Data Management for Resilience

A comprehensive Schneider Electric "Guide to Grid Data Management" completed this month includes insights on resilience, microgrids, and more. This article (published on MicrogridKnowledge.com in October 2021) summarizes the guide, which will become publicly available soon.

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Data Management is Power

We've all heard that "information is power." But today, simply having information isn't enough. It's how you manage the information that counts. Hence, today's version of this old adage is: "data management is power."

What can data management do for utilities and utility customers? In the electric power industry, the list of data management benefits is long and distinguished. It includes enhanced reliability, security, customer satisfaction, asset management, sustainability, and more. But have you considered how data management can enhance resilience?

Enhancing the resilience of the electric power infrastructure is top of mind for almost everyone in the industry these days, given the impacts of wildfires in the western U.S., winter weather in Texas, and multiple, severe storms in the eastern and southern U.S. There are many different ways to enhance resilience to these extreme events. Is data management a good way to do this? How does data management compare with other resilience strategies?
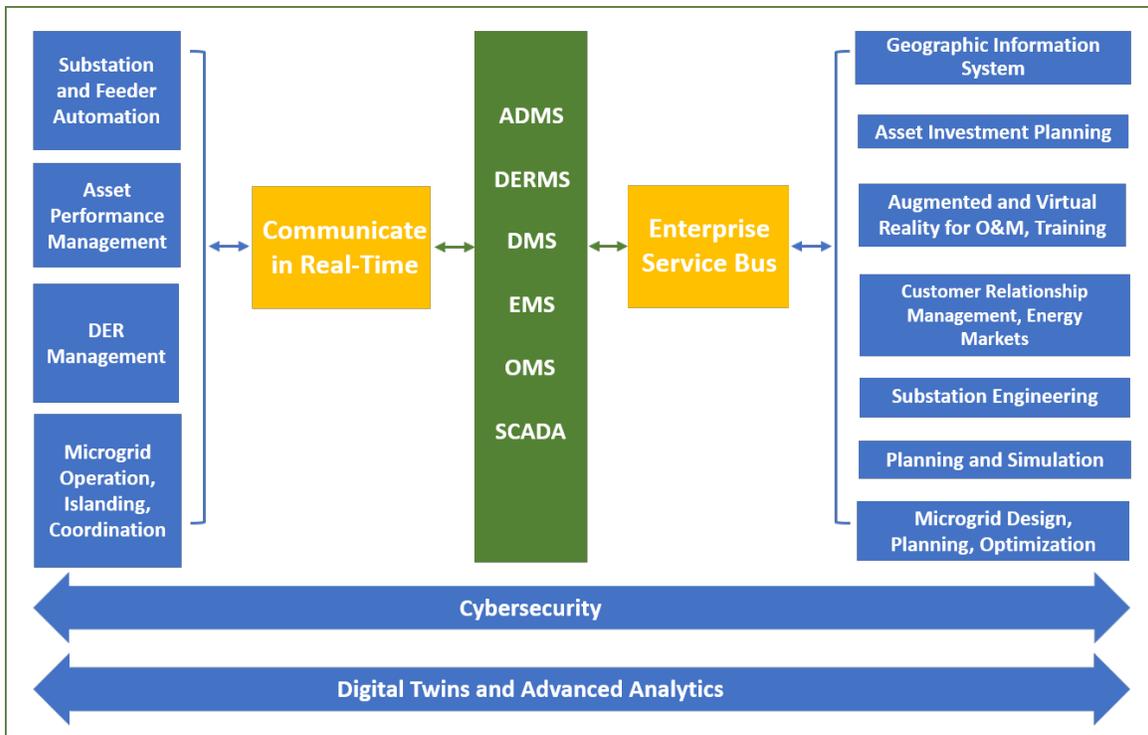
Schneider Electric's "Guide to Grid Data Management" shows how the distribution utility use cases for data management fit together

The Resilience Benefit from Data Management

The answer is that data management, if implemented effectively, can be an excellent way to enhance the resilience of the electric power infrastructure, benefiting utilities, utility customers, and society. One reason is that many traditional ways to harden the electric power infrastructure are asset intensive. Selective undergrounding of distribution lines, elevating coastal substations, and optimized vegetation management of rights-of-way, for example, are useful resilience solutions, but they're expensive.

Conversely, data management involves using data that utilities have already gathered. The data resides on utility servers – ripe for consumption. The data originates from smart meters, field devices, distributed resources, and a growing list of other sources. Some of the data is real-time, it's plentiful, and it's becoming more granular.

While the data itself is readily available (though sometimes siloed), the data management function can be complex. The vast size of each utility's database, while a goldmine in itself, presents its own set of challenges. How do utilities effectively mine it for the nuggets of information they need?

Developed with the support of Hoffman Power Consulting, a recently-completed "Guide to Value-Driven Grid Data Management" calls this "searching for a needle of 'truth' in a data haystack."
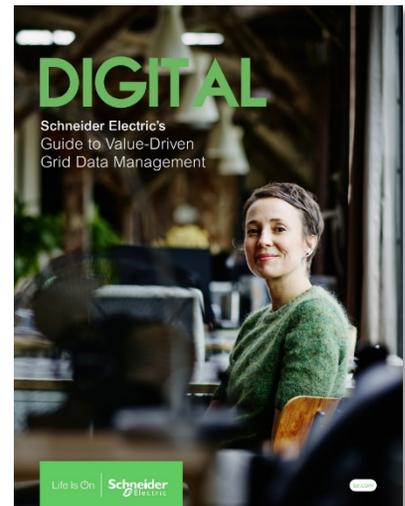
Data Management as a Digital Dividing Line

Nevertheless, the Schneider Electric guide emphasizes the importance of data management to enhance resilience, explaining that data management is a "dividing line between distribution utilities that generate value, and utilities that fail to realize this value." The report describes a "digital division" between "utilities that seek business and operational resilience for a strong future, versus cautious utilities that may incur significant risks through inaction."

More specifically, the Schneider Electric guide describes how improved data management can "accelerate service restoration in an outage or severe event" via more accurate data and use of augmented reality. Via more granular data in an advanced distribution management system (ADMS), data management can help "orchestrate and coordinate distributed energy resources to benefit customers...improving resilience." The report also explains how data management in demand-side management "helps ride-through system instability during extreme events and supports use of microgrids." Data management also helps "improve resilience...via enhance visibility and improved analysis and control" of the network.

Via nine in-depth use cases, the guide describes how data management practices can "enhance distribution utility planning, design, analysis, construction, operations, maintenance, training, and demand-side management." The report highlights Schneider Electric's vision for evolving digital twins, and explains how emerging advanced data analytics are building on the foundation of data management. The guide concludes with a recommended data-backed strategy for distribution utilities.

Comments Welcome

What do you think of these thoughts on data management? [Hoffman Power Consulting](#) welcomes your feedback.