The Case for Mobility: How New-Age Utilities Can Energize Operations and Boost Customer Service

A confluence of challenges — from rising regulatory compliance costs and scrutiny, through heightened competition and an aging workforce — make it imperative for utilities to embrace a new wave of mobility solutions that can enhance operational efficiency and continuously improve asset performance and service delivery across the value chain.

Executive Summary

Increasing competition from players with newer revenue models, especially in deregulated markets,[1,2] tighter and more costly regulatory compliance (especially related to service restoration and safety in catastrophic events), an aging workforce (which is impacting employee productivity and knowledge management) and an increasingly demanding, digitally-savvy customer base have utilities feeling pinched. As a result, many are seeking ways to simultaneously optimize operational costs[3] while continuously improving asset performance and service delivery.

Mobility holds the key for utilities that seek to digitally transform their businesses, enabling much needed service improvements across the value chain and operational efficiency that not only reduces costs but allows field technicians and back-office employees to work more productively and efficiently. Many feel the time is right, as mobility solutions have come a long way, from handheld and pocket PCs in the 1990s to toughbooks in the 2000s, to today's "mobile first" world. The proliferation of mobile apps and devices is providing added security and connectivity, increasing computing power and enhancing battery life, form and usage factors for industry road warriors the world over.

Spending by utilities on mobile workforce management technology, in fact, is expected to surpass $420 million by 2020.[4] This white paper examines the scope of mobility solutions and recommends an approach to operations and workforce managers in the power utilities space that can benefit the business as well as customers.

Alleviating Pain Points

Mobility solutions and technologies have the potential to boost front-line operator and field technician utilization and enable efficient, real-time communication with dispatchers and the customer. Such solutions empower front-line operators to leverage the back-end systems — CRM/CIS/WAM[5] — to determine priorities and respond proactively to calls and visual inspections. In sum, mobile apps empower field technicians to

query asset information, event history and condition assessments to make decisions and not just execute orders. Figure 1 encapsulates the various pain points that utilities face and how mobility can assist in overcoming them.

Mobility Across the Utilities Value Chain

The utility industry is quite asset intensive, with assets spread across large geographical areas. As a result of the industry dynamics cited above, utilities have for years been under pressure to increase their operational efficiency and field work effectiveness. Mobility has emerged as an important way to address the key challenges of dispersed assets and rising customer expectations. The reasons include:

- Mobile-based shift and schedule management solutions help generation power plant personnel to more effectively plan, organize and manage maintenance rounds. For instance, using a mobile asset inspection and maintenance solution, maintenance staff can quickly and easily locate individual inspection points, and take notes and pictures of assets and gauges.
- While conducting surveys at customer locations, sales teams can generate a customized offering fusing a mobile CRM solution that identifies the best deals for new energy-efficient equipment.

Mapping Challenges to the Solutions

Domain	Focus Area	Pain Point	How Mobility Can Help
Operational Efficiency	Field Productivity Improvements	• Lack of field automation and decision-making for field supervisors. • Lack of real-time workforce management – information, optimization, routing, scheduling, communication and visualization – raises cost of technicians, fuel and fleet. • Real time planning and trade-offs between short-term and long-cycle work.	• Mobile apps can reduce need to travel to the office for gathering service and dispatch information, elevating workforce utilization and reducing overtime costs. • Enable automated, rule-based, economic dispatch and routing of field technicians based on location, skill and availability. Such apps can also allow field techs to respond in real time to address order assignments and update assignments in real time, resulting in: › Enhanced visibility into work and technician availability for field supervisors. › Improved data capture in the field, leading to greater insights to improve fuel consumption, routing and worker safety that can further inform corrective actions for drivers and operational improvement opportunities.[6]
	Asset Management	• Geographically dispersed assets too difficult and labor-intensive to track and maintain. • Manual data capture and transmission is a gargantuan task, ridden with errors and compliance risks.	Mobile asset management and tracking solutions enable: • RFID and QR-based automated data capture and transmission from the field to asset databases to reduce the scope for data errors. • Access to real-time asset maintenance history and schedule information in the field enables proactive maintenance, improved asset utilization and performance, extended equipment life, reduced downtime and improved compliance.
	Back-Office Improvements	• Lack of real-time KPIs and visibility into performance. • Mounting paperwork and manual reporting leads to unnecessary cost, inefficiency and errors. • Inefficiencies and costs incurred in time and reporting.	Mobile dashboard and reports for technicians as well as field supervisors will provide: • Real-time metrics into service order progress and closure, and reopens, as well as visibility into KPIs and goals. • Reduced paperwork to turn in work-order-related documentation and time, expense and status reports, in turn reducing errors, clerical intervention and back-office costs.

FIgure 1

Continued on page 3

Continued from page 2

Domain	Focus Area	Pain Point	How Mobility Can Help
Knowledge Management & Collaboration	Aging & Retiring Workforce	• Need to build mobile knowledge, learning base and training aids. • New generation techs have shorter attention spans and are immersed in their mobile devices.	Mobile training and knowledge management and collaboration apps enable: • Enhanced knowledge management and preservation of and access to institutional knowledge. • Greater collaboration and experience sharing between experienced and aging workers and inexperienced technicians.
Increased Revenue	Cross-Sell & Up-Sell Capabilities	• Missed opportunities to cross- and up-sell. • Missed appointments, revisits, broken promises.	Mobile CRM apps that contain the complete past service history and integrated communication capabilities provide technicians with: • On-hand knowledge of customer history, analytics and insights to power sales and greater engagement with customers. • Increased first-time fix rate, causing fewer revisits. • Real-time communication and updates to customer, improving satisfaction.
Customer Experience & Satisfaction	Customer Engagement	• Lack of real-time notifications. • Lack of access to critical customer-facing functionalities on the go such as bill payment, schedule appointment, outage reporting, etc.	Mobile apps empower utilities customers to access their account information in real time from anywhere and allow them to interact with the company at their convenience, resulting in: • Increased program participation and enrollments. • Better received promotions and on-time payments. • Enhanced customer satisfaction and brand perception for the utility.
Safety & Regulatory Compliance	Cost of Safety & Compliance	• Ineffective storm and outage restoration and damage assessment.[7] • Scrutiny on workforce safety – safety adherence built into processes and systems. • Alerts for deteriorating weather and hazards. • Lower job satisfaction and productivity.	Mobile safety apps integrated with work-order and context-based safety instructions, terrain hazards, weather alerts, compendium of relevant safety checklists and procedures as well as panic and alerting features result in: • Fewer injuries, lower workforce comp expenses and reduced unproductive injury time. • Increased safety compliance, resulting in enhanced public image.

FIgure 1

Mobility solutions have emerged that address requirements across the entire utility value chain. Figure 2, next page, provides a snapshot.

Understanding Maturity Throughout the Mobility Lifecycle

Getting a utility ready for mobility solutions can be a daunting task. Disparate systems (legacy and modern) used throughout various business units must be integrated and support a new channel. It is therefore important for decision-makers to understand the phases of maturity that a typical utility progresses through to assess its state of readiness, determine gaps in mobility capabilities, and adopt an appropriate implementation regimen. Figure 3 on page 5 describes these phases in detail.

Mobility Solution Implementation Challenges

Careful forethought and planning is essential for successfully deploying a mobility solution. Change management is also important and must be assessed along key people, process and technology dimensions. Process automation and technician self-service will result in a significant

Utilities: Mobility Across the Value Chain

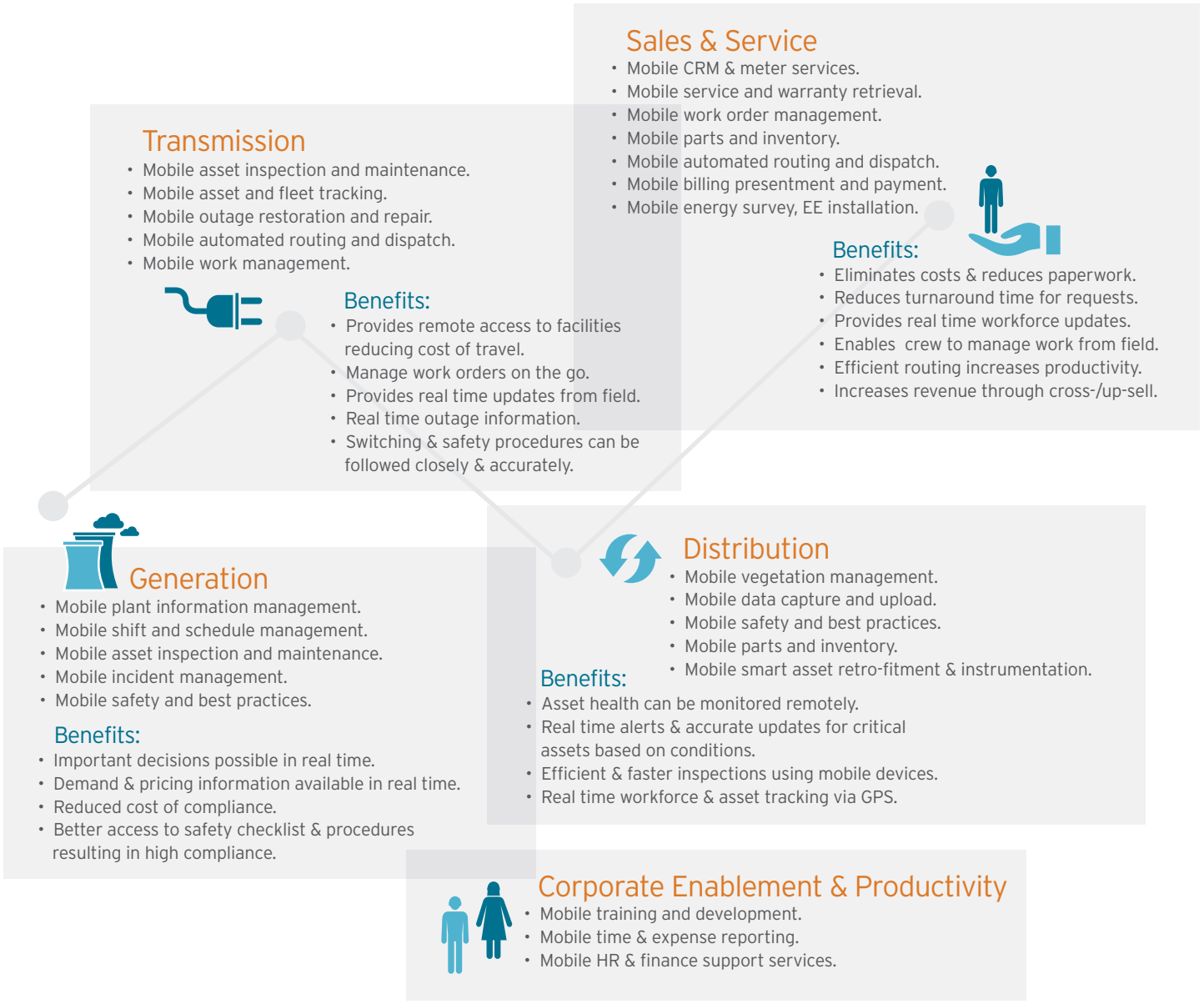

Figure 2

change in, or perhaps the elimination of, some back-office and clerical job roles. The mobile implementation planning exercise should be viewed as an opportunity to bring about business process, back-end system and data quality improvements, which if left unattended can have a major impact on field operations.

From a best practice standpoint, it is critical to provide a single view of data so all parties – customer service, dispatch, field technician and the customer – respond to and act on the same view of the process. In the end, a mobility solution will act as an information "aggregator," the effectiveness of which will greatly rely on the robustness of the underlying business processes.

Figure 4 on page 6 lists the challenges and pitfalls utilities need to be aware of during a mobile solution implementation program.

Facilitating a Smooth Transition to Mobility

A phased approach is best-suited to overcome the pitfalls outlined in Figure 4 and ensure that

Three Waves of Mobility Adoption

Wave 1:
Mobility as a novelty

- Mobile solution introduced to address various challenges.
- Mobile solution works in isolation, not integrated with key enterprise systems.
- Primarily comprised of laptops and PDAs with proprietary hardware and software.
- Read-only capabilities supported with delayed write.
- Does not completely eliminate paper-based processes.
- Simple and mundane tasks can be addressed by mobile devices like meter reads, energy surveys, incentive information, etc.
- No insight into mobile resources.

Wave 2:
Transition to mobility

- Various business units acknowledge the need of mobility.
- Key business processes are updated to accommodate new devices & channels.
- Enterprise workflow updated to enable reporting from mobile devices.
- Two-way communication with some enterprise systems established.
- Limited data retrieve & capture.
- Near-real-time information is available for key decisions.
- Context-aware functionalities, with some device independence.
- Few specialized tasks can be handled by mobile devices like work queue, outstanding request, parts inventory, etc.

Wave 3:
Mobility as a way of doing business

- Most business units have integrated mobility across business processes.
- All enterprise-wide business processes are integrated and are device & channel agnostic.
- Cross-business unit workflow updated in real time.
- Two-way real-time information flow from key enterprise systems established.
- Optimized use of shared resources.
- Device and capability portfolio supports all the functionalities as traditional channel – like exception handling, creating requests, collaborating with peers.
- On-the-go data retrieval and decision-making, remote printing, full GPS and context-aware functionalities, supporting BYOD.

Figure 3

Words to the Wise … and Wary

Dimension	Description	Remediation
People	A solution that is hard to use, has a poor user experience and does not eliminate the technician's paper-based or manual work process.	Usability and intuitive application design to mirror actual process flow used by field techs.
	Lack of awareness and support, resulting in rejection of the solution by end users.	Sufficient training and pre- and post-implementation support to ease users into adoption.
	An untested solution that is error-ridden, jeopardizing the field worker's effectiveness and reputation at the job location.	Effective piloting and phased rollout planning based on geography, business unit, job class and work type.
	Lack of support and evangelism for the transformation program.	Involve influencers and user groups in every phase of the program development.
	Frustration resulting from a steep adoption curve for new devices, as well as the inconvenience of carrying multiple devices for work and personal use.	Institute a "bring your own device" (BYOD) policy to support workers who want to use their own devices; this can boost user adoption.
	Lack of interdepartmental support for program development.	Setting up a program governance team and top-down executive support will eliminate cross-departmental barriers and foster a collaborative effort.
	Lack of employee engagement in the program.	Seek input into the change management strategy from multiple levels within your organization, ranging from field workforce to management; engaged employees = engaged customers.
	Fear about privacy and changing work relationships and landscape (e.g., devolving work roles).	Change management, role re-fitments and adequate communication from the top down to alleviate fears of privacy erosion.
Process	Failure of a business process or an improper rule can cause havoc on the field and at the job location.	Business process redesign and improvement to ensure that incorrect processes are not automated or mobilized.
	Lack of key integrations and fallback on manual/paper-ridden processes.	Effective mapping of the user journey to better understand most interactions and touch points between users and business processes.
	Lack of outcome measurement and realization of benefits.	Establish an initial baseline measurement of the organization's current and historical performance; a clearly defined roadmap with phase gates can help.
Technology	Network hacking, data leaks and security breaches compromising company and customer data.	Implement safety and security measures for customer and employee data on mobile devices and networks.
	Incompatibility between devices and applications, and rapid obsolescence of devices.	Define operation and maintenance (O&M) strategy for mobile devices and apps; expand support for mobile device types and form factors.
	Rapid technology obsolescence and requirement churn, making it difficult to fully deploy a complete solution and realize benefits.	Phased development, Agile rather than Waterfall implementation to realize solution benefits in manageable chunks.
	Superfluity in applications, with a multitude performing overlapping functions and requirements for added maintenance and support.	Evolve and rationalize the mobile application portfolio.
	Loss of connectivity hampering field work functions.	Applications optimized for hardware and networks, with offline capabilities.

Figure 4

Mobility Implementation Approach: Different Phases

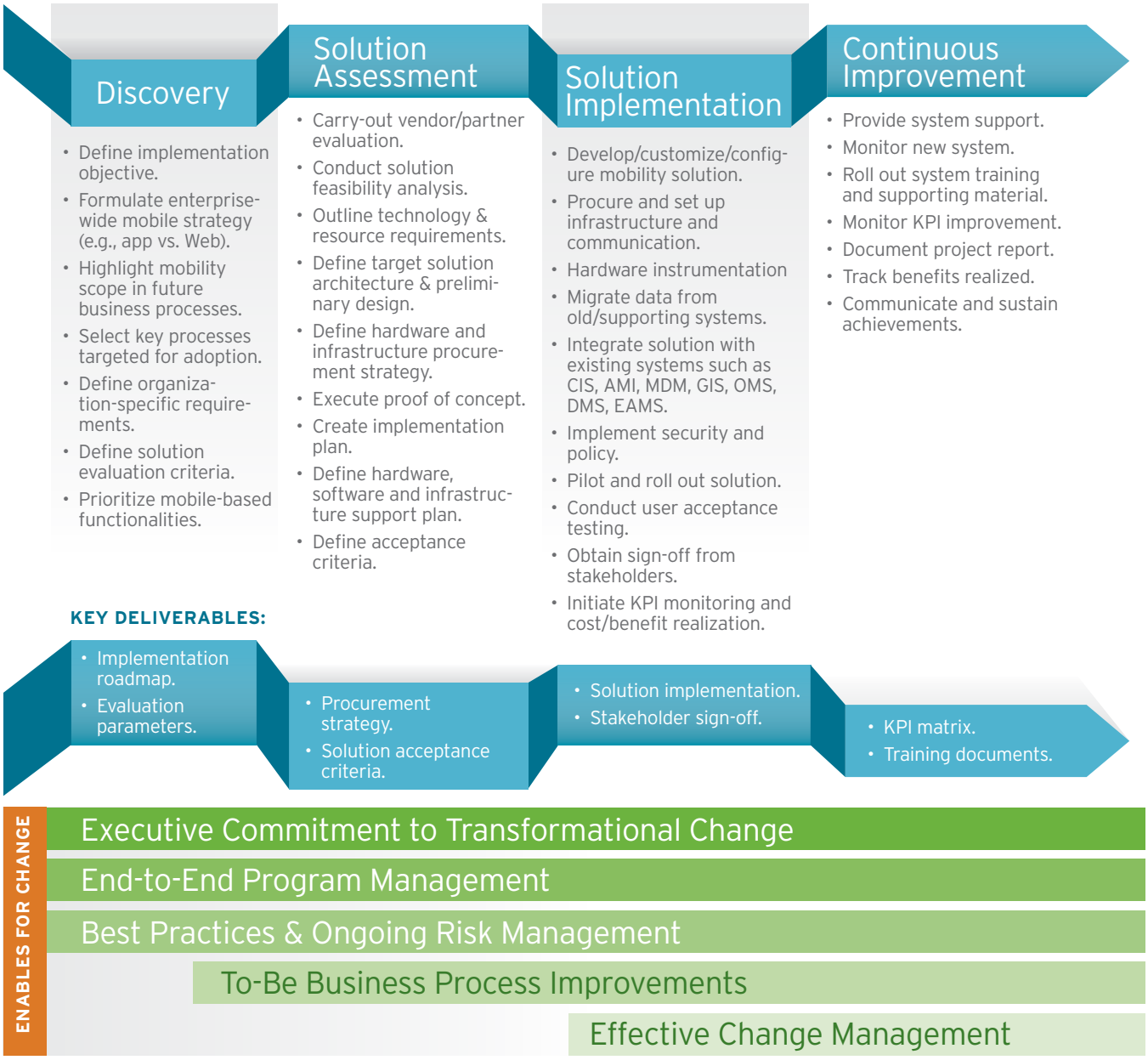

Figure 5

implementation of the mobility solution is effectively governed and successfully delivered. Figure 5 lays out the indicative phases involved in the end-to-end implementation of a mobility solution – from the discovery phase to post-implementation support.

Looking Ahead: The Future of Mobility in the Utility Industry

Over time, mobile devices will arrive in a variety of forms and use factors. In fact, advancements in wearable technology,[8] such as smart glasses, smart watches and smart helmets, as well as augmented reality, will usher in a new era of productivity, safety and efficiency for mobile employees, extending their ability to work hands-free to complete tasks with greater speed and accuracy. Augmented reality will have increasing application in monitoring and locating remote and underground assets[9,10] and visualizing hazardous conditions. Voice recognition, virtual mobile assistants, and image-to-text and text-to-

speech conversion will further reduce manual intervention and improve compliance, freeing field technicians to take on higher-value tasks.

Enhanced communication technologies along with new advancements in the field of cloud, analytics and data security will enable information transfer from remote locations to conference halls in real time. The field supervisor will schedule work from any location, at any time; the field agent will receive updated work routes in real time along with asset health reports based on current operating conditions and asset history.

Importantly, information from various sources across the grid will be assimilated and transformed for decision-makers to access in real time through handhelds/tablets, to inform everything from public announcements to responding to regulators. Mobile CAD software will speed substation design and modeling exercises and accelerate entry into new markets and customer segments. Analytics performed on field data collected from mobile devices can lend valuable insights into inefficiencies and performance. All of this will reduce the need for field technicians to travel to the office, as solutions that enable a virtual workplace through real-time collaboration and remote access to corporate applications emerge, offering improved worker safety and productivity, as well as reduced driving-related stress and office space expenses.

In Closing

Mobility solutions clearly hold great potential to equip the utility workforce with greater on-the-go insights and problem-solving capabilities, as well as to deliver to customers a superior customer experience that offers significant benefits to both parties.

A well-thought-out approach, with an assessment of current readiness, desired future state and clearly understood program goals, is critical to mobility implementation success.

Successful mobile transformation should be championed by business stakeholders with particular focus on the challenges and pitfalls described above. The day is not far when field technicians will be completely remote and mobile, and will not need to come to the office very often. Neither will customers have a reason to call into customer care.

Regulatory, competitive and shareholder pressures make it imperative for utilities to press on with mobile innovations. Utilities that ignore this do so at their peril.

Footnotes

1 https://www.business.directenergy.com/understanding-energy/markets-and-deregulation/competitive-electricity-market.

2 http://www.renewableenergyworld.com/articles/2012/08/writing-on-the-roof-competition-for-electric-utilities.html.

3 Joseph Scalise and Stephan Zech, Sustained cost reduction for utilities, Bain & Company, 2013.

4 http://www.navigantresearch.com/newsroom/utility-spending-on-mobile-workforce-management-technology-will-surpass-420-million-by-2020.

5 CRM: Customer Relationship Management; CIS: Customer Information System; WAM: Work and Asset Management.

6 http://www.intelligentutility.com/article/14/09/three-critical-steps-greater-mobile-workforce-efficiency.

7 http://www.elp.com/articles/print/volume-92/issue-1/sections/mobility-for-better-quicker-emergency-response-for-utilities.html.

8 http://thesmartvan.com/blog/2014/01/21/25718/wearable-tech-the-1-billion-opportunity-for-field-service/.

9 http://www.directionsmag.com/entry/augmented-reality-a-disruptive-technology-in-utility-asset-management/411375.

10 http://www.augview.net/.

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