

## **Mobile Workforce Management System**

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Energy transportation charges make up about one fifth of a customer's home energy bill. These charges include the cost towards work done by field engineers in maintaining the energy transportation system. Hence, efficient and effective field workforce management would lead to a reduction in an individual's energy bills, further improving customer satisfaction.

With mobile workforce management systems, Utilities can capture accurate data of the billable and non-billable time spent on a job and avoid potential delays due to unavailable/delayed information about work orders reaching field engineers. It would play a vital role by automating the mass smart meter deployment process as part of smart grid infrastructure development.

The IT systems developed for field work automation are named Field force Automation (FFA), Field force enablement (FFE), Field force management (FFM), and Mobile Workforce Management Systems (MWMS).

Some of the vendors providing off-the-shelf mobile workforce management solutions are Click Software, GE, Oracle Syclo, Ventyx, and SAP. Almost all the mobile workforce management solutions cover areas like personnel management, management of service parts and tools and field work processes. However, some of them have strong capabilities in specific areas; for example, Click Software has strong scheduling algorithms. GE has two applications called FFA and MapFrame, of which FFA handles scheduling and dispatch whereas MapFrame delivers graphical map-based solutions to the mobile workforce. SAP Mobile is more suitable for the sales force.

### **Features of a Mobile Workforce Management System**

#### ***Appointment fixing***

Appointment fixing involves seeking a time slot suitable to the end customer before commencement of work by a field engineer. This is typically handled by the front office/call centre. Work needs to start within the appointment time slot but the completion time would depend upon the volume of the work and challenges met during execution.

### ***Scheduling***

Scheduling pertains to the optimum distribution of work orders among field engineers. The work orders to be distributed could be created in advance or created on the day of execution. Typically, a large volume of work orders are created in advance. The scheduling mechanism distributes the work orders among field engineers early in the morning before they login and whenever new orders are created during the day. Distribution of work orders can sometimes become critical especially in times of natural calamities such as earthquakes, floods or storms.

The Scheduling mechanism is a fairly complex process. Before fixing the appointment, the scheduling mechanism needs to consider the availability of field engineers, the shift for which they are available, existing planned orders, travel time and cost of field engineer per hour. In addition to enabling manual assignment of work, a good scheduler, if properly configured can auto assign work orders to mobile engineers or they can be assigned manually. Scheduling mechanism uses appointment slots to match the availability of field engineers for work order distribution.

The two aspects that play a critical role in scheduling are the scheduling algorithm and the hardware that runs the mobile workforce management server.

### ***Sequencing***

After assignment of work orders, mobile engineers may have a set of orders within an individual's stack. However, these orders may not be in the sequence of their physical locations. The order sequencing mechanism organises the work orders to optimize the travel time. The field engineer can request for re-sequencing in case he decides to skip some of the work orders in situations like lack of access to work place.

The primary requirement for sequencing is geo-coding of work orders.

### ***Mapping***

Map enabled applications running on laptops and hand held devices show the graphical view of work assigned to the field engineer. The maps can be used show the optimized route of executing the work orders.

Maps can be configured to display the asset information and work order details. The field engineer can complete the orders on the map and return work completion details to the central asset management system. The field engineer can draw sketches using the Map Redlining feature and communicate with the central GIS team.



## **Conclusion**

To achieve the ultimate goal of cost effective Utility network operations, an efficient and coordinated use of features offered by mobile workforce management systems is required. The appointment fixing feature complements the scheduling mechanism and enables the assignment of work to the appropriate field engineer. The sequencing feature ensures optimum travel times on the day of work. The GIS enabling of the Utility network provides a visual depiction of routes and work execution locations as well as enables visual display of asset and work details.

Worldwide, Utilities have displayed a strong trend towards implementing mobile workforce management systems in order to optimize their field operations and improve profitability. Infotech with its strong domain capabilities and expertise in mobile solutions can help Utilities in implementing tailored mobile workforce management systems.