IMPROVING OPERATION EFFICIENCY BY COMBINING ICT SOLUTIONS AND WORKFORCE MANAGEMENT

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INTRODUCTION

Forthcoming and recent changes in the regulated and liberalized markets set up new demands to system obligation companies to improve supply quality, operation efficiency and to still reduce total costs of network operation. Simultaneously owners expect higher returns on their investments. For traditionally natural monopolies balancing between these expectations can be hard tasks to achieve. The utilization of modern ICT solutions can be used to improve workforce management efficiency.

BACKGROUND OF MOBILE WORKFORCE

Eltel Networks Corporation was founded 2001 as a result of bursting outsourcing trend in networks construction and maintenance operations in Finland. In more competitive environment all companies like Eltel Networks need to develop and introduce new ideas and new concepts to industry to be more efficient. One key conclusion that was made in 2001 was to start development of versatile ICT applications to support company's service offering. Further more ICT applications and solutions were defined to improve total efficiency of all Eltel Networks operations. These improvements also should result higher efficiency to networks owners.

MOBILE WORKFORCE CONCEPT

The Mobile WorkForce concept includes several sub-applications and solutions, where some are even tailor made to meet the demands of a specific customer. Sub-applications are build in modular structure so that one or several modules can work together and can be utilised in different kind of work orders or projects. Primary use and applications in the Mobile WorkForce concept are designed to improve fault repair processes and to ensure better supply quality as well as less interrupted supply of energy.

Workforce database

The Workforce database consists of several layers. Primary layer defines all workers that are available at the time. Each worker can activate and deactivate availability status by themselves. Second layer is all personnel with more detailed information of each individual worker, their skill level and competencies. Third layer includes tools and vehicles used by a worker. And forth layer includes a standard list of spares and materials placed in their immediate access.

Mobile communication

The world of information technology development in conjunction with the continuously improving mobile communication networks are essential reason to more and more efficient workforce management. Utilisation of SMS messages, WAP/GPRS based etc. mobile communication applications significantly reduces the need of face to face meetings between the workers and their foremen.

Work base

The Work base is a database with different sub-databases that includes all work orders. Work orders are divided by type and area. All work orders also include basic information such as ordering reference, status, responsible worker, work description and further more additional information of progress status and free comments.

Figure 1: Typical work base view with ad-hoc type fault repair orders

Work base views are also available via extranet solutions for partnership customers so that work order progress follow up is easy and always up-to-date. It is also possible to even sign in new work orders directly via extranet which reduces the need of traditional paper work.

Work base reporting and invoicing

Work base includes multiple reporting functions. All reports can be defined and tailor made for customer requirements and naturally reports can be transferred in electronic format. Daily, weekly and monthly reporting includes performed tasks, repair but also recommendations and notifications of needed future services. Reports can be organised in different
ways to improve planning of corrective actions as well as for example managing ordering of spare parts.

Due to continuous on-line connection to workers via mobile network communication all work status is always up-to-date and also time stamps for working hours can be collected. Utilising time stamps and internal connection to EBR-systems are the basis for both invoices and wage calculations.

Mapping and tracking

One of the most important issues for more efficient fault repairing is to minimise the time used for secondary functions like into travelling time. Therefore mapping and tracking both fault location as well as closest available and skilful repair personal is essential for the reduction of interruption time.

The tracking function uses commonly available function provided by telecommunication operator. Using the information from mobile base stations a mobile phone can be located in accuracy from 300 to 2.000 meters. This information together with mapping application provides a scalable view of available resources as shown on figure 2. As soon as the fault location is known the closest available repair worker can be signed to given task.

Tracking of a personal mobile phone needs special agreement with personnel since companies must follow the national legislation in privacy protection. Therefore each individual worker has to activate tracking permission into system every day as well as they have the possibility to deactivate it anytime.

24/7 Call Centre

The Mobile WorkForce concept enhances possibilities to improve total operation. A service centre or a call centre for inbound calls is a typical functional point where utilisation of modern ICT application results as new types of more efficient solutions. Workforce management for example can be easily done by call centre personal which results to more rapid response. This again creates a lean and flexible organisation which is more efficient and more competitive.

In most cases instead of using primary robot phone answering machines customers are more willing to talk to other humans. This results with higher customer satisfaction and ensures that bidirectional information is also available.

CASE EXAMPLE - MOBILE BASE STATIONS

The Mobile WorkForce concept and several of sub-applications are used in mobile base station service in Finland.

After an automatic fault alarm in a base station the control systems creates an SMS ticket (fault ticket) to work base and to call centre. Call centre personal performs double checking of the fault and tracks both the base station and available resources geographically. The worker alarmed to the task signs in and acknowledges task by WAP application. During the repair work the worker up dates the status of progress depending on the fault type. Finally after the task has completed a comprehensive report is sent back.

CONCLUSIONS

Based on close to two (2) years development and practical experiences operation efficiency both on network construction and fault repairing processes can be significantly improved by utilizing modern ICT solutions and tools on workforce management. Due to more efficient work order controlling savings up to 20 percent on related operational costs can be achieved and bidirectional communication on 24/7 call centre ensures possibility to receive first hand field information from the end-customers which results to improved customer satisfaction. Further more up-to-date work progress status availability at all times improves total service and supply quality in customer's minds.