

## OUTSOURCING ASSET CONSTRUCTION: EDP DISTRIBUIÇÃO QUALITY ASSURANCE STRATEGY

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### ABSTRACT

A company's efficiency and consequently its competitiveness is directly related to the performance level of its assets.

Quality control in its various dimensions is critical to ensure that the asset performs well throughout the life cycle for which it was designed.

Currently, there is a high level of outsourcing of the construction, maintenance and service activities to the AT, MT and BT network in EDP Distribuição. This paper aims to present the implemented model to monitor the execution quality of the services performed by external companies. Despite the volume of outsourcing, there has been a very positive evolution of the main Quality of Service indicators in recent years, in line with current regulatory impositions and market requirements.

Finding the hiring strategy and control model that provides the best results at all times is a constant challenge and a daily management task.

### INTRODUCTION

EDP Distribuição was created in 1993 as a result from the separation of production, transportation and distribution activities, which were all centralized in a single company, the former EDP-Electricidade de Portugal, SA..

In the first years, EDP Distribuição went through a strong workforce reduction. Restrictions on new hires, along with the normal retirement of many employees, led to the number of employees decreasing from 8.221 in 2000 to 3.313 in 2015, mainly due to a significant reduction in the number of middle managers (technical and administrative) (Figure 1).

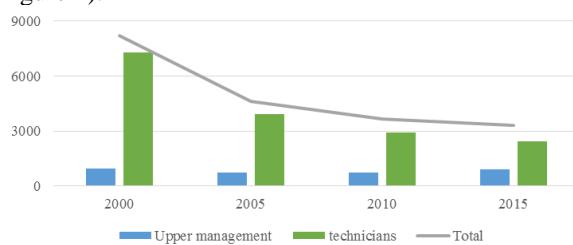


Figure 1. HR evolution in EDP Distribuição

At the same time, the electricity sector underwent a profound transformation and the new requirements, namely regulatory requirements, needed a fast and

efficient response from the company at controlled costs. Thus, outsourcing most activities was the solution found: at the beginning of 2010, almost all the construction and maintenance of AT, MT, BT, Street Lighting, Substations, Meter Installation and Network and Customer Assistance, was carried out by contractors.

This strategy allowed employees to focus on the management of activities more relevant to the company, led to a better resources management and a greater capacity to respond to growing market demands.

### STRATEGY

Currently, EDP Distribuição buys 100M€/year in material/equipment and outsources on average 150M€/year (Figure 2), through centrally negotiated long-term contracts integrating most of the necessary activities.

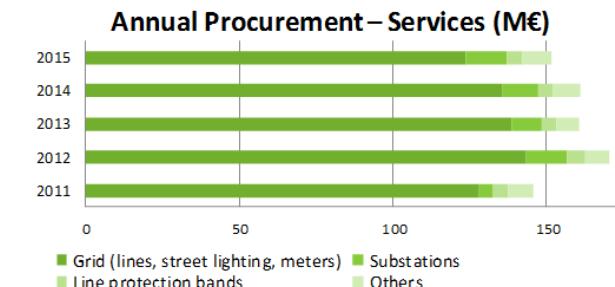


Figure 2. Purchased services

EDP Distribuição's contracting model is based on a high level of demand placed on the three essential pillars of the process:

- Supplier qualification
- Purchase/award
- Contract execution

EDP Distribuição has established several contracts, the most important of which (by volume and activity scope), is the one concerning network construction and maintenance, designated as **EC2015 – Redes**, which will be used as an example of the topic under analysis in this paper.

### EC2015- Redes - Supplier qualification

Since it is not feasible (humanly and financially) to develop a follow-up model for all jobs, it is essential to ensure that the companies applying for the service fulfill

the necessary requirements for performance that are compatible with the EDP's requirements.

Thus, hiring is usually preceded by a previous phase of selection and qualification of the companies, in which the stakeholders guarantee that they meet all the legal, financial and required certifications, have a structure with adequate management capacity, with the needed technical means (vehicles, equipment, ...), as well as the technical staff.

In this context, as workforce quality and skills are vital, EDP Distribuição, in the qualification phase, specifies the number of technicians (minimum) and the respective qualifications that the company must have for each type of work.

These requirements have promoted a continuous improvement philosophy in the market that extends throughout the supply chain (contractors, subcontractors, technicians, and managers), improving results and influencing the quality of execution.

### **EC2015- Redes – Purchase/Award**

In the last adjudication that resulted in the contracting of these services (EC2015-Redes), the country was divided into 19 lots/geographical areas and, after the negotiation phase, awarded to the successful adjudicators with the best proposal – for each lot there is only one single contractor who performs all kinds of work. The overall objectives, the execution demands and the execution requirements are the same for all lots, with only a few service level agreements variations established for each batch against the minimum benchmarks required for each zone by EDP Distribuição. The results and performance evaluation model, which is the same in all contracts, is based on established criteria which periodically measured and known to the contractors. Deviations from the expected results result in corresponding incentives and penalties.

All services provided by the contractors are typified and assigned a reference price. In a decentralized way, those responsible for the budget in any geographical area of the country have a SAP interface (Figure 3) that allows them to model the work in a simple and standardized way, selecting all the activities and materials necessary for the intervention.

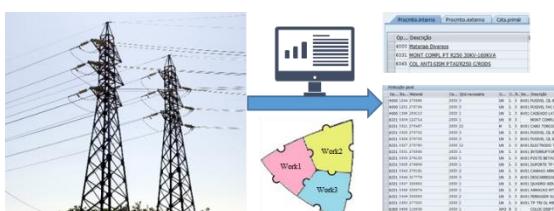


Figure 3. Budgeting

This methodology allows to daily award and dispatch about 500K€ in services in a completely dematerialized form.

The system has other functionalities, namely the definition and control of execution times, registration of changes to the initial budget, material transport guides and self-billing. (Figure 4).

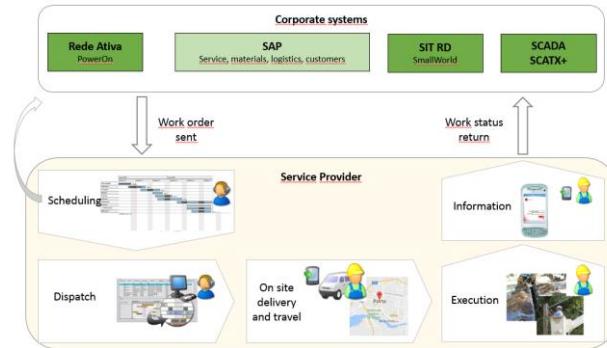


Figure 4. Work flowchart

### **EC2015- Redes – Contract Execution**

The first influencing factor for a good performance is labor quality and its control. There is a credentialing process in progress that aggregates all the information of the contractors' employees and their subcontractors, namely function, qualification, and training. This data base is fed as an employee's register where the relevant facts are recorded (e.g.: non-conformities practiced). A web interface allows access anywhere and by any authorized entity (Figure 5).



Figure 5. Credential and online access

Finally, the contractors' execution performance is evaluated on the job by a systematic process of audits by a EDP Distribuição specific department.

### **Audits**

The existence of national contracts allows the standardization of processes and systems, making it possible to control execution through audits. The audits are centralized in a single department of EDP Distribuição, with no connection to the organizational units responsible for the interventions.

This department has a reduced team of ten multifaceted technicians, distributed by two geographic centers that develop the nationwide activity (Figure 6).

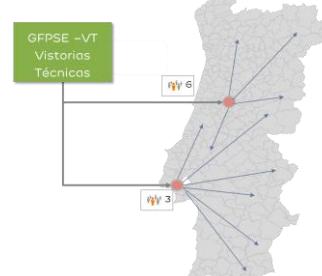


Figure 6. Nationwide activity

A small team is a deliberate choice that has been tested over the years and is considered appropriate to the objective – audits are done to a sample of randomly selected interventions, in a statistically representative number.

The audits control the execution quality in two moments: during the execution (audits to works in progress) and after the completion of the works (audits to completed works). Audits of ongoing works focus on safety, environmental and technical execution processes, while surveys of completed works focus on compliance with technical and budgetary standards.

Performing audits to works in progress also allows preventive action to eliminate nonconformity before the installation is at service, reducing the need for future interventions, thus increasing asset allocation and asset efficiency.

The activity support is based on check sheets for each type of work executed according to the applicable activities.

The data collected in the audits is processed in reports, listing the identified nonconformities, resolution requiring situations, improvement areas and evaluation obtained (Figure 7).

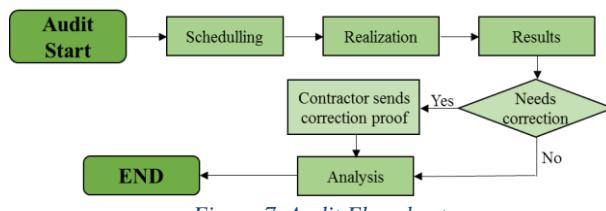


Figure 7. Audit Flowchart

The process also shares the collected information with stakeholders, as a way to promote the adoption of good practices.

All the knowledge gathered in these actions is of vital importance for the implementation of nonconformities mitigation measures (awareness actions, workshops, procedure updates and specifications revision).

The audit also has a strong human and pedagogical component, where sharing information and clarifying doubts *in loco* is an invaluable asset.

### Quality certification of the inspection process

Given the impact of the audit activity on the performance of EDP Distribuição and its contractors, it is crucial to have reliable, optimized processes with results and promoted and monitored quality indicators, which are currently guaranteed by the ISO9001 Quality management systems Certification.

This certification promotes a communication channel that promotes proximity and knowledge transfer (requests for clarification, opinions, information, etc.), available to all stakeholders, which contributes strongly to a standardized knowledge.

### Evaluation

All evaluation criteria are described in the contract. All

partial evaluations, obtained in the audits, contribute to the already mentioned achievement of objectives (SLA) and for the system of incentives and financial penalties.

## RESULTS

The adopted strategy promoted improvements in contractors' quality, visible in the evolution of the evaluation indicators since 2010: the number of interventions with critical nonconformities decreased to a quarter of the value of 2010 (Figure 8).

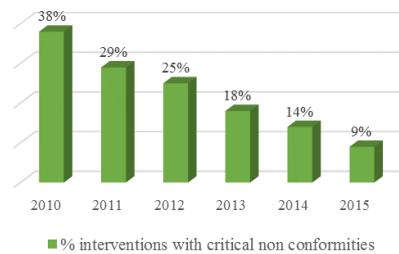


Figure 8. Interventions with critical nonconformities

The average evaluation also showed a positive evolution (Figure 9), despite an evaluation criteria reformulation with harsher demands in 2015.

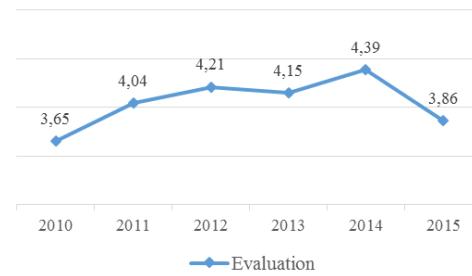


Figure 9. Evaluation through the years

As mentioned, analyzing the obtained information from the audits allows to identify areas with below-acceptable performances. For example, in 2010 an action plan (training sessions, review of evaluation criteria and updating of technical documentation) was structured, involving contractors and organizational units of EDP Distribuição, in order to reduce nonconformities in ground connections (Figure 10).



Figure 10. Ground connection nonconformities evolution

The use of contracts where procedures, specifications, activities and prices are typified and audit teams providing

feedback to the budget responsibles targeting non-conformities and addressing best practices, allows to maintain controlled levels of budgeting errors (0.4%).

The quality assurance of the various phases and intervenients of the asset construction, through the implementation of this strategy, also contributed to a general improvement in the service level indicators: TIEPI MT -Equivalent interruption time of the installed power (Figure 11), SAIFI (Figure 12) and SAIDI (Figure 13).



Figure 11. TIEPI MT (min) evolution



Figure 12. SAIFI evolution

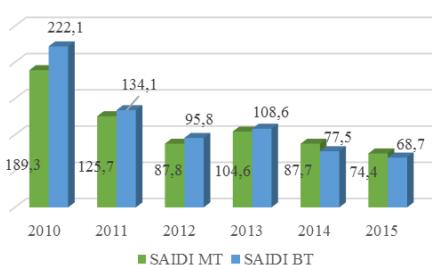


Figure 13. SAIDI evolution

## CONCLUSION

Results indicate that the implemented methodologies, namely quality control, promote the efficiency of operations.

The human and pedagogical attitude of the audit teams promotes and facilitates the information flow through all stakeholders, reinforcing existing partnerships and fostering work for the common good.

Auditing is a process of contract and standards self-regulation in which the information gathering that occurs makes it possible to identify the need for new tasks, to update existing activities and work methods, allowing to achieve a higher level of performance.

Setting service quality objectives and periodically evaluating them enables to align the contractors' and EDP

Distribuição's strategies and to promote continuous improvement.

Controlled outsourcing as a company strategy allows to outsource job execution without lost know-how while retaining execution control.

## FUTURE CHALLENGES

EDP Distribuição is committed to implementing improvements in its audits that will lead to an increase in their effectiveness. It will be necessary to extend the functionality of the mobility tools to all types of work (currently only available for Commercial Service and Fault Recovery), in order to know, in real time, the location of the service providers' teams, ongoing activities, technical performers, etc..

It is also fundamental to create methodologies that assure the maintenance of internal knowledge, to avoid relationships of exaggerated and irreversible dependencies to the market.

On the other hand, there are currently new challenges to the sustainability of outsourcing, related to ethics compliance, labor relations, social responsibility, rights and obligations of employers and employees, etc. Predictably, these aspects will be on the agenda of the entire supply chain and it is expected that the audit activity will be able to integrate new areas of intervention.

## ACKNOWLEDGMENTS

To implement and improve such strategy would not be possible without all those involved in asset study, budgeting and construction.

A special thanks to all EDP Distribuição collaborators and contractors.