

IMPLEMENTING AND CERTIFYING A STATE OF THE ART ASSET MANAGEMENT APPROACH – PRACTICAL EXPERIENCES

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ABSTRACT

Subject of the paper is the implementation of the Asset Management concept into the organization of Essent Netwerk First, the drivers for and essentials of the Asset Management concept are introduced. Then, the organization of Essent Netwerk's Asset Management department is described. Finally, the experiences of Essent Netwerk, whose Asset Management is certified according to PAS 55-1 and ISO 9001:2000, with implementing the Asset Management approach are shared and the project for certifying it is outlined.

INTRODUCTION

Due to various developments, the energy sector at present attracts more public and political attention than it used to. This trend does not pass over network operators which are nowadays much more often requested by their stakeholders to justify themselves.

The most important stakeholders of network operators are:

- The customers who are connected to the networks and who expect being served reliably and safely at a fair price.
- Employees, who want challenging, safe and secure jobs and a fair salary.
- The shareholders, who require a reasonable return on their investment.
- Governmental bodies/authorities, which rely on the availability of electricity for maintaining public order and serving public health.
- Regulators, which primarily serve the interest of the captive customers (both on the short and the long term) by preventing abuse of monopoly power by the monopolistic network operators (both in a financial and an operational sense) and therefore have a similar goal as the customers.
- Politicians, who decided to restructure the electricity sector and are hence particularly keen on seeing whether the interests of their supporters are adequately served by the newly formed network operators and are quick to respond in rate discussions or in case of outages.

These partly contradictory stakeholder goals lead to a growing pressure on network operators to operate transparently, effectively and efficiently. Besides, some stakeholders try to increase their influence on network operators. This particularly applies to politicians and regulators who are in a position to and may interfere with the processes and decisions of network operators. In other words, external parties tend to “open the black box” of the network operator by directly affecting the course of action

and the decision making, rather than focussing on the inputs (money obtained from rates) and the outputs (quality and safety of supply and administrative quality). Notwithstanding undoubtedly noble intentions, in practice this may complicate effective operation of the network operator both on the short and the long term.

ASSET MANAGEMENT AT ESSENT NETWORK

Asset Management Organization Model

The above mentioned developments lead to an increasing need for transparency and objectivity. As a result, but even more because Essent Netwerk has an intrinsic drive to be an excellent operator of energy networks, Essent Netwerk has modelled its organization consistently according to the Asset Management organization model. In this model, basically three roles can be distinguished, namely the Asset Owner, the Asset Manager and the Service Provider. In figure 1, the Asset Management organization model is depicted, including the responsibilities belonging to the three roles.

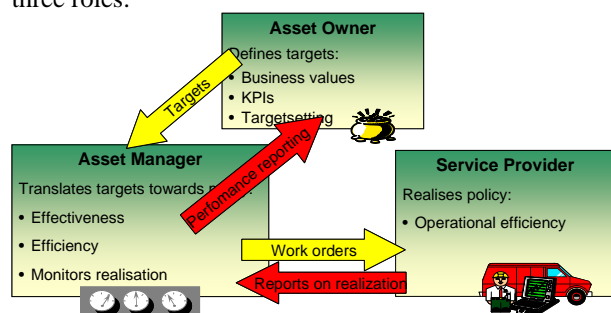


Figure 1. The Asset Management organization model

The advantage of the Asset Management organization model is a clear distinction between and definition of roles, so that each of the entities involved becomes focussed on and can specialize and grow in its specific tasks. More specifically, a split between target and budget setting (Asset Owner's task) and formulating policies and determining the resulting workload (Asset Manager's task) and between the latter and the execution of the work (Service Provider's task) counteracts the tendency of the Asset Manager and the Service Provider to generate their own work in such amounts that the available workforce is exactly used or maybe slightly overloaded, which is then used as an argument for growth.

Besides, an overall optimization over traditionally separated knowledge areas such as network extension, maintenance

and renewal can be achieved by adequately organizing the Asset Manager. This is desirable as in the end each of these traditionally separated fields of activities aim at serving the business values of the Asset Owner, so that an overall optimization is required to prevent suboptimal expenditures, for instance due to historical budgets or workforce competences.

The Asset Manager at Essent Network

The Asset Manager carries out both location-independent activities, such as formulating generic extension, maintenance and renewal policies and location-dependent activities, namely the application of the formulated policies to the network and the interaction with the Service Provider. The operations of the Service Provider are by nature geographically spread. In an either completely centralized or decentralized Asset Manager, respectively the location-dependent or location-independent activities can become problematic. Therefore, Essent Network has opted for a hybrid structure of its Asset Management department. The Asset Management department of Essent Network consists of three centralized units and one mainly decentralized unit. The units are (including the approximate number of employees):

- Strategy Development (15), which carries out the first steps of the Risk Based Asset Management Process (see for more information the next section) and uses this to formulate general policies.
- Strategy Realization (75), which applies the formulated policies to the networks in the different regions, negotiates concrete assignments for the Service Provider (so-called Service Level Agreements or SLAs) and monitors their execution.
- Projects (15), which carries out larger tasks that result from the execution of the Risk Based Asset Management Process, such as research projects, risk analyses, standardization projects, etc. on behalf of either Strategy Development or Strategy Realization.
- Asset Information Centre (15), which manages the asset data such as equipment locations and characteristics and also forms the interface between the Asset Manager and the Information Management department of Essent Network.

The Strategy Realization unit is mainly decentralized, whereas the other three units are centralized. Strategy Realization consists of a relatively small centralized part and five regional units which have been formed in correspondence with the regional structure of the Service Provider.

Risk Based Asset Management

To fulfil its task as the Asset Manager of Essent Network optimally, the Asset Management department uses the proprietary Risk Based Asset Management process. Central to this process are the business values of the Asset Owner on the one hand and the risks that threaten the performance of the networks as expressed by these business values on

the other. A second important aspect of the process is its integral nature, as it covers the complete chain from risk identification and analysis via development and implementation of policies to the evaluation of their progress and effectiveness. The process is depicted schematically in figure 2.



Figure 2. Essent Network’s proprietary Risk Based Asset Management process

In figure 3, the responsibilities of the described units of the Asset Management Department of Essent Network for the steps of the Risk Based Asset Management Process are depicted. As is shown, the first two steps are carried out by Strategy Development, the fourth by Strategy Realization while the third and the fifth step are a joint effort by these two units. Strategy Development and Strategy Realization thus are the units that mainly execute the Risk Based Asset Management Process. The units Projects and Asset Information Centre are supportive to these primary units by carrying out well-defined subtasks and making the required data available respectively.

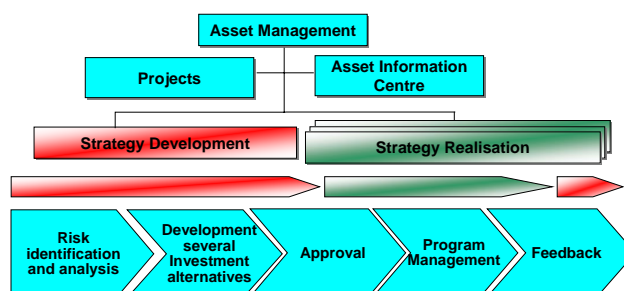


Figure 3. Allocation of the steps of the Risk Based Asset Management process over the Asset Management Department at Essent Network

IMPLEMENTATION EXPERIENCES

During the implementation of Asset Management at Essent Network, a number of practical experiences was made that are surely valuable for other DNOs considering the implementation of the Asset Management organization model and are hence discussed below.

Create trust

The Asset Management concept is a new approach to managing electricity and gas networks. Employees who have been working in this area for several decades should be convinced that their knowledge and experience is still, or maybe even more valuable under the Asset Management concept than it used to be. After all, the Asset Management concept aims at a higher effectiveness and efficiency in managing the networks, so experience and knowledge are rather more than less required. Trust promotes commitment

and prevents commotion and discouragement of particularly elder employees.

Manage expectations

Although the Asset Management concept is a new approach, in the end the changes in handling the networks are in a certain way limited. After all, activities such as maintenance, renewal and extension are still needed and the fact that these may be carried out differently than before is not always noticed by all people involved.

This raises the paradox that when the Asset Management concept is communicated as a revolutionary approach, in the end people become sceptical because the results are of evolutionary rather than revolutionary nature, whereas when the switch to the Asset Management approach is relativised, people start to question the need of any change at all. Therefore, the expectations of both the workforce of the Service Provider and of the Asset Owner should be managed carefully.

Recognize integrality

The Asset Management concept is an integral approach that concerns large parts of the company. There are several reasons for this. First, a large part of the organization and the employees at a DNO belong to either the Asset Owner, the Asset Manager or the Service Provider and are hence affected by the introduction of the Asset Management approach. Second, the Asset Management approach does not only consist of a certain way of managing assets, but also contains linking assets and managing them to serve business values and goals. Therefore, the Asset Management concept interferes with existing financial planning and control cycles and management incentives. When this is not recognized, contradictory incentives and priorities can easily be the result. After all, introducing the Asset Management concept comprises much more than merely renaming the network planning department to "Asset Management department".

Acknowledge complexity

The Asset Management concept implies a shift from the network as a "goal" (the traditional paradigm of "technical perfection") towards a "means" of serving the business values and goals of the Asset Owner. This means that investments must no longer be justified purely on a technical basis, but on the basis of the business values. The question how these business values would be affected when doing nothing must be explicitly addressed as well. Ideally, the relation between the investment and the business values is quantified (i.e. CML-reduction achieved, reduction (of the probability) of accidents or dangerous situations, etc.). This change first requires a change of mind which can be difficult for employees who have worked in the paradigm of "technical perfection" for decades. Second, this requires new and sometimes quite complicated theoretical approaches (e.g. network reliability calculations) which not all employees are able to use, as they have not been trained

to this end and were not asked to use methods like these before. The acquisition of these new competences must therefore be managed carefully and the suggestion of "incompetence" of the employees must be avoided at all cost, because this suggestion would be neither just nor useful.

Prevent overspecification, incorporate flexibility

The tasks of an Asset Manager are quite diverse (network extensions, renewals, maintenance, etc.). The processes of the Asset Manager should facilitate the various types of decisions. This can be achieved by either keeping the process descriptions and the underlying document templates quite abstract, so that they can be used for a variety of decisions or by establishing a much larger number of processes and templates which are tailored to specific types of decisions.

At Essent Netwerk, initially the latter approach was chosen. The idea behind this choice was that detailed processes and formats would facilitate the communication and the implementation and use of the new processes. It turned out, however, that this was not true at all. The large number of processes led to confusion and discussion. Besides, people felt as if they themselves and their tasks were not taken seriously, because a very detailed template suggests routine work for which not much creativity is required, whereas for technical professionals creativity is an important value. Later on, Essent Netwerk chose for a more high level description of processes and a higher abstraction level of templates and so far this has worked much better.

Watch (the number of) interfaces

In documenting the Asset Management processes, careful attention should be paid to the interfaces between units and between the Asset Manager and the Service Provider. There are several reasons for this. First, too many interfaces lead to fragmentation of tasks. This results in less commitment of employees, throwing things over the fence and no one feeling responsible for the whole. Second, in the task of describing the processes, interfaces require explicit attention because they affect more units, whereas the description of the processes is typically carried out for and by each unit separately. Therefore, very easily interfaces result that are not compatible as to the information that is exchanged, or even not two-sided. Third, interfaces in practice consume disproportionately much time and energy, so that it is favourable to minimize their number.

Address well known weak spots

In each organization, there are certain issues that have not been tackled for some reason, although many people have requested attention for them and to a certain extent are hindered by them. In order to maintain the credibility of the Asset Management concept and to underline the ambitions of implementing it consistently, such well known weak spots should not be ignored, but should be addressed explicitly and be improved. This also prevents opponents of

the Asset Management concept from abusing such weak spots as an excuse to question the purpose and necessity of the change program as a whole.

CERTIFYING ASSET MANAGEMENT

Standards

In order to underline Essent Network's both intrinsically (operational excellence) and extrinsically (increasing need for transparency and objectivity and for justification of decisions and activities towards stakeholders) motivated ambition to be an excellent network operator, Essent Network decided to have its Asset Management organization and approach certified by an external certification body. It was decided to aim at acquiring both the ISO 9001:2000 and PAS 55-1 certificates. ISO 9001:2000 is a formalized, generic standard for quality management systems, whereas PAS 55-1 is a less formal standard that more specifically focuses on asset intensive businesses, such as DNOs.

Reasons to opt for both certificates were:

- The compatibility and complementarity of the PAS 55-1 and ISO 9001:2000 standards.
- The more formal status of ISO 9001:2000: given the background and goals of the certification project, compliancy with a formal and internationally recognized ISO standard would contribute more to these goals than only certification according to a Publicly Available Standard.
- The specific focus of PAS 55-1: certification according to PAS 55-1 leads to a better identification of potential for improvement, which contributes to achieving the goal of becoming an excellent network operator.

Certification Project

Acquiring the desired certificates for the first time clearly falls outside the regular work of a DNO. Therefore, the task of certifying the Asset Management department of Essent Network was carried out as a project. The project team was staffed completely with internal personnel. The reason for this was that an earlier project to document the processes of the Asset Management department, which heavily leaned on external consultants, was not very successful for various reasons.

The processes were described by working groups composed of employees working on the processes being documented. The working groups were chaired by a member of the certification project group. The disadvantage that these tasks distracted employees from their regular tasks, which was the reason for hiring consultants in the first attempt, was taken for granted. The SqEME methodology and the ARIS platform were used to describe the processes and publish them on the intranet.

Essent Network decided to first certify all "unique" parts of the Asset Management department. These were the centralized units Strategy Development, Projects and Asset

Information Centre and one of the five decentralized units of Strategy Realization (see fig. 3). The other four decentralized units of Strategy Realization could then be audited in a second round and the experiences gained by the first one could be transferred to the other four in order to avoid a repetition of findings by the certification body.

From the start of the project, it took about 1,5 year to a complete certification of the Asset Management department, namely one year for the first phase (certification of all "unique" parts) and 0,5 year for the second phase (certification of the other four decentralized units of Strategy Realization). It must be noticed, however, that Essent Network already had started to implement the Asset Management concept into its organization some years earlier. Therefore, the certification project did not need to start from scratch and was an evolution rather than a revolution. Had this not been the case, more time would have been needed for sure.

REFERENCES

- [1] www.iso.org
- [2] www.bsi-global.com
- [3] Brown, R.E., Humphrey, B.G, 2005, "Asset management for transmission and distribution", *IEEE Power and Energy Magazine*, vol. 3, n. 3, 39 – 45.
- [4] Reder, W., 2005, "Asset management - fact or fiction?", *IEEE Power and Energy Magazine*, vol. 3, n. 3, 96 – 93.
- [5] Brown, R.E.; Willis, H.L, 2006, "The economics of aging infrastructure", 2006, *IEEE Power and Energy Magazine*, vol. 4, n. 3, 36- 43.
- [6] Morton, K., Walton, C., 2001, "Asset management", in : *Power System Restructuring and Deregulation*, Loi Lei Lai (ed.), John Wiley & Sons Ltd., Chicester, 287-329.
- [7] Arnold, S., 2002, "Asset Management for Utilities", Cap Gemini Ernst & Young.
- [8] www.sqeme.com
- [9] www.aris.com