Delivering Intelligent Energy platforms to drive efficiency, cost reduction and build a sustainable future

Accelerating transformation in Energy across Middle East and Africa

Executive insight from Ernst & Young LLP and Microsoft
Contents

Energy is everything, and everything is changing .......................... 2
Middle East and Africa (MEA): the natural home of energy ............ 4
The EY-Microsoft Alliance .................................................. 5
What are the key challenges that we will help you solve? .............. 11
A powerful future for Energy with the EY-Microsoft Alliance ........ 22

Delivering Intelligent Energy platforms to drive efficiency, cost reduction and build a sustainable future 1
Energy is everything, and everything is changing

E=MC². The strength behind everything we do. The power that switches on the lights, drives the machines and enables work. To paraphrase Mark Twain, we are nothing without energy. But energy is changing.

Renewable energy is the future

Dramatic headlines report the ‘end of an age’. Focus has shifted from fossil fuels to cleaner, renewable sources of energy. With growing concerns about climate change, a shift toward renewable energy is crucial to the world’s carbon-reduction goals.

The future is electrifying.

The rules of the game have changed

It’s not just our energy sources that are changing. How we distribute, access and store electricity is transforming too. Users demand reliability and value for money and, as energy grids become smarter, they’re getting more visibility and control.

Energy consumers are even becoming energy producers – generating a new noun for new players: the prosumers.

Business models are transforming

Value has taken over from volume. Demand controls supply. Energy organizations are transforming in response and becoming increasingly digitized. Renewable is going from strength to strength, supported by digital innovation.

Digital offers real opportunities for Energy leaders of tomorrow.

70% of oil and gas respondents are undergoing digital transformation and evaluating automation strategies to cut costs, optimize operations and create new M&A opportunities.

EY Global Capital Confidence Barometer, 2020

1 Estimates suggest that, by 2050, more than 50% of global electricity will be generated by renewable energy sources. Source: https://eto.dnvgl.com/2017/#Energy-Transition-Outlook-2017

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The COVID-19 pandemic: a powerful accelerator

With the pandemic came supply-demand disruption, and falling oil and gas prices.²

With no clear vision of what's around the corner, COVID-19 has accelerated the need to:

- Innovate and add value at speed.
- Drive greater operational efficiency.
- Differentiate for competitive advantage.
- Rethink operations for the future.
- Diversify into alternative energy.

The COVID-19 pandemic has given your customers and employees — not to mention your analysts — a vision of what digital can enable, and of what can be achieved when needs must.

Now, more than ever, they demand purpose and commitment to doing business better, and they expect to see changes fast.

² Oil demand fell by 10m barrels/day from Q1 to Q2. Prices crashed to their lowest levels since 2001 (below US$20/barrel).

We’ve seen two years’ worth of digital transformation in two months.

Satya Nadella, CEO of Microsoft

As the world emerges from the COVID-19 pandemic, it feels like we are at a pivotal moment.

Bernard Looney, CEO of BP
Middle East and Africa (MEA): the natural home of energy

Responsible for more than half the world’s oil and gas production, the Middle East is synonymous with energy. Africa is also rich in fossil fuels. Exports aside, the traditional elements of the fuel-supply mix are likely to continue to play a role, given the appetite for energy in developing economies.

But, as Energy evolves, the region is also on a steep and necessary renewables curve. It’s fast becoming a natural home for the energy of the future as countries, International Oil Companies (IOCs) and National Oil Companies (NOCs) set tough zero-emissions targets:

The Middle East is the second most popular region for renewable energy investment after North America. With ambitious renewables goals, the UAE is at the forefront of nuclear, wind and solar innovation: The Mohammed bin Rashid Al Maktoum Solar Park in Dubai is the largest single-site solar park in the world.

Africa has lots of potential for solar, wind, wave and geothermal energy. With huge growth in electricity consumption – predicted to treble between now and 2040 – renewables are expected to be the largest source of power generation across the continent by 2040.

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4 Source: https://english.alarabiya.net/en/business/energy/2020/05/17/Middle-East-second-most- popular-region-for-renewable-energy-investment-Report
The EY-Microsoft Alliance: A powerful partnership for your Energy business

As the Energy industry goes through unprecedented change, leading executives are looking for trusted partners to give them the advice and support they need to adapt and transform.

Both Ernst & Young LLP and Microsoft have proven experience in providing results for oil and gas, renewable and utilities clients. The EY-Microsoft Alliance has the potential to offer customers more choice across MEA. With EY team’s world-class skills in business consulting, risk, process and change management alongside Microsoft’s technical know-how, leading business applications and cloud platforms.

We’re here to help you extract more value from your business today and move toward a more innovative and sustainable future. We’re ready to work with you on local, regional and global initiatives that improve your impact on both the economies of MEA countries and the environment.

Together, we’ll reveal and realize unseen opportunities for now, next and beyond.
The EY-Microsoft Alliance advantage

Our commitment to the Energy sector shines through our investment and innovation in transformation accelerators. The EY organization is part of the Microsoft Energy Core, and Microsoft’s leading cloud technology supports EY energy-leading solutions: Digital Energy Enablement Platform (DEEP) and UtilityWave.

Microsoft Energy Core
Launched in Dubai, this initiative is dedicated to digital transformation in the Energy sector. It brings together leading global Energy operators, academic institutions, technology partners and the global Energy industry community to surface and solve key challenges.

The focus is on developing solutions that harness the power of AI, IoT and Cloud. It encourages and invests in innovation and training in AI across the region.

EY Digital Energy Enablement Platform (DEEP)
An open platform that breaks down data silos and integrates key processes to strengthen innovation, decision-making and efficiency in the upstream oil and gas value chain.

Key features of EY DEEP
- Process Optimization
- Customizable enterprise solution
- Operator owned
- Future focused
- Upstream application
- Data Integration

Key Value Drivers of EY DEEP
- Reduce unplanned down time by 30%
- Reduce time taken for well planning by 50%

EY UtilityWave
UW puts digital network in the palm of your hand. It helps to deliver the capabilities needed to tackle the biggest challenges of a digital, dynamic energy system in an business-centric platform that connects multiple legacy systems, new IoT devices and diverse sources of data.

Key features of EY UW
- Plan and improve deployment of devices and drive vendor performance
- Monitor field devices to immediately identify and resolve issues
- Collect, store and analyze device and customer data to inform better decisions
- Track real-time customer usage data to improve satisfaction
- Monitor overall security health to identify threats and support preventative actions
- Allow customers more control over their energy usage and accounts

Key Value Drivers of EY UW
- Increase response time electric fault by 50%
- Increase customer satisfaction
- Decrease revenue leakage by 20%

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EY Digital Energy Enablement Platform (DEEP)

An integrated, digitally enabled approach successfully deployed at IOCs that enables a single source of truth.

Executive dashboard

DEEP focuses on data driven decisions for executives based on quality data such as:

- Real-time rig schedule overview across different phases
- Forecasted and actual financials directly from the source

Inventory management

DEEP allows for the Integration with your ERP systems such as SAP/Oracle:

- Visualize, track, order and maintain inventory through a single interface
- Well-designed and quick scenario planning based on inventory availability

Engineering simulations

DEEP has APIs for complex simulations and calculations:

- Enables complex drilling calculations
- Allows vendor agnostic operations and multivariate decision making

Technology enablement

- Office 365
- Power BI
- ERP System
- Power Apps, MS Flow
- Third-party Engineering Applications

Watch the video to learn more about EY DEEP

Delivering Intelligent Energy platforms to drive efficiency, cost reduction and build a sustainable future
Can a single source of truth power your tomorrow, today?

Following the price crash of 2014, we saw a wave of digitization moving beyond field operations and into the back office. The immediate pressures caused by COVID-19 and the long-term forces of decarbonization will force oil and gas companies to look for new ways to achieve meaningful and permanent efficiency improvements, setting the stage for true digital transformation. Increased awareness of digital technology – and the maturation of the technology itself – has encouraged more and more oil and gas companies to digitize across their operations.

Data is key

Value is leaking across the oil and gas value chain through inefficiency and failure to fully leverage data. Despite cutting-edge technology below ground, above ground much of that data is currently recorded manually in multiple, disconnected paper records or spreadsheets. Various teams engaged in the upstream life cycle – from land and lease management and well planning, to production – work in silos and use different data management practices. As a result, employees spend a lot of time finding and validating data manually. This leads to delays and impacts critical decision-making.

Significant opportunities await

Oil and gas companies stand to gain more than US$145 million annually by integrating key upstream processes via common data models. Digitization of upstream business process flows could automate routine tasks and allow employees to spend time on strategic tasks that add value in the long run. For instance, engineers and landmen could spend less time hunting for data and cross-checking and updating it across spreadsheets. Instead of troubleshooting, they could spend more time in contingency planning.

Capturing the value

How oil and gas companies can make the most of their investment in a digital, data-driven operation. The current industry downturn and reduced capex could make it difficult for many companies to commit the necessary capital for digital transformation initiatives. Companies must take a long-term view on digitization, think of creative ways to offset the capital investment and ensure that maximum value is realized from their investments. The right choices made on the journey to an integrated, data-driven and digitally enabled upstream function can help companies make the most of their investment.

Erik R. Funfar
Global DEEP Leader

Read more about this on this article
EY Utility Wave (UW)

UW is an Industrial IoT platform that supports our clients in turning data into business outcomes using role based applications, it uniquely ingest, combines and analyzes data to create new services, applications and customer insights. UW has been deployed globally across multiple utilities and more recently has been deployed with a large utility in the MENA region to monitor the progress of smart meter installations through Machine Learning and AI.

A wide range of inputs ...
UW integrates multiple data sources spanning smart and internet of things (IoT) devices, enterprise systems and external sources

... to generate results for many different users
EY UW produces insights and outputs that enable improved customer services, business decision making and day-to-day operations

Watch the video to learn more about EY UW
Committed to a sustainable future

As well as being committed to helping clients and society in general achieve a more sustainable future, both Ernst & Young LLP and Microsoft have our own ambitious targets:

The EY organization is reducing and offsetting its carbon emissions: it plans to be carbon-neutral by the end of 2020. The organization is purchasing more new renewable energy to power its offices and buying carbon credits to offset its carbon footprint. It is also investing in projects that reduce emissions or remove carbon from the atmosphere.

Microsoft has pledged to be carbon negative by 2030 and to remove all the carbon the company has emitted since its founding by 2050. By 2025, 100% of the energy for the carbon-emitting electricity consumed by data centers, buildings and campuses will be renewable. Microsoft has also introduced bold environmental initiatives such as AI for Earth.
What are the key challenges that we will help you solve?

Energy clients and prospects tell us that there are three main areas they need to work on to strengthen business today and move toward a sustainable future:

1. Operational improvement
2. Workforce productivity
3. The transition to clean energy

In the following pages, we'll go through each of these areas in more detail to explore the issues, identify solutions and look at examples of how the EY-Microsoft Alliance is already helping Energy clients to solve these challenges.
1. Operational improvement

Delivering Intelligent Energy platforms to drive efficiency, cost reduction and build a sustainable future
1. Operational improvement

The challenge

Operations are the biggest cost center for Energy organizations, and investor valuations are driven by operating efficiency. So it’s no wonder that more than half of those we speak to cite improving operations as their priority.7

Locating natural energy resources and turning them into sell-able commodities is a complex, asset-intensive industry: billions are invested in projects that can take decades to provide results.

Executives need to extract value from existing assets and resources, prevent wastage, cut costs and provide greater returns on investment, faster. And they need to be responsible players, reducing the carbon emissions of their current operations.

What gets in the way?

Operations, especially in upstream oil and gas companies, are plagued by inefficiencies:

- Siloed data – there’s lots of data available but it’s in different places, on different platforms, in disconnected documents, with different levels of detail. It’s challenging to enter, access, analyze and use to inform decision-making.
- Inconsistent process – different business units are using different processes and workflow apps. This leads to unnecessary complications, duplications, and inefficiencies that slow jobs down, increasing costs.
- Unnecessary downtime – without easy, real-time access to data, managers lack the information they need to respond quickly and effectively to business-critical issues, delaying repairs and reducing productivity.

With average return on assets being as low as 7.5% in the oil and gas industry, there’s no slack for inefficiencies of any kind.8

7 Source: https://www.ey.com/en_sg/oil-gas/technology-can-light-the-way—but-do-you-know-where-you’re-going
8 Source: ‘Can a single source of truth power your tomorrow, today?’, EY, 2019.
1. Operational improvement

The EY-Microsoft Alliance solution

Digitizing operations delivers a step-change in efficiency, ensuring you get more from your investments.

- Single source of truth — we’ll ensure that all your business-critical data is in one place and easy to access in real time, giving you maximum visibility across your business and supporting better, faster, decision making.
- Realize the potential of the Internet of Things (IoT), Artificial Intelligence (AI) and Machine Learning — we’ll help support you have the ideal mix of intelligent tools and that they play together nicely to generate the insights that you need to improve operations.
- Applied insights — our analytics will help optimize everything from geological and geographical analysis through to well decommissioning. We’ll help make it easier for you to locate and explore the potential of new energy deposits, forecast the recovery factor, and extract more value from assets.
- Accurate, real-time monitoring of carbon emissions will give you the information you need to enhance energy conservation and achieve your sustainability targets.
- Get to market faster — easy-to-use analysis, visual simulation tools such as Azure Digital Twins and workflow apps will interact seamlessly with your existing engineering software to simplify, improve and speed up every stage of the design, test and build phase, giving you competitive advantage.
- Reduce downtime — AI, predictive analysis and condition monitoring will support you to spot and correct issues before they happen, extend equipment lifecycles, and keep assets up and running longer.

25% of oil and gas respondents forecast a significant jump in the use of digital tools.

EY Global Capital Confidence Barometer, 2020
1. Operational improvement

How EY and Microsoft are making a difference

An integrated oil and gas company uses EY DEEP, supported by Microsoft, to help optimize well planning

EY DEEP team’s real-time well planning dashboard, based on Microsoft Power BI, gives engineers access to all the information they need to strengthen the design.

- Microsoft Dynamics 365 enables them to link this information to their preferred engineering software for simulation testing.
- ERP systems connect with the supply chain so the engineer can check availability/costs and order material needed for the operations phase.

Well planning time reduced by 50% and costs reduced by 30%.

BP uses Microsoft Azure Machine Learning to get to market faster

- Azure helps BP to explore the potential of new energy deposits.
- BP is better able to gauge hydrocarbon reserves.
- With Machine Learning, BP can develop more accurate models dramatically faster.

We chose Azure Machine Learning because it offers a rich, end-to-end AI ecosystem that provides the features we need to bring solutions to market quickly.

Lance Goodship, Enterprise Architect AI, BP

Shell enhances safety with Microsoft Azure, AI and IoT

- Machine vision identifies potential forecourt hazards.
- Machines learn to respond by cutting off the gas.
- Employees and customers at Shell service stations stay safe.
- Shell gains competitive edge.

ExxonMobil use Microsoft technologies to support ambitious growth targets

- ExxonMobil subsidiary, XTO Energy, uses Microsoft cloud to co-ordinate a vast number of field assets.
- Innovative technologies collect data in real time over thousands of miles to extract maximum value from drilling opportunities.
- Leaks are detected faster, reducing environmental impact.
- Expected to support growth by as much as 50,000 oil-equivalent barrels per day by 2025.

Collaboration with Microsoft is key to our future development efforts.

Gjervik Staale, Senior Vice President, Permian Integrated Development for XTO

Delivering Intelligent Energy platforms to drive efficiency, cost reduction and build a sustainable future
2. Workforce productivity

Delivering Intelligent Energy platforms to drive efficiency, cost reduction and build a sustainable future
2. Workforce productivity

The challenge

Operational efficiency is linked to workforce productivity. When data lives in silos, getting hold of the information you need takes time.

Inefficient processes waste employee time that could be better spent strengthening your business and delighting your customers.

People are happiest when they’re being productive. Messy processes get in the way of employee satisfaction. It also makes it difficult for you to attract and retain the best talent. Without that talent, your organization will struggle to gain or maintain competitive advantage.

Technologies such as AI will play an increasing role in tomorrow’s successful, sustainable Energy organization, and those technologies will evolve continuously. It’s important to ensure that your teams have the skills and training they need to realize the potential of your digital investments.

The EY-Microsoft Alliance solution

Your people are your future. Our digital technologies and productivity tools support them to lead, so that they can take your organization to the next level.

- Keep people connected and elastic – our technologies give your teams easy, real-time access to the information they need anytime and anywhere. This is especially vital for field service staff as it supports them to speed up issue resolution and keep customers happy.
- Streamline process – we’ll use intelligent technologies to automate mundane tasks, reducing human error and variability while freeing people up to focus on their core skills. Engineers will spend more time engineering.
- Empower your workforce – we’ll help ensure people have the information, skills and tools they need to be engaged in their roles and to realize the full potential of your digital investments.
2. Workforce productivity

How EY and Microsoft are making a difference

A workflow management solution that provides predictive maintenance for an oil and gas company

- A client used EY DEEP to develop a Productions Operations Intelligence Hub.
- The hub removes data silos: all data is now on one easy-to-access Microsoft Dynamics 365 platform.
- The hub integrates seamlessly with client's ERP and SCADA systems.
- A Field Service GPS module sends actionable alerts, and issues are resolved faster.
- Repair analysis is looped back into the system to help with future planning.

Total Solar use Microsoft to strengthen communications and promote solarization

- Microsoft technologies keep teams connected and optimize productivity.
- Power Apps enables the quick building of apps that support projects on the ground.
- Power BI dashboards and a database on SharePoint centralize data for easy, real-time use.
- Power Automate automates processes to save time and reduce admin.

Microsoft help Centrica to support staff to serve customers better

- Field services have anywhere access to Windows Virtual Desktop, so the information they need is always at hand.
- Issues are resolved faster.

"We’re giving our users a better experience, which means we’re providing a better service to our customers."

Patrick Babic,
Service Owner, Centrica
3. The transition to clean energy
3. The transition to clean energy

The challenge

The pressure is on to keep the world moving while reducing carbon emissions.

Environmental concerns and commercial imperatives are driving improvements in energy efficiency; portfolio shifts; and diversification into renewable, clean energy sources.

The way we consume energy is also changing. With the growth of electrification comes the need to rethink the traditional business models of producer, grid, distributor, customer. Smart devices and the smart grid are the future, and smart energy providers are using innovative new technologies to gain competitive advantage.

Smart grids give customers greater visibility and control over how they use electricity and how much they pay for it. They can also feed any surplus electricity they generate back into the grid. As self-generating power accelerates, the customer might well become the competitor.

The EY-Microsoft Alliance solution

A new energy world demands new capabilities, and EY UtilityWave provides them by:

- Helping organizations to transition to the digital grid — our agile approach will get you up and running in just weeks, help delivering faster results.
- Improving performance — UtilityWave transforms how organizations integrate and leverage data from IoT devices to help manage distributed energy resources.
- Strengthening insights — advanced Microsoft analytics and reporting capabilities lead to better decision making.
- Driving customer satisfaction — consumers have the control over energy that they want and utility organizations have the real-time insight they need to improve customer service.
- Simplifying process — an end-to-end model and automated workflow help you run your digital grid services efficiently.
- Delivering social and economic impact — smart meters promise all kinds of benefits for the electricity organization, the customer and the environment. UtilityWave helps you build for a sustainable future.

Other AI technologies such as Azure Digital Twins can be used to build detailed digital models of entire environments where you can test and optimize your distributed energy resources.
3. The transition to clean energy

How EY and Microsoft are making a difference

EY UtilityWave is currently being used to help manage the largest deployment of smart meters in the MEA region.

EY UtilityWave helps a US utility to understand how customers are using its electronic vehicle charging network.

Global renewables organization ENGIE uses Microsoft AI to boost data insights

- ENGIE’s proprietary platform Darwin collects millions of IoT signals a day.
- Microsoft AI has modernized the infrastructure and reduced total cost of ownership.
- Microsoft Azure Time Series Insights provide robust analytics.

Ørsted relies on Microsoft to speed up development and support predictive maintenance

- Microsoft supports Ørsted’s move from oil and gas to wind energy.
- Microsoft AI collects and analyzes data from 1,300 turbines, giving visibility of potential issues.
- Microsoft cloud technology speeds up the development of new turbines.

“We chose Azure because of its Time Series Insights capability — it really swung the decision for us.”

Sebastien Gauthier, Head of Darwin Delivery at ENGIE Digital

“The strength of our relationship with Microsoft lies in the mission alignment between our companies of trying to make the world a better and greener place.”

Michael Judén, Head of Digital Strategy at Ørsted
A powerful future for Energy with the EY-Microsoft Alliance

One thing we can always be sure of is change.

If nothing else, the COVID-19 pandemic has shown us how quickly change can happen, and how quickly we can respond to it.

The Energy industry is undergoing unprecedented change. Everything from how we source energy, through to how we share and use it, is transforming. And, as we move toward a more sustainable future, digital is playing a key role in transforming the Energy sector.

EY and Microsoft are digital transformation professionals. We’ve come together to offer customers more choice across MEA. We’re committed to improve the potential of digital for Energy executives across MEA.

We’re already working alongside many leading Energy organizations, helping them achieve operational excellence, improve workforce productivity and transition to clean energy.

We have the experience, advice, solutions and energy you need to take your organization to the next level.

We’ll help you drive change, not just respond to it.
To find out more about how the EY-Microsoft Alliance can help you, or to arrange an Intelligent Energy Workshop, get in touch with Shu’aib Uddin or Oskar Nilsson:

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What’s an Intelligent Energy Workshop?

An immersive, collaborative half-day session based on our tried-and-tested Wavespace methodology.

It brings your key stakeholders together with sector professionals at EY and Microsoft to define issues, challenge assumptions and work on practical solutions.

Expect to:

• Discuss and summarize your key challenges.
• Agree a problem statement.
• Define what success will look like.
• Agree an action plan.
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Working across assurance, consulting, law, strategy, tax and transactions, EY teams ask better questions to find new answers for the complex issues facing our world today.

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The MENA practice of EY has been operating in the region since 1923. For over 97 years, we have grown to over 7,500 people united across 21 offices and 16 countries, sharing the same values and an unwavering commitment to quality. As an organization, we continue to develop outstanding leaders who deliver exceptional services to our clients and who contribute to our communities. We are proud of our accomplishments over the years, reaffirming our position as the largest and most established professional services organization in the region.

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