2017 Edition

The Digital Oil and Gas Company

Inspire and Shape

the Digital Energy Revolution

SAP Run Simple

KEN'S POINT OF VIEW

"We see a world energized by a safer, more reliable, and affordable digital energy network. One that spans all sources of supply and is transformed with new business models, processes, and ways of working that we have never before imagined."

Ken Evans
Global Vice President
Oil and Gas Business Solutions
SAP

Dear Customers and Partners,

By 2050, the global population is expected to reach nearly 10 billion people[1] – and all will need safe, reliable, and affordable energy. Total energy demand is universally predicted to increase due to growth in population, urbanization, and the middle class. This is undoubtedly great news for the energy industry.

However, the energy world as we know it is experiencing a revolution on both the supply and demand sides of the value chain. Hydrocarbons will continue to play a dominant supply role for some time, but we are also witnessing rapid growth of hydrocarbon alternatives, improved energy efficiency, and the adoption of less carbon-intensive lifestyle choices. At the same time, we're experiencing a digital revolution from the technology advances of hyperconnectivity, supercomputing, blockchain, cloud computing, smart technology, and cybersecurity.

The boundaries of traditional oil and gas value chains are changing where access to information is overtaking access to reserves and capital. To survive and thrive in the digital era, oil and gas companies need to reimagine their business models and operate on a platform that enables Live Business to reach new levels of safety, cost control, and agility in an environment with lower oil prices.

We envision this demand-driven value chain – focused on the ultimate energy needs of consumers – operating as a digital energy network. This network will connect ecosystems in a "network of networks" that enables both the resilience and adaptability needed to thrive within any new and developing energy market. Each network node will connect all of the required stakeholders around a specific function, such as hydrocarbon logistics, or an initiative, such as a capital project or an oil field. There will be no internal or external silos or barriers, so every worker, supplier, customer, and asset will connect seamlessly.

Leading energy companies are already starting their transformational journey and using these digitally enabled advances:

- **Reimagine business models** focused on moving beyond the barrel, deploying digital asset lifecycle management, competing as an ecosystem, and utilizing new digital platforms
- **Reimagine business processes** using digital technology to integrate, collaborate, and automate across enterprises with a more outcome focus
- **Reimagine roles and ways of working** that exploit new digital technology such as wearables, 3D printing, augmented reality, and learning technologies

At SAP, our vision is to help the world run better and simpler by digitally enabling oil and gas companies to deliver the safe, reliable, and affordable energy needed to support modern lifestyles and create opportunities for all people. To realize this vision, we are connecting all stakeholders on a next-generation digital platform so all can thrive within the emerging digital energy network.

This document offers our insights into how we see the oil and gas industry revolutionizing itself and how SAP will support your success within this digital energy network.

Thank you for your interest, and I look forward to helping you become a Live Business.

Ken Evans
Global Vice President
Oil and Gas Business Solutions
SAP SE

© 2017 SAP SE or an SAP affiliate company. All rights reserved.

TABLE OF CONTENTS

© 2017 SAP SE or an SAP affiliate company. All rights reserved.

THE DIGITAL ECONOMY

Big picture: The digital energy revolution

Technology trends change everything

We are witnessing an era of unmatched business innovation in the oil and gas industry enabled by technology megatrends and breakthroughs such as:

- Hyperconnectivity
- Artificial intelligence/machine learning
- Blockchain
- Augmented reality

Leading oil and gas companies are already preparing to use these technologies to become more competitive in the emerging digital energy revolution.

Access more information on the latest technology trends here:

The digital revolution

Global energy demand is growing

Most predictions agree that:

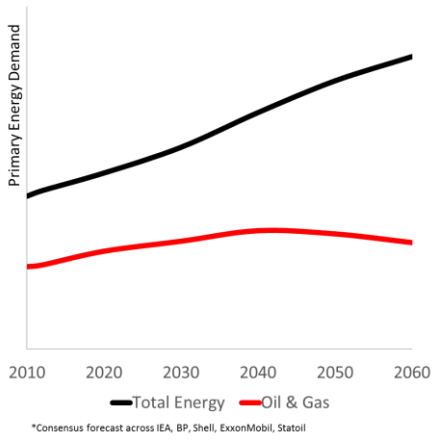
- Global population will reach almost 10 billion by 2050[1]
- 3.1 billion people will be joining the middle class by 2030,[2] demanding more clean and affordable energy to make their lives better
- Urbanization will result in two out of three people living in cities by 2050[3]

This is all good news for the energy industry, resulting in global energy demand growing 80%, nearly doubling, by 2050,[4] yet there are also rapid changes occurring which threaten traditional oil and gas industry paradigms.

Transformation drivers

- **Changing energy mix:** Decarbonization and advances in engineering and technological ingenuity, making possible new and expanded energy sources
- **Changing demand patterns:** Population growth, worldwide urbanization, and rising demand from emerging economies shift energy flows from west to east
- **Changing regulations:** The drive for both lower carbon intensity and overall greater safety of people, plants, and the planet is resulting in a broad and diverse set of regulations that the industry must constantly stay ahead of
- **Changing lifestyles:** The confluence of urbanization, resource constraints, and the digital economy are shifting consumers to prefer the simplicity of outcome vs. input-based energy consumption

There is a growing preference to consume the outcomes of miles/km, degree days, powered hours, and the products instead of needing to deal with the complexity of owning, maintaining, and fueling vehicles, furnaces, or our powered devices.



Energy demand is insatiable

- "Energy is the last domino of the information age. While it's hard to predict exactly what the energy revolution will bring, one thing is already abundantly clear: **over the next generation, power and influence will decouple from the ownership of resources** (and associated rent-seeking activity) and increasingly be tied to information and imagination."[5]
- "Success for **Shell** – and for society more widely – lies in working better, together. . . . Only then will we be able to take better advantage of the efficiencies that can be achieved by collaborating at a system level."[6]
- **"Energy companies need to adapt . . . and to build strategically** for the longer term. We not only need to control capital and costs, but to set a clear direction."[7]
- **ExxonMobil**: "Meeting energy demand safely, reliably and affordably – while also minimizing risk and environmental impact – will require advanced technology and expanded trade and investment. It will require innovation."[8]
- **Shell, SAP, and Volkswagen** have collaborated to create a solution that dramatically simplifies parking and fueling experiences for drivers.[9]

© 2017 SAP SE or an SAP affiliate company. All rights reserved.

THE DIGITAL ECONOMY

The Future: Digital becomes the source of competitive advantage

Success beyond traditional oil and gas

Digital will enable oil and gas companies to break free of the traditional energy demand and price curves and capture new value in three primary areas:

- **Costs:** The elimination of redundancies and execution lag times will dramatically improve productivity and further reduce capital and inventories from improved collaboration and sharing within the network
- **Diversity:** The modularity of the network lowers the barriers of applying existing competencies into a more diverse portfolio of energy, for example, applying offshore production capabilities to underwater mining
- **Outcomes:** Development of more outcome-focused business models, for example, new partnerships and market entries into retail, banking, and consumer goods, that enable delivery of such outcomes as transportation and heat instead of just the input fuel

The digital energy network

SAP envisions that this digital energy revolution will result in a more resilient digital energy network that connects all of the workers, suppliers, customers, and assets via reimagined business models, processes, and ways of working. We will move away from the traditional, vertically integrated model bound by physical, technological, and organizational boundaries.

Digitally enabled business processes will become ecosystems that connect all stakeholders around a specific function or initiative, such as a capital project, an oil field, or hydrocarbon logistics. For example, with connected hydrocarbon logistics, a product planner and scheduler might learn that a jobber is lifting less than forecasted. This will affect revenue and create a containment issue at the terminal if the product isn't moved. In the connected world, the system will automatically generate a number of cost-ranked options to move product at the three locations within operational constraints.

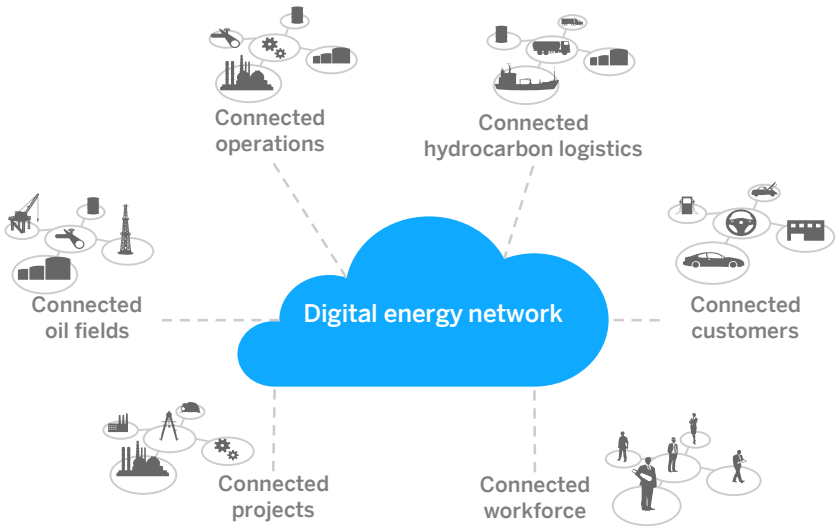
The product scheduler can then look on the network to identify potential transportation assets that can be employed in the movements. The system's modeling capabilities are used to better understand cost, constraints, and trade-offs inherent in the potential options. Once analysis is completed, a plan is selected that enables product to be moved to a nearby terminal where liftings are exceeding forecast.

Collaboration will be simplified through the sharing of information and resources. All elements of the value chain will become outcome-driven, focused on the ultimate needs of the customer. Access to information will overtake access to capital and reserves as the key competitive differentiator.

New business imperatives

Oil and gas companies are reimagining business models, business processes, and job descriptions enabled by the transformation drivers to achieve:

- Innovation beyond the barrel – energy outcome providers
- Products and service digitalization
- Ability to compete as an ecosystem
- Digital platform



© 2017 SAP SE or an SAP affiliate company. All rights reserved.

REIMAGINING

THE DIGITAL ECONOMY OFFERS INFINITE NEW OPPORTUNITIES

In a connected world where every company is becoming a technology company, smarter products and services will refocus commerce on business outcomes and blur industry lines.

REIMAGINE BUSINESS MODELS

Access to resources and capital is no longer enough to sustain competitive advantage in the digital economy, which is driving the development of new business models that increasingly rely on digital technologies and information to compete.

We see the primary strategies of cost control, diversification, and outcome focus being applied to the below business models types for participants across the digital energy network. The network's adaptability and flexibility and these emerging models will drive energy organizations' digital transformation.

Beyond the barrel: energy outcome providers

With the advent of the digital economy and the deregulation of energy markets, consumers are more empowered than ever and are demanding simplicity and service quality. Energy providers will extend beyond the barrel to master:

- Consumer energy usage analytics to offer services that optimize delivery of transportation, heating and cooling, and power
- Creation of new services and experiences focusing on convenient energy outcomes that cross traditional market boundaries. Examples include delivering the outcomes of transportation, climate control, or a powered device and not just the traditional fuel inputs

Products and service digitalization

Logistics providers will disrupt the entire value chain by managing physical deliveries across the network, often without owning or operating any of the necessary inventory or assets, or hiring the necessary employees. For example, SAP Asset Intelligence Network will create "digital twins" of physical assets, and will share business models among OEMs, service providers, and operators. Logistics providers of the future will:

- Become masters at aggregating and matching supply and demand and dispatching owned or contracted resources across all modes of transport. This starts with inventory visibility across a network of industry participants, with "digital logistics" determining the optimal move before physical logistics actually move anything
- Optimize and automate execution so that transactions are touchless and require minimal manual intervention
- Use digital connectivity with predictive and learning technologies to enable agile and autonomous responses to market dynamics

Competing as an ecosystem

In an increasingly volatile energy market with a broadening range of asset types and energy sources, the success of energy operators will largely be determined by three variables: safety, cost, and agility. Operators will:

- Push the boundaries of augmented reality and use of robotics in operations activities to improve safety and productivity
- Push organizational boundaries by seamlessly sharing data and calling on ecosystem partners to work together in ensuring production, profitability and safety targets are met (possibly pay for outcome)
- Master IT/OT convergence with machine learning and prescriptive operations and maintenance
- Develop greater asset intelligence by cooperating and sharing performance data with OEM and engineering specialists
- Collect performance feedback from connected assets to continuously improve and innovate design and operation of new and existing assets

Digital platform

Continued investment and ingenuity are needed to find, develop, process, and expand the energy network infrastructure. Digital leaders will deliver operationally ready assets, often on a performance or revenue-share basis, by:

- Using the power of supercomputing (for example, to run predictive and learning algorithms and models) for more accurate exploration and effective asset design and constructability
- Using a networked platform for collaborative project management that will orchestrate work and logistics across multiple trades and disciplines.

DISRUPTIVE COMPETITORS
By 2018, IDC Energy Insights predicts that one-third of the top 20 market share leaders in most industries will be significantly disrupted by new competitors (and "reinvented" incumbents).[10]

INCREASED CONNECTEDNESS
Vantage Drilling: "We've constructed an always available technology that makes any plant available anytime, anywhere."[11]

© 2017 SAP SE or an SAP affiliate company. All rights reserved.

REIMAGINE BUSINESS PROCESSES

Digitally enabled and connected processes will utilize new technologies, interactive devices, and real-time data to reduce risk, increase efficiency, and help make better informed decisions. Connected processes will become simplified and optimized, extending beyond a single enterprise to create a digital energy network.

Project orchestration

The energy industry will remain both asset and capital intensive, making project orchestration key to optimizing project planning, execution, and collaboration along the project value chain. Connected projects will plan, manage, and collaborate better by capturing all data across the full project lifecycle, and handing off easy-to-consume kits of digital necessities. Predictive and learning algorithms will improve program delivery. Full visibility will occur as project management, procurement, and logistics solutions integrate with finance, logistics, and health and safety.

Hydrocarbon production

With digitally connected oil fields, companies will manage the convergence of hydrocarbon production, maintenance, engineering, and financials. Operators and their partners will use real-time analysis of geospatial and sensor data from a portfolio of assets and combine it with user-configurable predictive analytics to identify underperforming assets and determine root causes of issues. Production will be optimized and secured through the use of proactive maintenance planning and integrated financial and resource management.

Hydrocarbon logistics

Hydrocarbon logistics processes will improve to optimize logistics and execution of each step across the end-to-end hydrocarbon supply chain. New "Uber-like," on-demand transportation models will become possible across all modes of transport. Hyperconnectivity will also enable organizations to gain real-time visibility of raw-material acquisition to retail and cut risk with a scalable supply chain for hydrocarbon logistics. Deeper refinery and terminal integration, complete with full integration across partner business networks, will drive efficiency in tendering and bid activities.

Operational integrity

Due to demographic challenges, advanced skill and certification requirements, and global workforce shortages, improving process safety and operational integrity, while reducing enterprise operating risk, is critical. Collaborative networks will drive fuller situational awareness, and optimize process safety and integrity in oil or gas operations. Recruiting platforms and managed service providers will enable the requisitioning needed to find people with the right skills to meet business needs and compliance requirements.

Procurement

Global supply chains will become contractually enabled with multitier management of suppliers, driving new levels of collaborative sourcing. Fully integrated procurement suites will help find and contract both complex services, as well as talent with specific non-core skills to drive strategies outside of current business scope.

Finance

Financial systems of the future will be able to analyze profitability instantly across multiple dimensions of the ecosystem. The systems will generate finance reporting with industry-related attributes, enable control of performance-based service contracts, and manage and comply with digital rights.

Human resources

Total workforce management will enable managing the entire workforce on a single platform to lower costs of time and attendance functions. This platform will support social collaboration among teams, train and certify the workforce on the latest digital technology, and collaborate with universities and external entitles with more flexibility.

$1M DISRUPTIVE INNOVATION
Reduction in cost at Continental Resources to drill a well due to technology advances in drilling and completion efficiencies

30% SIMPLIFIED FIELD TICKETING
Reduction in sales outstanding at C&J Energy Services more accurate insights into each job and increase overall operational efficiencies[12]

© 2017 SAP SE or an SAP affiliate company. All rights reserved.

REIMAGINE WORK

The transformation of processes – from a traditional, vertically integrated oil and gas company to a digital energy network – profoundly changes what workers do and how they learn, interact, and grow.

Substantial business transformation should automate manual tasks, enrich jobs, and create more meaningful work. For oil and gas companies, transformation typically involves:

Digital business processes: Digital energy companies will eliminate unnecessary and manual transactional work, replacing it with digital processes and real-time analytics that work together to support automated, rule-based decision making and even to automate exception handling.

Connected assets and people: Companies will enable real-time, on-demand access to the right data on the right device. This will improve decision quality, profitability, and productivity as people can access any information they need within the context of their actual work, regardless of whether they are internal or external to the business.

Predictive and self-learning systems: Digital energy companies will improve machine-to-machine collaboration and provide maintenance simulations (for example, of asset repair procedures). By delegating business processes from people to machines, companies will need fewer but more highly skilled workers who can orchestrate complex systems.

Interactive and touchless technologies: These technologies reflect the transition of people's roles from transaction workers to exception handlers, who address issues that fall outside the constraints of rules and thus demand human creativity and ingenuity. By using augmented reality and drones, safety and productivity will be improved, and human errors and exposure to risks will be reduced.

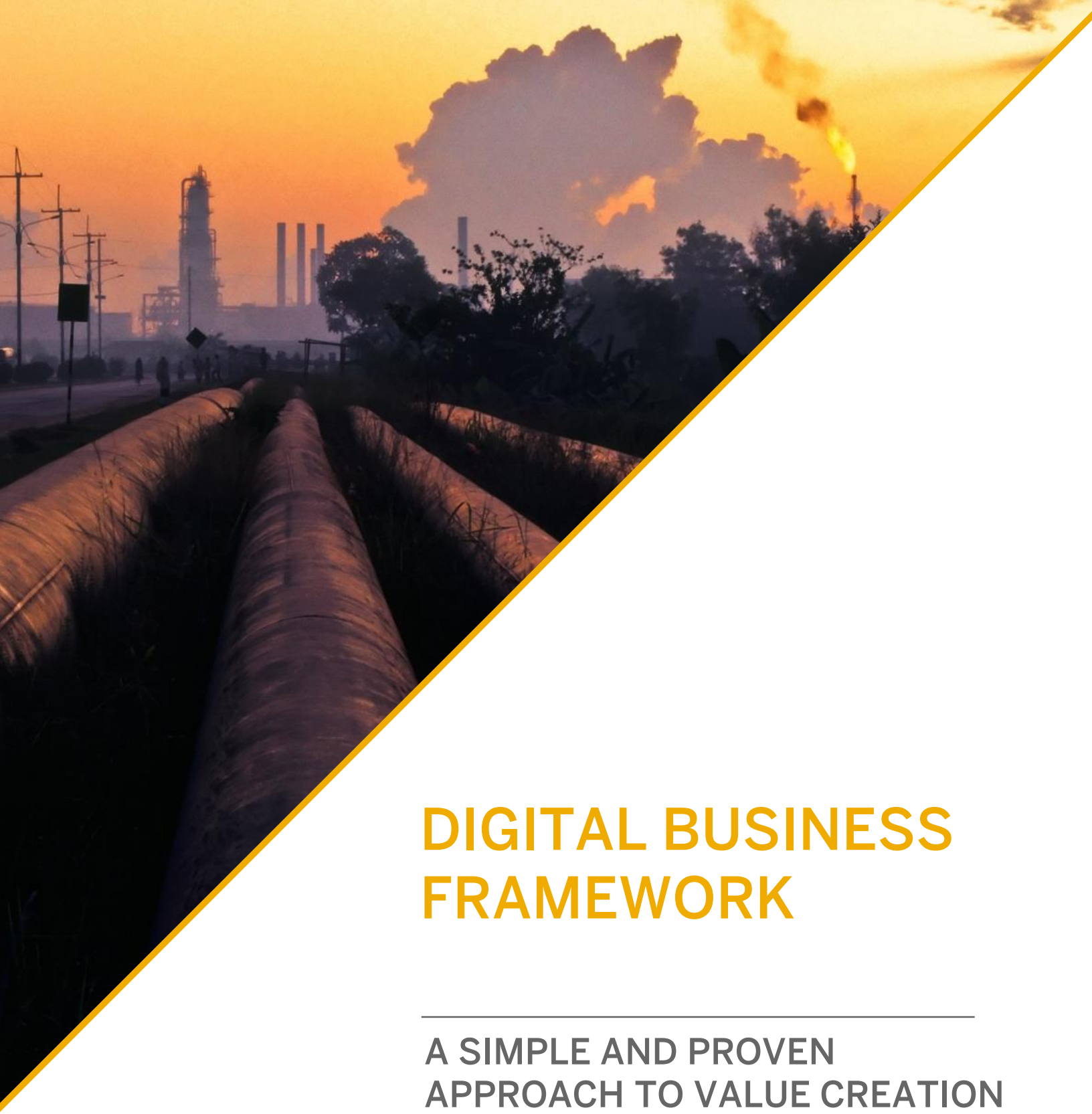
Flexible, business-to-people relationships: Digital energy companies will require effective and adaptive digital communication, both within their organizations and between their assets, workforce, customers, service providers, and all other stakeholders. Real-time information on the right devices will be a critical factor for the digitally enabled worker to build and run the digital enterprise of the future. In addition, communications will increase with the public over social and broadcasting networks.

People continue to be key assets in the digital energy network. Their roles will change, but their value within the network will grow.

>10.1 The ratio of devices that operate autonomously today, compared to those that have human interfaces. This ratio will move toward the hundreds and even thousands.[13]

An estimated 71% of the workforce in oil and gas is 50 years of age or older, according to an IPAA survey.[14]

© 2017 SAP SE or an SAP affiliate company. All rights reserved.



DIGITAL BUSINESS FRAMEWORK

A SIMPLE AND PROVEN APPROACH TO VALUE CREATION THROUGH DIGITALIZATION

Every company across all industries requires a simple, digital approach to building a pragmatic and executable strategy for realizing its digital vision.

DIGITAL BUSINESS FRAMEWORK

Every company needs to think about the five pillars of digitalization

SAP understands the five pillars of digitalization and the continuously changing requirements that are posing big challenges for businesses today. By reimagining business models, business processes, and work, companies will be able to develop their digitalization road map.

We developed the digital business framework to help oil and gas companies develop and execute on their enterprise strategy so they can fully leverage and contribute to a digital energy network. In doing so, oil and gas companies can grow profits and reduce costs by digitizing and simplifying their operations.

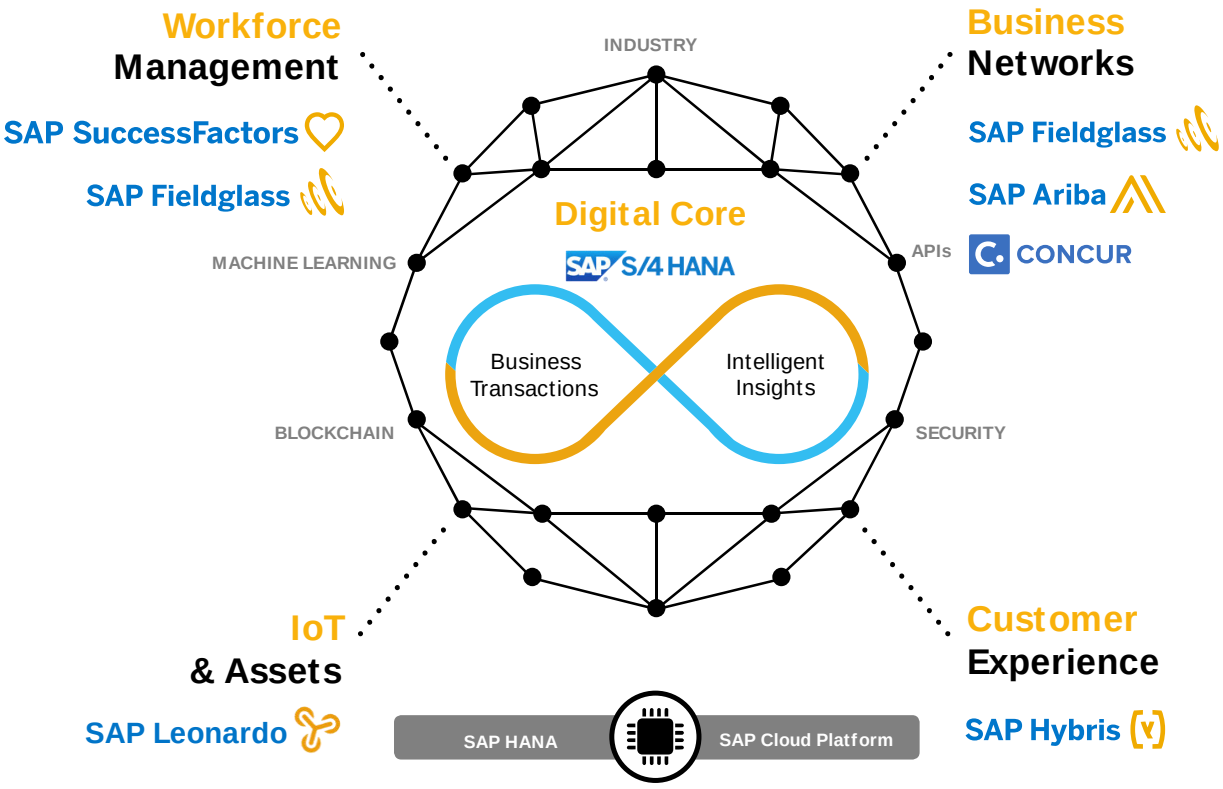
The digital core is the platform for innovation and business process optimization. It is the heart of the business where SAP is a leader, already providing the de facto solution suite for the oil and gas industry. The digital core connects the workforce, the Internet of Things, supply networks, customers, and stakeholders.

Using the digital business framework will help companies create:

1. A smarter and engaged **workforce** across all employees and contractors
2. **Supplier collaboration** to accelerate growth and innovation
3. Outcome-based **customer and stakeholder engagement** across all physical and digital channels
4. Full and safe utilization of **assets leveraging the Internet of Things** to drive real-time insights and enable new business models
5. Real-time business transactions and analytics connected on a **digital core** so everything is smarter, faster, and simpler

Get started today

It isn't necessary to implement this digital framework all at once, or even to start with SAP S/4HANA. Companies can start with the pillar that creates the most value for their given situations, and add others when they are ready.

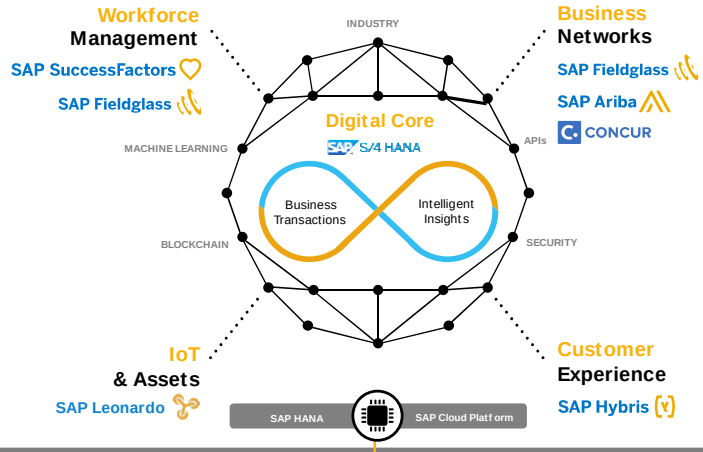


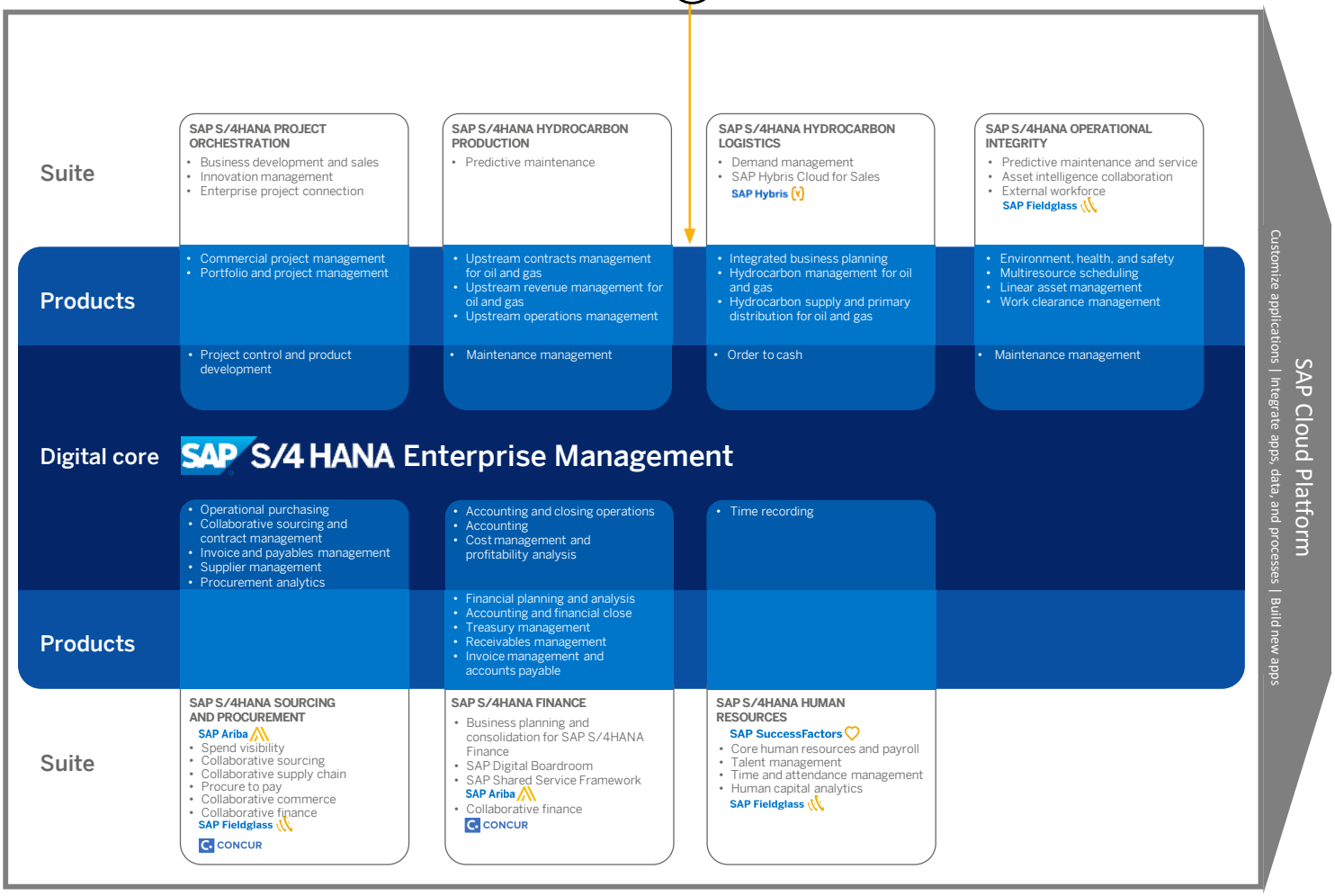
© 2017 SAP SE or an SAP affiliate company. All rights reserved.

SAP PORTFOLIO FOR DIGITAL BUSINESS FRAMEWORK

SAP has innovated our portfolio to provide both for a stable digital core as well as flexible line-of-business (LoB) extensions.

In the digital economy, simplification and business innovation matter more than ever. To do this effectively, it's important to cover the end-to-end digital transformation journey, ranging from planning a digital innovation road map and implementation plan with proven best practices to the ability to run all deployment options and ultimately optimize for continuous innovation with a focus on outcomes.





Learn more about SAP solutions today and discover planned innovations by accessing SAP's road map for oil & gas business solutions here:

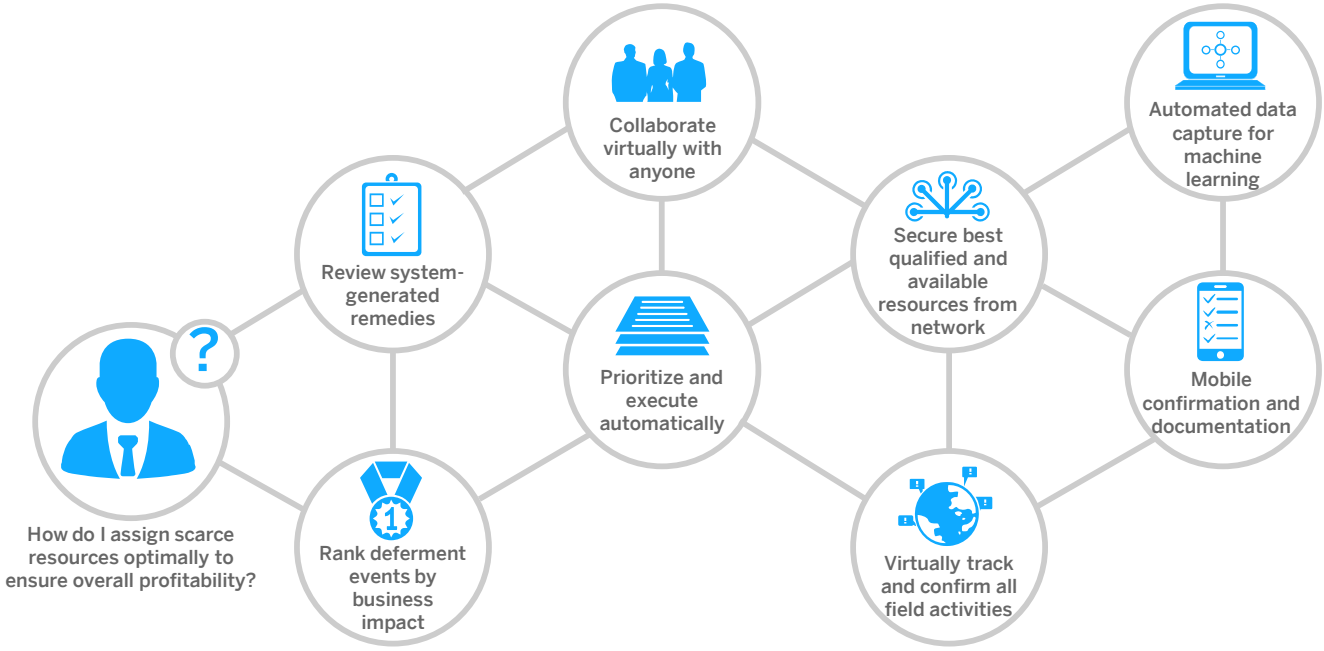
© 2017 SAP SE or an SAP affiliate company. All rights reserved.

© 2017 SAP SE or an SAP affiliate company. All rights reserved.

HOW DOES IT ALL COME TOGETHER? – EXAMPLE

Each of the five digital business pillars delivers individual business value, but next-generation business processes will span multiple pillars to drive efficiency internally or across the business network, connect to devices, and enhance the omnichannel customer experience.

CONNECTED OIL FIELDS



The process flow shown on this page portrays how leaders in the oil and gas industry are integrating their OT and IT technologies to proactively deliver production and profitability above forecast.

In this example, the system generates remedies to deferment events and ranks them by business impact. This allows the production operator to optimally assign scarce resources and ensure overall profitability. Resources needed to perform work are automatically identified on the business network, and activities are tracked and confirmed virtually.

In this context, connected oil fields yield tangible business benefits such as:[38]

- 5% increase in production
- 10% reduction in lease operating expense
- 25% reduction in well downtime
- 50% reduction in rate loss deferments
- Safer and beyond compliant operations

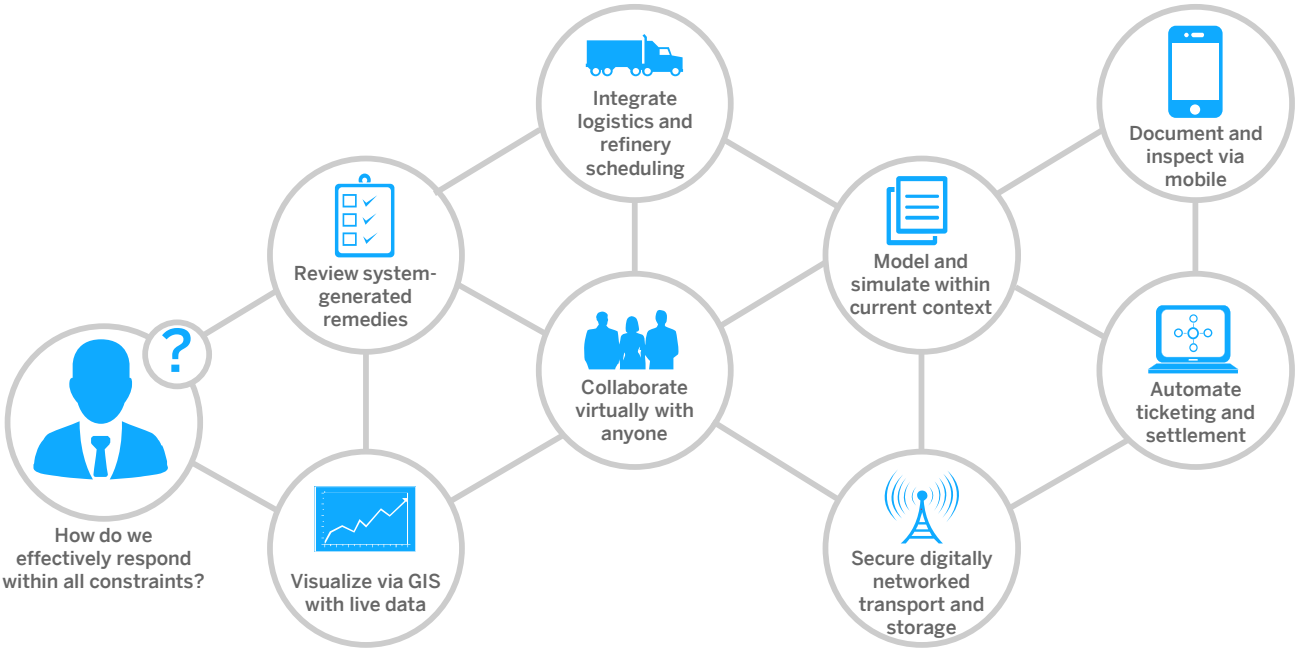
See a video on a day in the life of a production engineer here.

© 2017 SAP SE or an SAP affiliate company. All rights reserved.

HOW DOES IT ALL COME TOGETHER? – EXAMPLE

Each of the five digital business pillars delivers individual business value, but next-generation business processes will span multiple pillars to drive efficiency internally or across the business network, connect to devices, and enhance the omnichannel customer experience.

CONNECTED HYDROCARBON LOGISTICS



The process flow shown on this page portrays how leaders in the oil and gas industry are integrating their OT and IT technologies to proactively optimize the network and be ready for the next disruption.

In this example, the system generates remedies to disruption events and again ranks by business impact. The product planner and scheduler can visualize the disruption with GIS and live data and run models and simulations within the current context to effectively respond to a disruption within all operating constraints. Resources needed to perform work are automatically identified from within the business network, and activities are tracked and confirmed automatically.

In this context, connected hydrocarbon logistics yield tangible business benefits such as:[15]

- 2% higher refining and sales margins
- 6% reduction of hydrocarbon inventory
- 4% reduction in capital expenditure
- Safer and beyond compliant operations

See a video on SAP vision of connected hydrocarbon logistics here.

© 2017 SAP SE or an SAP affiliate company. All rights reserved.

FROM YOUR CURRENT STATE TO DIGITAL

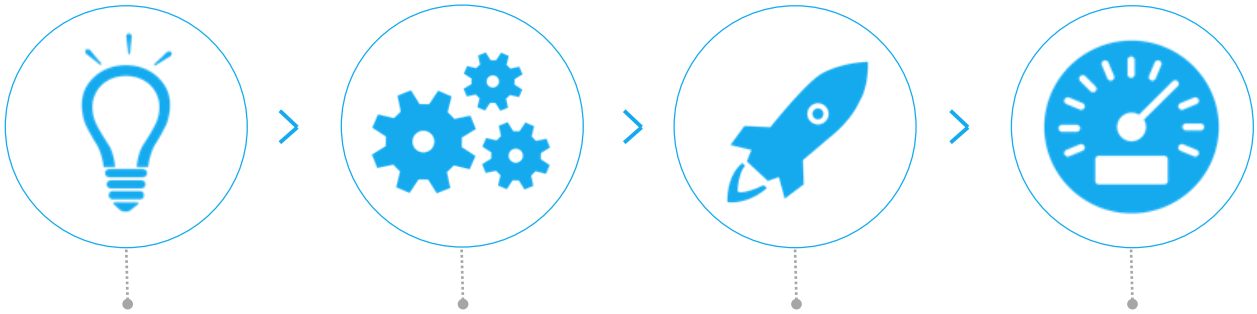
THE JOURNEY TO BECOMING A DIGITAL MANUFACTURER BEGINS WITH PLANNING A DIGITAL TRANSFORMATION ROAD MAP

TRANSFORMING FROM YOUR CURRENT STATE TO DIGITAL

The keys to success

In the digital economy, simplification and business innovation matter more than ever. To do this effectively, it's important to cover the end-to-end digital transformation journey, ranging from planning a digital innovation road map and implementation plan with proven best practices to the ability to run all deployment options and ultimately optimize for continuous innovation with a focus on outcomes.

The end-to-end digital transformation journey



PLAN
well to manage expectations

Simplify and innovate
- Reimagined business models, business processes, and work
- Digital business framework as a guide for digital transformation
- Value-based innovation road maps

BUILD/LAUNCH
with proven best practices

Standardize and innovate
- Model company approach to accelerate adoption with model industry solutions
- Design thinking and rapid tangible prototypes
- Co-engineered industry innovations delivered with agility

RUN
all deployment models

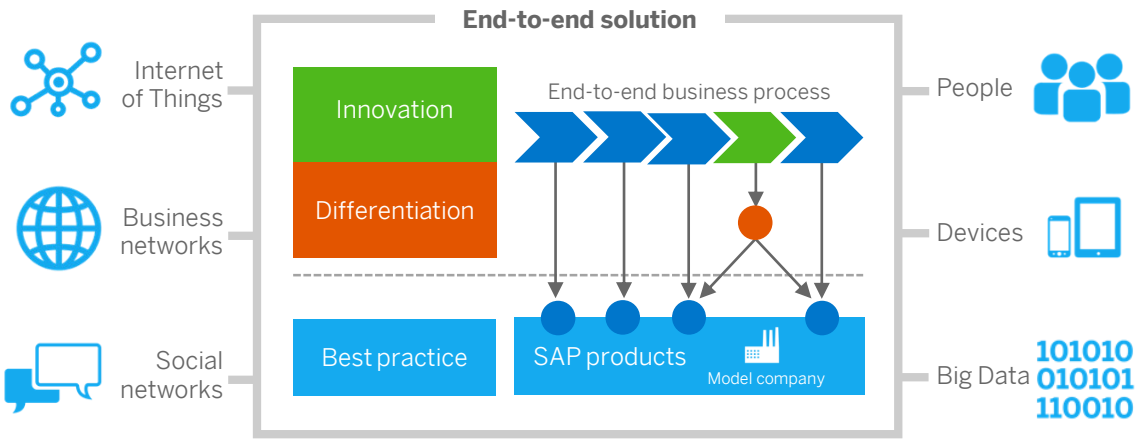
Run with one global support
- One global, consistent experience
- End-to-end support – on premise, cloud, hybrid

OPTIMIZE
for continuous innovation

Optimize to realize value
- Continuously capture and realize benefits of digital transformation

And to move forward with speed and agility, it helps to focus on live digital data, instead of Big Data, and combine solution know-how and industry-specific process expertise with data analytics so that the right digital reference architecture is defined and delivered. In that context, we believe that a model company approach is very relevant to enable you to transition from your current state to digital. Model companies represent the ideal form of standardization for a specific line of business or industry. They are built on existing SAP solutions using best-practice content, rapid prototyping solution packages, and additional content from customer projects, They provide a comprehensive baseline for rapid, customer-specific prototypes, cloud demos, and quick-start implementations.

Model Company Approach



© 2017 SAP SE or an SAP affiliate company. All rights reserved.

SAP DIGITAL BUSINESS SERVICES

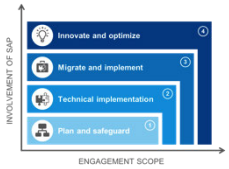
Enabling your success in digital transformation

SAP has a broad range of services to cover the end-to-end digital transformation journey, ranging from advising on a digital innovation road map and implementation plan with proven best practices to the ability to run all deployment options and ultimately optimize for continuous innovation. We provide both choice and value within our service offerings, allowing you to tailor the proper approach based on your specific company expectations and industry requirements.

- 25,000 professionals in 70 countries
- Serving customers in 130 countries
- Outcomes delivered as one team in one contract
- Projects connected in real time to global network of support functions through SAP Mission Control Center
- SAP MaxAttention™ and SAP ActiveEmbedded services to safeguard investment
- Consistent experience – on premise, cloud, or hybrid
- Standardized adoption of processes and tools
- Streamlined onboarding and ramp-up of stakeholders

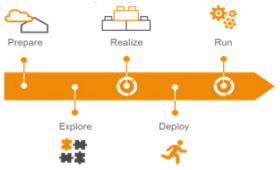
From proposing a comprehensive digitalization proposal to realizing and running it, SAP delivers on the digital transformation promise to its customers, on time, on budget, and on value.

SAP value delivery relies on unique differentiating assets:



Exhaustive service portfolio

SAP Model Company



SAP Activate methodology

SAP Solution Manager

SAP Mission Control Center

Expert organization

Global reach

Partner ecosystem

Industry expertise

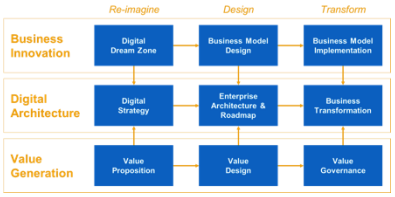
Focus on business outcome

Co-innovation

SAP Digital Business Services delivers digital innovation with simplification and accelerated implementation, which is key to adoption and value realization. Continuous improvement is supported through ongoing assessment of real-life data insights and joint governance with customers.

SAP value delivery focuses on the following deliverables:

Digital Business Foundation



- Digital business model
- Flexible, scalable enterprise architecture
- Platform for the digital future
- People and culture transformation

Business Insights

- Digital boardroom
- Predictive customer insights
- Value realization dashboard
- Agile decision making and execution support

Continuous Improvement

- Joint value governance
- Sustainable engagement model
- Innovation without disruption
- Simplification

© 2017 SAP SE or an SAP affiliate company. All rights reserved.

SAP COMPREHENSIVE ECOSYSTEM

Orchestrating the world to deliver faster value

Our comprehensive ecosystem of solutions for the oil and gas industry offers:

- Integration into a wide range of business services (suppliers, banks, key vendors, travel, and more)
- Open architecture, with a choice of hardware and software
- Complementary and innovative third-party solutions
- Reach – partners to serve your business of any size anywhere in the world
- A forum for influence and knowledge
- A large pool of industry experts with broad and deep skill sets

accenture, Atos, Capgemini, CSC, DELL, Deloitte., Hewlett Packard Enterprise, HITACHI Inspire the Next, IBM, itelligence, KPIT, NTT DATA Global IT Innovator, OPENTEXT, SIEMENS, vendavo, Vistex, WIPRO

BUSINESS NETWORK

- 1.9 million suppliers
- 200 major travel partners (air, hotel, car)
- 50K service and contingent labor providers

INFLUENCE FORUMS AND EDUCATION

- 32 user groups across all regions
- 40+ industry councils
- SAP community with >24 million unique visitors per year
- 1,800 members of SAP University Alliances

IMPLEMENTATION SERVICES

- 300+ services partners focused on oil and gas
- 3,200 services partners overall
- Delivering solutions and services specific to oil and gas companies

INNOVATION

- >1,900 OEM solution partners to extend SAP solutions
- 2,000 startups developing apps for the SAP HANA® platform

PLATFORM AND INFRASTRUCTURE

- 1,400 cloud partners overall
- 30+ oil and gas platform partners

CHANNEL AND SME

- 860+ oil and gas channel partners
- 4,800 overall channel partners

© 2017 SAP SE or an SAP affiliate company. All rights reserved.

WHY SAP?

SAP UNDERPINS THE DIGITAL OIL AND GAS COMPANY WITH THE DIGITAL CORE, BUSINESS NETWORKS, SUPPLY CHAINS, AND THE INTERNET OF THINGS

© 2016 SAP SE or an SAP affiliate company. All rights reserved.

SAP IS COMMITTED TO INNOVATION

Vision	Help the world run better and improve people's lives
Mission	Help our customers run at their best
Strategy	Become the cloud company powered by SAP HANA

- **77,000 employees** representing 120 nationalities
- **300,000 customers**
- Operations in **191 countries**

- **3,500+** oil and gas customers worldwide
- Industry-driven, **robust advisory councils** help ensure alignment
- **Deep industry-specific capabilities** with clear industry road map
- **40+ years** of delivering value to oil and gas

- **95 million** business cloud **users**
- **2 million** connected businesses
- **$740 billion** in B2B commerce with **SAP Ariba solutions**
- **99% of mobile devices** connected with messaging from SAP solutions

- 2011: **SAP HANA** launched
- 2012: **SAP Cloud** launched
- 2014: **SAP business networks** the largest marketplace in the world
- 2015: **SAP HANA Cloud Platform**
- 2016: **SAP S/4HANA** – most modern ERP system for oil and gas

- **3,500+** oil and gas customers worldwide
- **40+ years** of delivering value to the oil and gas industry
- Robust **industry-driven advisory councils** to help ensure alignment

AVAILABLE ANYTIME, ANYWHERE

SAP co-innovated with Vantage Drilling to overcome inherent latency in satellite communications at offshore locations.[11]

SIMPLIFIED USER EXPERIENCE

SAP co-innovation with Toyota helps dramatically simplify drivers' fueling experience, resulting in a **dramatically improved driving experience**.[16]

PRODUCTION MANAGEMENT

SAP co-innovated with Accenture to develop a suite of production management solutions called Upstream Production Operations by Accenture and SAP, 40 which are estimated to **improve production rates by 5%–15%**.[17]

© 2017 SAP SE or an SAP affiliate company. All rights reserved.

ADDITIONAL RESOURCES

Outlined below is additional external research that was used as supporting material for this white paper.

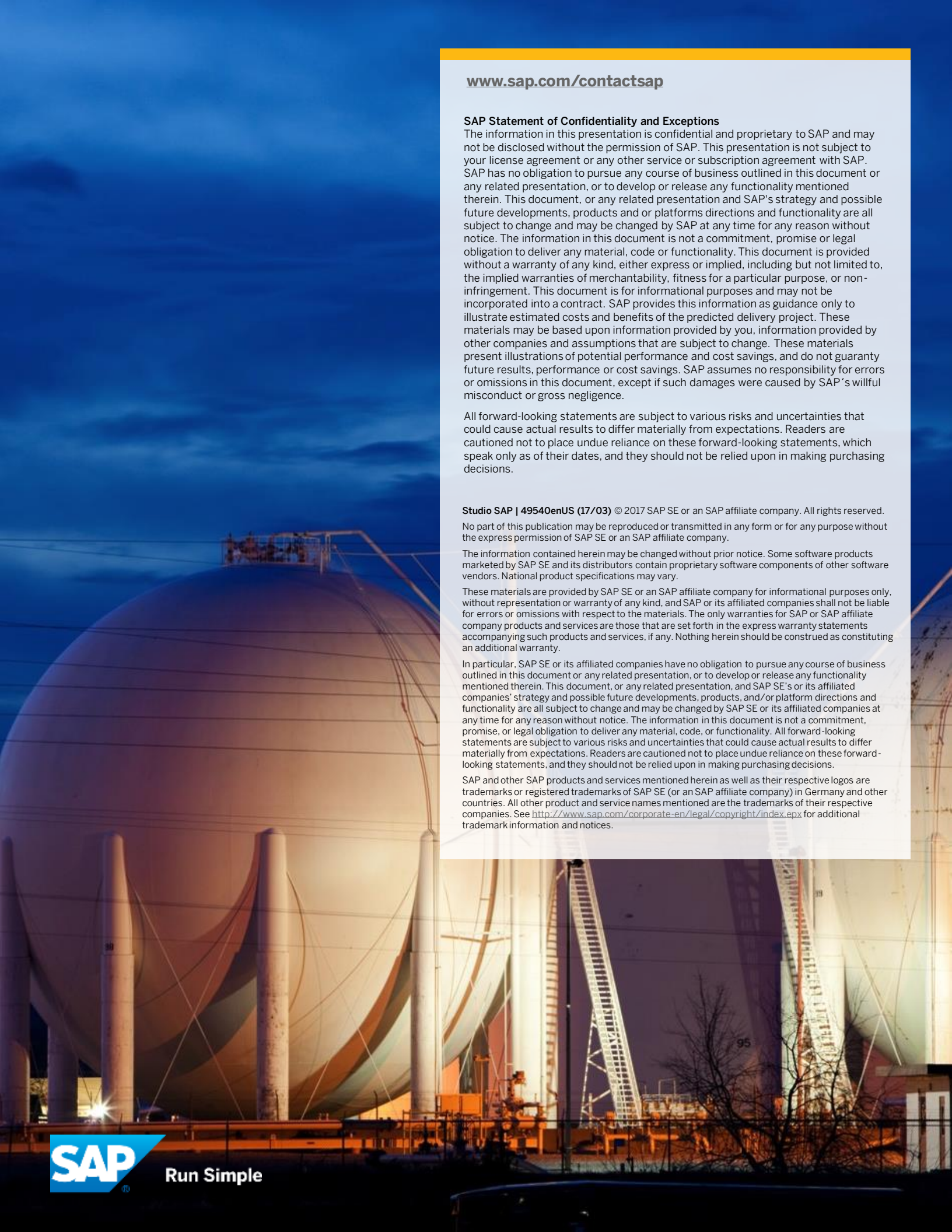
1. "10 Projections for the Global Population in 2050," Fact Tank, Pew Research Center, February 2014 http://www.pewresearch.org/fact-tank/2014/02/03/10-projections-for-the-global-population-in-2050/
2. "An Emerging Middle Class," OECD Observer, baseline 2009 http://www.oecdobserver.org/news/fullstory.php/aid/3681/An_emerging_middle_class.html
3. "World Urbanization Prospects 2014," Economic and Social Affairs, by the United Nations (page 1) http://esa.un.org/unpd/wup/highlights/wup2014-highlights.pdf
4. "New Lens Scenarios: Exploring How Economic, Political, and Social Forces Might Shape the Global Energy System and Environment over the 21st Century," Shell, March 2013 (tables, pages 2/7 – The oceans and mountain scenarios call for growth ranging from 68 to 83%) http://s01.static-shell.com/content/dam/shell-new/local/corporate/Scenarios/Downloads/Scenarios_newdoc.pdf
5. "How The Energy Revolution Will Transform How We Live and Work," Forbes, February 2015 http://www.forbes.com/sites/gregsatell/2015/02/08/how-the-energy-revolution-will-transform-how-we-live-and-work/#9d97e0924c88
6. "New Lens Scenarios: Exploring How Economic, Political, and Social Forces Might Shape the Global Energy System and Environment over the 21st Century," Shell, March 2013 (Foreword, page 2) http://s01.static-shell.com/content/dam/shell-new/local/corporate/Scenarios/Downloads/Scenarios_newdoc.pdf
7. "BP Energy Outlook 2035," BP, February 2015 (page 4) http://www.bp.com/content/dam/bp/pdf/energy-economics/energy-outlook-2015/bp-energy-outlook-2035-booklet.pdf
8. "The Outlook for Energy: A View to 2040," ExxonMobil, December 2014 (page 64) http://cdn.exxonmobil.com/~/media/Global/Files/Outlook-for-Energy/2015-Outlook-for-Energy_print-resolution.pdf
9. "SAP, Shell, and Volkswagen to Lay Foundations for Connected Vehicle Ecosystem," video, November 2014 https://www.youtube.com/watch?v=x2BCUAluVlU"
10. IDC Provides Guidance for Thriving in the Digital Economy as New and Reinvented Competitors Disrupt Industry Leaders," IDC, March 2015 http://www.businesswire.com/news/home/20150318005132/en/IDC-Guidance-Thriving-Digital-Economy-Reinvented-Competitors
11. "Energy and Natural Resources Industries: Thriving in the Face of Market Changes," video, https://www.youtube.com/watch?v=3c5BGCdFYIw
12. "Navigating the SAP S/4HANA Journey with the SAP Partner Ecosystem," SAP Insider, April 26, 2016 http://sapinsider.wispubs.com/Assets/Articles/2016/April/SPI-Navigating-the-SAP-S4HANA-Journey-with-the-SAP-Partner-Ecosystem
13. "Capabilities Offered by the Internet of Things: Smarter Infrastructure for Oil and Gas," Harbour Research, December 2013 (page 3) http://www.ogj.com/content/dam/ogj/IBMevent/presentations-docs/2%20Allmendinger%20%20-%20%20Capabilities%20Offered%20by%20the%20Internet%20of%20Things.pdf
14. "Oil and Gas Jobs in Demand as Companies Seek to Bridge Skills Gas," Nathan Randazzo, Drilling Info, September 4, 2014 http://info.drillinginfo.com/oil-and-gas-jobs-demand-skills-gap/
15. SAP estimates
16. "Connected Cars: Simplifying the Fueling Experience," SAP and Toyota, video, https://www.youtube.com/watch?v=N36XOWNpJtk
17. "Upstream Production Operations by Accenture and SAP" https://www.accenture.com/us-en/service-upstream-production-operations-accenture-sap.aspx

Note: All sources sited as "SAP" or "SAP benchmarking" are based on our research with customers through our benchmarking program and/or other direct interactions with customers

Note: Some images used under license from Shutterstock.com

Note: Logos contained in this document are used with the permission of SAP's partners.

© 2017 SAP SE or an SAP affiliate company. All rights reserved.



www.sap.com/contactsap

SAP Statement of Confidentiality and Exceptions
The information in this presentation is confidential and proprietary to SAP and may not be disclosed without the permission of SAP. This presentation is not subject to your license agreement or any other service or subscription agreement with SAP. SAP has no obligation to pursue any course of business outlined in this document or any related presentation, or to develop or release any functionality mentioned therein. This document, or any related presentation and SAP's strategy and possible future developments, products and or platforms directions and functionality are all subject to change and may be changed by SAP at any time for any reason without notice. The information in this document is not a commitment, promise or legal obligation to deliver any material, code or functionality. This document is provided without a warranty of any kind, either express or implied, including but not limited to, the implied warranties of merchantability, fitness for a particular purpose, or non-infringement. This document is for informational purposes and may not be incorporated into a contract. SAP provides this information as guidance only to illustrate estimated costs and benefits of the predicted delivery project. These materials may be based upon information provided by you, information provided by other companies and assumptions that are subject to change. These materials present illustrations of potential performance and cost savings, and do not guaranty future results, performance or cost savings. SAP assumes no responsibility for errors or omissions in this document, except if such damages were caused by SAP´s willful misconduct or gross negligence.

All forward-looking statements are subject to various risks and uncertainties that could cause actual results to differ materially from expectations. Readers are cautioned not to place undue reliance on these forward-looking statements, which speak only as of their dates, and they should not be relied upon in making purchasing decisions.

Studio SAP | 49540enUS (17/03) © 2017 SAP SE or an SAP affiliate company. All rights reserved.

No part of this publication may be reproduced or transmitted in any form or for any purpose without the express permission of SAP SE or an SAP affiliate company.

The information contained herein may be changed without prior notice. Some software products marketed by SAP SE and its distributors contain proprietary software components of other software vendors. National product specifications may vary.

These materials are provided by SAP SE or an SAP affiliate company for informational purposes only, without representation or warranty of any kind, and SAP or its affiliated companies shall not be liable for errors or omissions with respect to the materials. The only warranties for SAP or SAP affiliate company products and services are those that are set forth in the express warranty statements accompanying such products and services, if any. Nothing herein should be construed as constituting an additional warranty.

In particular, SAP SE or its affiliated companies have no obligation to pursue any course of business outlined in this document or any related presentation, or to develop or release any functionality mentioned therein. This document, or any related presentation, and SAP SE's or its affiliated companies' strategy and possible future developments, products, and/or platform directions and functionality are all subject to change and may be changed by SAP SE or its affiliated companies at any time for any reason without notice. The information in this document is not a commitment, promise, or legal obligation to deliver any material, code, or functionality. All forward-looking statements are subject to various risks and uncertainties that could cause actual results to differ materially from expectations. Readers are cautioned not to place undue reliance on these forward-looking statements, and they should not be relied upon in making purchasing decisions.

SAP and other SAP products and services mentioned herein as well as their respective logos are trademarks or registered trademarks of SAP SE (or an SAP affiliate company) in Germany and other countries. All other product and service names mentioned are the trademarks of their respective companies. See http://www.sap.com/corporate-en/legal/copyright/index.epx for additional trademark information and notices.

SAP

Run Simple