Management Of Big Data To Drive Utility Transformation, Pt. II

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Meet the Author:

An IEEE Fellow, electricity industry visionary, and leader, Dr. Mani Vadari delivers strategic services to a global set of utilities, vendors, and service providers seeking deep subject matter expertise in setting the business and technical direction to develop the next-generation electric/energy system. As a Business Architect, Dr. Vadari has been delivering solutions focusing on Transmission/ Distribution/ generation operations, Energy markets, and Smart Grid for over 35 years. In addition, he is an Adjunct Professor at Washington State University and an Affiliate Professor at the University of Washington. He has published two popular books, "Smart Grid Redefined: Transformation of the Electric Utility" and "Electric System Operations – Evolving to the Modern Grid, 2nd Edition", in addition to over a hundred industry papers, articles, and blogs. His books are serving as textbooks at several universities in the US and around the world

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New technologies are flowing into utilities at unprecedented rates in a variety of different ways. Utilities are just beginning to start taking advantage of big data and analytics to drive insight to improve their own operations, provide better service to customers and deliver improved returns to shareholders.

Each area of grid modernization is distinct and challenging in itself. The combination of solutions has incredible potential but to deliver real value, but it must also be supported by a combination of business process changes and change management. Looking at it totality, also allows the utility to prioritize their investments both from answering the question

- *WHAT – technological changes to make*
- *WHERE – to make them and*
- *HOW MUCH – to spend on it? Let us look at some examples*

Asset Management

Technologies like electric vehicles and solar PV are putting hither to unknown amounts of increased stresses on the system by utilizing it in very different ways. Utilities are adding new sensors to get a better view into how these components are being used and new systems like DMS and DEMS to operate the systems, all resulting in a tremendous amount of new data that is coming into the utility all of which contains a lot of insight. A good asset manager needs to be able to tap into this information and the operational insight to drive new value out of the asset management processes specifically focused on asset health and its impact on maintenance schedules and priorities.

Improved Outage Management and Restoration

Outages will happen but now we have sensors like smart meters which tell where they are and who is affected. Systems like OMS and DMS will allow us to understand the extent of the outage and the controls available to reroute power quickly. Distributed energy sources can allow us to identify new sources of supply that can be commandeered during storm conditions and the analysis of the data can allow us to plan systems and assets in such a way that we can reduce the outages the next time around.

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Improved Customer Service

Utility customer service for the most part was about customer billing. Now, for the first time, utilities have access to data (in this case mostly smart meter data) that can give them a tremendous amount of insight on customer use of energy. Proper analysis of this data can provide insight both for better customer service but also better rate design in the future.

Utility transformation cannot happen without technology infusion of the right kind – but at the same time, technology infusion alone cannot deliver value without the utility transforming itself. For this to happen in an effective manner, IT and OT will need to work together – meaning the CIO needs to work effectively and closely with the business leads across traditional silos and the regulator also has a role to play in this. Focusing on transformation will result in better operations at the utility and improved service beyond what can be achieved through technology alone.

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