

ASSET MANAGEMENT AND PROCESS DEMATERIALIZATION IN EDP, THE CONTRIBUTION OF THE WORKFORCE MOBILITY SYSTEM (WFM) INTEGRATED WITH THE GEOGRAPHIC INFORMATION SYSTEM (GIS) MOBILITY SOLUTION

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ABSTRACT

The dematerialisation of processes has a decisive impact on improving the operational efficiency of the organization as a whole, taking into account the improvement of the quality of the information and the availability and speed of that information.

The workforce mobility system (WFM), with the task of mobilizing the work orders (operational activities) for the field teams, enables the update of information in an automated way, directly from the field to the legacy corporate systems, without resort to any kind of manual process.

The upgrade of the current technical information systems that supports the network grid asset management will allow the updating of information directly from the ground through a mobile equipment, eg smartphone or tablet. Since most of the construction and commissioning activities on assets require the collection of information needed for the completion of the processes, with this system any form of manual filling is no longer necessary, as the information will be updated automatically from the ground to the asset management processes.

With the integration of these two applications in the processes associated with field activities, we are also able to collect all the necessary information (registration and operations) and to characterize the activities without using any paper form.

In addition, we also have information available on systems in a timely manner, with quality and in an expeditious way.

INTRODUCTION

The management of physical assets, their operation and maintenance, plays an important role in the operational performance and profitability of EDP. The correct operation and maintenance of the electric grid assets relies on the knowledge that the company has about the installed assets in the field, in particular of their technical characteristics and location (geographic position).

The knowledge of the assets is as good as the process of updating the information in the system, regarding the interventions performed in the assets throughout their life cycle. One way to improve the process of information and system data updates is to dematerialize the whole process of information, by eliminating paper forms in order to keep

information updated and error free.

The dematerialization of the processes, besides improving the information systems quality, through fewer input errors in data loading and by decreasing the waiting time for information access, allows a productivity improvement due to the reduction of the time needed to execute the tasks and the optimization of the human resources allocated to those tasks.

The dematerialization of the company's assets information update processes will be technologically supported by a mobility platform comprised of two integrated IT applications: the workforce mobility system (WFM) and the geographic information system mobility solution (MGIS).

The WFM enables the mobilization of the major tasks performed in the field and supports the entire information process associated with these tasks. It also allows tracking the status of the work done in the field from the scheduling to its conclusion.

This application allows to mobilize tasks in a faster way and to monitor its implementation on-line, thus optimizing the work and the human resources involved. It also enables the integration of the information in the corporate systems with greater speed and without manual intervention.

On the other hand, the MGIS supports the entire process of assets characterization information and update directly from the field into the corporate GIS system. This application allows updating the technical characteristics (e.g. manufacturer and model) and the electric network's assets position directly from the field, without the use of paper forms.

Thus, the information is updated without errors and manual loading in office, thereby improving the quality of the existing information in the corporate systems.

This paper aims to present the future of the technological platform composed by the integration of the two applications (WFM and MGIS), analyzing the information update process of the electric network's register directly from the field through a mobility equipment.

TECHNOLOGICAL PLATFORM

The technological platform contains the WFM and the GIS applications. The WFM is responsible for the information mobilization and update regarding the work done in the field. The GIS is responsible for updating the register, the technical characteristics and the position of the assets that are intervened in the field.

Workforce Mobility System (WFM)

The WFM is implemented across the company and it is the mobility application that supports the main commercial, maintenance and outage activities performed in the field. Since most of these activities have an impact in changing the company's electricity grid assets, we can say that the WFM supports most of the activities that generate change in the assets registration.

In a simplified way, we can describe the process where the WFM is inserted as follows: initially the WFM receives the services requests generated by the corporate systems. These requests are dispatched to the mobile devices of the teams in the field that, after performing the work, update the state and the characterization of the service performed directly onto the mobility equipment (Figure 1).



Figure 1 – WFM mobility equipment

On the other hand, it is possible to monitor the status of these services and the place where they are performed from a coordinating back-office. Typically there are four stages associated with each one of the services: a) Pending, sent from the source system to the WFM but still without an assigned team; b) Scheduled, with an assigned team and resolution period defined; c) Initiated, the team is on route towards the site; and d) Finalized, work completed and properly characterized.

After the service is finished and properly characterized in the field, the application automatically integrates the information in the corporate systems without manual intervention from the back-office employees.

The corporate systems involved are: SAP-ISU, responsible

for commercial services (e.g. customer reconnections); PowerOn, outage management; and SAP-PM, maintenance services. The following picture shows an image of the list of tasks in the WFM back-office, where all activities performed via mobility can be dispatched and tracked.

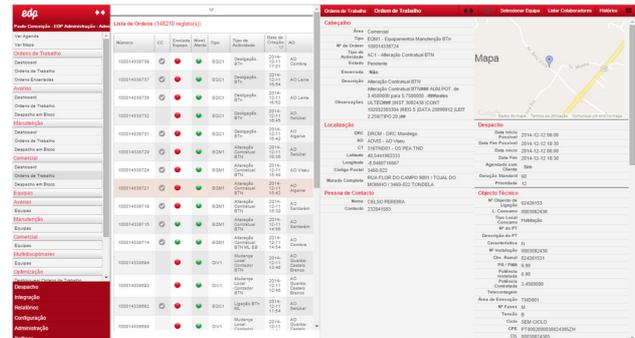


Figure 2 – WFM backoffice

Geographic Information System Mobility (MGIS)

The MGIS is a solution that is being developed on the platform that supports WFM and is integrated with it. All registration updates of orders made in the field will be performed through that solution.

In addition to the topological visualization and to the geographic and characterization of the electric grid in a mobile device, this application also allows the update of the electric grid information. These updates may consist of the removal, modification and integration of the electric grid objects in terms of geographic and also technical characteristics.

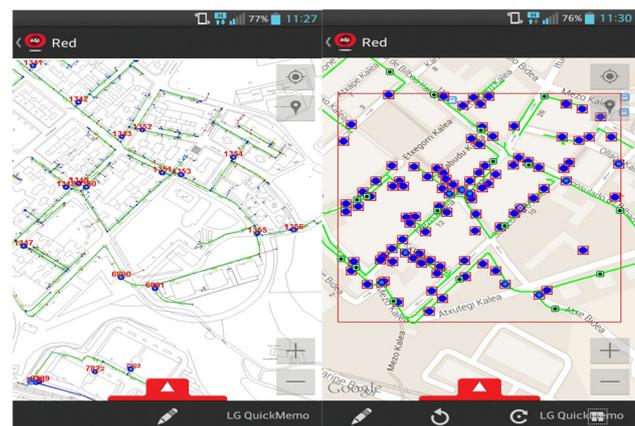


Figure 3 – MGIS topological consultation



Figure 4 – MGIS topology update

All features are available in both online and offline modes without access to mobile network connection. The tasks to be performed are incorporated in the work order sent by WFM and are part of the workflow associated with each type of work order. The location of the mobile device GPS, along with the location information of the asset intended for intervention in the work order, ensures that the task is done in the correct location.

All updates made in the field are automatically synchronized with the corporate GIS so that the remaining corporate systems, which are clients of this information (e.g. PowerOn and SAP), have the updated information in a fast way and without manual intervention in office.

DEMATERIALIZATION OF PROCESSES

The full dematerialization of the information processes, regarding the activities that are carried out in the field, maintenance, outage and commercial tasks, are only possible with the technological implementation of the previously described platform.

This platform is comprised of the WFM and the MGIS. Furthermore, it is necessary to consider the required interfaces between this platform and the corporate systems (SAP-PM, SAP-PS, ISU and PowerOn).

With the implementation of these technologies, the introduction of data in the field is made directly on the mobility platform, without the activity characterization sheets on paper forms, which had to be manually filled until then.

In the back-office, there is also a reduction of paper and, as a consequence, of the work load associated with it. The information is integrated directly from the field through the system without the need for manual entry in the corporate systems.

In addition to eliminating paperwork, the reduction of the activities associated with the process and the decrease of the data update time in the systems leads to better quality and a faster integration information in the corporate systems.

Previous Process

The previous process, without the existence of any mobility platform to support the services carried in the field, can be described as follows: the back-office coordinator obtains tasks to be performed in the field from the corporate systems and distributes them manually to the company teams and to independent service providers.

These teams carry out the assignments to the field and fill the characterization sheets of the tasks performed. Subsequently, usually at the end of the day, the forms with the information are left at the office and in the following days, other colleagues must type the received information into the corporate systems in order to be available for the entire company.

Besides time consuming and with the information becoming available long time after the completion of the field work, it is also burdensome, because it involves many employees. Furthermore, this process does not guarantee information quality since there are multiple employees updating information manually.

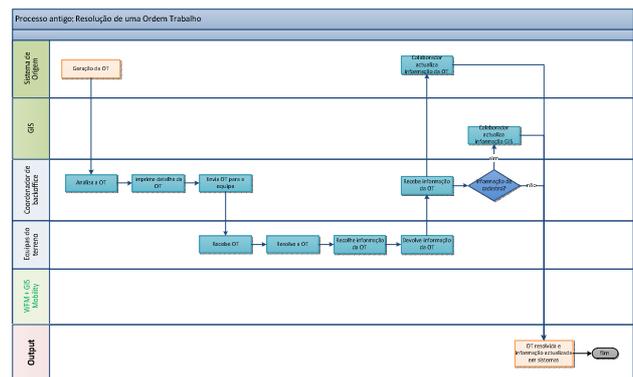


Figure 5 – Previous process

In a simpler way, we can easily identify ten activities correlated with the general process associated with the completion of a WO (Work Order).

In addition to the numerous stages, and hence the high number of employees that are part of the described process, we can verify the existence of many paper forms on the information gathering WO (WO characterization and record).

Several paper forms can be eliminated because the necessary information to fill them will now be integrated directly into the mobility platform.

Figure 6 – Paper forms

Future Process

The future process will undergo a reduction in the number of activities and consequently a reduction in the effort related to these tasks. The process can be described as follows: the coordinator distributes the tasks among the teams in the field, via mobility system, without the need to contact these employees.

The field technicians receive their WO in the mobile devices without the need to travel to the office. As the tasks are performed, they will also update the information regarding activities executed in the field without the need to fill any paper form.

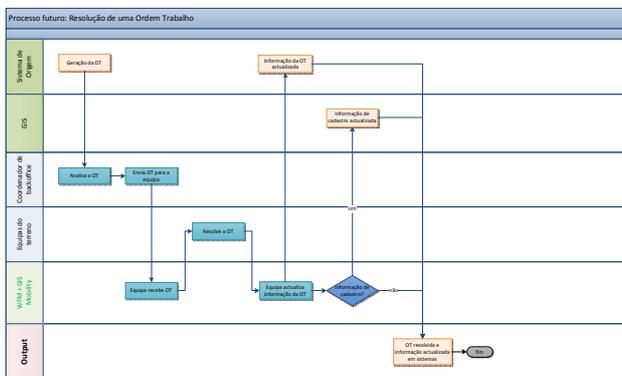


Figure 6 – Future process

Besides the possibility of being monitored by the coordinator, the information for the entire company is available for consultation earlier and without manipulation by other employees in back-office.

Thus, there is a decreasing of the number of activities associated with the WO processes, with consequent reduction in the number of participants and of the time spent in each one.

CONCLUSION

The implementation of the integrated mobility system, with WFM and GIS, contributes decisively to improve asset management and the dematerialization of field intervention processes (Commercial, Maintenance and Outage).

In addition to the effective monitoring of field services, the WFM implementation allows the dematerialization of the entire information process associated with WO, from dispatching of services by the coordinator up to the work information that return to the corporate systems.

All the activity characterization sheets are eliminated and the information is loaded directly into the mobility tool.

On the other hand, the information collected in the field is directly registered through a specific workflow sorted by activity type and without data handling by other contributors.

Thus, there is a significant increase in the quality of the information that will support the company activity. This fact will improve the knowledge of the assets condition and all the work related, which allows a better planning management decision.

The implementation of GIS allows to dematerialize all the information processes associated with assets characterization and positioning. With this implementation, in addition to faster access to updated information in the corporate systems (e.g. GIS), it will also eliminate the existing characterization sheets.

By eliminating the sheets, the fill out of technical characteristics and position will be made in the field via the application, through specific workflow for each type of asset, thus improving the information quality of the assets located in the field.

With the improvement described above, we will have better assets information in the system, thus contributing to its better management and improving the efficiency of the related processes.