positive, non-jeopardy audience.

"Innovation is also about making employees' lives better. Manipulating Excel spreadsheets all day long is not what we want as a career path for our people. We must inspire them to want and make real change."

Julie Cranga, VP – Digital, Technip Energies

1

is the number of hours per week that an average employee in a corporate culture must explore activities outside their normal role, one participant shared. All staff – as some in top management already do – should have a minimum of one day per month to explore their creative and critical thinking beyond the binds of their job.

34

is the UAE's overall ranking in the Global Innovation Index 2020 – out of 131 nations. It also ranked an impressive 17th and 22nd for human capital and research and business sophistication, respectively.

"Amid these great changes, our mantra is that no customer will get left behind. We are trying to be there for the market and to be a good partner – wherever companies are on their digital journeys."

Mohamed Mikou, Chief Operating Officer & CMO, Microsoft ME

DO YOU CARE?

Empowering staff is instrumental to spurring laggards in innovation, especially when it comes to creating a positive team culture. Creating a sense of purpose allows all team members – and a joint venture, a partnership, and so on – to feel accountable in some measure to an overall goal. Getting to this point means company leaders must be able to answer "yes" to these questions. Do employees feel safe to innovate? Are employees given time in their working week to stretch their creative abilities? Do you encourage growth mindsets in a safe-to-fail environment? Are you giving freedom to your staff to act? Are you providing additional training in digital skills?

REINVENTION AHOY

The fossil fuel industry – one based on a century of innovation – should not allow itself to be a "sunset" industry. Instead, it must gather its creative wits that have been honed for decades in what is the world's most profitable commodity market – big oil – and apply those lessons to carving out a lower carbon ethos. The leap to a greener future is not big as many assume for big oil. It is used to applying technology to resolve operational issues, it is used to being the forerunner in a world-changing commodity market, and it is used to crafting partnerships to achieve common goals – all similar skills needed in a low carbon future. Major progress is already being made in this space, with some of the world's biggest economies that rely on oil exports setting ambitious climate-related goals and investing heavily in renewables. For one, solar PV is expected to generate $182bn in investment in the Middle East's renewables market by 2025 – a push that local governments and big energy companies are playing a role in. But much, much more is needed to truly leverage the full benefits of the energy industry's penchant for thinking out of the box.

RETHINK YOUR BOX

How to keep talent engaged? Many companies have experienced a similar pattern. They hire staff who are "super energized and want to change the world", as one participant said. And then eventually, as the rigors of daily work and commercial pressures take hold, they eventually "slip into a box" that ultimately curbs their creativity and ability to innovate. So, companies must essentially help their staff "unlearn their box" in order to bolster their spirit of innovation. This means fostering an environment of trust so that every team member feels like they are reaching their full potential, rather than being restricted to the confines of their job title.

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Chapter 4: Sustainability

Best digital strategies to accelerate Industry's triple bottom line of sustainability: people, planet, and profit?

- Norm Gilsdorf, President, Honeywell, High Growth Regions, Middle East, Russia, Turkey, Central Asia & Customs Union, Honeywell
- Dr. Joseph Estep, Senior Business Relationship Management Analyst – Innovation & Commercialization, Chevron
- Joanna Mainguy, Industry Solution Manager – EMEA Energy Industry, Microsoft

EXECUTIVE SUMMARY

"We see so many organizations with a blind spot. They do not have top-to-bottom visibility of their operational performance and so, they struggle to derive business intelligence from disparate data sources. Once you can visualize it and bring it together under a central business model, a lot of issues and opportunities jump off the page. You can then begin to act on these, put programs and solutions in place. This is what digitalization can help with – and in turn, it accelerates your sustainability efforts."

Norm Gilsdorf, President, Honeywell, High Growth Regions, Middle East, Russia, Turkey, Central Asia & Customs Union, Honeywell

The recent surge of countries and companies' net zero targets over the last year will only rise as the global push for sustainability sustains its surprising but desperately needed momentum. So far, 21% of the world's largest 2,000 public companies that account for sales of almost $14trn have set net-zero commitments, revealed a new report by the Energy and Climate Intelligence Unit (ECIU) and Oxford Net Zero.

BUILDING PRESSURE

While laudable, there is still a long way to go. For one, as has long been the case, big oil and the broader traditional energy markets, are generally cast as environmental villains. Among many different pressure points is that 127 countries have banned or taxed single-use plastics, according to Bain & Company. This trend, which is essential for the environment, puts pressure on what is considered one of the Middle East's most blossoming commodity markets: petrochemicals.

As pressure on non-renewable energy builds, leveraging digital tools to bolster efficiency and creativity can help turn this narrative into one of potential and low carbon prosperity. The net economic benefit for every US dollar invested in building climate resilience is $2-$10, according to the Global Commission on Adaptation (GCA) – a good deal, even by big oil's standards. Another recent example is that the decarbonization of Europe's heavy industrial companies could generate more than €200bn every year by 2030, said Accenture. The opportunities to increase environmental protection, protect societies, and energy companies' bottom line are huge – but they can be almost limitless if digital tools are leveraged.

TOP TAKEAWAYS

GOLDEN WINDOW

Today's great disruption offers untold potential for the fossil fuel industry to reinvent itself from what many are calling a sunset industry up to 2050 into an energy pioneer, leveraging more than a century's worth of acumen. Truly meaningful progress has already been made; some of the world's biggest energy firms have set net zero targets, greener markets like blue and green hydrogen, as well as greener fuels like biofuels, plus growing appreciation for identifying and mitigating carbon footprints.

Fossil fuel operators have an opportunity to leverage digital technologies to either test, accelerate, de-risk, model, simulate, or lower cost of innovations in energy markets, including greener energy – helping sustain their spot at the top of the totem pole.

20/20 VISION?

Data visualization is critical when it comes to accelerating sustainability and making bold climate targets a reality – and many are very affordable. A very simple example is being able to monitor the temperature of a building, so that the heating or AC is on or off depending on the level of human activity within that space. Continuously and automatically being able to adjust the air temperature over a long period of time due to digital sensors, for example, can make a dramatic improvement to that building's carbon footprint, as well as boosting the company's reputational value, with both being increasingly non-negotiable factors for younger hires. Another example is using a planetary computer to create a simulation of how nature is affected and possible solutions, such as natural carbon sinks.

Great visibility on challenges also incites greater change, for problems can only be resolved once they have been identified. Only then can accountability start.

4%
global success rate for sustainability initiatives means many business leaders know they need to do substantially more, according to Bain & Company.

100%
of one participant's team is now committed to the development of in-house digitalization to support sustainability. Before the pandemic, only 20% were.

60%
of one participant's R&D budget is now focused on helping customers with environmental, energy, and social issues – a dramatic shift compared to five years ago.

"We are at the stage where we cannot say: I do not have data on that issue, or I am not investing in digitalization in some way or another. We have progressed too much; there are too many solutions not to act."

Joanna Mainguy, Industry Solution Manager - EMEA Energy Industry, Microsoft

KPIs VS REALITY?

Industry is finding it difficult to connect environmental key performance indicators (KPIs) with day-to-day activities in the field. KPIs that have historically been used in industry do not always naturally translate well when it comes to sustainability targets. So, industry, and perhaps their partners in academia and technology, must re-examine some of their data to see how they can better align their sustainability goals with the reality of their operations. Of course, alignment will not be an overnight success, but every inch towards parity is a valuable learning process that companies can apply to other parts of their supply chains or share with others.

"A lot of what we focus on when it comes to the triple bottom line is proactivity versus reactivity – and we do this by leveraging digital tools. We have an opportunity to connect historically disparate data domains that can allow us to better integrate the value chain, make better business decisions, and uncover interdependencies."

Dr. Joseph Estep, Senior Business Relationship Management Analyst – Innovation & Commercialization, Chevron

ADJUSTING TO SCRUTINY

The need to report on CO_2 emissions and methane levels in the energy industry is dramatically increasing. What was a choice for a few is now becoming compulsory for all, especially as reporting on scope 1 and scope 2 CO_2 emissions near – a very challenging prospect. Monitoring scope 3 emissions is an inevitability that very, very few industry players have any idea how to achieve. So, leveraging digital aids to connect physical and virtual worlds far faster lies at the core of helping companies – including those considered climate laggards – plot their environmental roadmaps. Part of this equation will be knowing how to identify, track, mitigate, and trade CO_2 emission credits, be it on compulsory or voluntary markets.

THE WHOLE PICTURE

Governments play an instrumental role in helping create a culture from the top-down where digital tools are considered the norm in the sustainability conversation – rather than a niche area that only a few can leverage. Leveraging digital tools to spur progress towards a low carbon world must be prompted as a key ally by governments, which will in turn also help deepen the value of industry-academia collaborations.

Microsoft

Chapter 5: Talent

Energy companies' best strategies to immediately attract and retain the world's strongest digital talent?

- Daniel Jeavons, VP – Computational Science & Digital Innovation, Shell
- Deepika Manchanda, Talent & Organization Advisor, Accenture
- Ronan O'Sullivan, Vice President – Energy Industries, India, Middle East and Africa, ABB
- Vladimir Krdzic, Group Chief Digital Officer, Petrofac
- Ozlem Bulut, Chief Readiness Officer, Microsoft

EXECUTIVE SUMMARY

"Why should you work for Shell? Because we want to play a part in transforming the energy system and help solve the biggest problem of our time. But the energy industry needs to do a much better job of marketing this message."

Daniel Jeavons, General Manager, Data Science, Shell

More than 50% of the engineering talent in the energy industry has retired over the last five years, according to participants – a staggering number. There are also sizeable gaps in middle management. Not only does this gaping hole need to be filled, but it must be filled with digitally fluent talent who are able to adapt to the ever-changing energy landscape.

This is easier said than done. A study by Korn Ferry shows that candidate scarcity is a massive issue in acquiring digital talent today. Many respondents (83%) cite it as a top challenge, while 70% said that they also have difficulty meeting candidates' rewards expectations. This complex dynamic is only increasing as the pandemic has increased employees' desire to have a mix of office and home-based work, as well as different contract options, such as part-time, project-based, consultancy-based, and so on.

BE KIND

While challenging for employers, these big changes and strains in the wider world – notably the pandemic, economic woes, environmental concerns, and long working hours – are also having a serious impact on employees. Consequently, energy companies must embrace a new ingredient in their talent management: empathy. Two in three employees already felt at risk of burnout before the pandemic began, so it is no surprise that leaders are now most concerned about how to deliver goals while managing widespread stress and fatigue, according to Mercer's Global Talent Trends 2020-2021 report. How we work and what we want to represent via our jobs has dramatically changed – and the energy industry must quickly change with it. The more proactive the company, the faster it can lock in the world's best talent.

TOP TAKEAWAYS

TALENT'S WISH LIST?

This has gotten considerably longer, especially due to the Covid-19 pandemic. Increasingly, talent wants flexibility, which means demand for a plethora of contractual options has emerged: part-time, project-based, short-term contract, consultancy-based, and more. Accelerating programs and policies that enable employees to adapt to new ways of working is a priority for human resources (HR) teams, according to a quarter of respondents to Mercer's report – the highest response. Comparatively, accelerating HR digital transformation garnered 17% of responses.

POWER OF FLEXIBILITY

A company's ability to leverage digital tools in this far more fluid environment is key. Remote working became the norm during the pandemic, with companies facing a "do or die" scenario if they wanted to continue their operations during lockdown. The vast majority thrived, raising the question among both existing and prospective talent: Why do I have to be in the office or on site from 9-5? And so, energy companies are increasingly having to answer: We can be flexible. What is especially true with a fluid workforce is the need to continually enhance digital literacy, especially when it comes to being aware of, and countering the risk of, cyberattacks. Companies that are more open to this more of a dynamic workforce – a route which will arguably capture some of the best talent – must also invest in digital leadership. This means setting a digitally cohesive note from the start; employees in ten different nations must unite as seamlessly as those working within one office.

"The attitude of 'I want to change the world' is one I keep encountering among talent. So, we must look at getting the types of projects that do just that, be it in digitalization or sustainability – or both."

Ronan O'Sullivan, Vice President – Energy Industries, India, Middle East and Africa, ABB

What's your speed?

Individuals learn differently and at different speeds. Accordingly, organizations must embrace adaptive learning strategies and enable this progressive ecosystem by empowering data. When it comes to the ecosystem of learning, it is prudent to first understand the skill gap. Simply put, this is: what do we know versus what we think we will need to know as part of the skills of tomorrow? There are several new-age assessment technology platforms emerging, which are changing the outlook. Previously, self-assessment typically involved human engagement with a manager, for example. Now, this experience is moving towards AI-based assessments that leverage predictive tools to 'guestimate' how significant a student or employee's skills gap is. Once this has been identified, the next step is to create a talent strategy. Under the umbrella of this adaptive learning, it is useful to create a personalized path of learning to give people the time and motivation they need to achieve their full potential. Cramming students and employees with too much material "does not help them magically learn everything overnight," one participant stressed. But with the right strategy, the right platforms, and the right amount of patience, a positive culture of conscious learning will be cultivated – benefiting employees and employers for years.

"We are seeing a lack of talent and expertise, especially in the Middle Eastern market. The good talent is way too over-priced and likely to be quickly picked up by a tech giant. So, we decided to go a different route. I am going after engineers who are 25-30 years old and from big mechanical and electrical companies. Then, I give them lots of training to upskill their digital knowledge."

Vladimir Krdzic, Group Chief Digital Officer, Petrofac

GET TALENT MOVING

Introducing rotational programs within the workplace is an excellent way to not only keep talent inspired, but also to broaden their skill sets. Over an eight-month program, for example, an employee can be exposed to several different departments that are interlinked with their core expertise, giving the employee a stronger and holistic overview of how their work impacts the company's overall progress. This can be inspiring and spur their creativity, as well as give employees a firmer idea of how they see their career paths unfolding in the organization. Overall, this will help stem the industry's brain-drain and counter competition from technology companies.

ARE YOU A POSITIVE DISRUPTOR?

Increasingly, IOCs and NOCs are marketing themselves as positive disruptors in the energy transition, as they invest more in renewable energy portfolios and set climate-related targets. This is a very attractive proposition for existing and potential talent. But industry's message that it is committed to solving the biggest problem of our time must be far better communicated. For example, training talent in traceability – using digital tools to track the provenance of an energy product to hit sustainability goals – ticks several boxes. It supports digital literacy, sustainability, economic efficiency, and enables talent to learn new skills – a win-win.

50%
of employees want to work for an organization that offers responsible rewards.

49%
of employees prefer an organization that protects employees' health and financial well-being.

37%
of employees are motivated by strong corporate values, mission, and purpose.

36%
of employees favor companies that focus on social equity and environmental protection.

Source: Mercer, Global Talent Trends, 2020-2021

$3.4bn
is the anticipated value of the global digital talent acquisition market by the end of 2025, up from $2.2bn in 2020, according to ResearchandMarkets.com.

75%
of the 800 senior executive respondents in a recent global survey by McKinsey said they were stepping up investment in automation and AI – either somewhat or significantly.

"Leaders who want their organizations to pivot to become truly digital must first demonstrate a digital culture. They must inculcate a continuous learning environment and a growth mindset – something that is largely missing in industry right now."

Deepika Manchanda, Talent & Organization Advisor, Accenture

IS YOUR IDEA ON THE PILE?

Creating an environment where anyone, regardless of age and rank, can throw their ideas into the mix is crucial for talent being able to fully express their digital potential. This is especially relevant to younger generations who tend to vote far more quickly with their feet if they feel their creativity and skills are being stymied. The potential across all age ranges with this attitude of a safe-to-fail openness is unlimited. One participant said his Head Manager of Automation is in his twenties and doing an excellent job, due to his drive and willingness to learn.

SIMPLIFY THE PIPELINE

There is still talent emerging from academia who lack the skills that industry needs; a time-consuming and expensive misalignment that takes time, sometimes years, to fix. Industry and academia must work more closely together to narrow this gap, especially as the demands on the energy industry and the pace of digital and environmental change intensify. Disturbances in the energy industry are not uncommon, so employees must have talent who can easily adapt when operations hit inevitable chokepoints.

"We need to develop new ideas. This means building a diverse workforce that has a varied set of experiences, perspectives, and backgrounds. Then we must bring them together to foster innovation."

Ozlem Bulut, Chief Readiness Officer, Microsoft

Microsoft

Chapter 6: Data Transparency

Best actions to spur more open data platforms in existing and new partnerships?

- Ahmed Hashmi, Chief Digital Officer and Technology Officer – Upstream, BP
- Trygve Randen, President, Software Integrated Solutions, Schlumberger
- Uma Sandilya, General Manager, Oil & Gas, BHC3
- Juan José Casado, Head of Data & AI, Repsol
- Sidharth Mishra, Senior Partner - Digital & Consulting (ENU), Wipro EMEA
- Uwa Airhiavbere, Director - Worldwide Oil & Gas Sector, Microsoft

EXECUTIVE SUMMARY

Much of the energy industry's data has long been tucked away in monolithic structures, generally isolated and inefficiently leveraged. But the obvious economic and ethical value of sharing knowledge and data is fast chipping away this old norm. Increasingly, sharing is the considered a smart business move rather than a compromise too far.

"All data is not created equal and not all needs are the same. But we all know that we must change the energy systems of the planet. So how can we put data of varying kinds to use? By starting with specific goals."

Ahmed Hashmi, Chief Digital Officer and Technology Officer – Upstream, BP

RIGHT DIRECTION

Shell, C3.ai, Baker Hughes, and Microsoft launched the Open AI Energy Initiative, which is initially focusing on reliability and predictive maintenance for energy assets as one example. And the Open Subsurface Data Universe (OSDU) project, created in 2018, is another. The initiative brings software providers, operators, and technology companies together to work on a common platform designed to eliminate traditional data silos and bring more efficiency to exploration and development workflows. Plus, Schlumberger and Microsoft have expanded their partnership to bring open data management to the energy industry. This includes enhancing the Enterprise Data Management Solution, tightening integration with OSDU, and developing joint solutions using the industry-focused cloud, data, and AI.

But while this is undeniably strong progress, much more is needed. Covid-19 has been a stark reminder of how rapidly progress can be achieved on critical, cross border issues when data collaboration and openness gains momentum. Adopting this approach to support energy security amid the global energy transition, as well as to counter climate-related risk, is truly good business sense.

"Despite the promises of OSDU – and the great value it has already brought – we are probably many, many years away from the point where we can just take a resource card, plug it into a computer and have a complete interoperable system. There is still a need for strong alliances to operationalize data and bring it out to the market."

Trygve Randen, President, Software Integrated Solutions, Schlumberger

TOP TAKEAWAYS

DEVIL IN THE DETAILS

Specifics must be pinned down in order to have sustainable and transparent success, especially as the very nature of partnerships carry a myriad of differences. Collaborations on open data platforms must be very clear about their key performance indicators (KPIs) and boundaries from the outset, as well as the expectation of timetables and overall costs. This build trust and confidence, which in turn should make it easier for companies to share knowledge and jointly innovate on platforms. Plus, the greater the detail, the greater a help the content will be to smaller companies; small and medium-sized enterprises (SMEs) and entrepreneurs rarely have the wherewithal to do host their own open data platforms. One participant spoke about how a call for solutions to deal with the sudden impact of the pandemic on operational effectiveness raked in 52 research papers, each offering solutions. This truly reflects this the value speed and troubleshooting on open platforms.

"There is a growing desire to share IP in order to help scale up smaller companies that do not have the wherewithal to access it, let alone act upon it."

Uma Sandilya, General Manager, Oil & Gas, BHC3

10%

of organizations report having implemented DataOps fully across the enterprise. Yet the majority of respondents to Seagate's survey said DataOps is "very" or "extremely" important.

42.2%

annual increase in the volume of generated data will be seen by enterprises from 2020 to 2022, said Seagate. This means enterprises will have to manage a lot more data in motion.

SPEAK THE SAME LANGUAGE

Contributors must standardize their submissions to open data platforms. For example, differing standards and formats risks causing confusions, dulling overall standards, and switching off potential users' interest. Identifying common parameters for submissions is imperative. This will also save wasted hours that many in industry still spend trying to find specific data points and information. The information is there, but it is "hidden" as it is in the "wrong category", making it harder to find. With the potential for so much quality data at our fingertips – Seagate expects enterprise data to rise per year by 42.2% up to 2022 – it would be travesty to make the wrong business decision because of data issues.

"There is 51bn tons of carbon emitted per year – and we have to hit zero by 2050. That is a lot of work and having access to an open data platform that increases visibility is very much-needed."

Uwa Airhiavbere, Director - Worldwide Oil & Gas Sector, Microsoft

GETTING SMARTER?

The other aspect is around from extension, haven't talked about other data type, for example, safety was one example. So how do we take a similar capability to other data technologies? So, for example, footprint reporting for emissions that is already underway, but how do we take this to production paradigms and various other aspects? Right, the way we had molecular management and molecule tracking, similarly, we'll be actually doing energy tracking and emissions tracking as new energy systems develop and the collaboration is lot more external in the new business model, and circularity and various other types of business models are fitting in there. So that's the other aspect so how do we take a step forward in terms of connected platforms and carry forward the paradigm of openness into the new systems and new business models.

"We will see a rise in CO_2 emissions tracking as new energy systems develop. So, how do we take a step forward to have connected and open data platforms, as well as new business strategies, to support this space?"

Sidharth Mishra, Senior Partner - Digital & Consulting (ENU), Wipro EMEA

COMPETITIVE COLLABORATION

This does not mean companies have to share competitively advantaged data, or let competitors look under the bonnet of their financials to gain the upper hand. But it is about joint ventures or multi-company partnerships selecting the information they feel can be both public and useful to others to help advance the entire market, creating a win-win situation. For example, jointly working on digital twins to run scenarios that could be a shared risk to industry is a rational, collaborative move that could benefit all.

"We must think about data sharing architectures more deeply. Who is going to pin down best practices? What kind of tools are we going to use? Is it going to be federated data in the future? Shall we start to invest in AI now to support the volume of data that is coming? How are these data spaces going to be governed? Who is going to pay what entity to guarantee safety and adherence to the guidelines? And the questions go on."

Juan José Casado, Head of Data & AI, Repsol

Microsoft Energy Core's Board Members

Energy Operators
Ahmed Hashmi, Chief Digital Officer and Technology Officer – Upstream, BP
Brad Davis, Innovation and Commercialization Manager, Chevron
Daniel Jeavons, VP - Computational Science & Digital Innovation, Shell
Khaled Al Blooshi, Vice President, Digital Projects & Innovation, ADNOC
Nabil Al Nuaim, Chief Digital Officer, Saudi Aramco
Michael Deal, Chief Digital Officer, ExxonMobil
Sergio Zazzera, Business Partner, Technical Computing for Geosciences and Subsurface Operations and ICT, Eni
Torbjørn Folgerø, SVP & Chief Digital Officer, Equinor
Valero Joaquin Marin Sastron, Chief Digital Officer, Repsol
Nicolas Simone, Global Executive Director- Digital Transformation and Innovation, Petrobras

Universities
Adel Fadhl Noor Ahmed, Dean, College of Computer Science and En gineering, KFUPM
Sebastian Geiger, Energi Simulation Chair and Director of Research, Herriot Watt
Steve Griffiths, Senior Vice President, Research and Development, Khalifa University

Industry Bodies
Mark Rubin, CEO and Executive Vice President, SPE

Technology Partners
Allan Rentcome, Chief Executive Officer, Sensia
Babur Ozden, Founder & CEO, MAANA
Peter Herweck, Chief Executive Officer, AVEVA
Norm Gilsdorf, President, Honeywell, High Growth Regions, Middle East, Russia, Turkey, Central Asia & Customs Union, Honeywell
Pattabhiraman Ganesh, Vice President, Digital Transformation & Lifecycle Services, Middle East & Africa, Emerson
James Wimbury, Resources (Oil, Gas & Petrochemicals) Lead – Saudi Arabia, Accenture
Ronan OSullivan, Vice President – Energy Industries, India, Middle East, and Africa, ABB
Susana Gonzalez, President Europe, Middle East & Africa, Rockwell Automation
Trygve Randen, President, Software Integrated Solutions, Schlumberger
Uma Sandilya, General Manager, Oil & Gas, BHC3

Microsoft
Ali Faramawy, Corporate Vice President, Digital Transformation & Partnerships
Darryl Willis, Vice President, Energy
Dave Wisenteiner, Managing Director of Energy, Microsoft Azure
Vanessa Miler, Director, Energy Innovation & Impact

Energy Core Board Meeting (Q2, 2021)
Speakers
*(*Alphabetical order)*

Ahmad El Dandachi, Industry Lead - Energy & Manufacturing – Middle East & Africa, Microsoft
Ahmed Hashmi, Chief Digital Officer and Technology Officer – Upstream, BP
Ali Faramawy, Corporate Vice President - Digital Transformation & Partnerships, Microsoft
Andreas Hartl, SVP - Cloud Strategy, AVEVA
Daniel Jeavons, VP – Computational Science & Digital Innovation, Shell
Deepika Manchanda, Talent & Organization Advisor, Accenture
Dr. Joseph Estep, Senior Business Relationship Management Analyst – Innovation & Commercialization, Chevron
Dr. Steve Griffiths, Senior Vice President - Research and Development, Khalifa University
Frédéric Gimenez, Chief Digital Officer & Digital Factory Managing Director, Total
Joanna Mainguy, Industry Solution Manager - EMEA Energy Industry, Microsoft
Juan José Casado, Head of Data & AI, Repsol
Julie Cranga, VP - Digital, Technip Energies
Michael Mansour, Chief Learning Officer - Middle East & Africa , Microsoft
Mohamed Mikou, Chief Operating Officer & CMO, Microsoft ME
Mounir Taleb, Vice President - Measurement Solutions, Middle & Africa, Emerson
Norm Gilsdorf, President, Honeywell, High Growth Regions, Middle East, Russia, Turkey, Central Asia & Customs Union, Honeywell
Ozlem Bulut, Chief Readiness Officer, Microsoft
Rainer Ludwig, Global Director of Business Development Digital Solutions, Sensia
Ronan OSullivan, Vice President – Energy Industries, India, Middle East, and Africa, ABB
Sami Sokker, Digital Transformation Lead - Saudi Electricity Company
Sayed Hashish, General Manager - UAE, Microsoft
Sebastien Grau, VP Middle East - Turkey & Africa, Rockwell Automation
Sidharth Mishra, Senior Partner - Digital & Consulting (ENU), Wipro EMEA
Trygve Randen, President, Software Integrated Solutions, Schlumberger
Uma Sandilya, General Manager, Oil & Gas, BHC3
Uwa Airhiavbere, Director - Worldwide Oil & Gas Sector, Microsoft
Vladimir Krdzic, Group Chief Digital Officer, Petrofac


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