Powering digital transformation: A platform-centric approach for utilities
Abstract

The new energy economy is driven by decarbonization, decentralization and democratization, compelling the utilities industry to accelerate digital transformation. The global digital utility market size is expected to reach $299.1 billion by 2025, expanding at a compound annual growth rate (CAGR) of 11.6%1. Digital technologies are expected to streamline core processes, support data integration, improve asset utilization and visibility, and enhance regulatory compliance. According to McKinsey, digital transformation can help cut operating costs by up to 25%2. However, disruptive technologies and competitive threats will continue to place pressure on utility companies to innovate quickly and deliver seamless customer experience, while ensuring safety and reliability.

Next-gen transformation in the utilities industry requires a purpose-driven, resilient and adaptable approach. This whitepaper looks at how utility companies can build new capabilities, business models and revenue streams by leveraging a platform-centric approach. A modular approach will enable enterprises to reimagine value creation, become more agile and enhance decision making.

Aligning with the changing energy ecosystem

The utility industry has been undergoing unprecedented transformation in recent years. This is pushing companies to rethink their sustainability and growth model by shifting focus to customer and employee centricity. There is also a growing demand for renewable and distributed energy resources, non-energy product bundles, self-generation, and e-mobility services. Here’s a closer look at some of the key shifts that are driving transformation in the utilities industry:

Global shift towards renewable energy sources: Countries have pledged net-zero emissions and carbon neutrality to tackle climate change, and utilities are adopting carbon-capture technology and super grids to support this goal. However, shifting to alternate sources of energy requires a significant transformation across infrastructure, asset, people, and technology. By 2024, over 40% of traditional oil and gas companies will operate low or no carbon subsidiaries and rebrand themselves as diversified energy companies3.

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Climate change and regulatory compliance: Extreme weather conditions, such as wildfires in USA, bushfires in Australia, flash floods and cyclones in Europe and Asia, have been linked to global warming. The current infrastructure may not be robust enough to handle such drastic weather changes. Governing bodies are therefore enforcing stricter regulatory norms, which will require utilities to reimagine their operations, including vegetation management, grid resilience and power restoration.

Competition in a de-regulated market: New players are entering the market with innovative business models and disrupting the traditional value chain. For example, Tesla is now offering energy supply alternatives, such as solar roof panels and battery farms. Utilities must provide better customer experience at lower cost in order to compete effectively.

The COVID-19 pandemic has further catalyzed the need for automation, digital interfacing and smarter operations. By 2024, 80% of electric, gas and water companies will have implemented sustainable business models by rearchitecting their core business to accelerate transformation. Over the next five years, the focus for generation as well as transmission and distribution businesses will be on enhancing flexibility, efficiency, safety, and reliability. Management of distributed energy resources, digital grids and real-time situational awareness through integration of information and operational technology, and artificial intelligence (AI), will be the key areas of transformation. On the other hand, utility retailers are likely to prioritize customer experience and operational efficiency and build new revenue streams. This will be driven by mass personalization and innovative product management along with intelligent, data-driven operations.

Internal roadblocks to digital transformation

Compared to other industries, utility companies have been slow to implement digital technologies across the organization. According to J.D. Power’s 2021 Utility Digital Experience Study, while utilities have been largely successful in digitizing areas such as payments, they are still lagging in more complex areas such as viewing consumption history and researching energy-saving information. This may be due to internal roadblocks such as:

Inability to scale: The utility industry is infrastructure-heavy, with assets (both above and below the ground) spread across geographies. Maintaining and upgrading these assets to improve outage management is challenging. Moreover, legacy IT system that are on average 10-15 years old, make it difficult for utilities to respond to change and scale quickly to meet digital requirements.

External dependencies: Utility companies rely on several commercial off-the-shelf solutions, which create dependencies on product vendors for transformation decisions.

Diverse and decentralized data: There has been a sudden surge of data from multiple endpoints, including smart meters, connected devices and social media, with varying volumes, frequencies and even structure. In addition, this data can come from various sources and is stored in disparate systems, making it difficult to generate actionable insights quickly.

How can utilities further their digital journey?

It won’t be enough to simply invest in digital capabilities, such as AI, machine learning, cloud, DevOps, blockchain, and robotic process automation to keep pace with industry shifts and changing consumer behaviour. Utilities will need to realign their processes, people and culture by focusing on the following key areas:

- Capability-driven architecture to enable purpose-led design and achieve business outcomes.
- Lightweight, fast and persona-driven channels to improve user experience.
- Data as a service to offer a unified view of information across the enterprise and support better decision making.
- Seamless collaboration through APIs (application programming interfaces) for fast and easy integration with the partner ecosystem.
- Automation to align and optimize core processes and improve productivity, efficiency and agility.
- Continuous innovation to ensure quick, incremental and automated release of products and services.

To be successful in their transformation journey, and address both the external and internal barriers, an enterprise needs to adopt a modular, platform centric approach as shown in Figure 1.

*Figure 1: Factors Driving Utilities towards Platform-Centric Transformation*
A platform-centric approach to achieve transformation goals

A platform is a logical set of self-contained capabilities that provide business value through applications, technologies and processes. Each platform will support a specific business purpose and is flexible, thereby enabling independent decision making. The key characteristics of a platform are depicted in Figure 2.

![Figure 2: Key Characteristics of a Platform](image)

- **Autonomous**
  - Self-driven, self-sufficient, and self-governing logical units

- **Consumable**
  - De-coupled and promotes interoperability through APIification

- **Focused Goals**
  - Delivers specific goals which further attributes to enterprise goal

- **Nimble and Standardized**
  - Promotes lean and standardized technology and architecture

- **Independent in Financial Management**
  - Manages and takes decision on funding and investment

- **Context Aware**
  - Independent unit which is cognizant of the associated risk, enterprise architecture strategy, regulatory compliance, organizational impact, operation nuances and security

The enterprise needs to re-structure themselves into multiple platforms. This will drive enterprise agility, reduce time to market and support innovation through self-organizing, and easy-to-govern units. Figure 3 shows the different types of platforms utility companies can leverage to structure and simplify the enterprise-wide transformation strategy.
Edge platforms provide the flexibility to adapt with the changing utilities market scenario (for example experience and field operations), enabling platforms serve as the backbone for utilities’ growth (for example, data and integration) and core platforms optimize key enterprise functions (for example, customer management and billing and asset management).

Leading in the new-age energy economy

Thriving in an evolving energy landscape comprising smart cars, cities, buildings, and homes requires technology transformation at the enterprise level. Digital transformation has immense potential to unlock over $1.3 trillion of value for the electricity sector. Realigning enterprise architecture to the digital transformation roadmap will make utilities more agile and resilient so that they can lead the energy economy of the future, in a more sustainable and efficient manner.

About the authors

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