



WORKFORCE MANAGEMENT SOLUTION – CONSIDERATIONS

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Introduction

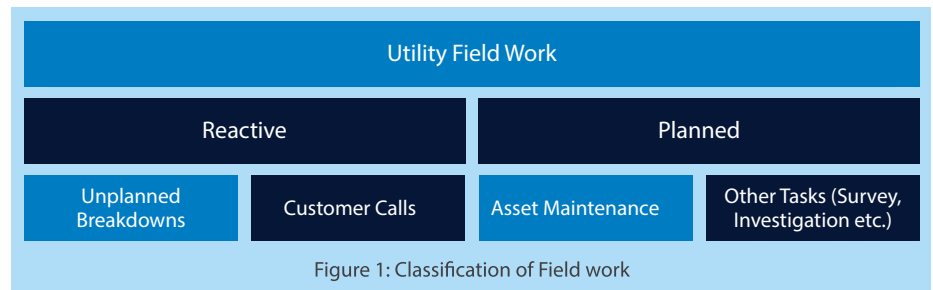
Below observations are based on our experience in implementing varied number of workforce management applications using several suite of products across geographies including Europe, US and India.

Field workforce management is not just about assigning appropriate work to appropriate crew. Numerous factors come into play while selecting the most appropriate crew like skills, availability, shift timings, distance, cost, idle time, contractors and many more. One can guess the complexity level with this example – if 10 jobs have to be scheduled for 1 crew in a day, there are 3.6 million different ways of scheduling. With 50 jobs across 5 crews, there are 93320×10132 different ways of scheduling. There are various companies coming up with intelligence in managing the workforce and it is quite a competitive space for product companies. This competition is good for the future of utility industry because this competition will eventually lead to emergence of best algorithms and state-of-art intelligent solution. Through this paper, we will try to envision the solution, the preparation utility should do before going for field workforce management-IT solution and the factors that influence the selection of a particular product.

Workforce Management Solution

Before discussing anything on the solution for field workforce management, let's understand the importance of the field workforce for the utility's business. Utility operates round the clock and they cannot afford to have any downtime. In addition to this requirement, customer satisfaction is an important parameter for utility to be in business. Field workforce is the face of Utility to the its customer as they are the ones who are in contact with the customers. They are also the backbone of Utility as they are instrumental in providing an uninterrupted service. Field workforce related work can be classified in two categories

- **Planned Tasks** - includes maintenance jobs or some planned activities of expansion or survey
- **Reactive Tasks** - includes all the unplanned work, like the work which need to be carried out when any problem arises e.g. Outage, Breakdown, and Customer Emergency etc.



It would be easy if only planned work needs to be managed, but the real problem comes when the reactive work comes along with the planned work. The reactive work cannot be predicted correctly and sometimes it will be an emergency which needs to be answered as soon as possible. The complexity of the problem increases with geography span under the utility. Mobile Workforce Management IT solution connects the field workforce with the operational office staff in real time. The solution will help in analyzing all the possible routes and get the best possible scheduling. The efficiency of solution will be determined by the flexibility of the algorithm. Most of the solutions available in the market have a competitive algorithm and utility has to select the one best suited to their environment.



Some of the considerations before choosing a solution are given below.

Understanding of Utility Priorities

Operations Priority

Utility operations can be classified on two fronts i.e. Network operations front and customer operations front. The priorities of the two fronts will change from utility to utility. It will depend on the internal factors like Mission, Vision of the utility, bottlenecks in one of the department etc. along with external factors like market condition, Regulations etc. Utility's which are not in open market should always first go with the Network Operations improvement which will make them more efficient and effective and ready for the competition of the open market. Utility which is already efficient in Network operations should target for the customer operations to improve on the customer satisfaction score.

Other Priority Factors

The basic aim of the workforce management is assigning jobs to the appropriate crew so that all the required SLAs are met, cost of operations is minimized and regulatory requirements are met. To achieve these basic objectives, any algorithm or engine will have to strike a balance between various parameters and utility needs to understand their priorities as well as operational processes before going for a change. A couple of scenarios are given below.

Customer Satisfaction v/s. Operational Costs

Customer appointments are very important part of day to day field workforce operations. The customer satisfaction is mainly dependent on the timely services. Sometimes, utility has to pay to the customers on missing the appointments. Utility has to understand what is more important and costly

- Not complying to the appointment timing, may result into customer dissatisfaction

- If customer calls and the day is completely packed with other planned work, should the utility still take the appointment and try to meet it?
- To comply with the appointment should the utility prefer long travel i.e. to meet an appointment will you prefer a crew travelling out of its designated area? This might result in additional costs, but helps in improving customer satisfaction levels.

Overtime v/s Long Travel

There will always be a case when a planning has to strike a balance between overtime and over travel.

E.g. A job needs to be done today only, there are two options either one crew will travel beyond his designated area to finish the job or a crew will do that job in overtime. Utility needs to understand in such situation what it will prefer. The decision will depend on

- Employee Guideline or practices in that geography
- Overtime cost
- Fuel Expenses or any other travel cost

The solution should also provide the ability to change/tune these parameters as and when required based on informed business decisions.

The parameters to be considered in general include (but not limited to) - Overtime cost, late cost, window cost, travel distance cost, travel time cost, idle time cost, arrival cost, shift promotion cost etc.

Existing IT Landscape

Most of the utilities use some systems for job raising, recording information and reporting. Also, there will be various systems used by other departments. The new solution should be able to communicate with all the required systems. It should be in alignment with the existing IT landscape and the IT strategy of the organization, and should smoothly blend into it. The solution's main goal is to provide an optimum schedule using the activities information which flow in

from the same job raising system. This job raising system will provide the input in terms of jobs needs to be performed in the field to the scheduling system.

Planning Horizon and Amount of Data

Every Utility has a legacy system with planning capability; the aim of the new solution is to take inputs from the planning and forecasting system and provide a real time scheduling solution. Existing system might be using a 3 months or 6 months or yearlong planning horizon for the preplanned maintenance activities or some other activities which can be planned early. However, utility should need to consider the planning horizon requirements and the necessity in the new system. That will have impact on the amount of data which will be pushed into the new scheduling system, if too many activities are sent to the scheduling solution without optimum planning the scheduling algorithm might fail or won't be able to perform efficiently to match the expectations of the utility.

It is important that proper forecasting, capacity planning are done before activities are pushed into the workforce management system.



Vendor Selection Criteria

The space of workforce management in general incurs significant operational costs for the utility. The optimization in this field will save a lot of cost for the utility and could potentially result in very high customer satisfaction levels. These are driving utilities to find a solution which is suitable for them and in turn encouraging product companies to invest into such solutions. There are many companies with competitive products in this space and selecting one of them is a real challenge for any utility. Utility should focus on following criteria for selecting any vendor.

Must Have Features

Role Based Access

Role based access is the primary need of any such solution. Every personnel in operations department will be accessing this solution right from the top level executive to the field worker.

everyone have different responsibilities and according to that, the access to the personnel should be granted.

Real Time

Optimizing the scheduling of various tasks is the main purpose of the solution. The optimization should be done to the last possible moment. The solution must provide the real time scheduling. Also, real time information across the system will help the decision maker to take effective and efficient decisions.

Display on Map

After the advent of GIS, utility started using the map for their day to day operations. Also, utility operatives are accustomed of working with maps. So, the continuous display of crew position, work location, route for the day on the map will help in better understanding of the schedule.

differentiating Features

1. Scheduling Engine

As discussed, algorithm will play the most important part of the solution. There are two major differentiation factor of any scheduling engine

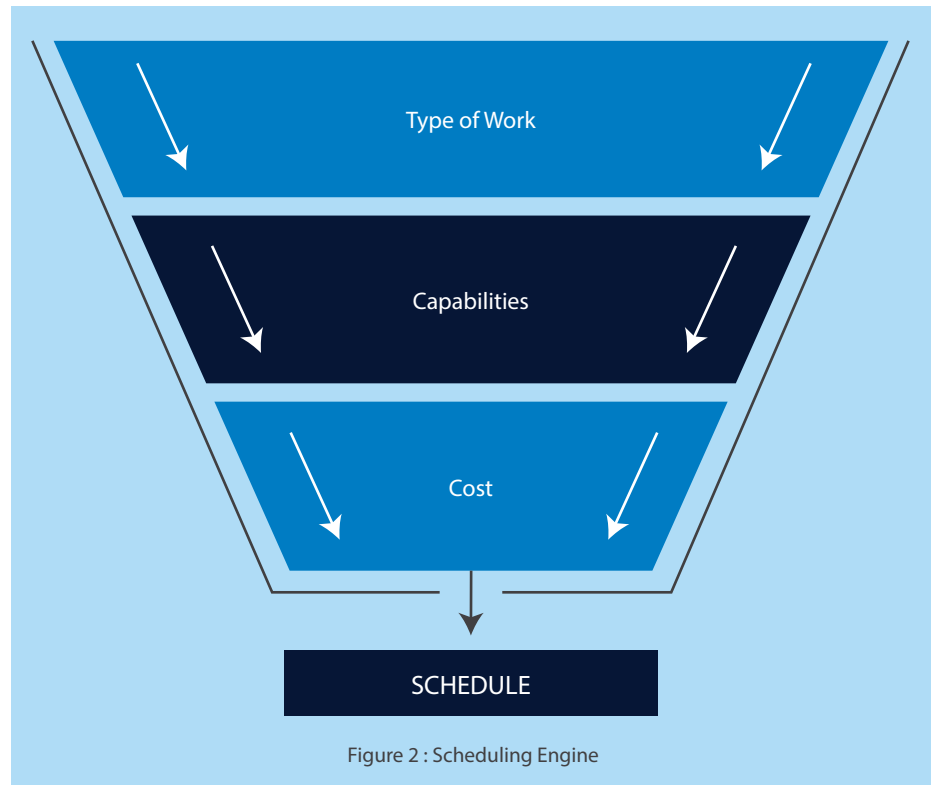


Figure 2 : Scheduling Engine

- **Input Factors:** More the number of factors considered more chances of getting the optimized scheduling. All the different products will have different input factors and this will make a difference in their solution. Utility should understand its priorities and the important factors.
- **Algorithm:** Input factors are not only the ingredient for the best solution. The use of various mathematical formulae and getting a state of art algorithm will also be important. Companies with patented logic will be leader in the space.

Comparison criterion:

Before comparing various products, utility should understand the current factors it takes into consideration for scheduling. At least, those factors should be considered by the solution as input factors. In addition to that, for the utilities it would be nice to have a trial run into the demo environment and then comparing the schedule of various alternatives putting schedule based on current process as benchmark.

2. Customization

Several products have the scope of

customizations. Every utility has its own way of carrying out business, so the solution has to adapt to the business process to the extent possible. In addition to that, more adaptable the solution the easier implementation would be. Also, customization window should be available for tuning according to changes.

Comparison criterion:

Utility should be thorough with the 'to be process' and the change it's envisioning in its business. Then compare various products on the two characteristics – First the type of customization, if it is helping to the company's vision then they should compare various products on the basis of extent of customization.

3. Integration

There are various IT solutions related to different departments like HR, Finance which are already in place for every utility. In addition to that, utilities have systems like Outage Management, SCADA, and GIS etc. Mobile workforce management surely won't be able to work in silos, it has to interact with all the related systems of the utility and provide an integrated solution.

Comparison criterion:

All the available alternatives should be checked for integration with the existing IT landscape of the utility.

4. Interface

Obviously the solution will be used in two places, office as well as field. Office interface can be used on the desktop but the one which will be used at the field need to have the flexibility of using various handheld devices like tablets, touchpad, mobile phones etc.

Utility should make sure the hardware and the interfaces they are using. Are they going with Android, Windows or IOS Apps? In case of office interface, do they want the desktop applications or the web application? Utility should consider the flexibility available with the various alternatives.

Additional Features

In addition to the above features, every solution will have its own additional features. And utility should compare all the additional features and their applicability for them. Though couple of additional features can be

1. Alert Mechanisms

The solution should have appropriate alert mechanisms in place. The utility's with more reactive work need to have the alert mechanism. This will ease the work of the office staff; this will help to react to the problems well in advance.

2. Mailing Functionality

Normally every company has its own mailing or communication set up. However the solution can have the dedicated functionality for communication between

office and field workers. This will reduce the pain of the field workforce of either calling or switching to the other application.

Other Criteria

3. Device Selection and Compatibility

Wide range of mobile device compatibility will be one of the major factor for selecting a solution. In future, if utility decides to go for new hardware or devices with more capabilities like bar code reader etc., then solution should be such that it should not have to be dependent on the device. The solution would be really handy if it's come as an App for Android, iOS and Windows. This will cover the dependency of solution on device.



Challenges In Implementation

Going for the transformative change similar to this is not an easy task for any company. Utility should be thorough with their vision and mission statements for the change. Following are some of the hurdles for the utility to go for the field workforce management IT solution implementation. In addition to that, there might be some more hurdles specific to the utility.1.

Change in Business Process:

Obviously there is shift from manual to automatic. This change is usually very hard to accept for the people who are going to use it without an effective change management process. It's the job of the service provider as well as the utility to provide the appropriate training and help the staff during transition.

Solution - Comprehensive Training and In Depth Training Material

In our implementation for one of the water utility giants in UK, we have created a separate training material of the solution. Every solution comes up with basic training material but we have created dedicated training material which explains each business process change and the way it needs to be carried out in new system. It is supported with extensive training session which helped every operation personnel to cope with the change easily.

2. Trust on Solution:

The solution is supposed to provide optimized solution, more intelligent way than the existing method. In such cases, staff using earlier methods will find drawbacks in new solution. It will take some time for them to trust the new solution.

Solution – Expert Support with great communication skill

In our experience, it takes some time for office staff to trust the new automatic scheduling, also there is a hint of job losing which might make the situation worse and they start finding out the drawbacks. In such time, you need a people's person

on the floor with the solution expertise, who will politely solve their confusion and explain them their importance in the new system.

3. Not Tech Savvy Workforce

Field workforce is skill niche area. The workforce needs to have apt knowledge about the area of work. This skilful workforce is less in number so utility cannot afford to loose them at the same time utility need to use the technology for efficient business operations. In cases, where they lack the interest with the technological advances, it's a big challenge for the utility to get them on board.

Solution – Extensive Training for targeted Group

For the staff which is not much acquainted with the technology will find the change very challenging. Also, utility cannot afford to lose the knowledge base, experience base they have. So we have scheduled and delivered special sessions for such targeted audience. It helped them to understand the technology and use it fluently.

4. Investment for small Utilities

Small utilities which lag in the process of smart grid technology advancement may see the investment as a burden.

Solution – Phase wise implementation

During one of our implementations, we helped the utility to understand their separate business operations and helped to segregate the implementation. Utility has to select the more important part of their operations. As it was not the open market, utility selected the network operations as the priority. This helped them to reduce the initial daunting cost figure and after getting satisfactory saving from the first phase implementation they went on investing into the next phase.



Way Forward

However modern, hi-tech and smart the utilities become their workforce in the field is the key for their performance, customer satisfaction and efficient operation. If a transformer broke down then the instant reaction of the utility will be to send a crew to the location and get it fixed. Smart grid will surely send the signal but the work has to be carried out either to repair or replace the transformer. In the coming era, every utility will be smart, and then the difference in the operation will be made on how effectively they use their mobile workforce and how quickly they resolve the problems. The management of mobile workforce will be one of the game changers and the real difference between various smart utilities.

It's better to get the advantage in the race as early as possible. As mentioned above, in coming few years, every utility will be smart so the difference will be more in terms of optimizing the business operations. This is the part of business operations which coincides with the client interaction and will have a huge impact on client satisfaction. This will generate the goodwill across various social media channels and will help utility to grow their business. So surely, for the utility which wants to be the leader in the industry, this is one of the areas they should target.



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