Distinguishing Utility-Specific Mobile Workforce Optimization from Field Service Applications
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The Role of Mobile Solutions in Business Improvement

In today's utility market, the pace of change has accelerated beyond utilities’ capacity to control it. Utilities are now dealing with a mix of complex, and often related, internal and external challenges: aging infrastructure, integration of smart meters and other modernizing microprocessor-based technology, increasingly stringent conservation and efficiency programs, and new customer and regulatory expectations. Many must also manage retail competition, market consolidation, microgrids, and distributed generation.

Overcoming these challenges requires utilities to improve business performance across the board. A mobile workforce optimization solution provides a low-risk, highly effective way to address issues associated with these challenges, including work management, infrastructure change, customer service, regulatory adherence, and risk and safety management.

Today, many generic field applications are being dressed up as mobile workforce optimization solutions suitable for handling utility needs. Most are inadequate. How do you distinguish a utility-specific mobile workforce optimization solution from generic field service applications?

This paper is a guide to the requirements necessary in a mobile workforce solution designed specifically for utilities to help them succeed in this demanding business environment.

The Evolution of Utility Work Optimization

Use of technology to help field engineers improve their efficiency and effectiveness has evolved slowly over the past three decades. Until recently, field service applications evolved in a way that permitted a single vendor’s solution to address multiple industries.

As a result of this slow change, many field service applications in today's market are still designed only with short-cycle orientation in mind. They fail to address all aspects of the much more demanding utility field environment. As a result, they are better suited for general use by companies whose technicians perform relatively simple tasks—delivering packages or repairing just one type of equipment.
Today’s Utility-Specific Requirements

Today, utilities are hampered by the limited systems built for the past. They need utility-specific mobile workforce optimization applications that:

» Schedule and support a wide variety of both simple and complex tasks required of utility field engineers
» Support very specific utility process, such as grid hardening, mapping and field design projects
» Quickly mobilize resources, assess damage, and schedule restoration in potentially life-threatening work environments
» Integrate contractors and loaned crews into all types of work
» Ensure compliance with service level agreements as well as the complex health, safety, and environmental regulations that lie at the core of utilities’ obligations to their communities
» Track and secure assets across wide geographies and timeframes

To provide this level of mission-critical benefits, utility mobile workforce solutions must incorporate capabilities that go well beyond those required for less demanding environments. Specifically, for an application to be considered a mobile workforce optimization solution it must support seven key areas:
Address Short-cycle and Complex Work

Perhaps the most distinguishing feature of a utility-specific enterprise mobile workforce solution is the capacity to support all work, from the simplest and most repetitive tasks to complex long duration projects.

In the past, many utilities were confronted with field service support technologies that addressed only a single need—either:

» Short-cycle optimization for work involving customer service, maintenance, or equipment repair. There is real value in short-cycle optimization, with utilities commonly reporting decreases drive times of 15-20 percent and overall field productivity gains exceeding 30 percent. However, these technologies cannot support complex work.

» Construction work management/CMMS solutions with work packages that included the quantity and types of skills or trades required to perform a job. These lacked the ability to assign work to individuals or crews, track progress, or re-assign work to ensure deadlines are kept.

Today's utility-specific mobile workforce solutions address both these needs. Their algorithms can optimize short-cycle work while also:

» Employing automation and configurable business rules to segment long duration work into daily assignments while maintaining the integrity of the job requirements including skill sets, task interdependencies, and early starts and due dates

» Incorporating intricacies specific to long duration work, including individual and crew-level assignment, split-shift management, and multi-day scheduling

Maximize Resource Sharing

Up to now, many utilities have retained the single-department field service systems common in the mid-2000s. These systems have often been purchased from different vendors, or they may run on separate instances of an application using dedicated departmental hardware and software. Their limitations—lack of scalability and complex, costly integration—inhibit resource-sharing across departments and reinforce walls between siloed departments.

In contrast, a utility-specific mobile workforce optimization system continually uses the best people and resources at all times. A solution capable of resource optimization does so by:

» Developing a common schedule for personnel, helping minimize work delays or overtime

» Using load- and staff-planning modeling tools to enhance planning and forecasting

» Enabling the nearest appropriate work crew to accept a job, reducing travel time and costs

» Integrating call center staff into field activity

Union issues and tradition aside, utilities need an increasingly agile field force that can work across departments to meet peak demands. To do so, a system needs to measure workers equitably while apportioning shared work-load and equipment appropriately among all departments.
Accelerate Information Flow

Utility field engineers are asked to perform more work and diagnose problems on increasingly complicated equipment. Information traditionally stored in the “back-office” needs to be at their fingertips. It is no longer viable to provide field workers with limited customer information, lengthy manuals in the back of the truck for reference, and connection to a dispatcher. Schematic diagrams, specification sheets, images of installations, network maps, and equipment operating tolerances are all needed for field personnel to work safely, extend asset life, and accomplish repairs on a single trip.

A utility-specific mobile workforce solution provides field workers with data in multiple formats. And it must be able to do so quickly, in forms that are easy to search if utilities are to achieve the productivity and customer service improvements they require. Most importantly, data can be accessed from a wide variety of systems supporting critical processes:

» Geospatial analysis, outage and restoration activities, asset management, meter services, SCADA, and meter data management.
» Customer care and self-service, and customer-facing analytics for both internal and external reporting.

Deliver Flexible Scalability

Utilities require modern business flexibility in deploying mobile resources. Meter deployments, outage management, routine maintenance and construction all have their own work requirements. Enterprise mobile workforce solutions need to scale to support any of the above scenarios, and do so quickly when called upon. Additionally, a utility-specific mobile workforce solution is built with recognition of the varying IT structures and resources among utilities. Doing so means it must support multiple deployment models:

» On-premises solutions managed within a company facility
» Limited-duration SaaS for handling large but limited-timeframe projects
» Permanent SaaS solution that provides a predictable schedule of expenditure over time.
» A cloud test environment for new releases
» Hybrid environments

Enable Real-time Adjustment

The pace of utility field work has been accelerated over the past 15 years. Increasingly, emphasis is being placed on key performance indicators, such as scheduled work completed percentages, that measure field crew responsiveness.

Working in this environment means that utilities must be able to adjust more quickly to changes in field conditions, priorities, and resource availability. A mobile workforce optimization solution enables improved responsiveness by instantly eliminating subjectivity and continually automating efficiency, both of which increase the speed and accuracy of work. It does so through:

» Communication process and monitoring that can be applied to company employees or third party field workers
» Real-time resource allocation during appointment setting to improve the ability of the utility to meet service commitments.
» Embedded real-time scheduling to instantly accommodate unexpected events.
» Comprehensive, real-time views of all pending tasks and available resources combined with rules-based scheduling to better calculate routes and get the right skills to the right job at the right time
Access to real-time information of job status, enabling field technicians to better protect revenue, keep customers more informed and improve service.

Provide Data-driven Continual Improvement

Utilities are juggling the need to increase productivity and simultaneously reduce costs with the reality that work plans are always evolving and procedures will never be perfect. This means that work must be continually improved upon.

To create this cycle, work must be continually analyzed for areas of measurable improvement, using hard data and metrics. A mobile workforce optimization solution uses data to examine work for inefficiency and error, continually enabling higher productivity and quality of work at the lowest cost. It does so by:

- Monitoring and measuring key performance indicators (KPIs) to show how well work is being executed
- Identifying areas of cost overrun, such as excessive overtime
- Uncovering root causes of inefficiency, such as incomplete activities and multi-trip work

Manage Internal, Loaned, and Contracted Workers

Peak demand may still at times exceed the utility’s ability to handle it without extensive personnel overtime. In these situations, contracted personnel can provide temporary relief.

Finding the most economical/best mix between external contractors and internal workers poses challenges beyond simple hourly rate considerations. A mobile workforce optimization solution provides all the tools needed to improve collaboration with contractors, aligning utility needs and work demand with contractor capabilities and capacity. It enables utilities to consider the many factors that must be addressed with contract workers, such as managing:

- Contractors access to restricted physical sites and sensitive company information
- Work of varying complexity and skill requirements
- Contractual boundaries and the assignment of tasks between utilities and external firms or individuals

A mobile workforce optimization solution must address all of these complexities while providing fast and easy ways for contractors to get information and to report results.

Automate Best Practice, Safety, and Compliance

A safe work place and reduced risk have always been priorities for utilities. A utility-specific mobile workforce optimization solution embeds automation and configurable process to ensure safety best practices are maintained across all work types—long and short—and crews—internal and contracted. Utilities can use it to:

- Configure specific safety routines based upon the type of work being performed, all the way down to the individual worker
- Support check-list prompts for crews
- Designate inspections and alerts based upon the type of vehicle assigned to the field workers
- Enforce event-based scenarios for safety
- Provide GIS-based map notifications to account for and alert workers to hazardous conditions in specific service areas
- Alert dispatchers to vehicles or crews that inadvertently enter dangerous areas or leave designated work areas
- Establish when and where to assign work to different workers, both internal and contracted, based upon economic cost, region or other business considerations
Oracle Fulfills the Promise of Mobile Workforce Optimization

**Oracle Utilities Mobile Workforce Management** injects speed, efficiency and visibility into the management of both short duration tasks and complex activities spanning multiple days. By improving collaboration between operations, field crews and contractors in real time, optimization of the entire work lifecycle is finally a reality. Using real-time intra-day scheduling, you can adapt your workforce throughout the day, avoiding costly delays, repeat work, and inefficient allocation of resources. And by adding street-level routing you will drive fewer miles and complete more jobs—the first time and the right way—with the same number of people.

**Oracle Mobile Workforce Analytics** offers pre-built dashboards that help you boost efficiency and improve customer satisfaction across your entire field service operation. Key performance indicators can be identified and tracked to ensure your mobile workforce is delivering service excellence and optimized work at the lowest cost possible. Monitoring and reporting tools provide insight needed to address cost and performance issues.

Higher Standard

Oracle Utilities Mobile Workforce Management addresses short-comings of generalized field applications and sets a new benchmark for performance. It:

» **Improves the rate of tasks resolved on the first trip** by ensuring that field engineers with the right skills and credentials arrive with the right materials and access to up-to-date equipment specifications and site plans.

» **Reduces costs by integrating short-cycle work with construction projects.** There is no need to maintain separate workforces or miss service obligations due to unforeseen lack of resources.

» **Enables more customers to be served at a lower cost** by incorporating industry-standard mapping data into the scheduling process and street-level routing at the time of booking appointments.

» **Cuts the costs and risk of maintenance and inspection work** by integrating planning, scheduling, completion of tasks, and inspection across multiple workforces.

» **Increases wrench time while reducing work cost and environmental impact** by leveraging real-time scheduling and street-level routing.

» **Simplifies the management and optimization of contractors** and loaned resources by seamlessly integrating them into workflow.

» **Improves decision quality through business intelligence** via more than 65 pre-built, easy-to-use dashboards, charts, and visualization tools that track field activity and measure current performance against goals.

» **Integrates to broader workflows**, such as grid and outage management, asset management, and customer service, to increase the ability of mobile workers to drive improvements across enterprise processes.

» **Improves service call scheduling precision and accuracy** by integrating call center personnel and delivering to them real-time visibility of field technicians’ timetables, increasing customer choice by enabling smaller window times.

» **Increases organizational agility** via wireless communication between operations personnel and field workforce.

» **Supports multiple devices.** Rugged laptops and tablets can work side-by-side with consumer grade tablets and smart phones, all on different operating systems, permitting utilities to select the appropriate device for the tasks at hand.

» **Continuously improves performance** via an ongoing feedback loop from activities into planning that ensures continual work and process optimization.

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**The solution is composed of four interoperable components.**

» Resource Planning and Scheduling

» Common Dispatch Interface

» Mobile Communication Platform

» Oracle Mobile Workforce Analytics
"With Oracle’s mobile workforce management solution, customer service is improved because everyone – from office staff to field staff – knows the status of work. We also significantly improved productivity for field service management, dispatch staff, and field service technicians."

DANA DRYSDALE
VICE PRESIDENT OF INFORMATION SYSTEMS, SAN JOSE WATER COMPANY

The Choice of On Premises or in the Cloud

Utilities require modern technology choices and business flexibility so solutions fit business needs, not the other way around. Oracle Utilities Mobile Workforce Management can be delivered flexibly and quickly via:

» **On-premises solutions** managed and maintained by company staff.

» **A limited-duration SaaS** to handle projects such as smart-meter roll-out. This type of environment may also be suitable for utilities that are experiencing a need for fewer field personnel as a result of better maintenance practices, lengthening equipment life, or smart meters that reduce the need for truck rolls.

» **A full, permanent SaaS** solution that provides a predictable schedule of expenditure over time. Oracle’s cloud environments are managed 24 x 7 by trained professionals who:
  » Procure the right hardware, operating system software and databases
  » Manage the ongoing support of applying patches and updates
  » Provide fail-over strategies

» **A cloud test environment** for new releases, freeing up expensive internal I/T resources and hardware for acceptance testing.

» **Hybrid environments** that combine two or more of the above.

Accelerated Time to Productivity

Quality assurance is critical to deploying a solution effectively, ensuring the productivity of users, and quickly gaining return on your investment. However the testing necessary for quality assurance is often plagued by manual process, time-consuming script development, and insufficient validation.

**Oracle Application Testing Suite for Oracle Utilities** provides the fastest way to ensure the quality of Oracle Utilities Mobile Workforce Management as well as any custom built extensions. It is a powerful and easy-to-use functional and regression testing tool that allows you to automate your testing processes. You can use it to accelerate your time to productivity by:

» Cutting test script creating time in half, eliminating weeks from a project’s testing schedule

» Reducing the amount of manual testing required for each release

» Letting you focus on testing your implementation rather than developing test scripts

» Eliminating the need to learn multiple tools and scripting languages for different types of tests

» Optimizing testing based on testers’ skill set by supporting both “record / playback” and keyword driven testing

» Improving application quality by allowing for increased test coverage and more extensive validation

» Reducing the amount of manual testing required for each release.

» Protecting testing assets from the impact of upgrades.
Delivering Greater Value Faster

For more than 30 years, Oracle Utilities has enabled electric, gas, and water utilities of all types and sizes to successfully navigate a wide range of mission-critical business challenges. Via innovations such as cloud-based services, Express Implementation, and the industry’s most comprehensive range of utility specific applications – Meter, Grid and Network, Work & Asset, Customer and Analytics – Oracle delivers greater value faster.

No other vendor offers as broad a solution footprint or as many best-in-class, interoperable solutions—based on utility industry best-practice process flows—as Oracle delivers to the utilities industry. Oracle’s operational solutions for electric, gas, and water utilities are comprehensive in scope, covering all major areas of utility infrastructure and field work. Capabilities within these solution areas provide the most complete approach for utilities to improve efficiency and achieve operational excellence.

The industry’s most complete solution

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