

STRATEGIC ASSET MANAGEMENT FOR UTILITIES - OPTIMISING THE BUSINESS OF ELECTRICITY TRANSMISSION AND DISTRIBUTION

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1. INTRODUCTION TO THE ASSET MODEL

Whilst the global economy is riding the wave of uncertainty, European energy markets are continuing down the road of globalisation, deregulation and restructuring. As such, Transmission & distribution CEO's are being pressured to increase shareholder value at the same time as meet stringent EU and Governmental safety and regulatory requirements, improve reliability performance levels to ensure continuity of supply, and power quality – all in an increasingly competitive market. A tough challenge, that has prompted internal reviews of core competencies, and an increased focus on the business operations.

Transmission and Distribution companies are realising that the profitability, stability and performance of the company relies heavily on Strategic Asset Management – how assets that are critical to business and financial performance are purchased, maintained and optimised throughout their lifecycle – providing companies with an important source of cost savings, regulatory compliance, availability enhancements and competitive advantage.

This focus has consequently resulted in major developments and changes in business and operating models, with the trend being to un-bundle the operations into three distinct units:

- **The Asset owner** - sets the overall business goals and parameters for risk, cost and performance, and is responsible for meeting any regulatory legislation. The asset owner provides the operating guidelines for the Asset Manager, and ensures that an active service level agreement is available and tracked with the asset manager.
- **Asset Manager** - focus upon asset strategy and policy definition, risk management, investment and maintenance planning (not scheduling) and contract management. This approach enables the organisations decision-making to be driven by the needs of the asset. Decides how and where money is spent, and sets policies and procedures for service providers
- **Service Providers** - focuses on core skills of scheduling manpower to deliver programmes efficiently and effectively to meet defined service levels. It does NOT decide where or how to invest budgets.

By focusing on core competencies, T&D CEO's are

realising that the long-term viability of their company hinges on how to create further value from its complex and distributed asset base – which currently cost them billions of Euros per annum.

That is why they are introducing best practice asset management principles - linking strategy and values to key processes across the asset lifecycle, and balancing the trade-off between cost, performance and risk. Survivors in open markets will be those organisations that can demonstrate their ability to manage this, and prove it through greater financial performance.

Companies that have already started this un-bundling include: Yorkshire Electricity in the UK, Essent in the Netherlands, Endesa in Spain, Xcel Energy and Hydro One in North America.

2. STRATEGIC ASSET MANAGEMENT DEFINITION

Strategic asset management is about maximizing the performance of all assets that have a direct and significant impact on achieving corporate objectives. Network operators must have a clear understanding of all their capital assets, where they are located, and the impact they have on the business in order to plan capacity and manage grid availability & reliability, in cost effective and efficient ways. This complete approach to the lifecycle management of the critical assets will help make informed decisions to extend the assets' life, at the same time as enhancing system reliability and performance to ensure continuity of supply. And this must all be managed with the aim of maximizing asset return.

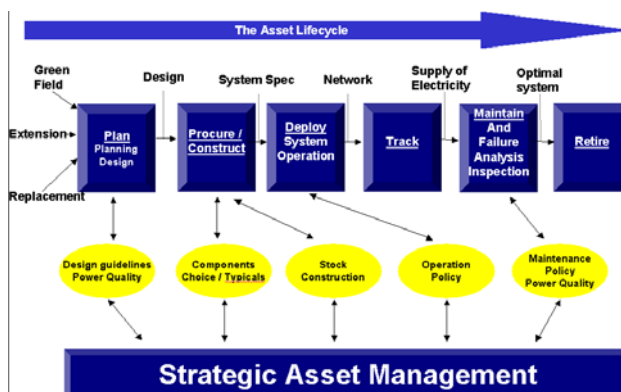


Figure 1 shows how asset management is covering all network policies and activities, forced by the business driver's demands.

In order to develop a strategic asset management policy it is important to understand the relationship between the different asset lifecycles, the network activities and processes.

Network management, and the resulting network policies, are determined by the Distribution company's strategy. Developments in the fields of innovation and R&D may also be taken into account. For different obvious reasons new technologies and methodologies must be considered after reviewing their contribution to the system's reliability and/or performance and especially looking at possible cost savings. Performance indicators on reliability, power quality, safety, etc. as well as failure analysis, condition assessment and monitoring, will continuously be reviewed in order to implement improvements on short notice.

In formulating the strategy the results of asset management studies play a decisive role. How can costs be reduced looking at the present ways of network design, maintenance, capacity planning, operations and at the performance levels? The assignment of the network operator is how to harmonize the business driver's demands with operating the network.

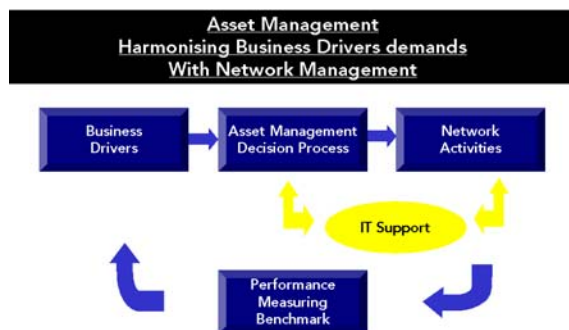


Figure 2: Asset management as the key to optimise the business of electricity transmission and distribution

As shown in figure 2, performance measuring and the use of benchmark data are important feedback mechanisms in order to continue the improvement cycle. Special attention has to be paid to the ICT support of network activities and processes.

3. THE APPROACH

Creating visibility of the critical assets and their associated supply chain, and consequently finding where the largest cost savings, risk reductions and performance improvements can be achieved, is undertaken with the following methodology, based on 5 key stages:

1. **Defining the Value Stream:** confirms which areas of the business are involved in generating revenues – the transmission and distribution of energy / services
2. **Connecting the asset to the value stream:** assesses the asset management priorities within the company – giving a clear view of the assets that are critical to the business generating revenues - the grid operations, power lines, distribution centres. The objective of the business must therefore be on managing effectively, and in greater priority, those assets that are directly linked to revenue.
3. **Connect Demand to the Asset:** – Once the priority of assets has been realised, the third stage connects the demand to the asset, ensuring continuity of supply. Reliability of the assets is key – and as this improves, costs go down, and consequently asset availability improves – providing greater revenue opportunities, and lowering the total cost of the asset.
4. **Connecting supply to demand:** focuses on the supply-chain to the asset. For every demand there is supply – whether labour, materials etc), and unmanaged supply is extremely costly (e.g. idle/unmanaged labour / excess inventory) – affecting the total cost of ownership of the asset – from acquisition to possession to retirement. This stage of the methodology prioritises supply activities around the critical assets – mitigating risk of unavailable and unreliable assets.
5. **Demand Supply Compression:** increasing the value adding content of all assets and supporting activities. This stage takes the data from the previous four stages and determines a strategy to move forward, based on expected ROI figures.

The information gathered and used in this methodology includes:

- costs of the different network activities (projects, maintenance, operations, etc)
- number of failures, costs involved, failure risks
- numbers of outages, outages locations
- reliability and power quality information of different network parts
- capacity reserves
- investments in relation to network planning
- design principles
- policies regarding replacements and renovations

The process of going through these stages will produce a clearly defined Strategic Asset Management plan - enabling T&D organizations to take charge of their critical assets, and view them from an enterprise level – rather than in isolation optimising asset performance across the organization. The data collected will provide a benchmark for future improvements, that will prove tangible financial results, as well as developing key performance indicators.

4. STRATEGIC ASSET MANAGEMENT IN PRACTICE

Companies, such as MRO Software have been serving Utility companies for many years – both on the generation and T&D side, and have been helping them to understand, through using the above methodology, where business operations can be optimised to give greater performance. The following 2 examples are major players in the International Transmission & Distribution market:

A leading UK Utility serving over 4 million customers, has undergone a major operational and cultural change, and now focuses on the asset centric model. This model enables them to break down its value chain, and introduces risk into the decision making process. By unbundling, and focusing on maintenance best practices, they are now acting as a completely different business, generating more value for its shareholders, customers and employees:

- Best in Class: 20% reduction in ‘customer minutes lost’
- 6% better than the UK National Average time (3 hours) for restoring customers’ supply
- Average 19% reduction in annual maintenance costs since 1995
- 20% reduction in unit asset renewals costs since 1995
- €75million (£50million) reduction in annual operating costs since 1993
- Average rate of return on assets is 14.5% per annum in last 5 years

South Africa’s national electricity utility has been using Strategic Asset Management within its distribution group. Since 1996 they have been utilising their workforce resources more effectively through the application of maintenance best practices. The SAM solution controls and takes care of their critical assets by optimising them through better management of resource management, capturing historical data and providing advanced decision making tools:

- 50% of work-orders are dispatched in less than 15 minutes, and 80% in less than 30 minutes

Strategic asset management is about gaining greater understanding of the assets, and priorities which are critical and which are not.

5. INFORMATION TECHNOLOGY CHANGES EVERYTHING

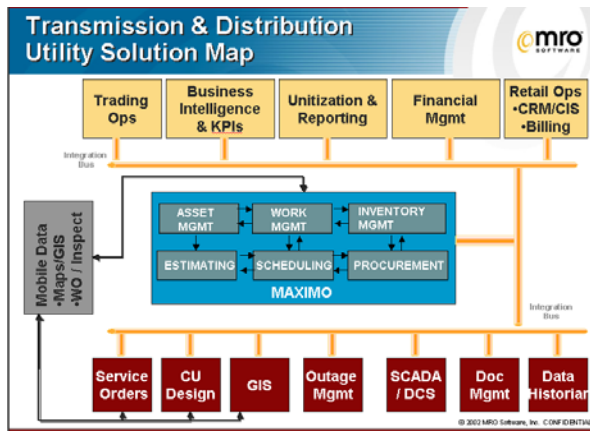
Open standards, protocols, and the advent of the internet have revolutionised the structure and the role of the corporate IT function – providing incredible scalability and flexibility to respond to changing business conditions. Rather than being constrained by proprietary suites, companies are now free to access – easily and affordably –

the best of the specific applications they need in the form of web services.

Web-services architecture enables plug and play application interoperability – providing true platform and vendor independence – making it possible for enterprises to update their applications as required, collaborate effortlessly and reduce their IT investment.

Today, most enterprise application portfolios remain integration resistant, cumbersome and costly to maintain. The day is coming, however when companies can drastically cut their investment in IT integration, while broadening the scope and the quality of available software.

Strategic asset management crosses organizational lines because most companies depend on a variety of assets — production, fleet, IT and facilities. Managing them is a challenge; it demands a comprehensive set of performance measures and an information system that promises both a unified analytical model and fast, easy interoperability with manufacturing, financial, HR and customer-facing systems. The system must also be affordable to implement and maintain, yet flexible enough to meet different user or business needs and be easily deployed enterprise wide.



Interfacing technical and business/financial systems needs a good vision of what data is required to provide key business process information: a strategic view is required. System integration that meets the requirement of all users using intelligence for an appropriate information exchange is expensive. However, the benefits to be gained regarding effectiveness and efficiency can be calculated and used for a cost/benefit analysis. IT standard for this process must be object oriented technology.

6: SUMMARY

The Utilities market is constantly changing, and with those changes is picking up challenges from open markets, greater competition, legislation, regulations, and health and safety requirements. With margins being squeezed, and

with the changing market conditions, Transmission and Distribution companies are increasingly looking at the Strategic Asset Management principles and methodologies outlined in this paper to drive better performance and financial stability through better maintenance practice.

With Analysts believing that millions can be saved from operations by better asset management practices, Strategic Asset Management – the methodology and practices outlined in this paper are contributing straight to the bottom line.