

# Integrated strategic mobility : technology drives improvement

## At a glance

Utility companies are feeling the pressure to support a diverse and geographically dispersed workforce.

Legacy technology hampers a utility providers' ability to respond quickly and improve core operations.

Utilities that harness new web-based technology are positioned to thrive in today's evolving marketplace.

Utilities have a long-standing need to support geographically dispersed technicians, construction workers, and field supervisors. In fact, since the beginning of the industrial era, utility companies have supported a distributed workforce. As a result, executives in this sector are not strangers to the challenges of supporting employees who build and maintain key infrastructure while also serving their customers at home and work.

Moreover, utilities have been under constant pressure to support their far-flung workforce in demanding—and often unforgiving—environments. Utilities are expected to maintain high levels of availability and service in even the most difficult circumstances. Downed power lines and broken water main pipes during storms, earthquakes, or resource shortages cannot be ignored or put off for long without generating unwelcome headlines.

## The challenge

However, because the utilities industry has had the critical need to field and support mobile workers for many years, companies have accumulated and implemented an array of legacy mobile technologies and business processes. These systems are now aging and, in many cases, in need of replacement. More importantly, the state of mobile technology in most organizations today is preventing development of innovative business practices that can:

- Reduce operational costs
- Enhance customer service
- Harness key national and industry-wide trends to improve utility infrastructures

Barriers to progress presented by legacy mobile workforce solutions can be traced to three root causes:

- **End-user complexity.** The technology used by field workers is fragmented, cumbersome, and outdated. Technicians must often carry multiple voice and data devices—from two-way radios to cell phones to handheld computers—that utilize dedicated networks and do not interoperate. These limitations add time and complexity to completing maintenance or customer service tasks.
- **Rigid operational processes.** The limitations of proprietary legacy technologies have defined how utilities do business. Lack of flexibility and interoperability has made it difficult for utility organizations to adapt to new customer demands, competitive pressures, and regulatory mandates that are already prompting companies to re-engineer key processes.

- **Lack of back-office integration.** The fragmented and complex systems in the end-user environment are perpetuated in back offices. Different systems dedicated to supporting specific devices and channels of communication do not interoperate. The inability to share information makes it difficult for decision makers to respond in a timely manner to key developments in the field. Indeed, legacy technologies contribute to a lack of visibility into key processes, reducing utility providers' abilities to respond rapidly and improve core operations.

## The opportunity

In the meantime, new developments in technology have matured to a point where they provide an historically risk-averse industry with the tested tools it needs to modernize its mobile workforce strategy safely:

- **Modern mobile multimedia devices and networks** are robust and feature-rich. This creates an opportunity to simplify end-user environments and enhance workforce productivity.
- **New business processes** can be enabled on-the-fly. The availability of more open

access to more information in a better context. This supports change management while reducing risk exposure.

In this white paper, PricewaterhouseCoopers outlines the evolution of mobile workforce solutions in the utilities industry and provides guidance on how executives can develop a modernized mobility strategy that aligns key technologies with core organizational objectives. Utility executives who harness these new technological developments while taking a comprehensive approach to process innovations—including process reviews, change management, and performance

Utility executives who harness new technological developments while taking a comprehensive approach to process innovations—including process reviews, change management and performance metrics monitoring—will be in a position to thrive as the industry enters its next major stage of evolution.

technologies allows workers to get more accomplished, in more places, and in a greater variety of circumstances. It introduces a new level of operational flexibility that can stimulate creativity and innovation to streamline how tasks are approached and completed.

- **Back-office enterprise management systems** have become more intelligent and sophisticated. This allows executives to integrate, centralize and standardize the flow of data throughout their organizations. As a result, decision makers have

metrics monitoring—will be in a position to thrive as the industry enters its next major stage of evolution.

To reach the next level of an enterprise mobile workforce solution, executives must understand the evolution of these solutions and the sophistication of technology available today, as well as the effect they can have on their organization's business processes. Once these are understood, a comprehensive enterprise mobile workforce optimization (EMWO) strategy can be developed.

## Evolution of mobile workforce solutions in utilities

Mobile workforce solutions in the utility sector have evolved significantly over the past 10 years. Early generation solutions ran on single platforms and supported rigid sets of processes primarily driven by customer information systems (CISs).

Early forays into utility mobile workforce initiatives were associated with CISs for the sole purpose of dispatching orders into the field via proprietary wireless handheld devices. With real-time updates sent to host CIS dispatchers, they were able to assign field orders to specific field crews, recall orders and cancel orders while monitoring the workloads of each field crew. Early investments in mobile workforce solutions automated many manual processes.

Over time, however, it became apparent that, beyond customer service operations, a variety of utility activities could benefit from mobile workforce solutions. For example, in operations and maintenance, the need to create a mobile workforce component to outage management systems (OMSs) and enterprise work and asset management (EWAM) solutions was growing. The objective was to increase the amount of productive time that employees spend in the field and reduce time in offices performing paperwork.

While headway was made toward this objective, it quickly became apparent that the inability to schedule resources efficiently based on field crew skill sets, work order types, materials and equipment, and schedules was a barrier to further progress. In response, industry vendors focused on three primary initiatives to help utilities:

As technologies became standardized on interfacing mechanisms and data exchange protocols, some of these shortcomings were reduced, but they were not eliminated.

- Easily integrate additional data from mobile workforce applications with new and improved upstream systems such as enterprise resource planning (ERP) systems, CISs, OMSs, and enterprise asset management (EAM) solutions
- Utilize this data and gain insight from the effect that revised process flows would have on both customer service operations and dispatch centers
- Streamline resources and schedule tasks based on predefined rules and objectives

Early attempts to address these objectives failed because of the high costs and complexity that legacy mobile workforce systems imposed on utilities. Expensive code modifications were required to extend existing functionalities. These modifications were quite complicated; they demanded

intense requirements analysis and design phases, further contributing to the time and cost of mobility strategy upgrades.

In addition, the ability for wireless networks to reliably transmit an increasing amount of data was hampered by network throughput and coverage limitations. Private

data networks attempted to address these concerns, but they also had complex deployment challenges and proved costly to implement and support.

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## The emergence of web-based technologies and 3G networks

A breakthrough occurred when web-based technologies matured to the point where ubiquitous computing platforms could support seamless access to applications and their data. This important development created an environment in which the complexities of sharing data and applications could be reduced.

The next generation of open and robust wireless communication networks also matured. For example,

flexible solutions that address the shortcomings of early mobile workforce solutions.

With more robust configuration options, these solutions have the flexibility that utilities need to be competitive in a dynamic business environment.

## Business process innovation in utilities

The new web- and 3G-enabled mobility environment has created new opportunities for utilities to experiment and improve key business processes. Business

for mobile workforce solutions. As these processes are implemented, PwC also has developed methodologies for measuring their effect on utilities, customers, and other key stakeholders.

This approach to modernizing mobility strategies allows utility organizations to rigorously identify deficiencies, scope out areas for process improvements, and enhance information sharing. PwC follows a five-step process for continuous improvement:

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current 3G networks can transmit larger volumes of data dependably to a multitude of portable devices.

The convergence of web-based computing, improved interfacing mechanisms, and better wireless throughput has created profitable and affordable opportunities for application vendors to deliver more

process innovation provides utilities with a competitive edge and enhanced opportunities to achieve key strategic objectives more rapidly.

PwC has worked with a growing array of utility organizations to develop new standardized processes and refine a new generation of leading practices

PwC has worked with a growing number of utility organizations to develop new standardized processes and refine a new generation of leading practices for mobile workforce solutions.

1. **Develop baselines for current processes.** A comprehensive effort must be undertaken to review total process flow across all departments and business units. If the process review is only examined within a single department, some influencing factors and interdependencies may be missed, and bottlenecks in upstream and downstream environments may be overlooked. For example, if a service order is created in the customer portal and transmitted to the service group every 24 hours, it may take up to a day to be fulfilled. Such a significant service delay cannot be addressed unless all departments are involved in the process review. Once this information is documented, a thorough review can be completed and the necessary adjustments made to improve performance and overall productivity.
2. **Identify key performance indicators (KPIs) and determine success against strategic objectives.** To establish meaningful KPIs, it is important to correlate corporate objectives

with operational performance. Management must lead this effort to verify that the relevant objectives are mapped and the right targets are identified. For example, exception handling is often a manual process. If a service order has to be rescheduled for the next day, do not compromise by scheduling this order sometime in the future. Instead, look to implement an automated mechanism that can evaluate options for getting the order completed today. Once the cost of each option is computed, the least-costly alternative can be selected.

3. **Implement KPI monitoring.** Using the results of the process review, organizations can revise and implement new processes. Business process teams, working closely with technology teams, can model the new process flows.
4. **Review results with process owners and identify changes.** The metrics that measure the effects of the new process flow should be reviewed, and additional metrics should be developed if necessary.

5. **Implement new processes and re-establish baselines.** The cycle for reviewing processes then starts all over again. It should be noted that this is a continuous improvement process. It is a journey, not a destination.

### What processes are affected?

Several mobile workforce processes can benefit from a thorough review. These include processes that affect:

- **Day-to-day operations**—These include automated scheduling and dispatching of standard work orders or expediting emergency orders. Streamlining these two key processes will help organizations address critical productivity issues and allow dispatchers to focus on more complex and resource-intensive activities, such as emergency and capital construction work orders that require multiday and multitask scheduling and coordination. The ability to respond more effectively to emergency orders also will improve customer response times.

Now that technologies have evolved to provide increased functionality, enhanced configurability and increased communication capabilities, utilities face new opportunities to design more effective mobile workforce strategies.

- Scheduling—These include processes that help companies dispatch resources to respond to predefined events as well as emergency orders. As these events are reported, an EMWO solution can be configured to develop an effective schedule for specific resources, order types, or times of day. This allows organizations to allocate appropriate resources to improve customer satisfaction or enhance revenue-generating opportunities.
- Construction work that requires multiday, multitask and multicrew resources over time—this activity can be streamlined and scheduled based on resource availability. This work may be generated from an EWAM application that is supported by a project-estimating tool.

### Implementing an enterprise mobile workforce optimization solution

However, companies should avoid viewing EMWO as an individual business application. EMWO solutions are not point solutions. Many CIS, OMS, EWAM, and ERP systems vendors claim to provide mobile workforce solutions, but many vendor-based mobility solutions are invariably designed to support single-host applications. This approach should be evaluated carefully because it may lead to more complex, less flexible, and, ultimately, more expensive mobile workforce solutions.

Selecting and implementing an EMWO strategy should be viewed no differently than any other enterprise solution. Companies need to follow standard methodologies for capturing system requirements, documenting business processes, and developing a requirements document.

Mobile workforce strategies should be developed in conjunction with a range of enterprise applications that benefit the utilities industry, including CISs, OMSs, EWAM solutions, geographic information systems, and ERP solutions.

Utilities that are considering implementing an EMWO solution may want to work with a systems integrator that has:

- Utility domain knowledge of core utility applications
- Mobile workforce skills in a utility environment
- Mobile workforce communications and infrastructure experience
- Utility business process knowledge
- Organizational and human capital change management skills



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