



Utility Decision-Making for “Smart” Investments

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SUMMARY:

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This paper is a follow up to the 3rd Annual Smart Grids Summit held in Stockholm in January 2012.

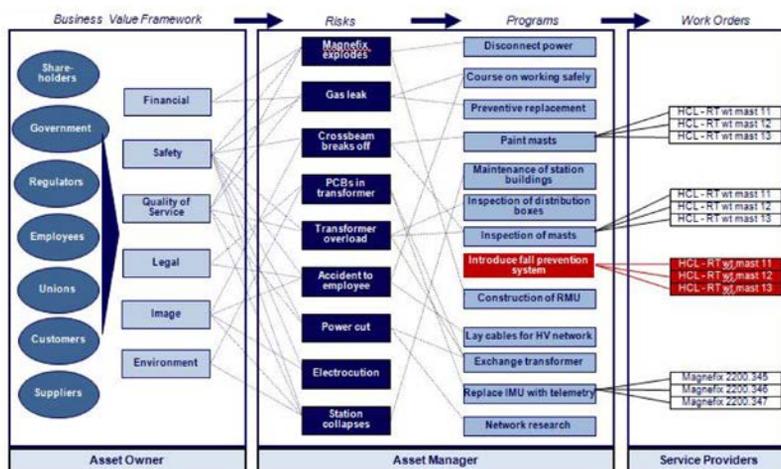
The Summit brought together Europe's leading electricity grid distribution specialists, investors and regulators to share insights on the Smart Grid. Over 120 senior managers from leading European distribution companies like E.On, Vattenfall, RWE, Enexis, Alliander, Dong, ESB, EDP, and ERDF participated in the Summit.

As our work helping clients implement and improve their Asset Management functions, as well as optimizing their investment portfolios keeps us busy, we do not often attend conferences. However, we were curious to find out how utilities were making their smart investment decisions, so we decided to attend and discuss this issue with the utility participants. This paper is a summary of our findings.

INTRODUCTION

OUR VIEW ON "SMART" INVESTMENTS

Our overarching philosophy on utility investment is that the investment portfolio should be strongly linked to the company's strategy, which should in turn be driven by an understanding of stakeholders' needs. By balancing the competing needs of different stakeholders and understanding the critical success factors in meeting those needs, utilities can determine how to prioritize investment across business values. Investments that positively impact these business values can be identified, the risks to them can be assessed, and solutions can be developed to mitigate these risks.



This methodology produces a list of potential investment opportunities that are linked to the company's strategy. However, utilities typically face either funding or resource constraints which limit their ability to invest. As not all projects in a portfolio can be undertaken in a given time period, some must be deferred. Therefore, a means of optimizing the portfolio is needed to ensure that the value of these limited resources is maximized and a consistent set of evaluation criteria is needed to enable selection of the best possible combination of programs in the portfolio.

We wanted to research whether or not investments in smart metering and smart grids were being evaluated in the same manner as "ordinary" investments like asset replacement, reconstruction or maintenance. To determine current practice in this area, we attended a Smart Grid conference in Stockholm, Sweden where we found a large group of industry experts focused on smart technology. In one-on-one conversations, panel discussions and during an interactive session after our presentation, we questioned current investment decision-making practices by asking:

- Which stakeholders are driving the smart investments and what are their critical success factors?

- What does the business case look like and what are the relevant evaluation criteria?
- What do your customers think of these new technologies?

WHO DRIVES THE "SMART" INVESTMENTS?

Although it's a simple question, providing a simple answer proved difficult for many of the conference participants. A number of initial responses were that the regulator or the government wanted the utility to make the investment. Further discussion made it clear that from a long term perspective, the regulator and government want to see the industry move to a smarter grid. However, in the short term they are often not willing to fund the level of investment needed to accomplish this objective. In fact, the key message from these stakeholders is to wait until other factors (e.g., standards, security, smart appliances) are in place and until markets are ready to utilize the new capabilities they will unleash. So if these stakeholders are not the driving force for smart investment, who is? Based on our discussions with conference attendees, it appears that most utilities have unilaterally decided that smart investments will benefit stakeholders, so they are going to pursue them. We heard comments like, "We know what is good for customers," and "You can't expect stakeholders like customers to understand what smart investments are and what the impact will be; however, in the end everyone will benefit." These discussions appeared to indicate that the drivers behind the smart

investments aren't the stakeholders, but the utilities themselves.



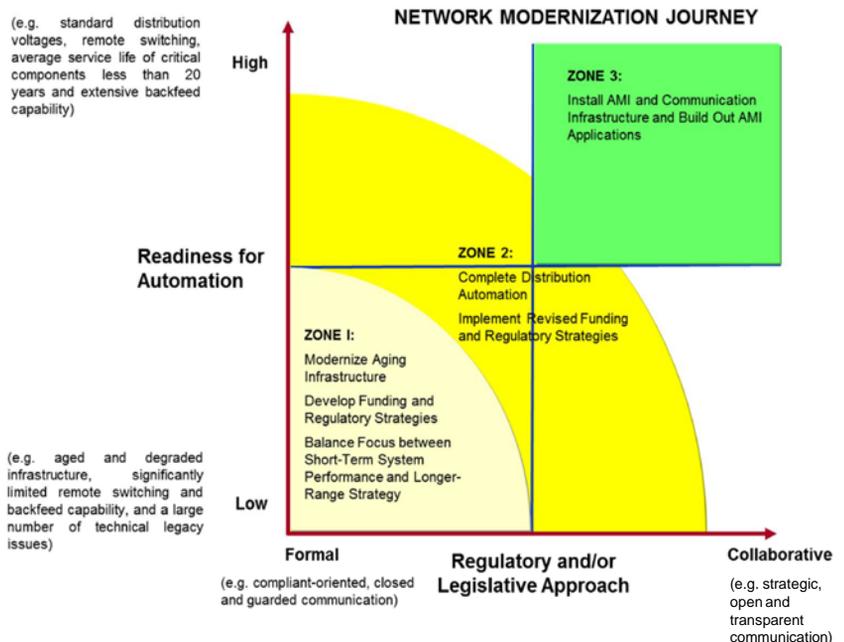
WHAT'S THE BUSINESS CASE FOR THESE SMART INVESTMENTS?

The second question we asked was in regard to the business case behind these smart investments. We would expect that utilities interested in the smart grid would have a long-term smart grid strategy derived from the company's overall strategy.

Based on this strategy, a plan would be developed with a sequence where certain phases of the plan would be funded annually and implemented over a multiyear time frame. Given the size of the investment required, we would expect a thorough business case to have been developed articulating the expected return on the investment.

Development of a business case is common practice for grid planning investments. In fact, investments generally need to have a positive economic impact or else the request for funding will not even be considered. We wanted to determine if the business case behind smart meter and other smart grid initiatives followed these standards.

The response to the question from the industry participants at the conference surprised us, as while some had developed a business case, none had a positive



positive economic impact. They explained that since the business case was for a grid company, it did not include the supplier benefits which they believed would lead to positive overall economic benefits. They were basing their investment decision on the belief that in the long-term there would be a net positive benefit and it seemed like a “smart” investment. This raised the question of how an investment scored on an intuitive basis could be compared against traditional investment, which all have in-depth analyses and positive business cases? The silence and lack of a response to this question indicated that companies are moving ahead with these projects on an ad hoc basis rather than through a formal optimization process.

AND WHAT ABOUT THE CUSTOMER?

Our third question was intended to provide insight into what utilities thought their customers’ views on smart investments were. The specific questions we asked included: What is the opinion of the end user regarding smart investments? Is the customer aware of the need for the investments? Do customers understand the impact of the investment on reliability and quality of service? Are customers calling and asking when they will get this new functionality? Do customers understand the impact on rates and are they willing to support higher grid tariffs? We found that no one had asked the opinion of the customer. The general view was that it is the utility’s job to decide when new technologies are needed and to act in what it perceives to be the



best interest of the end user. This viewpoint is emblematic of the utility industry’s strongly inward-focused culture where interaction with customers is frowned upon. However, as has been seen in a number of smart grid projects, failure to fully engage customers up front can lead to a lot of heartburn for utilities down the road.



UMS GROUP OPINION REGARDING “SMART INVESTMENTS”

At UMS Group we prefer to use the term grid modernization rather than “smart grid” as we feel it is a more precise term with a scope that runs from the source of supply to the customer premise.

The transition of generation from centralized fossil-fueled power production to decentralized, renewable power production will have major impacts on the grid, which will need to be re-designed to meet new capacity expectations and to handle two-way transmission and distribution of energy flows. Furthermore, grid companies have increasing numbers of aging assets that need to be refurbished or replaced.

In addition, we believe that the transition to a smart grid will run into problems with an outdated infrastructure that requires significant modernization. Many grids have a startling shortage of “automation-ready” elements (e.g., radio-controlled reclosers, remote-operated switches, smart relays, expanded telecommunications bandwidth, and added margins for automatic load shifts) that will be required before the benefits of smart investments can be realized system-wide. Compounding the situation is the realization that the estimated costs associated with addressing the technical legacy issues far exceed estimates for customer premise automation.

Based on the high level survey we

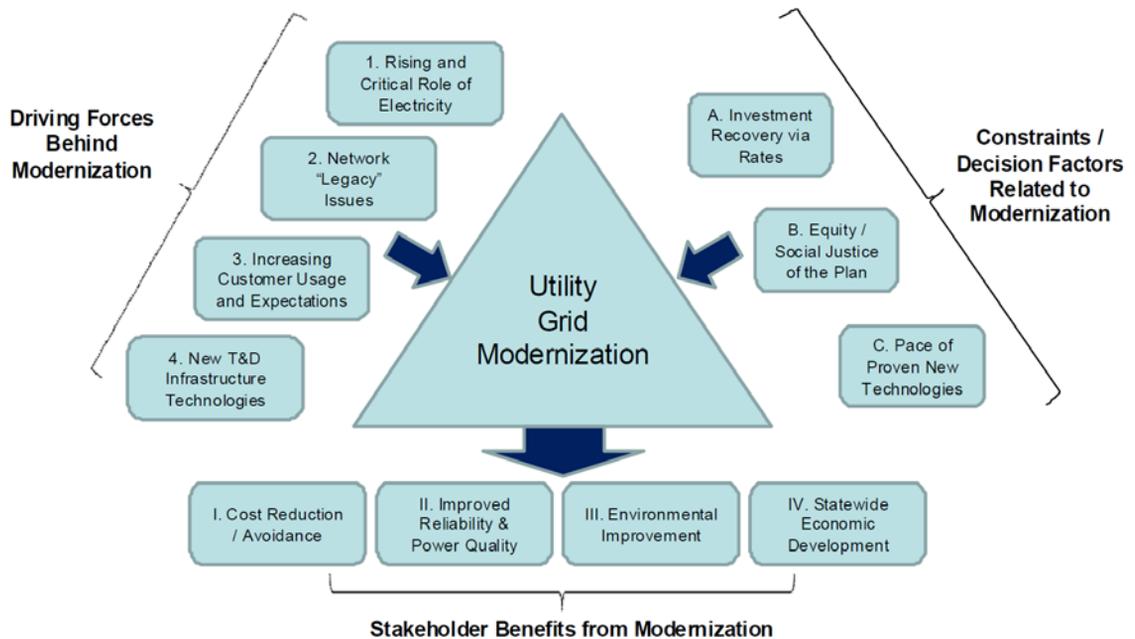
conducted at the conference, we believe there is a need for an independent opinion regarding the business case for grid modernization investments. In response, we have developed a holistic model which can be used to determine all relevant parameters for the evaluation of grid modernization investment business cases, including the calculation of costs and benefits.

These factors include not only the economic constraints normally associated with grid investment, but also the maturity of available technologies and the general “fairness” of the plan.

Undertaking a comprehensive review of the driving forces and constraints involved allows utilities to develop an optimal grid modernization strategy.

funding, aggregate the costs and benefits at the enterprise level, and translate the resulting plan in terms easily understood by all stakeholders.

For more information on our approach to grid modernization, investment optimization, or the business case behind “smart meters” and “smart grids” please contact us at: info@umsgroup.com



This model starts with the understanding that there are numerous internal and external forces that have established a compelling need for modernization. Understanding these forces is foundational to understanding why modernization is a vital topic for a utility, its customers, and all its stakeholders. Similarly, the sequence, pace, and approach of any modernization program should and will be governed by numerous decision factors.

In addition, understanding the various drivers and tradeoffs involved aids in communicating across the universe of stakeholders, capturing and translating technical benefits into terms easily understood by all parties, and supporting the integration of the broader grid strategy with the current operational planning process.

By developing an integrated network modernization strategy, utilities can develop a portfolio of all the investments requiring