SAP’s Industry Cloud Spotlight for the Utilities Industry

Energy for a New World
Transforming into a New World of Energy

The utilities industry finds itself in the center of a massive global shift toward sustainability and renewable energy sources. The transition has a profound impact on society and is driving the industry’s own transformation. The movement toward sustainable energy in combination with integrated mobility and more livable future 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 are fostering the rise of renewable energy sources, leading to intermittent energy generation and challenges to balancing energy supply and demand.

- **Digital “prosumer”** – 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 technologies** – 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.

- **Value-added energy services** – Utilities companies must redefine their core strengths and learn to create value in the industry networks in the face of rising competition.

Thought-leading utilities are designing their journey into the new world of energy based on an understanding of the system they operate in and which outcomes they want to drive for people, communities, society, the environment, and their stakeholders.

We anticipate that by 2025, the cost of energy from 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.
Innovative utilities companies manage the balance of operating efficiently under their established business model of generating, distributing, and selling energy while they are searching for new sources of revenue and business outcomes. The following success strategies show a range of approaches based on evolving existing products and processes and exploring disruptive new business models:

**Distributed energy resource operations:** At near-zero marginal cost for the generation of renewable energy, commissioning and efficiently operating assets for renewable and conventional power generation are key to maximize margin.

**Smart and efficient distribution:** Utilities are experiencing rising operational costs and are challenged to properly manage the bidirectional flow of energy to ensure the grid remains in balance.

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

**Omnichannel retail to digitalized consumers:** Consumers are demanding a new experience from their utility, and utilities need to adopt new business models to address these demands.

---

**Reframing “Customer Centricity”**

Experience management will be key moving forward for utility service providers. It begins with the understanding what is happening based on operational performance data (OT data) and business data (IT). Relating experience data (X-data) from customers, employees, subcontractors, and suppliers with the IT and OT data is the foundation for improving organizational performance and delivering better business outcomes.

*Source: SAP Performance Benchmarking*
From Best Practices to the Vertical Edge

In a digital world, energy services innovation is no longer the monopoly of marketing and engineering. Innovation must become an integral part of each department and discipline, so they all contribute to the evolution from industry best practices to next practices, right to the “vertical edge.” This enables cross-functional teams to experiment with new ways to create unique value for customers, thus generating top-line and bottom-line improvements.

Competing as Ecosystems

Transformation and innovation go beyond the four walls of the enterprise. Ecosystems are forged to combine the power of the partners to deliver more business value to customers. Rapidly implementing processes across enterprises and with a clear focus on win-win partnerships creates competitive edge, powered by efficient business networks.

Innovation at the Vertical Edge

Moving from proven best practices to the vertical edge takes courage. Nine out of 10 ideas and initiatives will fail in the search for the unicorn. This startup attitude needs a culture and systems that foster rapid innovation and the willingness to take risks and learn from failures.

© 2020 SAP SE or an SAP affiliate company. All rights reserved.
Road map to the Vertical Edge

We have identified seven initial innovation spaces where we see the potential to move to next practices and the vertical edge jointly with our customers. Utilities core processes offer a significant potential to move from current best practices to next practices using digital technologies and a digital mind-set.

**Collaborative Innovation**

Building the Intelligent Enterprise for the utilities industry is a collaborative effort between our customers, partners, and SAP. We see opportunity in innovation spaces that are sparsely populated or even empty today. We know how many innovative ideas are out there in search of a platform to turn imagination into innovation and reality.

SAP’s intelligent suite and business networks are the perfect foundation for next practices and innovation at the vertical edge.

**Kevin Angland, General Manager, Digital Services, Mercury**

“We’ve got the mobile app now as a means of taking that engagement beyond your traditional activity with utility into something a little more and creating a richer experience. And we’re now stepping into. Advanced Analytics and using that analytics to inform what we do around AI and digital assistance and robotics. So we’re moving beyond the experience layout. And to the automation space.” [Watch the video](#)
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.

**Top value drivers***  
- Reduced customer churn rates  
- Additional revenue from new energy services

*Source: SAP Performance Benchmarking*
Intelligent Asset Management

COMMON PRACTICE

- 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. Field worker might not be trained to perform the work.
- 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.

BEST PRACTICE

- 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 through the mobile asset management application. Field worker is guided with 3D images through the work steps.

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.

Top value drivers*

- **44%** Reduction in unplanned downtime
- **8%-10%** Reduction of maintenance costs

* Source: SAP Performance Benchmarking

© 2020 SAP SE or an SAP affiliate company. All rights reserved.
Scheduling and Load Management

COMMON PRACTICE

- 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 run times 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

BEST PRACTICE

- Import of relevant information through an industry-wide standard
- Machine language 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

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 enable real-time insight into the health of the grid.

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.

Top value drivers*

- Efficient process handling through machine learning algorithms
- Full transparency and fast access to any data through standardized reporting tools

*Source: SAP Performance Benchmarking

© 2020 SAP SE or an SAP affiliate company. All rights reserved.
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 energy marketplaces rather than as simple providers.

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.

### Top value drivers*

- Improve customer satisfaction
- Reduce sales and service costs

*Source: SAP Performance Benchmarking

© 2020 SAP SE or an SAP affiliate company. All rights reserved.
Transforming Digital Service Delivery

COMMON PRACTICE

- Time-intensive manual price-quote process is performed individually for each service with no support for digital services.
- There is no single view of all service delivery and forecast margins for combined offerings.
- There is no support for subscription-, usage-, or outcome-based business models.
- Different revenue recognition methods for each component are performed periodically using batch processes.
- There are several invoices for one solution, with no integration of different delivery channels.

BEST PRACTICE

Configure, price, quote
Fast, accurate, and consolidated quotes are provided for complex solutions, including digital services offerings.

Service delivery
A single view of all related services provides real-time visibility into revenue and margins and ability to forecast and predict outcomes.

Recurring digital services
There is support for subscription-, usage-, and outcome-based business models such as digital services.

Revenue recognition
Real-time revenue recognition models range from fixed-price to subscription- and usage-based.

Billing and invoicing
A single invoice crosses all billing types for services, projects, and products.

Energy sustainability and decreasing CO2 emissions are changing the energy game. New business models are emerging that are based on decentralization, prosumers, and the digitalization of all the equipment playing a role in the energy ecosystem. Utilities have to propose new digital services and adapt their processes in real time and on the fly.

Imagine a platform that allows you to modularly, seamlessly, and instantaneously define your dynamic processes from the quote for a simple productized service or complex business solution across the entire value chain: pricing, delivery, revenue recognition, billing, and invoicing.
SAP’s Industry Cloud – A Joint Innovation Space

Business innovation is driven by everyone – customers, partners, and SAP. It starts with ideas: how to fix a problem, how to discover and unlock new value, how to deliver new business outcomes. Translating an idea into a business process or a solution needs an innovation space that comes with digital tools and content to build and deliver quickly and predictably. This allows developers and business users to focus on getting things done to push new solutions out the door.

**Industry Innovation Spaces**
Stand-alone applications struggle to deliver relevant business value. Enterprise applications always need access to essential business domains such as products, cost centers, employees, and customers. We provide direct access to business domains and processes in the intelligent suite through APIs, while our business and technology services provide the tools and infrastructure to create and run innovative industry cloud solutions.

**Intelligent Technology at Your Fingertips**
Business innovation needs digital technologies that are ready to use to solve a business problem. SAP’s industry cloud is powered by our Business Technology Platform and provides a full set of technologies ranging from user interfaces over robotic process automation to artificial intelligence and machine learning.
Cloud Solutions for Utilities

Cloud solutions for utilities from SAP are integrated yet modular service business solutions to transform the energy retail business – distribution and meter operations will follow.

These solutions help utilities transform into full-service providers efficiently. They can act as a menu card for utilities customers, who can start where they see the most need for transformation first.

Cloud solutions for utilities offer our customers the required core processes to define individual customer solutions, charge and invoice them, and steer the delivery of all services internally and also within their business network. This enables them to free up their business resources to work on developing innovative customer solutions, because utilities have to lead by innovation to stay relevant.

Key Priorities for Energy Retailers – Beyond Commodity with Efficiency Uplift

- Customer excellence
- Introduction of new offerings
- Business growth
- Efficient business operations

Customer satisfaction  Time to market  Revenue growth  Cost to serve
Cloud Solutions for Utilities

The road map

Value creation

2020
Anchor customer operations
- 360-degree customer view
- Product bundles
- E2E business processes
- Real-time analytics
- TCO optimization through cloud
- Consistent UX

2021
Deliver on new business models
- Omnichannel E2E customer experience
- Entering new product ecosystem
- Intelligent process automation
- E2E best practices

2022
Scale intelligent operations
- Enabling customers for life
- Flexible bundling and fulfillment for complex products
- Energy service company brand experience

2023
Become mature energy service company
- Predictive customer experience based on customer preferences and behavior
- Next-level value chain automation
- Optimized revenue and profitability management

Capabilities
- Lead-to-cash end-to-end (E2E) integration
- Simplified utilities product management
- Process automation
- Adoption services
- Digitalization of customer experience
- Business model innovation
- Increased intelligence for back-office automation
- E2E best practices run
- Cloud onboarding services
- Intelligent automation of all high-value processes
- Scalable utilities marketplace enabled
- E2E best practices managed
- Full energy service company capabilities
- Optimized automatization of entire value chain
- Predictive technologies for customer experience and back office

Cloud solutions for utilities support the following business capabilities:
- Marketing
- Customer data
- Sales and commerce
- Customer service (agent and self-service)
- Energy data
- Billing of commodity and noncommodity services
- Accounts receivable
- Market communication
- End-to-end process monitoring
- Master data management

© 2020 SAP SE or an SAP affiliate company. All rights reserved.
SAP’s Comprehensive Partner Innovation Ecosystem

SAP has been the proud solution provider for the utilities industry for almost five decades – starting from humble beginnings growing into a position of supporting the core business of our customers.

Cloud solutions for utilities from SAP open the field for a new level of co-innovation with customers and partners, enabling next practices and new business models that help our customers capture the new opportunities of future mobility.

Our open partner strategy gives our customers the choice of whom they work with to design the business models of the future; whom they partner with to define and implement business processes for efficiency and growth; and whom they trust with running their infrastructure.

There are many journeys utilities can take into the digital economy to become intelligent enterprises. No matter which they choose, our scalability, security, global reach, vibrant business networks, and business process knowledge across consumer products and adjacent industries are the success factors for our customers, our ecosystem, and SAP.

Our partner ecosystem includes, among others:

Engagement Model

SAP is the partner for the utilities industry in the long run. We have established a co-innovation and collaboration model with many of our customers that is based on mutual trust and long-standing, value-based relationships.