Enhancing Utilities Maintenance Efficiency with a Mobile Workflow

Using tablets, service crews can cut repair times, optimize schedules, improve record keeping, minimize travel time, and protect data

A tablet-based, end-to-end workflow solution can improve customer service by allowing dynamic reassignment of service tickets and job/crew rescheduling. Improved efficiency can reduce the number of trucks, crews, and overtime hours required to handle the maintenance workload.

Executive Summary

Providing reliable service remains the highest priority for utility companies.[1] But to maintain high-quality service, many companies need to improve the efficiency of their processes—including the commonly used paper-based service request process.

Although these paper workflows can successfully track crews, materials, and jobs, they require multiple manual handoffs of information. Service crews spend large amounts of non-billable time handling paper and filling out forms. Back in the office, clerks must re-enter information from forms into back-end systems. Meanwhile, technicians are unable to update information without direct interaction with the home office and have limited ability to respond to changes during the workday. Improving the efficiency of these workflows can help utilities reduce costs without jeopardizing service availability.

Equipping service crews with ruggedized tablets powered by Intel® processors and protected by Intel® security capabilities can help utility companies improve the efficiency of maintenance workflows. These tablets provide a robust, reliable interface for end-to-end workflow applications. Built to resist bad weather and harsh conditions, ruggedized tablets enable service crews to sustain the efficiency of a digital workflow even in unfriendly environments.

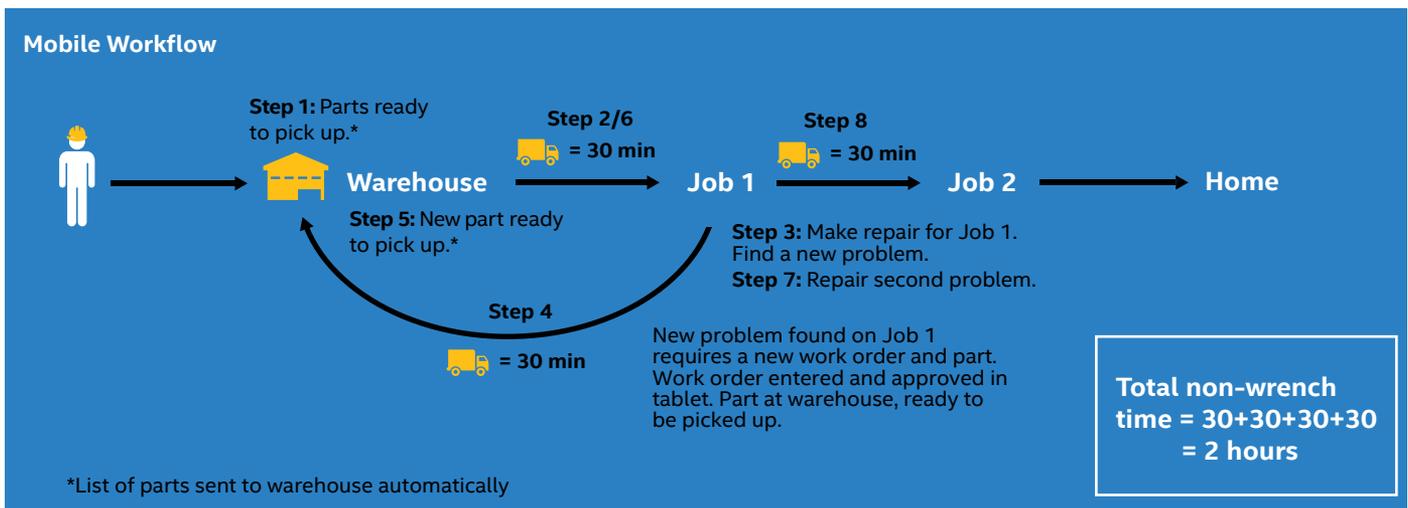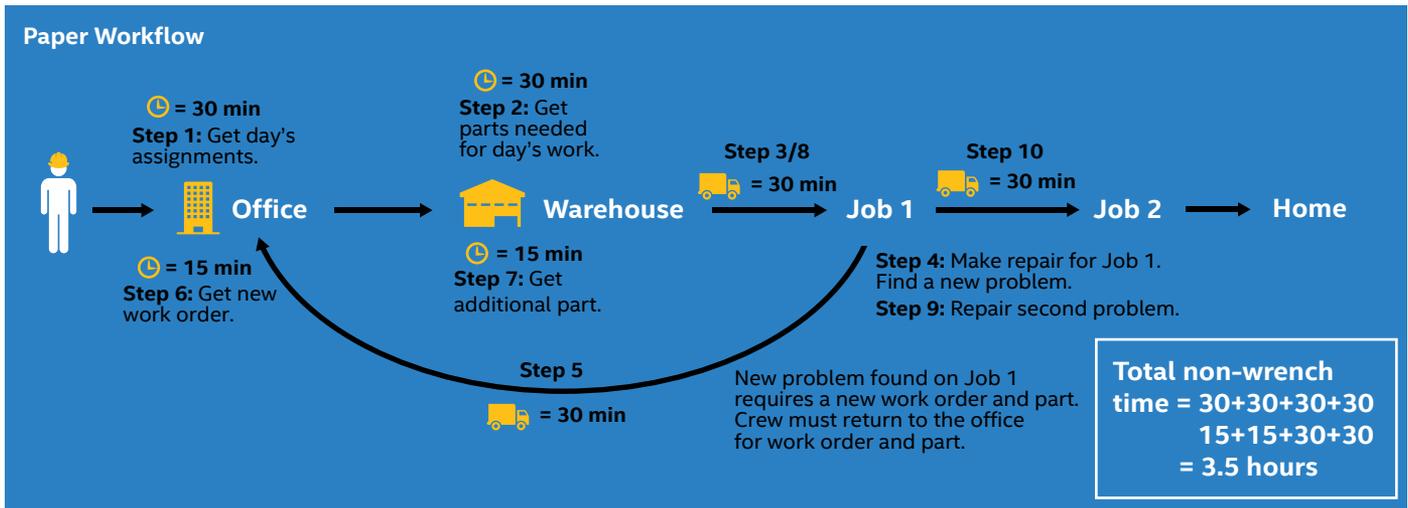### Reduce Costs and Modernize Workflows

Despite economic recovery, growth in demand for electricity is anemic, as consumers bring more energy-efficient devices on line and the threat from distributed power generation grows inexorably. The U.S. Energy Information Administration forecasts electricity demand in the United States will increase by only 0.9 percent a year on average through 2040.[2]

As a result, utilities are under constant pressure to cut costs and modernize work methods without sacrificing service quality. Equipping service technicians with mobile capabilities can bring immediate productivity improvements and reduce costs while accelerating repairs and delivering high-quality service to customers.

Foster End-to-End Operational Improvements

Utilities' service crews are responsible for making service calls to maintain the distribution network and individual building connections. In many cases, these crews work over a large geographic area, and are hampered by operating practices centered on time-consuming methods and siloed tracking systems. They work from job tickets
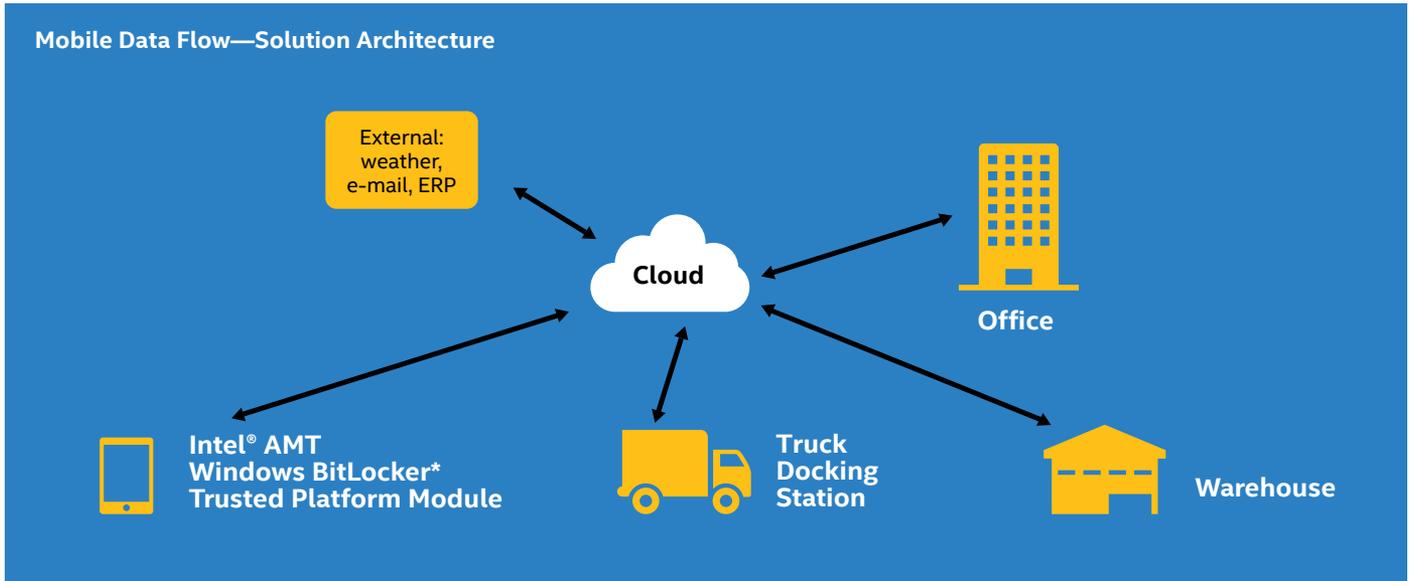
Paper Workflow

🕐 **= 30 min**
Step 1: Get day's assignments.

🕐 **= 30 min**
Step 2: Get parts needed for day's work.

Step 3/8
🚚 **= 30 min**

Step 10
🚚 **= 30 min**

👷 ➝ 🏢 **Office** ➝ 🏭 **Warehouse** ➝ **Job 1** ➝ **Job 2** ➝ **Home**

🕐 **= 15 min**
Step 6: Get new work order.

🕐 **= 15 min**
Step 7: Get additional part.

Step 4: Make repair for Job 1. Find a new problem.
Step 9: Repair second problem.

Step 5
🚚 **= 30 min**

New problem found on Job 1 requires a new work order and part. Crew must return to the office for work order and part.

Total non-wrench time = 30+30+30+30 15+15+30+30 = 3.5 hours

Mobile Workflow

Step 1: Parts ready to pick up.*

Step 2/6
🚚 **= 30 min**

Step 8
🚚 **= 30 min**

👷 ➝ 🏭 **Warehouse** ➝ **Job 1** ➝ **Job 2** ➝ **Home**

Step 5: New part ready to pick up.*

Step 3: Make repair for Job 1. Find a new problem.
Step 7: Repair second problem.

Step 4
🚚 **= 30 min**

New problem found on Job 1 requires a new work order and part. Work order entered and approved in tablet. Part at warehouse, ready to be picked up.

Total non-wrench time = 30+30+30+30 = 2 hours

*List of parts sent to warehouse automatically

and track their travel time and materials for each job, usually on unrelated paper forms. Many companies continue to rely on paper-based systems to manually document work in the field, which means clerical staff must later enter job completion data into tracking software. Manual data entry is not only time-consuming, it opens the door to data entry errors.

By equipping service crews with ruggedized tablets that can dock in their trucks and connect through cellular service, organizations can enable technicians to update service requests directly, with no need for an additional data entry step later. This new connectivity helps technicians quickly and efficiently handle unexpected problems found at job sites, track changes more accurately, and intercept data entry errors early in the process. Crews can enter service requests at the job site when

they discover additional service issues, often avoiding a repeat service visit. If they have access to GIS software, they also have greater visibility into equipment geolocation.

Using a dynamic scheduling capability on tablets can significantly reduce travel and wait time for crews. Workers who are allowed to keep service vehicles at home can drive directly to their first job of the day, instead of traveling to the office to get their daily assignments. Using a tablet-based order system, technicians can remotely request material pick lists for upcoming jobs from the central warehouse—and then time their pickup for when the items are ready, without waiting at the depot for parts to be staged. Finally, field crews can update their time cards and turn them in remotely using the tablet—again, minimizing return trips to the central office and travel hours.

Mobile Data Flow—Solution Architecture

External:
weather,
e-mail, ERP

Cloud

Office

Intel® AMT
Windows BitLocker*
Trusted Platform Module

Truck
Docking
Station

Warehouse

Enhance Efficiency, Reduce Costs

With a connected field workforce, utility companies can increase billable "wrench time" for service and maintenance crews, and reduce the amount of data entry required for job tracking. Companies can simultaneously minimize unnecessary trips to the main office and optimize field trips by detailing the necessary equipment for each visit.

Capturing service data in the field through a tablet lessens reliance on paper and can improve the accuracy of data input by requiring correct formats and enforcing predefined data ranges at the point of data entry. It can also cut the costs of correcting and transcribing data from paper and minimize clerical time for managing paperwork.

Tablet-enabled workflows can also enhance the information collected in the field. For example, field technicians can use tablets to photograph completed installations and link the images to the proper job on the spot to document work performed. If subsequent work is required for a particular customer, the next technician can immediately access this rich information to accelerate and improve service.

A tablet-based, end-to-end workflow solution can also improve customer service by allowing dynamic reassignment of service tickets and job/crew rescheduling. Field crews can create or extend service tickets at job sites, accelerating resolution of new issues and decreasing the number of

repeat visits. All of these efficiencies can combine to reduce the number of trucks, crews, and overtime hours required to handle the maintenance workload.

Implementing Ruggedized Tablets

Utility service crews often work in challenging physical environments. Their mobile devices must stand up to extremes of temperature, dust, shock, and humidity—yet still be easy to carry and connect to docking stations.

At the same time, these tablets need to integrate software and hardware for end-to-end workflows. Service crews might need to access e-mail or send data to an enterprise resource planning (ERP) system. The job might require connection to bar code scanners or cameras, or use of GPS capabilities for their field tasks. Intended for mobile operation, safety features that prevent usage while in a moving vehicle might be mandated. Tablets that enable remote manageability can help IT groups better support and control the systems.

Multipurpose tablets with Intel® processors are designed to meet these stringent requirements, while offering a selection of enterprise-grade software designed for the energy industry. Utility companies can choose from different models from several manufacturers, including Xplore, Aegex, Bartec, Panasonic, and GammaTech. These ruggedized devices can provide the reliability utility companies need to support crews in demanding physical environments. Because they use Intel

processors, these tablets can also support a wide variety of enterprise applications and enable integration with a full range of back-end systems.

With the right tablets, utility companies can also take advantage of robust security measures. For example, they can use Windows BitLocker Drive Encryption* in conjunction with Trusted Platform Module (TPM) to protect the Windows operating system and user data, and prevent tampering if a tablet is lost or stolen.

Smooth coexistence with the enterprise IT infrastructure is a key requirement. By using tablets with Intel® Core™ vPro™ processors, utility companies can take advantage of Intel® vPro™ technology and Intel® Active Management Technology (Intel® AMT) to streamline remote management, diagnostics, patch deployment, and more. Intel AMT enables IT administrators to control mobile devices, whether they are connected to the network, powered off, lost, or stolen.

Summary

Many utility companies are looking for new ways to maintain consistent service while reducing costs. Deploying tablets based on Intel processors to their service crews can help these companies transform their service and maintenance workflows. Using tablets, service technicians can maximize their wrench time and minimize paper-pushing and data entry. Companies can enhance efficiency, deliver better, more responsive service, and help ensure reliability of utilities while reducing operational costs.

Acknowledgments
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