Flexible Work Practices Improve Utilities’ Operational Resiliency

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The COVID-19 pandemic is acting as a catalyst for utilities to accelerate their ongoing digital transformation initiatives shifting to more agile and flexible work options. Utility CIOs should reevaluate work arrangements in three distinctive key areas to ensure current and future resiliency.

Overview

Key Findings

- The failure to fully digitalize field work — which requires interaction with coworkers and often customers — will prevent utilities from successfully addressing challenges imposed by the pandemic.

- Work-from-home and work-from-anywhere requirements triggered by public health and employee safety requirements have accelerated back- and front-office digitalization and adoption of new employee collaboration technologies and digital customer engagement platforms.

- Functions that are critical to the integrity and functional readiness of power systems — like network control and nuclear power plant operation — face serious challenges from the enhanced service continuity requirements and workforce physical distancing.

Recommendations

Utility CIOs responsible for technology optimization and modernization:

- Redesign work processes and reimagine work capabilities to sustain utility operations in the new work environment, by including technology capabilities for employee productivity and operations processes mapped to specific post-COVID-19 business goals.

- Evaluate new work arrangements by including changes in work time, duration and work-from-home or work-from-anywhere schemes. In particular, look for opportunities to digitalize customer-facing front-office work activities to sustain operations and reduce cash flow disruption.

- Tap into new investment opportunities by focusing on modernizing mission-critical applications, along with their infrastructure and security practices, to securely move additional workloads out
of physically constrained environments like operational control rooms.

Strategic Planning Assumptions

By YE22, more than 30% of utility operations and types of work — field, office and mission-critical — will involve flexible working arrangements.

By YE22, more than 20% of utilities will have permanently changed most employees’ primary work locations, using a mix of home, field and office.

Analysis

The COVID-19 pandemic is changing the nature of work dramatically, with impacts on the makeup, processes and work culture across utilities that will be felt for decades to come. Gartner estimates that the percentage of employees worldwide who will work remotely after the pandemic will go up almost 40%, from 30% to 48% (see “9 Predictions for the Post-COVID Future of Work”).

In the first half of 2020, the global utility sector has faced a variety of challenges, in addition to the long-term energy transition challenges resulting from global sustainability concerns and technology-enabled grid edge disruption (see “Top 10 Trends Driving the Utility Industry in 2020”). The stress on utilities has been sharply increased by the COVID-19 pandemic. All of this further drives the confluence of the 4D megatrends (digitalization, decentralization, decarbonization and democratization) impacting the industry, with greater emphasis on digitalization in the sector. These trends will continue to accelerate structural changes in energy provisioning systems and the need for digital transformation and the underlying business process redesign of the sector.

Utility functions have been categorized as essential during the recent pandemic. But essential work is far from business as usual. To meet physical distancing requirements and address the issue of worker absenteeism, many utilities have reprioritized work and streamlined work processes.

Utilities provide critical support for virtually every aspect of the functioning of a modern society. They provide water and power for critical services like healthcare and government operations in the face of catastrophic events like pandemics and natural disasters. And they offer urgently needed support for work-from-home and work-from-anywhere business continuity schemes, and even extraordinary situations like the dramatic increase in the number of children studying from home due to pandemic-driven school closings.

Utilities are well-versed in working through crises like cyberattacks and natural disasters like hurricanes and earthquakes, but they aren’t fully prepared to deal with protracted catastrophic global events like the COVID-19 pandemic. This is a serious problem, because experts agree that global events like the COVID-19 pandemic may emerge again, and may well increase in frequency. As enterprises across all industries prepare for the postpandemic modus operandi, utilities are evaluating the pros and cons of flexible work, to understand how to adapt business processes that
permit physical separation but maintain integrity in outcomes. Recent mandates for social distancing have accelerated digitalization in three key areas of the utility:

- Field work
- Office work (including customer services)
- Mission-critical work (including control centers)

Utilities should evaluate and implement changes in the makeup, practices and culture of work across the enterprise, fostering the redesign of work processes and the technologies that support work. This will create workforce flexibility that will deliver significant benefits in the postpandemic period (see Figure 1).

**Figure 1: Three Distinctive Areas of Focus for Utility Resiliency**

*Three Distinctive Areas of Focus for Utility Resiliency*
This research focuses on three distinct key areas for flexible working operations — field work, utility office work and mission-critical work. And it outlines opportunities and emerging best practices that can help utilities become more resilient in utility business renewal. Focusing on these areas will support utilities’ business continuity preparedness and help them avoid and mitigate financial and operational risk.

Field Work
Nicole Foust and Sruthi Nair

Key Findings

- The failure to fully digitalize field work — which requires interaction with coworkers and often customers — will prevent utilities from successfully addressing challenges imposed by the pandemic.

- Utilities are increasingly reevaluating their strategies for field operations in terms of processes and technologies that support technician self-service, automation and seamless workflows, providing personnel with data and insights and optimized field resources across the enterprise. The task now is to apply the lessons they’ve learned during the pandemic and make it part of the field work practice in the new normal.

- Utilities face challenges in providing special skills and certified personnel realignments when planning for employee absenteeism.

- New work requirements triggered by physical distancing mandates have accelerated digitalization of many field processes and the need to redesign work processes mapped to specific business goals.

- Technologies like field mobility systems, wearables, guided maintenance tools and video collaboration tools, as well as artificial intelligence (AI), machine learning (ML) and autonomous bots, can help reduce workload. But utility field work technology will need to be accompanied by significant people, process and technology integration and redesign, coupled with facilitated implementation to meet enterprise cost, performance and continuous improvement requirements.

Implications

Utility field work has been categorized as essential during the COVID-19 pandemic. Utilities have embraced critical prioritization and field operations process streamlining to address the issue of employee absenteeism and to meet social distancing requirements (see “Video: COVID-19 Fast Response Plan for Energy and Utility CIOs”).

The nature of utility field work is complex. The key reasons:

- Utility field work is diverse and typically occurs over wide geographies and use cases.
Utility assets are generally long-lived and have different cycles of field attention across their life cycles, from design and commissioning to maintenance, upgrade, refurbishment and retirement. For these reasons, assets require constant attention.

This segment of work can't be conducted from home or stay in one work environment. In transmission and distribution and water utilities, for example, field crews must work over very large territories. Field workers must continue critical operations — maintaining critical assets and sometimes entering businesses or homes to check for gas leaks or provide other on-site services. The nature of jobs leaves these workers exposed to the population in communities they serve during events such as the COVID-19 pandemic, and during extreme environmental events like severe storms, wildfires and flooding.

Many utilities have traditionally relied on and partnered with one another for mutual aid efforts. However, during the pandemic, many utilities and third parties have had to reevaluate their field work roles and capabilities to limit the spread of the COVID-19 virus. Some third parties had depleted resource pools to make available for utilities, while others were subject to government travel restrictions. Other personnel concerns during this crisis include ensuring the safety of field personnel working alone when monitoring remote water meters or pumping stations, limited technician availability due to self- or family quarantine and lack of protective gear for field operations. Manual meter readings represent a particular problem, especially in areas — including many Asian countries — where manual reading and bill handling is mandated. This obviously increases the risk of contagion through person-to-person contact.

Most utilities have adequate levels of field technology and work processes in place to support field operations and personnel, but not to support digital optimization and flexible work arrangement initiatives. Most utilities have not fully digitalized their field work. Some continue to rely on siloed field technology deployments — mobile work or point solutions that target specific business processes, business units or assets. They may focus on different parts of the utility organization or even the value chain (for example, meter-related work), or they may be an extension of an enterprise system (for example, a customer information system, as mentioned earlier. And because these enterprise systems are designed for specific purposes, they can't optimize field work activities and personnel across the entire utility.

The COVID-19 pandemic inevitably increased employee absenteeism, resulting in the need for work criticality ranking and reprioritization, as well as increased health and safety concerns for field technicians. This has driven job process changes in areas like how field personnel get to the job site, who they work with and for how long, and the work completion process. Challenges relating to work flexibility and systems and personnel access, supply chains and materials procurement have resulted in delays in work initiation and completion.

To meet new business and operations needs, utilities continue to introduce process changes, like requirements for taking separate vehicles to the job site, providing rental vehicles or allowing the use of personal vehicles with mileage reimbursement. Other examples include grouping field crews
for staggered shifts with the same people whenever possible, and providing technology that gives field technicians the same view as the control room. Examples like these can be applied to new business process redesign, with utilities building on what they’ve learned from recent fieldwork changes and applying it to the new post-COVID-19 normal. For example, some utilities have introduced process changes allowing field technicians self-service/sign-out access to pick up equipment. This can be redesigned to deliver permanent self-service capability, by combining process changes with technology enhancements.

The utilities industry is undergoing massive shifts in the nature of work and the operational processes — shifts that will last for decades to come. Catastrophic global events like the COVID-19 pandemic may emerge again, or increase in frequency, but they aren’t the only driver of industry transformation. Utilities should not let the lessons learned in field work over the past several months go to waste. CIOs should see this as an opportunity to reimagine a better future. Process inefficiencies and reliance on paper and manual touchpoints will hinder utility digital resilience further. Emerging field work requirements and opportunistic capabilities are compelling utilities to implement and cultivate new permanent work processes and technologies. Utilities should build seamless workflows and a horizontal view of all field work by integrating enterprise systems and work processes and cross-training personnel.

Recommendations for CIOs

- Examine field work business processes to identify areas of improvement by looking at ad hoc changes to evaluate what worked well and can be supported by technology and what worked less well and could be improved.

- Redesign field processes and remote work capabilities to sustain the new field work environment by including capabilities for staff productivity and operations processes mapped to specific business goals for efficiency gains and standardization.

- Create a detailed strategy for implementing your digital workforce plan by integrating an agile and adaptable workforce with the right technologies to automate utility operations.

Utility Office Work Flexibility

Ethan Cohen and Zarko Sumic

Key Findings

- As utility offices gradually reopen after the coronavirus lockdown, more utility enterprises are evaluating new, more flexible working arrangements that comprise changes in work time, duration and work-from-home or work-from-anywhere schemes.

- Work-from-home requirements triggered by social distancing mandates have accelerated digitalization of many back-office processes and accelerated adoption of virtual workforce collaboration platforms.
Safety requirements for employee-customer interactions have forced utilities to fast-track new digital channels for customer interactions and payment processing.

Work-from-anywhere sets new requirements for enterprise applications, such as easily deployable HTML5 thin clients and cloud architecture. It also extends the enterprise digital perimeter, making the utility more vulnerable to cyberattacks and intrusions, in particular, if work is performed on personal IT assets.

Technologies such as document, voice, and video collaboration tools, as well as augmented and virtual reality, can help in the lift-and-shift aspects of alternative work time and workplace arrangements. However, utility office-work flexibility will need to be accompanied by significant people, process and technology redesign, integration trials and facilitated implementation to meet enterprise cost, performance and continuous improvement requirements.

Implications

COVID-19 is altering the makeup, practice and culture of office-based work worldwide. As they prepare for a postpandemic modus operandi, utilities are evaluating the pros and cons of flexible work to understand how to adapt business processes to permit physical separation but keep integrity in outcomes. National health institution mandates for social distancing have accelerated digitalization of many back-office and customer-facing processes, creating workforce flexibility, which can be beneficial in the postpandemic operations.

The business challenges of the COVID-19 pandemic have put pressure on utility office workers and office workplaces. With office spaces becoming a focal point in business decision making around limiting employee health risk and identifying opportunities for cost cutting, many utilities are looking to different future workplace visions for divergent working needs.

Being conservative by nature, many utilities have historically looked at work-from-home and remote-work arrangements with some suspicion. But in response to the pandemic, with most utility office workers having largely or fully migrated from office buildings to work-at-home or other remote-from-office workplaces, the once-feared and sometimes even dreaded depression in productivity has not broadly materialized. In fact, the opposite effect has been observed, with some studies claiming to measure up to a day of additional output per week over a nine-month period and a 50% drop in employee quit rates. ¹

One of the pandemic’s key lessons globally is that employers’ focus will have to shift from designing for efficiency — streamlining workflows — to designing for resilience.

This is particularly relevant for utilities as the mandate for service continuity and resilience become even more important during a pandemic. As with office workers in other industries, utilities have been able to measure some negative impacts in productivity and on resilience. However, the direct
correlation of work-from-home and remote work is difficult to make, because many other factors are involved. These include increases in worker stress, more childcare and family-care responsibility and time demands created by pandemic lock-down conditions, including retail store closures and the suspension of leisure and convenience services.

Gartner analyst interactions with clients across electric, gas and water utilities yield two thought-provoking insights:

- Utility leaders are more concerned about employee physical and mental health and well-being than about the location of employee work. Employees-as-people concerns trump employees-as-workers concerns.

- Utility employees say they’re more focused on providing high-quality work when they’re working from home or remotely, than when they are in the office.

Relatedly, most utilities we’ve spoken with don’t foresee a complete shift to total work-from-home or remote-work. This is due primarily to constraints on some types of utility office work that must be completed in-office to be effective or to meet regulatory policy mandates. Even after the impacts of the pandemic have abated, or the pandemic is resolved, it’s unlikely that most office workers will want to work from home or work remotely all of the time. The social nature of work, the stimulating and creative aspects of work that can be enhanced by some kinds of office work, and the work-and-home-life balance that offices provide can and will be important in the future.

At the peak of COVID-19 response and recovery, most utilities had sent home about 70% of office workers across the business from customer service, corporate shared services and IT. In some limited cases, utilities have requested and allowed workers to come into the office for certain types of activities, like necessary in-person training, skills qualification and certification, or to conduct safety and operations audits. This limited and controlled office work has generally gone well.

Certain categories of office workers (including engineers, facilities workers, inspections groups, finance operations teams and audit workers) have been asked to report to the office as usual. This has also gone well, with utilities enacting and enforcing social distancing policies, curtailling the number and frequency of multiple-person meetings and putting other measures in place. Some of these measures are reconfiguring office spaces and foot-traffic patterns to give office workers flexibility in maintaining interpersonal distance and safe eating and hygiene routines. Most utilities are planning to continue and even expand these environmental, policy and behavior modification actions, as workers may variously return to the workplace or occasionally return to the office in the future.

Office work that includes front-office, in-person interactions with customers, like bill payments and in-person service requests, has been particularly scrutinized during the pandemic, due to its potential hazardous impacts on both employees’ and customers’ health and safety. To maintain the expected level of customer engagement, as well as the integrity of business-critical payment
collection functions, utilities have accelerated the adoption of digital customer experience channels such as customer self-service and other digital payment options. Most of them have gone beyond traditional electronic bill presentment and payment processes to use digital payment methods. They've used options from global providers such as Apple Pay, or selected service providers with national appeal in their service territories, like Alipay or WeChat Pay.

The chief lesson for utility CIOs and business leaders is that they should take a broad view of the workforce, the workplace and utility work itself. They must leverage the pandemic crisis mindset to frame a new vision and new strategies for business operations redefinition. They must make their decisions and actions more nuanced, to balance pandemic and other crisis operations with financial outcomes and with overall business transformation objectives. And they must invest now to finish the transition to a resilient work environment in a way that improves pandemic recovery and renewal outcomes. In particular, this means providing the tools and technology necessary to deliver enterprise work at targeted cost, quality and safety, regardless of whether human work capacity is physically at home, in the office or elsewhere.

**Recommendations for CIOs**

- Quantify the real work productivity and capacity performance gap among work-from-home, remote-work and work-from-anywhere, by evaluating work standardization and performance through time study, work sampling, analytical estimating and predictive modeling.

- Identify work and business process issues by using SIPOC, lean and agile business design and analysis frameworks. This analysis can subsequently be used to design hacks and other interventions, as well as scope investments in automation that improve work-from-home and remote-work arrangements and progress the integration of interrelated activities between location and time frame work models.

- Make the right decisions about people, process, and technology changes by first focusing and triaging in the context of critical utility work prioritization. The journey of progression and evolution for location and time frame work models is likely to take years. Start in the places of most critical and important impact.

- Prepare for increased work-from-home impact on your enterprise applications traditionally used in the office setting by evaluating application architecture's ability to meet resilience, performance, scalability and security requirements for the postpandemic flexible workforce.

- Plan for an increased level of digital customer interaction in the postpandemic new normal by opening new digital customer engagement channels and reinforcing those open during the pandemic.

**Mission-Critical Work**

Lloyd Jones and Zarko Sumic
Key Findings

- Adhering to shelter-in-place and social distancing mandates creates unique challenges for mission-critical operations — such as nuclear power plants and network control centers — that have to be staffed 24/7.

- Mission-critical staff have entered into long-term sequestration patterns at critical sites during the pandemic, creating logistical and operational challenges and setting precedents for labor relations.

- Long-held assumptions about control room work practices, including assumptions regarding requirements for enabling control room operational technology, are shifting.

Implications

Control rooms are normally under pressure when the system peaks or a natural event occurs that physically damages the grid. If a natural event were to occur in parallel to the current pandemic disruption, the natural event would be compounded across both grid operators and field crews. Such a compound event would cause prolonged outages by limiting the ability of the utility to respond and repair damaged infrastructure. Controls are mission-critical nodes whose criticality becomes even greater during pandemic service continuity mandates.

Mission-critical work is the moment-by-moment operation of resources that are critical to the integrity and functional readiness of a power system. This definition includes balancing across generation, transmission and distribution control centers, as well as markets, where the failure to exercise responsibility in one domain will trigger a cascade of failures in the adjacent domains. Such failures carry an extremely high social cost, and may even result in the complete failure of the energy system. This is why energy systems are part of the backbone of society, and one of the “critical infrastructures” of the modern economy. Consequently, most utilities have business continuity plans, and leading organizations have thought through the pandemic response, but have not actioned their plans before now.

Control rooms are not conducive to social distancing. Utilities have stepped up to address control room staffing issues, in both traditional and creative ways. Increased medical surveillance, including regular temperature screening with recorded medical questionnaires, is the new normal, as is deep cleaning of all contact surfaces in the control room. Utilities have also implemented backup control rooms as part of their disaster preparation, or have brought backup control rooms into parallel production. Actions like these reduce the number of employees at one site, implicitly improving social distancing. Due to physical monitoring infrastructure limitations of control centers, utilities have had to apply careful thought to segmentation of work across dual control rooms.

In order to reduce the likelihood of community COVID-19 transmission among critical personnel, some critical sites have had to sequester teams. This strategy works well for short-lived disaster
scenarios, and is a typical regulatory requirement for nuclear operators. Nuclear operators have installed facilities on their sites for accommodation, personal hygiene and food services. Other operators of critical infrastructures have had to make a plan with existing facilities or bring in mobile housing units or recreational vehicles within the facility control perimeter. Accommodation has tended to be assigned to single occupants, to maintain some form of social distancing in place.

In most countries, including the U.S., essential power plant, utility or grid operator employees are not legally required to continue working during an emergency.

For these reasons, utilities have relied on volunteers and incentives to staff these teams, whose members have had to leave their families and move into mission-critical facilities for extended periods. In some instances, that has also required an extensive negotiation process with labor unions. Regardless of the way the agreements for sequestrations have been achieved, Gartner has seen a general move to a model of long shifts of 12 hours — to a two-weeks-on, two-weeks-off model. This is similar to the oil and gas industry staffing pattern for remote sites like offshore drilling platforms. Teams have been fixed for the duration of the emergency, so that there’s no rotation, to reduce the risk of cross-contamination by unintended mixing.

The new ways of staffing and working in mission-critical operations during the pandemic have brought a greater emphasis on employee well-being. This implies that the utility must find a balance between the mental health needs of sequestered workers and its business needs. In general, utilities are making sure that the well-being of employees as people is being given more importance than their usefulness as workers. It’s true that this posture may incur additional cost, and potentially introduce some risk, due to changing workflows and roles’ responsibilities. But it also effectively reduces risk by making sure critical personnel are emotionally and mentally fit and able to perform mission-critical actions.

Performing mission-critical work under prolonged pandemic conditions hasn’t just started to change some long-held assumption about work practices. It’s also begun to challenge some assumption about architecture, deployment practices and usability of operational technology in control centers. Flexible work practices require agile and flexible control center technology. One example: emergency restoration work traditionally orchestrated from control centers on designated applications, such as ADMS — which include emergency restoration capabilities with client/server architecture — can now be performed from the field. By changing user interface architecture to HTML5 web clients and reconfiguring roles and responsibilities, utilities can designate restoration work to personnel who are not physically located in the service center.

Workforce flexibility will be part of the postpandemic new normal. Leading utilities have been able to leverage their investment in modernizing mission-critical applications, along with their infrastructure and security practices, to securely move additional workloads out of the control
According to some experts, there may be a second COVID-19 wave. If it comes, it will likely be in late 2020, coinciding with the Northern Hemisphere's autumn storm season. Making sure that workflow flexibility is supported by adequate and properly designed technology will be critical to ensuring resilience for utilities as critical societal infrastructure operators.

**Recommendations for CIOs**

- Reexamine operational business processes by looking for workloads that can be moved away from the control room.

- Proactively examine organizational preparedness for the storm season, assuming that the pandemic is ongoing, by ensuring that your resiliency efforts correlate with incremental weather conditions in all regions likely to be impacted.

- Leverage the lessons learned from the COVID-19 pandemic by challenging assumptions about who performs which work, from where and how.

- Make sure that your underlying technology can support flexible work requirements by engaging your operational technology providers in new use-case evaluation and product architectural redesign.

**Evidence**


**Recommended by the Authors**

- Market Guide for Mobile Workforce Management Systems for Utilities
- Market Guide for Advanced Distribution Management Systems
- Strategic Roadmap for Utility Customer Information Systems
- Navigating the 2020 COVID-19 Disruption in Utilities
- Top 10 Trends Driving the Utility Industry in 2020
- Utility Mobile Workforce Management and Horizontal Field Service Management Systems Provide Different Capabilities to Utilities
- Use Gartner's ACME Framework to Make Informed Technology Selection for New Work Nucleus
- Drive Better Digital Workplace Employee Collaboration Using AI, Chatbots and Advanced Analytics
- Market Guide for Content Collaboration Tools
- Toolkit: Content Collaboration Tools (Vendor and Product Data)

**Recommended For You**

- Summary Translation: How to Deliver a Truly Hybrid Integration Platform in Steps
Summary Translation: COVID-19-Induced Downturn Will Disrupt SaaS Pricing Models
Follow Gartner’s T4 Process to Optimize Negotiations: Tactics, Templates, T&Cs and Timing
Cost Optimization Is Crucial for Modern Data Management Programs
Summary Translation: 16 Tips to Enhance Your IT Disaster Recovery Program

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