THE ECONOMICS OF MOBILE RESOURCE MANAGEMENT

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By Jason Koch

GPS-enabled technologies can drive efficiencies into a utility’s service organizations in a way that maintains customer satisfaction levels and controls service-related costs. One area where significant gains can be made is in the management of vehicle fleets. Mobile resource management (MRM) technology, integrated into other enterprise software solutions, is one of the highest-impact tools fleet managers can use to optimize business operations and manage their vehicles more effectively. The most effective MRM solutions combine GPS location hardware, wireless communication, software applications, and the internet to help companies get the information they need to make intelligent business decisions.

Today, many shareholder-owned utilities have adopted some form of MRM technology to improve their mobile operations and reduce costs, moving from the early-adopter phase to widespread use. These systems are expected to be incorporated into 75 percent of fleets within the next two to three years.

With MRM, fleet and operations managers have a set of tools that provide real-time visibility into vehicle and asset locations, efficient dispatch information, continuous improvement metrics, and enterprise intelligence to improve mobile resource utilization.

Technology Innovations Drive Adoption

As of the end of 2009, there were 3.9 million total devices in the United States being used to monitor the location and status of mobile resources, including mobile workers and assets such as fleet vehicles, trailers, and heavy equipment, according to the analyst firm C.J. Driscoll & Associates, and that number is expected to grow to more than 6.5 million by 2012. The local fleet market (as opposed to interstate truckers) is growing at approximately 20 percent each year, and the number of vehicles equipped with a mobile technology solution has nearly doubled from 920,000 units in 2005 to 1,730,000 today. By the end of 2010 the local fleet market will grow to more than 2,000,000 units, according to estimates.

Advances in GPS technology are behind the adoption of MRM systems across the fleet market, and improvements to the delivery method are also making it significantly easier to deploy the solutions. With the advent of software-as-a-service technology (saas, which delivers software over the internet and is increasingly popular for its ability to simplify deployment and reduce customer acquisition costs), fleet managers are no longer required to install and customize cumbersome client-server software packages.

What attracts fleet operators to saas solutions is that the technology can scale to any size fleet, is easy to use, and integrates easily with a fleet’s existing technology investments. In addition, the information available through web-based applications to the dispatch and fleet groups can be easily transmitted to the vehicle, connecting drivers with the information needed to improve fleet performance.

Key Improvements

MRM solutions have widespread applications in the utilities industry, but several areas attract fleet operators because of the rapid return on investment. (See the sidebar, “Basic Components and Costs.”)

Cost management/fleet optimization. Cost containment is an issue for every fleet. MRM technology helps optimize operations. For instance it can identify vehicle maintenance requirements, helping to avoid unnecessary work. For example, battery health monitoring can proactively alert a mechanic to a problem before a driver goes to his truck in the morning and realizes it won’t start. Another example is that maintenance schedules for buckets and booms can be performed around actual versus estimated boom usage.

As the price of fuel continues to fluctuate, fleet managers are trying to find ways to save on fuel costs and eliminate nonproductive idle time. MRM technology can track and report, for example, when and for how long the main engine of a truck is running and give the total miles driven over a given time period. The fleet manager can validate and analyze expected miles per gallon (mpg) versus actual mpg, along with other important motor functions. Poor performing assets can be identified. An electric hybrid vehicle’s performance and (fuel savings) can be verified to comply with the requirements of the 2009 American Recovery and Reinvestment Act stimulus grants awarded to fleet operators purchasing such vehicles, for example. By better managing and optimizing asset usage, utilities can see a tangible return on investment.

Increased productivity and streamlined work order processing. MRM solutions also make mobile workers more productive, allowing them to carry out more tasks during the workday. For instance, MRM technology can help plan routes and communicate to crews in a more efficient manner, optimizing travel time as well as mileage. Moreover, by having remote, real-time access to their drivers, companies can route trucks more efficiently, avert traffic bottlenecks, and provide...
turn-by-turn directions to jobsites. Ultimately, managers are better able to manage the time-in/time-out entry, reduce overall miles and labor, and speed up ticket response and route plans. This also results in improved customer service, including more accurate estimated times of arrival and on-time percentages.

Also, by knowing the location of each type of asset and deploying the most suitable vehicle to each work order, companies can minimize the number of incidents when inappropriate resources are deployed. In the field, easy-to-use laptop applications that include voice-prompted navigation and work order management can streamline operations, reducing the need for crews to continually check in with the home base to report their job status.

Secondly, the technology can be used to verify driver productivity by providing exception alerts of excessive idle times, as well as deviations from routes and unauthorized stops. Aberdeen Group research suggests that organizations that deploy MRM solutions for their fleets can expect to see a 23-percent boost in workforce productivity, a 25-percent reduction in idle times, a 32-percent increase in fleet utilization, a 22-percent decrease in fuel costs, and a 31-percent drop in daily mileage.

Of course, drivers may blanch at what they consider Big Brother-style monitoring of their workday. Many fleet operators have addressed these concerns by involving drivers early in the selection and design of the fleet management system and by explaining how the technology can benefit the driver as well as the company. Depending on the industry and the reimbursement model, drivers can boost their productivity and their pay by increasing the number of delivery stops or customers serviced each day. At many companies, drivers aren’t paid for the time they spend waiting on hold to talk to a dispatcher or driving in circles because they received bad directions.

MRM technology can help companies reduce overall miles and labor, cutting costs and improving customer service

Safety

There are a number of tools available to provide greater visibility into driver behavior. For example, accelerometers inside the cabs can identify harsh acceleration, swerving, and braking; dash-mounted cameras can record both the drivers and outside traffic conditions. Once crews are aware of the fact that their driving behavior is being monitored, there is a noticeable improvement in driving performance. As a result, fleet operators can reduce the number of crashes and improve vehicle performance.

Companies also can research incidents to better manage liability for when a utility truck is involved in an accident with another vehicle. By knowing the exact location and parameters of a vehicle’s operation at the time of the incident, utilities can be protected from frivolous claims by proving that their vehicles were being operated in a safe manner.
**Going Green**

Like many other companies, fleet operators are under pressure to reduce their carbon footprint by either investing in more fuel-efficient vehicles (such as new hybrid trucks) or by reducing mileage and idle time. Utility companies that leverage these systems to reduce drive times and fuel consumption can demonstrate in a tangible way that they are reducing their carbon emissions.

In addition to fuel savings, new reporting mechanisms available in MRM solutions can highlight to investors or government entities how the company is doing its part to help improve the environment.

Duke Energy, for example, introduced a hybrid vehicle in 2009 and plans to invest $600 million over the next 10 years in converting its fleet to plug-in hybrids and all-electric vehicles. This will undoubtedly require GPS and telematics technology (which provides the ability to remotely monitor equipment performance) to manage and validate Duke’s investment. The telematics systems can verify that the hybrid trucks use less fuel on average than traditional trucks, as well as help manage and minimize maintenance costs on vehicle equipment and the expensive battery systems in these vehicles.

**Improved Storm Response**

In addition to streamlining everyday operations for utility providers, fleet and mobile workforce management solutions have become crucial to emergency response situations such as hurricanes or ice storms. By being able to find the nearest vehicle and driver with the appropriate capabilities and skill set for the job, the technology helps utilities restore power more quickly and minimizes restoration expense and lost revenues. Using web-based fleet management solutions, companies can even monitor the mobile assets of other utilities, utility service companies, and vegetation management companies even if they are using different fleet-tracking platforms.

**Actionable Business Intelligence**

Utility executives need instant, high-level operational information to help guide major business decisions (including staffing, planning, maintenance schedules, and equipment purchasing), and MRM solutions can provide that type of business intelligence. Some vendors even offer fleet operators a single-screen dashboard where information about fleet activity can be customized and made accessible to all levels of the organization, from front-line supervisors to executives.

**This Is Not a Hunch**

Future technology enhancements will enable even greater business visibility. For example, fleets will move from scheduled maintenance to proactive planning that anticipates maintenance events. Fleet mechanics will be able to adjust engine management control systems remotely to correct and improve performance. Vehicle area networks also will emerge in the vehicles themselves, allowing diagnostic and activity data from sensors and laptops to flow seamlessly over the utility’s secure wireless network.

Automatic, real-time assignment of work will no longer be based on hunches, but instead on a wealth of data being collected, stored, and analyzed by the technology. All remote assets, even small transformers, will be equipped with wireless telematics technology to monitor performance and anticipate failures, and GIS data will support instant, wireless status updates.

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**Basic Components and Costs**

A mobile resource management (MRM) solution consists of several basic components. The in-vehicle tracking device typically provides location tracking, driver alerts, and the ability to monitor speed, idle time, and other performance measurements. These devices may be connected to other telematics equipment that monitors vehicle performance via the truck’s engine computer.

Fleet operators usually pay an ongoing software subscription fee that includes maintenance and enhancements, as well as fees for wireless data service. Upfront implementation costs include installation, training, and the initial set-up of assets and an organizational hierarchy.

Premium solution providers generally have multiple tiers of product offerings that include varying levels of service and functionality. Hardware prices can range from $300 to more than $1,200 per vehicle, and software service can range from $25 to $70 per vehicle, per month. A monthly wireless plan can range from $5 to $15 per vehicle, with one-time installation charges ranging from $90 to $250 per vehicle. Training and implementation costs vary dramatically based on how involved the client is in the actual deployment.