Eight Prospects and Challenges Faced by Energy and Utility Companies to Implement Mobility Solutions

Smart phones, iPads, mobile video…the list goes on. Today’s technology environment is rapidly growing with many options for mobile solutions.

Just look at the simple cell phone. In the “old days” the phone could be used to place and receive calls—assuming you had the cellular service needed. Then over time, a new option for SMS—short messaging service—also known as text messaging was an added feature. Today, that same phone is essentially given away for free and you can usually buy your minutes at a major retail outlet or even a local convenience store.

Today, as you look at the smart phones on the market, the features include the simple aspects of cell phone calling/receiving and text messaging but you can also expect to have a full QWERTY keyboard (albeit “thumb sized”), a camera, email, video, and a collection of applications to help you read and manage Adobe PDFs, Microsoft Word documents, spreadsheets, and PowerPoints. Today’s smart phone has more computing power and capability than the old 286 desktop workstation companies started with circa 1981.

Energy and utility companies have many opportunities to take advantage of the new “mobile” work environment. These opportunities include smart phones as well as other mobile solutions used for “M2M” or machine-to-machine communications where the cellular communications medium is used to help move data from a machine to another machine to affect a change, flip a switch, or set off an alarm.

Conceptually, imagine a utility worker who is assigned a fully stocked field service truck but he works from his house. Each day his work orders are emailed to him and he retrieves them on his smart phone or specialized “iPad” or Xoom. He goes out to his assigned work site and not only completes the work orders electronically but electronically reports the parts he used, the time he took for the work, etc. It is all electronically communicated back to the home office Enterprise Resource Planning (ERP) system so the utility can determine when to restock his truck, when to change the oil in his vehicle, how to determine miles driven and even where his truck is using a mobile-based GPS system.

Regarding the Machine to Machine (M2M) environment, hold on to your hat! Infonetics Research has released a new report which is forecasting revenue from services to embedded modems in M2M applications to grow exponentially until at least 2014. Infonetics estimates that there were 87 million embedded mobile M2M connections in 2009. That number is expected to reach 428 million by 2014, a compound annual growth rate of 38 percent in mobile M2M connections, according to the market research firm.\(^1\)

The future for these mobility solutions at utilities is truly fantastic and is not always difficult to enable. However, there are still challenges faced by the energy and utility companies before they can deploy these labor- and time-saving mobile devices and M2M services. Let’s take a moment to look at these business forces that can affect this implementation of mobile solutions.

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1. The Recent Recession
The financial impact of the recent recession certainly has utilities and energy companies reeling. Their customers are financially constrained and any technology deployments must have a solid rate of return and be acceptable to shareholders, stakeholders and customers. Mobile and M2M devices can certainly be implemented in a way to save a company money in the long run; however, the short term cash impact is something that could slow down the mobility solution implementation.

However, funds are available to the energy and utility companies either from their own cash reserves and/or low interest loans and leasing terms. It is a matter of focus and willingness to make this financial commitment. Fortunately, the credit market is beginning to thaw and for well-healed energy companies they may be able to access these funds more readily than other companies including their competition.

2. New Generation—Mainly Renewable Resources
You've seen the wind farms—or at least photos of them. Also, new generation in the form of distributed assets such as small hydro, micro turbines, “micro grids,” etc. are also part of the utility executive’s vision. Here, mobile solutions are really a “perfect fit” if you will. Because the new generation is usually located in remote locations or in places where direct command and control cannot be hardwired, why not use the existing cellular signals? Hence, mobile solutions with emphasis on M2M can really help in this regard to enable the generation assets to be monitored and controlled from the utility control centers without running expensive copper wires or fiber.

3. The Environment
Almost daily the energy/utility executive is pondering their carbon footprint. This is especially true of utilities that generate power; however, what about fleet management? There is an environmental impact to consider here with the emissions generated by the utility fleet or even the employees commuting to/from their workplaces.

Mobile solutions can really help here.

As we discussed and referencing the worker above who essentially works from her house, think about the carbon emissions curtailed because the worker doesn’t need to commute back and forth in their personal car to get their work truck. Similarly, telecommuting for employees—even one day a week—using mobile solutions such as smart phones and wireless cards used in their laptop computers, could be a very positive contribution by the utility to the environment.

4. Aging Assets
Energy and utility executives are facing a daunting challenge—that is the age of their current assets. The communications infrastructure alone needs upgrading. This includes Supervisory Control and Data Acquisition (SCADA) systems that are old and hard to maintain; packet radio systems that are being re-banded by the Federal Communications Commission; and refresh of older cellular phones.

Even spare parts for these older technologies can’t be readily located on E-Bay!

Mobile solutions are a cost-effective answer for many of these challenges.

For instance, why not use wireless communications at a substation rather than bury more fiber or copper? Why not replace the older, re-banded radios with new push-to-talk smart phones? What about issuing smart phones to the employees so they have more options for working away from the office—yet still remaining productive?

5. Aging Workforce
The energy utility workforce is getting older. The “Baby Boomers” of the late 1940’s and early 1950’s are aging and reaching retirement age. The younger workforce is more technologically savvy and more adept at technical change. Mobile solutions are readily accepted by the younger workforce which views technology as a “must have” rather than an inconvenience. Hence, energy and utility companies are actually faced with a “good” problem—there will be less resistance to this change by the workers (and even the customers that we’ll talk about later).
6. The Smart Grid
Meters, meters everywhere but how do I make them talk in a two-way fashion? Why not use wireless/mobility options to help? The smart grid includes deployment of thousands of “smart” meters and sensors that can not only pass along their status and consumption data but can also receive commands to turn off/turn on/throttle, etc. Similarly, there are plans to have a two-way conversation with electric vehicles when they are connected to the grid for recharge. Again, the extensive coverage of cellular signals can be a strong benefit to the energy/utility company in its plans for smart grid rollouts.

7. Customer Expectations
Today’s younger customers are very technology savvy. Text messaging is second nature to them and having an application for everything ranging from managing their digital video recorder (DVR) to their appliances at home and in the office is almost viewed as an “entitlement.”

This is a huge opportunity for the enhancement of the energy/utility companies to provide advanced, technical solutions to the customers but on their smart phones, iPads, Xooms, etc. Mobile solutions have a perfect opportunity in this environment because the customer not only wants this convenience, they expect it.

8. Security
Simply turning on a wireless access point—like your 802.11n router in your house—is simple but not necessarily secure. Applying mobile solutions to smart meters, M2M devices, and workers’ “work-pads” still must be done with due care and caution to maintain the confidentiality and integrity of the data and protect that the systems from being “hacked,” intercepted or interrupted.

Fortunately, the current CDMA/EVDO cellular technology has its own built-in security. Better yet, the newly deployed Long Term Evolution (LTE) cellular signal—sometimes also referred to as Verizon 4G—is even more secure. LTE offers a faster signal, more bandwidth, deeper penetration into buildings and two-way authentication. Essentially, the future of mobile solutions and M2M devices using LTE is much more secure for the energy and utility company.

Conclusion
Implementing mobile solutions for energy and utility companies does not have to be a challenge. Of course funding and budgets are often the reasons cited why a company cannot proceed; however, what about the holistic view of such mobile applications and their impact? Generally these mobile “answers” can result in improved productivity of employees, reduced environmental impacts and carbon emissions, more efficient performance of the energy and electric grids, and improved customer satisfaction and acceptance of the new ideas that can be enabled with cellular technology—especially using CDMA/EVDO and LTE protocols.

1 http://viodi.com/2010/10/07/exponential-growth-in-m2m-market-dependent-on-important-network-enhancements/