White Paper

Digital Transformation: Changing the Future of Utility Operations

Sponsored by: Infor

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IDC OPINION

In the past several years, the utility industry has been undergoing pivotal changes that have provided both opportunities and challenges to the sector. Disruptions such as historically low commodity prices, tight profit margins, and global decarbonization efforts to produce clean and sustainable energy have put pressure on the operational side of utility businesses. At this point in time, progressive utilities have taken the lead on digital transformation (DX) efforts by investing in and embracing advanced technologies and platforms that can provide benefits to utilities and their customers in the industry's ever-changing business environment.

Digital transformation in the utility industry will continue to play out for the next several years, and as it does, this transformation is expected to enhance the way energy is produced, delivered, and consumed. Utilities worldwide are in the process of creating new business models, products, and services to seamlessly blend and improve on both digital and physical experiences for their employees and customers while improving operational efficiencies and overall organizational performance.

IN THIS WHITE PAPER

This white paper explores how tightly integrated, cloud-enabled operational utility applications and platforms will be key to the future success of utilities as they continue their digital transformation journeys. This document also provides context on how utilities' movement toward digitization and cloud-enabled platforms can boost efficiencies in operations while simultaneously increasing revenue and cost savings as utilities take on the digital transformation process.

In addition, this white paper highlights some of IDC's worldwide utilities FutureScape predictions over the next three to five years, with a focus on the operational and technology advancements that will be shaping utility industry trends for years to come. Furthermore, this white paper provides an overview of Infor's capabilities and technology strategies and how Infor can address the highlighted IDC FutureScape predictions and anticipated trends in the utility space. The white paper also discusses both the challenges and the opportunities utilities face as they digitally transform and begin to further embrace cloud-enabled operational technologies (OTs) in efforts to succeed and manage the evolving business and technology developments already underway.

SITUATION OVERVIEW

Although perceived as being slower to embrace new technologies and cloud than other industries, the utility sector in recent years has been making digital advancements in many segments of its businesses. Traditional energy commodities have always been one of the key drivers for a successful and profitable business (i.e., the safe and reliable delivery of power, gas, and water). As the utility sector digitally transforms, the commodity that is becoming most valuable to the industry is data. Utilities are increasingly collecting, analyzing, and utilizing operational and customer data to make better-informed and quicker business decisions; these activities are driving many of the DX trends in the utility space.

Historically, within utilities operations, the management of assets has been a time- or schedule-based exercise. For example, most utilities would perform maintenance during the shoulder months of low heating and cooling demand, with routine scheduled inspections of all critical assets. However, in the past several years, there has been a shift to a more strategic approach to asset management and operations — an asset condition–based approach.

Technologies such as artificial intelligence (AI), machine learning (ML), edge devices, and cloud computing are changing the ways utilities are managing assets, workers, and resources. The trend toward automated operations and connected workers and assets has been gaining traction for some time. Most recently, during the COVID-19 pandemic, the goal of automating operational processes, fully optimizing assets, and creating efficiency gains throughout a utility's organization has been prioritized and accelerated. Figure 1 highlights IDC's top 10 potential digital transformation investment opportunities for utilities.

FIGURE 1

Top 10 Potential DX Investment Opportunities for Utilities

Source: IDC, 2021

Lessons learned by the industry during the current COVID-19 pandemic have pushed utilities toward investing in advanced technologies. Utilities are focusing more on leveraging state-of-the-art technologies to ensure customer and employee safety, increase enterprise and operational efficiencies, eliminate redundancies, lower costs, and increase the optimization of their critical assets.

The utility industry is currently at an inflection point as the benefits of technological advancements such as cloud-enabled applications and platforms are becoming more obvious in creating favorable business outcomes due to changes in how utilities approach operational practices.

FUTURE OUTLOOK

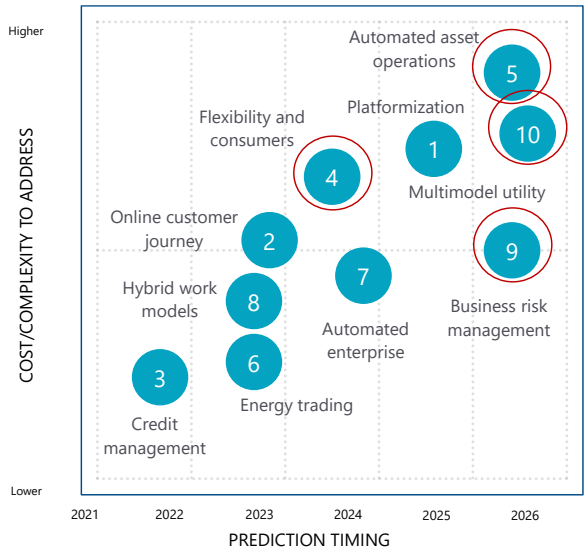
As utilities accelerate their digital transformation efforts in the coming years, IDC anticipates there will be a continued emphasis on striving for operational excellence to lower costs and increase revenue. In addition, utilities will prioritize best practices on how to serve and delight their customers in a safe and reliable manner. Within the next five years, utilities must adjust their strategies to build resiliency in their business and operating models to adapt to shifting customer needs and changing market conditions.

Each year, IDC Energy Insights produces a FutureScape report that highlights technology-related predictions for the utility industry. These predictions are developed by IDC and consider the roles and responsibilities of information technology (IT) and line-of-business decision makers and provide guidance on how to adapt to anticipated future trends in the utility industry.

Figure 2 highlights four of IDC's worldwide utility FutureScape predictions. (Note: Marker numbers refer only to the order the prediction appears in *IDC FutureScape: Worldwide Utilities 2021 Predictions,* IDC #US45816020, October 2020, and does not indicate rank or importance.)

FIGURE 2

Worldwide Utilities Predictions



4 By 2023, because of the increasing role of residential consumers in distributed energy, 35% of grid operators will have deployed AI to enable resilient and flexible management of the grid.

5 By 2025, over 50% of utilities will increase spending in automating operations with an emphasis on edge, AI, and ML technologies, thus doubling the penetration of predictive and prescriptive maintenance.

9 By 2026, 50% of utilities will integrate IT and OT security unifying data governance to mitigate physical breaches and cyberbreaches, which will create a holistic approach to secure overall business risk.

10 By 2025, 35% of energy utilities will drive at least 30% of their business via digital platforms based on cloud-native technologies, fulfilling the evolving needs of customers and infrastructures.

Operational Excellence in Utilities

Cloud-based platforms in combination with IT-OT integration and automation at both the enterprise level and the operational level will increase customer satisfaction, drive down costs, increase productivity, and improve security (physical and cyber) for utilities.

Note: For more details, see *IDC FutureScape: Worldwide Utilities 2021 Predictions* (IDC #US45816020, October 2020).

Source: IDC, 2020

INFOR'S CAPABILITIES ADDRESSING FUTURE TRENDS AND PREDICTIONS

Infor has capabilities and strategies that can address the IDC utilities FutureScape predictions depicted in Figure 2. Infor offers the utility industry cloud-based applications, platforms, and services with a core focus on five areas: asset performance, reliability and resiliency, customer service, talent and technology transformation, and modern platform security.

Utilizing AI to Enable Resilient and Flexible Management of the Power Grid

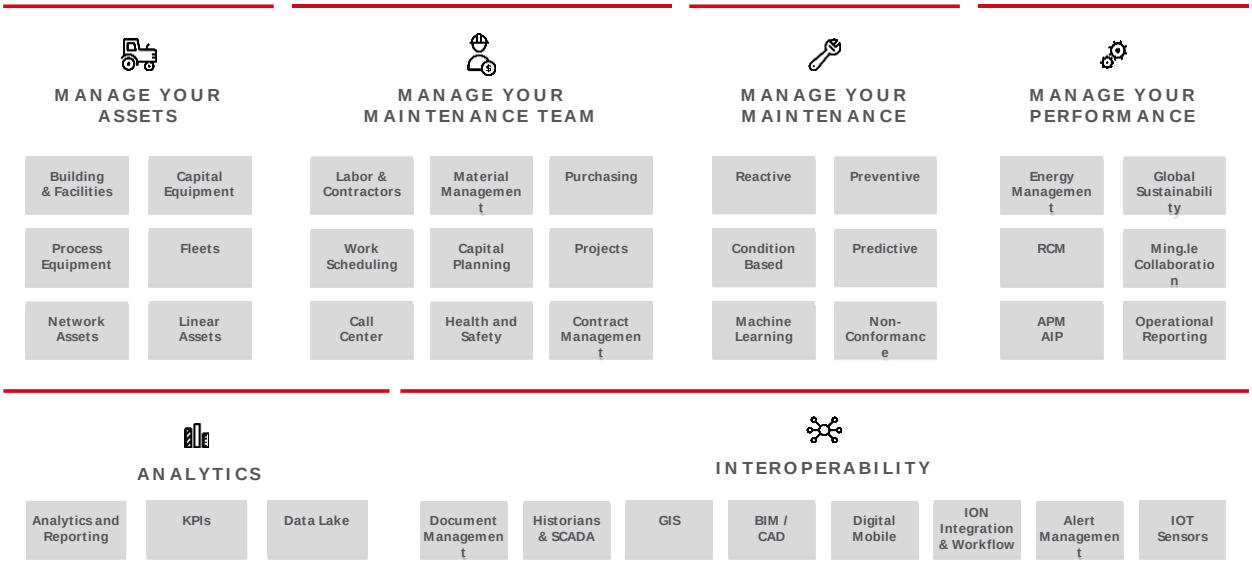
Infor is building AI capabilities that enable maintaining a reliable grid, which can provide effective load balancing in a utility's distribution system. The rapid expansion of distributed energy resources is creating complexity for utilities. Maintaining resiliency, reliability, efficiency, and safety, particularly at peak demand times while successfully integrating renewable resources into the grid, will become increasingly challenging for many utilities. Infor's cloud-enabled, AI-led applications can assist utilities in making informed decisions, in addition to increasing operational automation. This use of AI can help utilities optimize power flows and distributed resources to meet load obligations and ensure reliability of the power grid. In addition, Infor is building out AI capabilities to support natural gas transmission pipeline systems.

Utilizing AI and ML Technologies to Drive Predictive and Prescriptive Maintenance

Infor offers full life-cycle management tools to utilities with a focus on reliability, sustainability, and risk management. Infor's asset management offerings leverage the company's AI and ML capabilities aiming to provide asset owners and operators predictive asset analysis, in addition to providing prescriptive analysis and decision support with recommendations on how to best maintain and optimize a utility's assets. Infor's enterprise asset management (EAM) system provides core capabilities around asset management, work management, inventory management, procurement, and inspection rounds. Infor's asset management capabilities on the company's cloud platform can enable collaboration – supporting asset management between operations and enterprise applications. Figure 3 illustrates Infor's comprehensive platform for utilities operations.

FIGURE 3

Infor's Platform for Utilities Operations



Source: Infor, 2021

Integrated IT and OT Security to Mitigate Physical Breaches and Cyberbreaches

The Infor Operating Service (Infor OS) platform has tight integration and coordination between information technology and operational technology security. At the center of Infor OS is a digital innovation layer. Within this core innovation layer, IT-OT security plays a big role in supporting utility operation applications such as asset management, workforce management, advanced distribution management, and outage management systems. Infor has comprehensive security and compliance strategies supported by IT-OT integration and advanced analytics. Infor security capabilities can enable collaboration between IT and operations, providing data governance and meeting utility industry-specific compliance standards and regulations. Infor's compliance approach has a foundation, which is based on transparency, traceability, visibility, and assurance. Infor's key security and compliance capabilities include, but are not limited to, authentication, user behavior analytics, asset and data classification, configuration hardening, and logical segmentation.

Driving Business Opportunities via Digital Platforms Based on Cloud-Native Technologies

Infor has a focus on cloud-based technologies and has experience across multiple industries. As utilities continue to embrace cloud adoption, Infor's cloud offerings and experience in other industries can provide utilities with best practices and perspectives from both inside and outside of the utility sector. Infor has worked with utilities providing cloud offerings, which support collaboration throughout an organization. The company can assist utilities with collaboration tools and items such as video, augmented reality assistance from remote locations, and access to centrally located documents and data that can be readily available to all key stakeholders on a utility project team. Infor's cloud performance reflects the following key metrics: 28,500,500GB of raw data generated per month;

25,800,000 records per hour; 99.95% availability; 80,000 connection points; and 367,000 analytic queries per hour. Infor's multitenant SaaS cloud offering and architecture are made up of and based on four pillars: industry analytics, enterprise application, the Infor OS platform, and cloud infrastructure.

CHALLENGES AND OPPORTUNITIES

Challenges

There are key challenges that exist for both utilities and the vendor community that serve the industry, as the sector continues to take on digital transformation initiatives in the coming years. One of the biggest hurdles will be the historically slow adoption of cloud in the utilities sector. Utilities have been slower to embrace cloud than other asset-intensive industries such as manufacturing, but the time is ripe for utilities to change their acceptance and perceptions of cloud technology. Many future digital transformation initiatives for utilities will be best suited for cloud-enabled applications and technologies such as remote monitoring and diagnostics, machine learning and artificial intelligence in asset management, remote collaboration, field service support, and distributed energy resource management.

Another challenge for utilities as they embark on their digital transformation journeys is the industry's history of halting progress after the pilot phase of a program or project. Utilities need to take proof-of-concept and pilot programs to the next level and ensure all stakeholders, decision makers, and influencers have invested in their technological advancement initiatives and have the appetite to embrace organizational, process, staffing, and skill set changes. To make technology investments beneficial for their organizations, utilities must be prepared to face fundamental cultural changes such as breaking down silos between IT and OT and taking a more holistic approach to projects that implement state-of-the-art applications and platforms that will provide advantages to all staff and departments throughout a utility's organization.

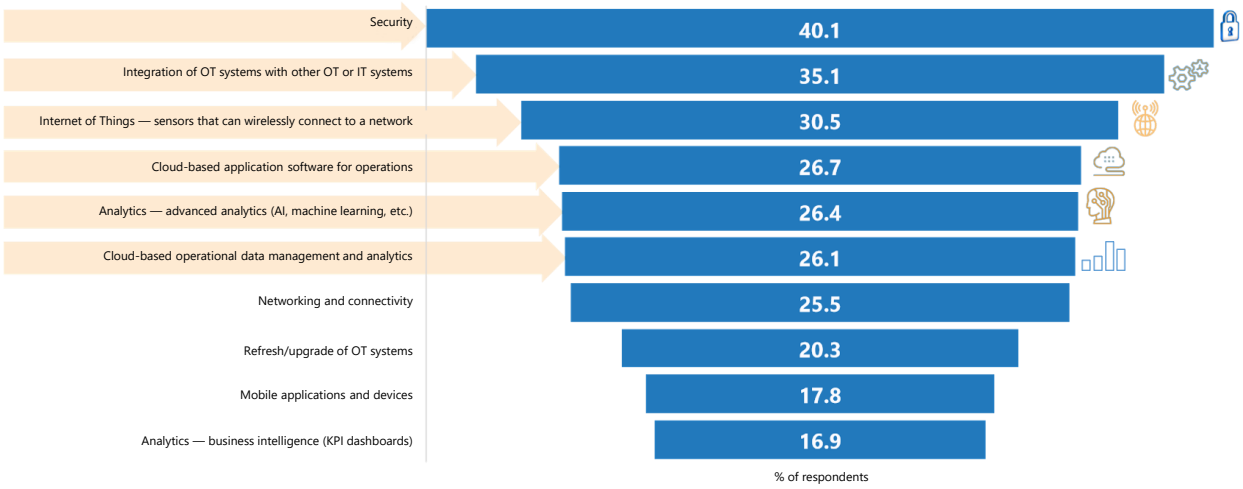
Opportunities

As utilities take on digital transformation, several opportunities will evolve as the sector advances its technological capabilities. In the past few years, and particularly during the COVID-19 pandemic, utilities and regulators have recognized the benefits that cloud-based technologies bring to both utilities and their customers. In addition, regulatory changes around capital expenditures (capex) and operational expenditures (opex) are being developed and proposed on how utilities can capitalize on cloud investments. The capitalization of cloud is one of the main barriers holding back some of the large investor-owned utilities from pursuing cloud investments. Agreement between regulators and utilities on how to capitalize on cloud will vastly accelerate the adoption rate of cloud. There has been progress in recent years, and IDC anticipates that regulations will be further developed and provide utilities more mechanisms to capitalize on cloud investments.

Another opportunity to accelerate cloud-enabled applications and platforms is the heightened interest in and awareness of the benefits of automated and remote operations. The ability for utilities to become as efficient as possible in order to optimize their assets, limit downtime, and reduce operating costs is an issue that is front and center and will continue to be emphasized. As the future unfolds, an advanced and strategic approach to operations in the utility industry will be one with a solid foundation of cloud-based technologies that provide maximum benefits from time, cost, and labor perspectives. Figure 4 shows IDC's top operational technology initiatives for utilities.

FIGURE 4

Top Operational Technology Initiatives for Utilities



Source: IDC's *Worldwide IT/OT Convergence Survey,* June 2020

CONCLUSION

As the future of utilities operations becomes more complex in response to meeting the needs of all constituents in the market, cloud-enabled applications and platforms are expected to become more prevalent. Progressive utilities are making gainful strides in their digital transformation initiatives by implementing emerging technologies such as AI, ML, edge computing, and digital twins – all of which are best supported by cloud offerings and services.

The pace of cloud adoption in the utility industry, albeit slower than the pace of adoption in some asset-intensive industries, is gaining momentum. This momentum is not by default but by design. The benefits of cloud-based technologies are becoming more transparent to the industry and are producing tangible results, particularly in operations. The ability to collect, analyze, and use operational and customer data for decision-making support is proving to reduce costs, improve efficiencies, optimize assets, and increase customer satisfaction. All of these positive results and improvements in key performance metrics are laying the groundwork for sizable growth in cloud adoption. Nonetheless, there will be hurdles to overcome, such as needed regulatory change, change in the perceptions of cost (i.e., capex/opex), and the industry's ability to gain confidence in cloud technology security.

In the end, it is expected that, with time and evidence of successful utility experiences realizing consistent ROIs, cloud will become foundational in utilities' business and technology strategies. Enterprise and operational excellence will be achieved through collaboration, technological advancements, improved processes, and new and refined skill sets emerging in the sector. As summarized in this white paper, cloud-based technologies will play a critical role in the utility industry moving forward. That being the case, Infor's capabilities and continued innovation in producing cloud-enabled products, platforms, and services position the company well to help utilities navigate the changing dynamics in the sector today and in the future.

About IDC

International Data Corporation (IDC) is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications and consumer technology markets. IDC helps IT professionals, business executives, and the investment community make fact-based decisions on technology purchases and business strategy. More than 1,100 IDC analysts provide global, regional, and local expertise on technology and industry opportunities and trends in over 110 countries worldwide. For 50 years, IDC has provided strategic insights to help our clients achieve their key business objectives. IDC is a subsidiary of IDG, the world's leading technology media, research, and events company.

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