FIELD WORKER CONNECTIVITY

Moving mobile technology to the job site

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The world looks very different from the top of a utility pole, or from a manhole on an underground power junction. As electric utilities expand the deployment of technology to their field workers, it is becoming more critical that information technology (IT) departments be able to observe their environment from the worker's vantage point.

Years ago, IT departments worked with a precursory understanding of the field. The first wave of mobile utility apps was centered on dispatch and work order processing: functions that were typically handled sitting in a truck with a laptop. The applications were often adaptations of desktop versions, and from an IT standpoint, the devices did not appear that different from a remote desktop.

The world has changed significantly. On one hand, the rise of mobile computing has raised the standards and the expectations for connected workers. On the other hand, utilities are facing slowing demand and aging infrastructure, and are increasingly dependent on the efficiency of their service operations to ensure profitability.

As a result, companies are attempting to push data technology to a broader range of field work functions. According to a 2014 VDC Research study of 500 electric utilities titled "*The Changing Face of Utilities*", 71 percent of companies looking at mobile solutions cited improved worker productivity as the most important metric currently in pursuit.

Pushing technology to a wider range of work functions involves what I call, "the last mile"—the section of the network between the truck and the point where the work is completed (this is the most neglected part of the network when it comes to providing technology to the field—and the most difficult to tackle). Yet, the last mile is where utilities can make the biggest productivity gains.

INFORMATION IS A TWO-WAY STREET

One of the most important changes with the new wave of mobility is that the supply of information to the field is at least as important as the collection of information from the field. In fact, giving workers accurate and current information is where utilities can make the most significant gains in productivity.

To give a practical example, a worker who encounters an unusual reading can verify if he or she is looking at the right meter. The worker on a repair call can access service records, parts specifications, drawings, step-by-step instructions, customer information, thereby improving efficiency and cutting

down on errors and rework. Moreover, vitally important, IT systems can provide alerts that the worker is entering a danger area, perhaps enhanced by a global positioning system (GPS).

The aforementioned features and benefits can help utility workers become much more than a pair of hands. Timely information allows for improved decision-making, enables the worker to become a safety advisor to the customer, assist with inventory issues, or take a more proactive role in identifying new business opportunities.

EXTENDING IT TO THE LAST MILE

Moving technology to the last mile (that is, the section of the network between the truck and the point where the work is completed) can have many benefits. When a utility worker performs assessments, he or she refers to the following three workflow categories (refer to "*Workflow Categories*" sidebar).

THE TRUE MEANING OF ADOPTION

The biggest challenge, and the true test of a mobile solution, is adoption. However, compliance—pushing workers to use the mobile devices—is not the answer, especially in the field where the worker is using technology under a number of physical constraints.

MONEY, MONEY, MONEY

Hidden/not-so-hidden costs of non-adoption

- Inaccurate or incomplete information from paper notes
- Guesswork based on not having available information
- Wasted time re-entering information into the device
- Re-work due to errors
- Incorrect response to customer situations
- Safety problems based on the worker not being informed or not informing others

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Work-Order Automation

01 moves the electronic work order to the point of service. Work requirements and forms are current and information is entered only once, meaning that the worker does not have to spend valuable time sitting in the truck transcribing notes on to a laptop.

Inspect/Repair/Maintain

02 improves the accuracy of repair, maintenance, and safety information, and reduces the time required to record it. Additionally, this category improves customer service, cuts down on costly errors, and automates safety audits and compliance reporting. Instantly, this workflow category pushes the latest information out to the field, including safety alerts.

Inventory Management/Asset Tracking is the integration of inventory tracking with day-to-day workflow as an ongoing function. The workflow category tracks the degradation of aging equipment more effectively and adds a location verification function, which is aided by a global positioning system. Lastly, this category makes assets more easily available for workers.

True adoption requires buy-in—a genuine acknowledgment by workers that the provided tools from IT will help them do their jobs. In order to adjust their work patterns to accommodate technology, the workers on the poles must realize the value of the work, and the only way to achieve this goal is to develop solutions carefully with that viewpoint in mind.

▶ APPLICATIONS

① Does the application require a lot of typing?

② Does it require the worker to navigate through multiple screens?

③ Is the application appropriate for a mobile display, or was it designed for a larger screen?

④ Does it rely on a desktop-style keyboard with function keys?

⑤ Can it work offline? Cloud-only solutions are not accessible in a sub-basement.

⑥ Is the application fully compatible with the main office?

▶ DEVICES

① Is the device light enough to carry? Heavy devices are left in the truck.

② Is the display readable in bright sunlight?

③ Will the device work in extreme cold conditions, or extreme heat? Is it impervious to dust and moisture? Will it pass a drop test?

④ Can the battery be hot-swapped? If running out of battery involves logging in and out, this can be a huge distraction and time waster.

⑤ Can the device be used with a harness to allow the worker to work unencumbered?

CHALLENGES ON THE LAST MILE

The first step to providing realistic solutions on the last mile is understanding the potential show stoppers. The entire solution, including all applications and the device, has to be easily usable under the circumstances that field workers face. Utilities must ask some fundamental questions (refer to "*Applications/Devices*" sidebar).

THE DRIVE-ALONG

When working with clients, we often capture the worker perspective by spending a full day "shadowing" one or more workers. This is far superior to worker interviews, as workers rarely reveal the subtleties of their work when brought into a meeting room. As well, taking the time to "walk a mile in their shoes" gives workers a much-needed acknowledgment of respect for their hard work in the organization.

DOS/DONT'S

Important tips to improve productivity on the drive-along

DO look at everything the worker does. Do not limit your observation to the use of technology. Other opportunities to use the technology might exist where it currently remains unutilized.

DON'T avoid busy days. Do pick the busiest ones available. Busy days provide the best opportunity to assess how technology is being used, or where better technology is required.

DO ask many questions. Do not wait for the worker to give you a play by play of his or her job. Very often, the worker will not spontaneously mention details that he or she considers obvious to the everyday operative.

DON'T make assumptions based on prior knowledge or experience. Do ask what might feel like "dumb" questions. The most important lesson from a drive along is best understood with the words of Roman poet Phaedrus: "Things are not always what they seem; the first appearance deceives many; the intelligence of a few perceives what has been carefully hidden".

DON'T try to be a dispassionate observer. Do show empathy. Remember, these individuals may be engaged in dangerous operations, may receive incomplete repair information, or an impossible schedule. Acknowledging their situation will build the trust necessary to acquire the truth.

DO follow-up by sharing acquired knowledge, and receiving verification and feedback on the understanding of the worker's situation. Do not simply write the report and move on. Results and conclusions need to be validated, and validated again.

The drive-along might sound like a major time commitment that is difficult to justify. However, when a supervisor or an executive considers the enormous potential costs of non-adoption, the investment is minor and well worth the effort.

65%

Percentage of enterprise tablet users who reported that their batteries 'frequently' or 'occasionally' did not last the full shift

19%

The annual failure rate for consumer-grade tablets, when used in a utility environment

Source: VDC Research

FAMOUS LAST WORDS

The experience of several drive-alongs, along with a thorough knowledge of the challenges of the last mile, will move electric utility operations far ahead of the curve when it comes to empowering worker productivity as well as encouraging workers to take a more proactive role in the field. As the role of workers broadens, the need for information in the field will grow. This level of information, however, can only be delivered if IT approaches the last mile with its eyes open. **ET**