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Albert Cho, vice president and general manager at Xylem, discusses how utilities are responding to Covid-19, the digital technologies that are assisting operational continuity and what the pandemic means for the future of utility management.

We are still in the early days of the global coronavirus crisis, but some things are already clear. First, the pandemic has considerably raised both the stakes and the difficulty level of utility management. Second, utility leaders are rising to the challenge, but the crisis has revealed vulnerabilities to address in the future. And third, implementation of secure digital technologies has proven to be a real differentiator between the most resilient and adaptive utilities and the rest, signaling a pivot point in the adoption of these valuable operational tools.

If there is a silver lining to the misery and chaos of Covid-19 in our industry, it...
is that the response to this crisis contains the seeds of a transformation that not only will help utilities run better, faster and cheaper, but also become more resilient to future shocks.

**Raising the stakes**

Covid-19 has proven to be a monumental challenge for utility leaders around the world. Most obviously, the external environment has become radically unpredictable, characterized by environmental, regulatory, and economic uncertainty. But the crisis has had a particularly intense impact on water utilities, considerably increasing the stakes for operational reliability and the cost of disruption. The universal need for frequent handwashing requires reliable access to clean water, and public concerns over the persistence of viral load in wastewater make sewage overflows even more problematic than usual.

The pandemic has also tied the hands of utility teams. Financial concerns are mounting as the shutdown of key commercial and industrial customers hits the revenue and cash flow of many utilities. But operational concerns have dwarfed economic ones for the time being. Social distancing protocols mean that some utilities have sent as many as four-fifths of their staff to work remotely, with only operationally critical staff on site.

Utilities without a ‘bench depth’ of licensed operators have their teams literally sheltering in places walled off from their colleagues and the contractors, vendors and consultants who support daily operations. Some utilities have experienced alarming rates of infection in their own staff and seen large numbers of personnel enter self-quarantine, further sapping their operational capacity. So, while stakes have never been higher, the margin of safety has never been so slim.

Finally, the virulent and infectious nature of Covid-19 has intensified the operational workload facing utilities. For good public health reasons, several US States and jurisdictions have stopped shut-offs and indeed required reconnection of all suspended accounts, but this move has created new demands on field crews.

Of course, the public hunger for disinfectant wipes and the shortage of toilet paper has produced a massive spike in persistent solids entering the sewage system, clogging pumps and pipes and yielding new work orders for the skeleton crews that remain on site, steadfastly repairing assets while staying six feet apart from each other and operating with makeshift personal protective equipment.

**Signs of strain**

In difficult circumstances, utility personnel have once again risen to the challenge. Selfless acts have taken place at every level of practice, from field crews to procurement professionals to senior leaders. The water professional’s commitment to serve the public has never been more necessary, nor more evident.

The genuinely collaborative and highly networked culture of the water community has also been a source of strength: professional associations and organizations have provided an invaluable forum for sharing experiences and best practices that have rapidly spread throughout the world. Utilities have shared continuity of operations plans with their neighbors, mutual aid arrangements have been reinvigorated, and webinars have proliferated on every Covid-related topic imaginable. These “knowledge networks” have transcended social distance and provided a valuable platform for improving the sector’s collective response.

However, the crisis has also revealed some vulnerabilities that utility leaders will be better prepared for in the future. Reliance on mutual aid becomes challenging when a pandemic affects multiple utilities who are all facing the same human resource constraints. Some local professional associations have stepped in by creating lists of certified operators who are willing to volunteer; maintaining these should become a universal practice.

Access to adequate quantities of personal protective equipment should be a given for utility workers, who are essential in the truest sense of the word. And while remote work should be seamless, many utilities have struggled to equip their workforce with the

**“One critical factor that has distinguished the most resilient utilities from the rest is early adoption of secure digital technologies.”**

Cloud-based SCADA platforms will enable operators to safely work from home, or from anywhere, as needed. (Image AdobeStock)
tools they need to be productive from home.

**Digital as a differentiator**

One critical factor that has distinguished the most resilient utilities from the rest is early adoption of secure digital technologies. Based on discussions with more than 25 utility leaders in the early stages of the Covid outbreak, I believe that utilities that have made systematic investments in digitizing their processes and workflows have adapted far more easily to the Covid-19 environment than those who have maintained legacy systems.

At one end of the spectrum, one utility leader I spoke with bemoaned the fact that his paper-based workflows made it much more challenging to manage a largely remote workforce. “We still use paper timesheets,” he said. “And don’t even get me started on trying to get laptops for everyone.”

At the other end of the spectrum, I heard from another utility leader who had completed an advanced metering infrastructure deployment, distributed sensor networks, advanced monitoring and control, and a digital asset management system. In her words, “because we have made these investments, we can run large parts of our system remotely, so our life hasn’t changed all that much.”

**Digital transformation**

Coming out of Covid-19, investing in secure digital transformation will become a central part of utility resilience strategies. These investments will likely take several forms. First, enterprise mobility strategies will work from the workplace at water utilities just as they have in other workplaces. Investments in secure virtual private networks, edge devices or virtualization tools, and digital workflows will help utilities maintain continuity of operations wherever workers happen to be.

Second, remote monitoring and data acquisition technologies will enable utility managers to keep an eye on their systems. In the wastewater collection system, for example, imagine a future where every pump station is instrumented, connected and viewed over a secure mobile portal. Remote capabilities enable field crews to monitor the health of all lift stations. The system generates proactive asset management recommendations, allowing teams to focus maintenance activities only when it is required. Artificial intelligence embedded in every pump optimally operates each lift station and initiates self-cleaning whenever there is a risk of clogging. And sensors distributed throughout the sewer network detect blockages in real time, helping crews focus scarce resources on targeted interventions, not crisis response.

Solutions like these are no pipe dream: they are readily available today, and they are already business as usual for today’s resilient utilities.

**The next crisis**

Covid-19 is far from over, and the duration and shape of the crisis remain unclear. We will witness more heroic acts and sacrifices by water professionals before the pandemic ends. But most experts believe that the crisis will subside in a matter of months, and when it does, recovery can begin.

The goal of resilience planning is not only to bounce back from peril, but to bounce forward stronger than ever. The next crisis will not look exactly like this one, so we should approach planning with a degree of humility about our ability to predict future needs.

That said, whether future challenges are economic, environmental, or epidemiological in nature, there is tremendous power in the adaptive capacity of digital networks and their ability to help systems function even under great strain. In a world where connectivity is both a vector of contagion and a way of life, tapping the power of secure digital water solutions will help us meet the needs of our communities now and well into the future.

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