THE INTELLIGENT ENTERPRISE FOR THE UTILITIES INDUSTRY

We need a file that can be used by a

Inspiring and shaping a digital world that reinvents power generation, transmission, distribution, and retail

THE BEST RUN SAP®

WELCOME

"Sweeping societal change is putting massive pressure on energy utilities to transform. It is both our biggest challenge and our greatest opportunity – a chance to develop new capabilities, to pioneer new technology, and to create a new value proposition. Together, we can have a lasting, positive impact on the world."

Miguel Gaspar Silva
Global Vice President
Utilities IBU
SAP SE

Dear Customers,

The energy utilities sector has immense responsibility to provide a safe and secure infrastructure for the world's well-being. Looking forward, the stakes get even higher. How the energy industry evolves over the next decade will have profound effects for generations.

With the global mandate to reduce carbon and the rise of renewable energy sources, electricity providers must cope with the new challenges of balancing supply and demand. They must accommodate customers' energy preferences; embrace cultural, technical, and environmental changes that are disrupting energy utilities; and be mindful of regulatory oversight.

The transition is well under way. In 2016, investments in electricity supply and clean energies surpassed investments in oil and gas – a gap that will continue to expand in the coming years. Global investment in electricity power generation, networks and storage has surpassed US$700 billion, and between 2013 and 2018, more than 300,000 home batteries were installed around the world. Market demand continues to drive massive investment in alternative forms of energy, storage, and delivery. But there is still much to be done.

A world of rapid technological change – distributed energy resources, micro-generation, batteries, microgrids, and electrical mobility – and social media adoption is forcing providers of electricity to rethink how they work, the services they provide, and their business models. The most successful companies will flexibly manage demand, enabled by insights garnered from smart technologies. Successful companies will think like data companies – able to process vast amounts of data to reengineer their own processes and adopt increasingly more efficient service delivery.

To get there, electric utilities must respond to rapidly changing conditions yet still comply with all standards within a regulatory framework. Four critical capabilities for success are:

- Distributed energy resource operations
- Smart and efficient distribution
- Demand and supply balancing services
- Omnichannel retail to digitalized consumers

By 2025, the cost of combining solar power, wind power, and energy storage will be competitive with traditional power-generation technologies in most of the world.

The business models for energy retailers will shift from pure selling of energy to providing comprehensive services for digital energy "prosumers."

Reaping the rewards are the companies that embrace intelligent technologies for processing data and those with the skill sets to fully leverage it. They are the ones most responsive to individual customer demands and to the challenges posed by energy transition. They are the early adopters of digital operations and skilled at managing cybersecurity. The best-performing companies are widening their lead by adopting new technologies early and quickly learning to increase efficiency and develop new products and services.

This paper takes a deep dive into the trends shaping energy utilities over the next five years and the path to innovation. In it, we propose a set of priorities that will drive transformation and the tools that will make it possible.

Sincerely yours,

Miguel Gaspar Silva
Global Vice President
Utilities IBU
SAP SE

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OUR PLACE IN THE NEW WORLD

The utilities industry sits at the center of a massive global shift toward sustainability. The transition has profound impact on society and is driving the industry's own transformation.

The movement toward sustainable energy in combination with integrated mobility and livable cities requires utilities companies to develop intelligent solutions for energy generation and storage, water, and waste management while also striving for energy efficiency in their own operations.

The utilities industry is being reshaped by four trends.

- **Renewable energy** – The global objective of carbon reduction and governmental regulation is fostering the rise of renewable energy sources, leading to intermittent energy generation and challenges to balancing energy supply and demand.
- **Energy prosumers** – Customers are becoming both producers and consumers of energy – prosumers – and they expect products and services that fit their exact needs at competitive prices. The ability to capture customer requirements and integrate end-to-end energy products and services will be a critical differentiator.
- **Smart technology** – The rising number of smart meters, sensors, and other devices poses challenges that span from organizational setup to having the right talent to operate in a cybersecure environment.
- **Changes in value proposal** – Utilities companies must redefine their core strengths and learn to create value in industry value networks in the face of rising competition.

In short, today's energy grid is not set up to accommodate a world where consumers and businesses are able to generate energy on their own, or where that energy can come from anywhere and can fluctuate wildly from day to day. We believe that forward-thinking energy utilities view these challenges as a chance to rethink the very nature of their businesses and to move quickly up the learning curve as early adopters.

Vestas Wind Systems is planning to use a digital solution to deliver faster, more efficient, and more cost-effective wind turbine installations, providing clean energy to the world more quickly. It wants to provide workers in the field, construction managers, technicians, subcontractors, customers, and suppliers with accurate, real-time information 24x7 wherever they are, connected or offline. Vestas is using data for comprehensive project analysis and continuing improvement.

Tokyo Electricity Company (TEPCO), one of the world's largest utilities companies, expects to deploy 29 million residential smart meters within its service territory by 2020.[1]

Alliander, the large Dutch power distribution company, uses SAP HANA® software to analyze 1.5 billion grid sensor measurements (expected to grow by two magnitudes) and forecast the required asset substitutions or maintenance at continuously reduced time cycles.[2]

CenterPoint Energy implements an SAP HANA–based predictive maintenance solution that supports the strategy of integrating information technology (IT) with operational technology (OT).

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DATA LEADS THE WAY TO INNOVATION

We believe that by 2025, the cost of combining solar power, wind power, and energy storage will be competitive with traditional power-generation technologies in most of the geographies of the world. Simultaneously, many utilities will have concluded the digital transformation projects that will fundamentally change how they operate.

Business models will move from pure selling of energy to providing comprehensive services for digital energy prosumers – businesses and consumers who generate their own energy and feed it back to the grid. Grid operation will be automated with smart grids and local energy balancing. New providers for services such as virtual power plants or local energy exchange will be established.

Energy utilities will move from being an energy provider to being a facilitator and enabler of multiple market models. The rollout of smart meters will give energy consumers real-time access to energy consumption and microgeneration – a shift that will challenge utilities to ensure grid stability in the face of peaks driven by the demands of e-mobility and microgeneration.

New services will span from simple after-sales services and value-add services to complex bundles or equipment-as-a-service models. They also will include new business models based on the monetization of data.

In a time of great change, the winners will be those companies that develop new capabilities based on insights from their data. They will be able to manage demand as well as streamline their own processes and adopt increasingly more efficient service delivery.

20%

Of digitally determined utilities' revenues will come from new products and services by 2022[3]

65%

Of power, gas, and water companies will have invested in edge analytics and computing by 2020, as they strive for operational excellence and the best optimization of their assets[4]

65%

Of electricity companies will have invested in digital technologies and platforms to support flexibility services by 2023, thereby activating a load potential of up to 35% of installed capacity[5]

75%

Of critical utilities assets will be digitally connected to predict and prevent equipment failure and prescribe best maintenance options to optimize and extend asset lifecycle by 2023[6]

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FOUR PRIORITIES FOR SUCCESS

We have identified four strategic necessary for energy utilities to transform their business.

Distributed energy resource operations

Smart and efficient distribution

Demand and supply balancing services

Omnichannel retail to digitalized consumers

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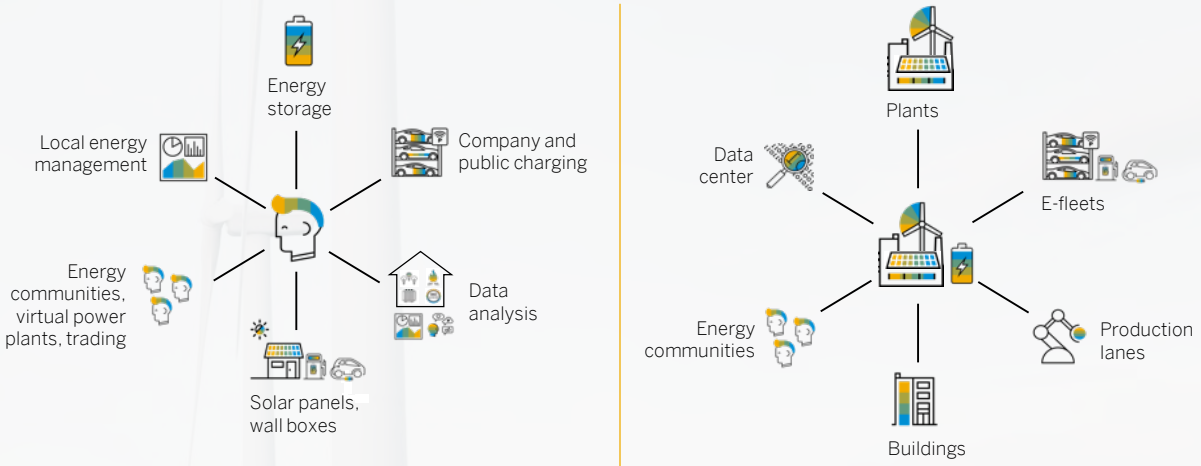
Distributed Energy Resource Operations

Today, smart solutions allow consumers of all sizes to interact with the energy system by making their demand more flexible. In the electricity system of the future, businesses and consumers will be able to produce their own energy through renewable sources. They will be both consumers and producers, drastically changing their relationship with energy utilities. Sensors and meters attached to power-consumption or power-generation devices will allow transparency and aid in managing capacity automatically.

During the transition, utilities should focus on gaining a 360-degree understanding of both business-to-consumer (B2C) and business-to-business (B2B) customers. See Figure 1. Household customers will be won with detailed analysis of technical, consumption, and experience data to determine their needs while securing customer profitability. Commercial and industrial customers with more complex asset structures and higher energy demands must avoid costly energy peaks while ensuring permanent availability of their infrastructures. Energy streams will be optimized by detecting flexibilities that can either be intelligently redispatched or traded, when economically feasible.

Figure 1: The Next Iteration of Utilities Customers



Romania's Environmental Funds Administration plans to run a program in March and April to offer up to **€115 million** (US$128 million) to prosumers to encourage the adoption of solar energy.[7]

Petrol provides energy products and services. Currently, **292** buildings are being contractually provided with energy savings, **15** systems with efficient lighting, and more than **80** locations with charging stations are currently being managed.

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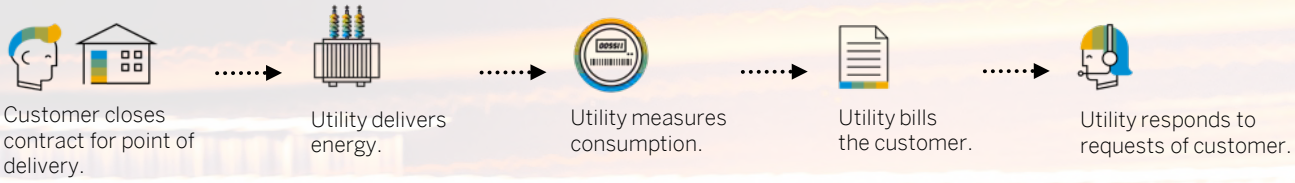
Distributed Energy Turns Utilities into Energy Service Companies

TRADITIONAL SCENARIO



NEW-WORLD SCENARIO

POTENTIAL BENEFITS

10%–20%

Increase in revenue from new products

10%–20%

Increase in customer satisfaction

Source: SAP Performance Benchmarking

Energy utilities will turn into energy service companies that partner with customers to constantly optimize energy streams, decrease costs, and offer new products and services to prosumers.

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Smart and Efficient Distribution

The existing distribution grids were not built to support decentralized energy generation, distributed energy storage systems, or virtual power plants. In 2025, we expect that distribution grids will be equipped with sensors similar to today's transportation grids. Utilities will use smarter asset management with fully digital allocation of spare parts, work, and logistics services. Smart asset operation and maintenance will ensure cost-efficient, compliant, and safe power distribution.

Intelligent software will connect the distribution grid and bring together information from operational and business systems. Together, the granular data from the sensors, the maintenance history of the assets, and the consumption data provided by smart meters will provide real-time insight into the health of the grid.

These insights will allow smarter maintenance and investment decisions, lower maintenance costs, and a risk-based maintenance strategy through:

- Just-in-time triggering of maintenance orders
- Maintenance schedules based on real-time asset health status and failure prediction
- Accommodation of the grids to a bidirectional flow of electricity
- Collaboration in business networks with manufacturers and suppliers throughout the asset lifecycle

See Figure 2.

Figure 2: Intelligent Asset Management

"With the help of SAP, we are transforming to a 'live' digital enterprise to better serve customers."
– Gary Hayes, CIO, CenterPoint Energy [8]

CenterPoint Energy implemented the SAP Predictive Maintenance and Service solution to enable in-depth knowledge of the health of grid assets and support for maintenance and investment decisions.[9]

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Anticipate Grid Maintenance

TRADITIONAL SCENARIO

Work order process is triggered by static preventive maintenance plans or failure notes.

Maintenance work order is manually scheduled and then printed.

Asset status is determined on-site; required spare parts or resources might be missing.

Second visit to the asset is required to perform maintenance work.

Maintenance work is confirmed on paper, and the asset management system is updated the next day.

NEW-WORLD SCENARIO

Work order process is triggered by asset health predictions based on granular sensor data or by real-time condition monitoring.

Precise knowledge of the asset status allows automatic allocation of the right resources and spare parts and optimizes the route.

Maintenance work is confirmed, and asset status is updated in real time via the mobile asset management application.

POTENTIAL BENEFITS

44%

Reduction in unplanned downtime

Source: Based on results from early adopters of SAP S/4HANA

8%–10%

Reduction of maintenance costs

Source: Trenitalia

The foundation for smart distribution is transparency of the current and even future status of the grid assets. Based on this transparency, maintenance becomes more efficient and outages will be avoided.

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Demand and Supply Balancing Services

The transformation to renewable energy sources requires the decentralization of the infrastructure. In 2025, we expect decentralized power generation will be the primary source for overall energy production. Centralized power generation – where the utility has full control over all generation capacities – is moving toward energy production based on local entities such as solar panels and wind mills, for example. Consequently, utilities will need real-time access to the data these entities generate to manage overall grid balance and stability. See Figure 3.

However, decentralized production output can be unstable due to the weather. On the one hand, it makes sense to create renewable energy near the point of consumption. On the other hand, renewable energy is most effectively created where population density – and thus local consumption – is low.

In addition, the intermittent nature of renewable energy sources forces energy to be conserved during off-peak periods using environmentally friendly technologies. For the same reason, it makes sense to provide consumers with incentives to save energy during peak periods.

We expect a long transitional period during which traditional energy sources must remain integrated into the supply system. Over that period, utilities will equip residential customers with smart meter technologies. In parallel, decentralized power generation will increase with the continuous installation of solar panels, wind parks, and so on. Bidirectional connectivity to these smart meters and entities for decentralized power generation will be key to optimizing the grid.

Once such a digital energy network is in place, real-time energy settlement calculations can be executed flexibly. Moreover, customers will participate in load-shifting programs for their overall energy reduction, and all market participants will guarantee grid stability.

Figure 3: Digital Energy Network

55% Of utilities will derive 20% of gross margin on average from combined distributed generation and storage packages for prosumers by 2021.[10]

ReNew Power, a renewable-energy independent power producer in India, is tracking the real-time status of its invoicing for enhanced billing capabilities with SAP solutions.

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Data Is Key to Balancing Demand and Supply

TRADITIONAL SCENARIO

Upload of meter reading and profile data with high manual effort

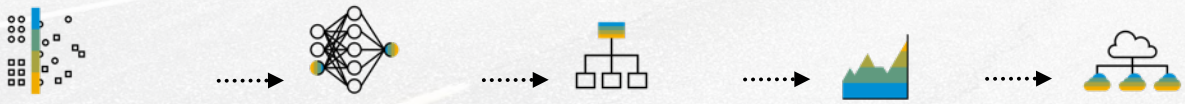
Quality check and collection of relevant information for energy settlement

Planning and execution of energy settlement run with long runtimes due to high data volume

Visualization and evaluation of final results through enhanced reports and manual interaction

Sending of relevant information to other market participants

NEW-WORLD SCENARIO



Import of relevant information through an industry-wide standard

ML algorithms to support and enable the high quality standard of imported metered data

Real-time execution and provision of scheduled energy settlement processes

Visualization and evaluation of final results through instant results and standard operational reports

Provisioning and distribution of energy settlement results through a cloud-based environment

POTENTIAL BENEFITS

Efficient process handling through ML algorithms

Increase in on-time deliveries

Reduction in total manufacturing costs

Source: SAP Performance Benchmarking

The success of the demand and supply balancing services is correlated with the availability, reliability, and fine granularity of data generated in the digital energy network.

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Omnichannel Retail to Digitalized Consumers

In 2025, utilities will have moved from the traditional one-direction customer relationship to a cooperative prosumer relationship, where consumers both generate and consume electricity. As a result, utilities will need to store and manage electricity coming from outside their domain and act as an energy marketplace, rather than as a simple provider.

To get there, energy utilities must change their business model to offset shrinking margins in the commodity business. Energy and water efficiency, distributed energy resources such as solar or wind, storage, and smart home devices all require increased automation and artificial intelligence. To serve the digital prosumer, energy utilities must adopt an intelligent front and back office, connected with meters through the Internet of Things. See Figure 4.

Figure 4: The Digital Prosumer Journey

RESEARCH AND PURCHASE	INSTALLATION AND ACTIVATION	USE AND GENERATION	PERSONALIZED SUPPORT
▪ Ability to be a trusted advisor and support customer "events" such as moving to a new home or building a house ▪ Value of the customer, handling switch bonus, and attracting loyal customers ▪ Personalized offers, pricing, and education based on "experience data", individual consumption, and generation patterns, installed equipment, and devices ▪ Purchasing products and services online	▪ Transparency in order fulfilment and installation ▪ Timely delivery and installation of equipment and services ▪ On-time energizing of equipment and meters ▪ Activation of contracts and devices ▪ Captured feedback from customers on the installation	▪ Transparency and accuracy in billing of commodity and non-commodity products and services ▪ One utility invoice as a way to pay for everything ▪ Constant feedback collection during use to adjust interactions with the customer	▪ Proactive personalized notification and feedback regarding offers, bills, use, generation, storage, trends, outages, and emergencies in a timely fashion ▪ Self-service and intelligent bots as a way to act conveniently anytime

39% Of customers are interested in self-generation technologies such as solar or small wind, but only 28% of them would buy from their energy supplier.[11]

20% Of digitally determined utilities' revenues will come from new products and services by 2022.[12]

Improving Revenue and Time to Market
First Energy Corp., based in Akron, Ohio, has fulfilled its needs to grow its consumer product business from small to large, increase revenue, expand its online presence, and empower its marketing and operational support group. After only five months, the company is selling new products to current and new customers.

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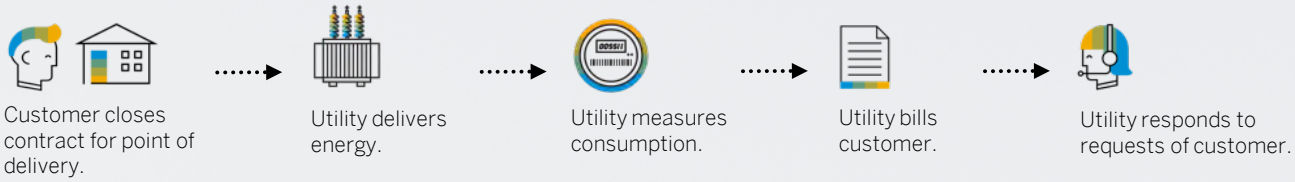
Putting the Prosumer in the Center

Multiservice Relationship with the Digital Prosumer

TRADITIONAL



PROSUMER CENTRIC

POTENTIAL BENEFITS

Increase revenue from new business models

Reduce customer churn

Source: SAP Performance Benchmarking

The emergence of prosumers and increasing environmental and energy awareness broadens the scope of customer interactions. To win the prosumer, utilities must have insight into the customer profile.

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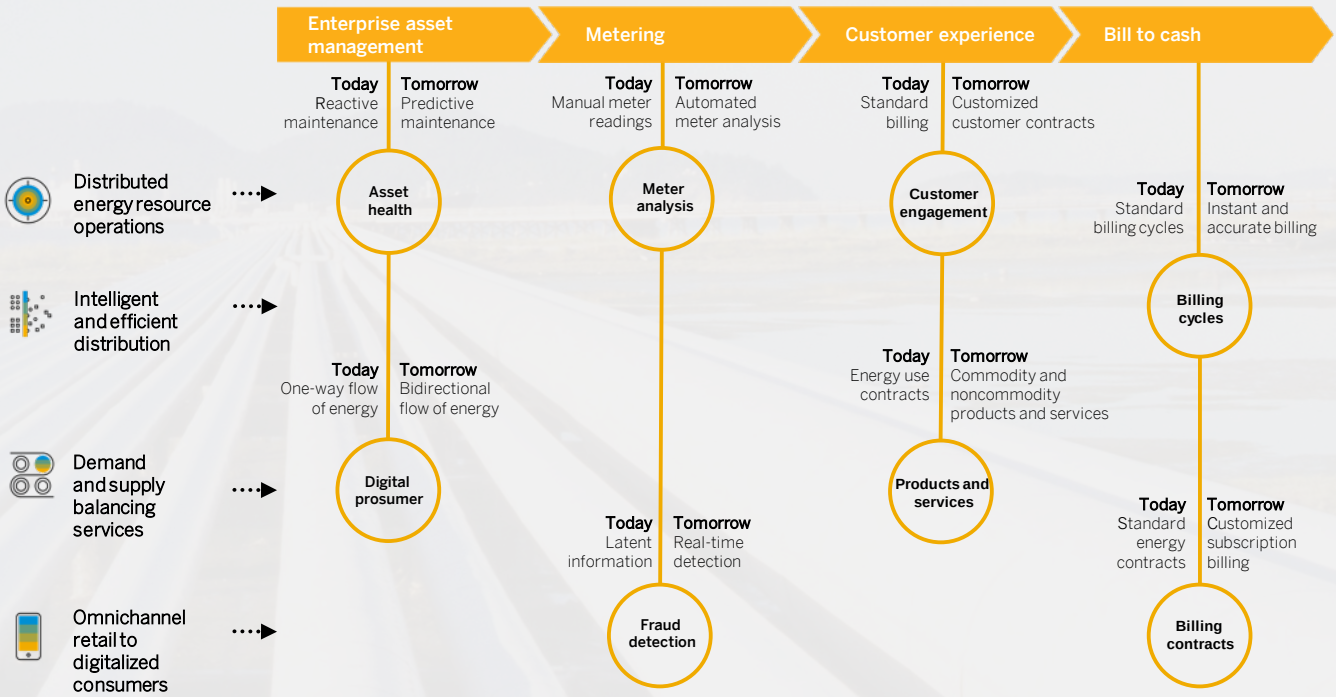
Energy Gets Intelligent

To execute on these four strategic priorities, companies need to change the way they operate. By shifting routine tasks from humans to business systems enabled by machine learning, and by redesigning processes, they will free up the capacity needed to define and pursue innovative and transformative business models. See Figure 5.

Figure 5: Strategic Priorities Across Lines of Business



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KEY TECHNOLOGIES

Advanced Analytics

Empowered users can get real-time visibility into their changing business performance, simulate the impact of business decisions, mitigate risk, and achieve better customer outcomes with the help of intelligent insights.

The Internet of Things

Data-driven insights of customer preferences can drive better operations, lower maintenance costs, and reduce risk of failure. Intelligent assets can be jointly managed as digital twins by manufacturers, utilities, and partners, thereby improving shared remote condition monitoring of assets, collaborative access to real-time data, and vendor-optimized predicted maintenance.

Artificial Intelligence and Machine Learning

Utilities can use artificial intelligence and machine learning capabilities to eliminate repetitive manual tasks such as service ticket management or by applying machine learning to historical data to streamline the quotation process for configurable products.

Robotic Process Automation

Robotic process automation streamlines repetitive, rule-based processes and tasks in an enterprise and reduces cost through the use of software robots by replicating specific tasks or keystrokes.

Conversational AI and Digital Assistants

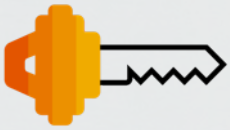
Voice interfaces will be the go-to technology for the next generation of applications, allowing for greater simplicity, mobility, and efficiency while increasing worker productivity and reducing the need for training.

Virtual and Augmented Reality

Already in use to help workers with difficult or infrequent maintenance activities, this will become even more critical to attract and retain new talent.

Blockchain

Blockchain is revolutionizing the movement and storage of value by creating a chain of unalterable transactional data. The blockchain model of trust, through distributed digital consensus, could reshape supply chains and commerce, including digitalizing the trade of energy and automating cross-company collaboration in microgrids.



35%

Of utility CEO's will have access to an intelligent personal assistant at work by 2021[13]

$1.2 trillion

Will be the amount spent on the Internet of Things in 2022[14]

70%

Reduction in revenue losses will result due to artificial intelligence being applied to revenue protection by 2020[15]

40%

Of digital transformation initiatives will use AI services by 2019[16]

50%

Of new industrial robots will leverage AI by 2019[17]

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GETTING THERE:
A PHASED APPROACH

Companies will become intelligent enterprises on three distinct tracks. They will:

1. **Optimize** what they already do by implementing a stable and scalable digital core to make processes more transparent and integrated
2. **Extend** their current processes by connecting them to the real world using Internet-of-Things technologies
3. **Transform** their business using a constant stream of data enabling new service-driven business models (See Figure 6)

Figure 6: Strategic Priorities Across the Maturity Framework

	OPTIMIZE	EXTEND	TRANSFORM	VISION 2025
Distributed energy resource operations	Management of the increase of small-sized energy generation and storage	Inclusion of analytics and predictive capabilities in B2C operations	Support for personal mobility needs making use of customer-produced energy	**Customer centricity (personalized offerings)**
Smart and efficient distribution	Digital end-to-end process from the sensor in the grid of the mobile device of the field technician	Maintenance strategy and investment plans based on asset health predictions	Digital collaboration with other stakeholders during the asset lifecycle	**Self-healing networks**
Demand and supply balancing services	Continuous rollout of smart meter technologies	Ongoing investment in local renewable energy production (for example, solar)	Real-time energy settlement calculations	**Decentralized power generation**
Omnichannel retail to digitalized consumers	New business models including subscription and pay-per-use offerings	Big Data extensions of the B2C sales process	Support for market and peer-to-peer trading of energy flexibilities	**Service provider for the prosumer**

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SAP'S FRAMEWORK FOR THE INTELLIGENT ENTERPRISE

The Intelligent Enterprise framework is a suite of intelligent business applications that use intelligent technologies and can be extended on a digital platform. This enables next-generation business processes to deliver breakthrough business value on our customers' journey to becoming intelligent enterprises. See Figure 7.

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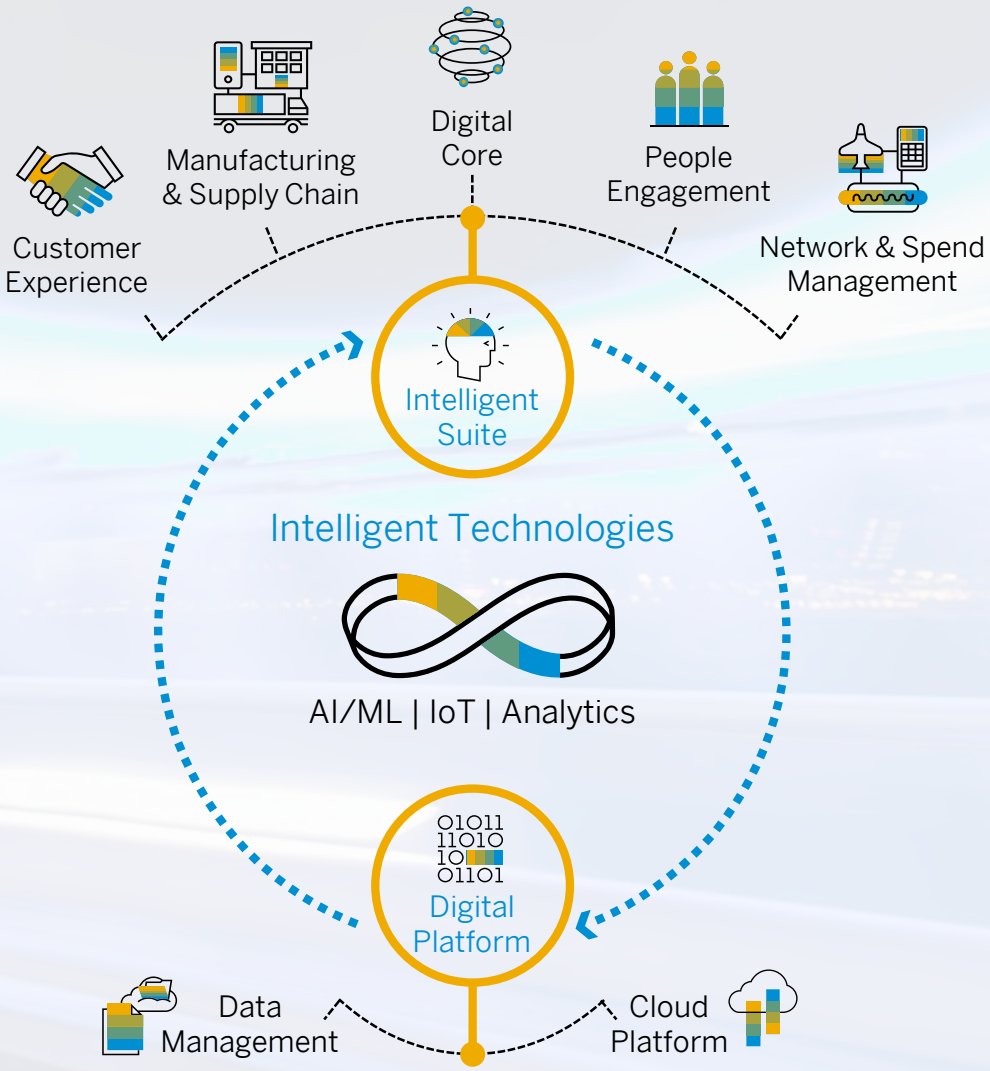
Figure 7: **The Intelligent Enterprise Framework**



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How to Plan Your Path to the Intelligent Enterprise

In the digital economy, intelligent technologies and integrated business processes are now driving digital transformation.

To do this effectively requires an end-to-end plan for becoming an intelligent enterprise. This includes creating an intelligent enterprise road map and implementation plan with proven best practices and deployment options that optimize for continuous innovation with a focus on intelligent outcomes.

The End-to-End Journey to Becoming an Intelligent Enterprise

Plan
well to manage expectations

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

Build and launch
with proven best practices

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

Run
all deployment models

Run with one global support
- One global, consistent experience
- End-to-end support – on premise, in the cloud, or with a hybrid approach

Optimize
for continuous innovation

Optimize to realize value
Continuously captured and realized benefits of digital transformation

To move forward with speed and agility, it helps to focus on live digital 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, a model-company approach is aimed at simplifying and increasing the speed of the digital transformation journey. Model companies represent the ideal form of standardization for a specific line of business or industry. They are built on preconfigured SAP solutions based on best practices supported by SAP, along with the business content that encompasses our experience and expertise relevant for the industry. They provide a comprehensive baseline and come with the accelerators to jump-start digital transformation projects.

Getting There: A Phased Approach

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Comprehensive SAP Ecosystem Orchestrating the World to Deliver Value Faster

Our comprehensive utilities ecosystem offers integration into:

- Open architecture with a choice of hardware and software
- Complementary and innovative third-party solutions
- Broad reach through partners to serve your business of any size anywhere in the world
- Forum for influence and knowledge
- Large skill sets

Our partner ecosystem includes, among others:

accenture High performance. Delivered.
Capgemini
DXC.technology
esri
EY Building a better working world
Greenlight TECHNOLOGIES
IBM
ERM
implico
NEXTLABS
OPENTEXT
OSIsoft.
pwc
ROLTA
utopia Perfect Data. Perfectly Possible™
Vesta Real. World. Experience.
wipro

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SAP Is Committed to Innovation

10-Year Innovation Vision

SAP delivers fully intelligent business solutions and networks that span across company boundaries and promote purpose-driven businesses. These solutions will be the most empathic symbiosis between machine intelligence and human ingenuity.

- Self-running enterprise systems
- Self-organizing business ecosystems
- New markets and business models

Comprehensive Industry Coverage

SAP enables comprehensive coverage of the complete utilities value chain across the enterprise. With its clear industry road map, SAP is the partner of choice for the utilities industry.

- More than 4,100 utilities in 97 countries are innovating with SAP solutions
- 93% of utility companies in the Forbes Global 2000 are SAP customers
- All lines of business are supported on a single platform

Proven Services Offering

By bringing together world-class innovators, industry and emerging technology expertise, proven use cases, and design thinking methods, we help utilities develop innovations that deliver impact at scale.

- Proven methodologies to drive innovation, from reimagining customer experiences to enhancing operations
- Innovation that is fueled through a managed innovation ecosystem from SAP
- Ability to build your own innovation capability and culture

SAP supports utilities companies in becoming intelligent enterprises – providing integrated business applications that use intelligent technologies and can be extended on SAP Cloud Platform to deliver breakthrough business value.

Learn more

- SAP.com for Utilities
- SAP Leonardo
- SAP Digital Business Services
- SAP Design Thinking

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RESOURCES

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

1. TEPCO Web site, "Smart Meter Project," TEPCO, 2019.

2. "The Digital Utilities Inspire and Shape a Digital World That Reinvents Power Generation, Transmission, Distribution, and Retail," SAP white paper, 2017.

3.,4. IDC, "IDC FutureScape: Worldwide Utilities 2019 Predictions," Doc # US44555918, December 2018.

5., 6. John Villali, "Top 10 Worldwide Utilities 2019 Predictions," IDC, November 28, 2018.

7. Svetlana Jovanović, "Romania to Launch EUR 115 Million Subsidy Program for Solar Prosumers," Balkan Green Energy News, February 2019.

8. Thor Olavsrud, "SAP's HANA Vora Bridges Divide Between Enterprise and Hadoop Data," CIO, March 15, 2016.

9. "CenterPoint Energy Collaborates with Accenture, SAP on Asset Analytics," T&D World, November 10, 2016.

10. IDC, "IDC FutureScape: Worldwide IT Industry 2018 Predictions," Doc. #US43171317, October 2017.

11. IDC, "The IoT Imperative for Energy and Natural Resources Companies," IDC White Paper, sponsored by SAP, May 2017.

12. IDC, "IDC FutureScape: Worldwide Utilities 2019 Predictions," Doc # US44555918, December 2018.

13. "The Future of Jobs Report 2018," World Economic Forum, September 2018.

14. IDC, "IDC Forecasts Worldwide Technology Spending on the Internet of Things to Reach $1.2 Trillion in 2022," June 18, 2018.

15. IDC, "IDC FutureScape: Worldwide Utilities 2019 Predictions," Doc # US44555918, December 2018.

16. IDC, "Worldwide Spending on Cognitive and Artificial Intelligence Systems Will Grow to $19.1 Billion in 2018, According to New IDC Spending Guide," March 22, 2018.

17. IDC, "IDC FutureScape: Worldwide Utilities 2019 Predictions," Doc # US44555918, November 2018.

Note: All sources cited as "SAP" or "SAP Performance Benchmarking" are based on our research with customers through our benchmarking program and other direct interactions with customers.

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