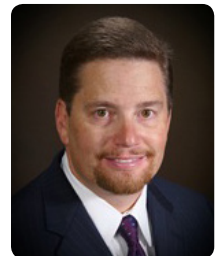


Mapping Out the Best Uses for Energy Networks



> GEOSPATIAL SYSTEMS MOVE FROM THE BACK OFFICE TO THE FRONT OFFICE AS UTILITIES STRIVE TO MAXIMIZE THE RETURN ON THEIR NETWORK ASSETS // BY BRYAN FRIEHAUF

INTRODUCTION: THE INTEGRATION CHALLENGE AND OPPORTUNITY

Through the years, utilities have amassed an array of network assets that are supported by a series of autonomous systems run by various business units. The end result is a great deal of duplication and inefficiency. In an effort

to optimize business operations in a more cohesive and productive manner, utilities have been trying to bring the network assets together.

To make this transition, energy providers need to designate one solution as the central information hub. An application

that acts as the central coordinator for all department tasks is required. A geospatial system best meets this need because it is used in some capacity by every department in the organization. Consequently, geospatial solutions have been moving from the back office to the front office as well as into the field. Once geospatial

systems become the Corporate System of Record, utilities will be able to streamline business processes, boost productivity, and provide better service to customers.

DATA SILOS RULE THE DAY

The smart grid has evolved, resulting in utilities collecting more data than ever before, with the volume promising to increase dramatically in the coming years. Often, this data is generated by applications run by business units, so data collection occurs in an ad hoc manner. The installation group generates network configuration data, the maintenance department monitors service areas, and the finance department manages the cost of network assets.

As departments capture critical business process information, only a limited group is able to access it. Managers can see fragments of the operation but are challenged to access all necessary information in order to improve efficiency and effectiveness.

Dealing with Data Dispersion

Right now, data is housed in a scattered manner. Departments develop their own iterations of the information. Network information is used largely by the engineering and maintenance departments, which rely on the information on a daily basis. Other business units deploy applications that manipulate small pieces of network information. Furthermore, utilities rely on public data sources for network information. The end result — network data is scattered throughout the organization and managers have pieces of data rather than a complete picture of business operations.

A Lack of Integration

Energy providers generate many datasets in large complex systems. Since these applications were not designed to interoperate, these solutions act as information silos. Information is quarantined locally rather than being available throughout the enterprise. Breaking down these barriers is often a complex, expensive process.

Business Inefficiencies

Energy has become an information-based industry. Business processes revolve around data accessibility. Since information does not freely move throughout the company, workflows are designed in small groups. The result is duplication and a reliance on manual procedures. Employees spend a lot of time inputting information, work often entails consolidating redundant information, few business processes are automated, decision making is delayed, and enterprise productivity is drained.

An Elusive ROI

As utilities have rolled out their smart grid projects, spending on network infrastructure increased significantly. Many building blocks are now in place, so energy providers want to enhance network manageability and reap a greater return on their investment. Reaching this goal is cumbersome because utilities cannot easily draw a comprehensive picture of network performance. To do so, utilities need a cohesive, consistent view of their network.

THE DAWNING OF A NEW AGE

Now, companies stand at the edge of change. New central geospatial systems are emerging that consolidate information, enhance communications, and streamline business processes. These solutions break down traditional barriers and enable energy providers to work with common information in a simple and consistent manner.

Geospatial systems were once understood only by engineering and maintenance teams, but this has recently changed. Led by various technology companies, the consumerization of mapping systems has significantly expanded its reach. As the geospatial system interface has improved, data input and manipulation has become simpler. More employees use the systems and understand its capabilities.

Management also realizes the power of geospatial systems, which provide a common visual language that all departments speak. Employees now have a tool to take network financial data from the financial team and couple it with installation data from the maintenance crew.

As a result, geospatial solutions now act as data hubs, marshalling and homogenizing information from disparate sources. Consequently, data is no longer siloed in various departments. Instead geospatial visualization tools tie different data sources together, allowing managers and employees to gain fuller, richer pictures of network assets. Employees see connections that were not previously evident. As a result, energy providers are



much better positioned to deliver strong ROI on network assets.

Leading utilities are building on this foundation. Rather than one autonomous system, their core systems consist of a comprehensive portfolio of solutions that support many critical processes for either electric or gas companies. These solutions are used in the planning, design, building, operating, and maintenance departments and support numerous functions, including:

Strategic Planning

Networks are ever changing. Geospatial information helps planners map out network expansion and forecast current and future demand. Armed with connections to other department applications, managers are able not only to understand where additional investments are required, but also find ways to justify those purchases. This capability is especially important when a utility is considering large, complex, expensive network upgrades.

Network Planning

Networks have been expanding. First, planners must understand the workings of their underground and overhead network assets. Then they must be able to determine how these systems will interact with any new construction. Finally, employees must account for other networks and public facilities.

Network Design

Today, utilities have many options for building out their networks. Geospatial data is essential for designers to understand the lay of the land. By combining

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geospatial information with current network configurations, designers quickly lay out possible solutions for any new service request. In addition, they can examine current configuration and identify ways to reduce capital or maintenance costs.

Network Build

Many departments play a role in adding to a network. Construction crews need accurate engineering maps of the planned assets. Supervisors need to provide information in job packs issued to work crews, who take that data and turn the plan into action.

Network Service Extensibility

The whole is greater than the sum of its parts. Geospatial solutions make network models available to other operational systems: Energy Management System (EMS), Distribution Management System (DMS), Outage Management System (OMS), and Demand Response Management System (DRMS). The geospatial model is the foundation for the processes of network design, as it helps construction and maintenance teams, energizes Advanced Distribution Management System (ADMS) teams, and becomes the starting point for managing outages.

Rather than work with small pieces of the picture, utilities access all systems and operate efficiently and effectively.

EXPERIENCE: THE BEST TEACHER

Utilities would benefit from working with a supplier with extensive experience as well as a broad robust product line. The products must have a sound technical foundation, one that is scalable and easy to use. More importantly, their supplier needs to take the geospatial system and tailor it to the utility industry. The supplier's solutions do not touch upon select departments, such as the maintenance office or financial services; but rather, the portfolio extends to every area of the enterprise. So no matter what view of the network data the user needs, the solution provides it.

Experience is also key. Deploying and maintaining an energy network is a complex process, one that requires decades of experience to understand fully. The supplier needs to have deployed solutions among the world's large and small energy providers. By working closely with energy firms, the supplier identifies their pain points and develops solutions that address them. Some suppliers have the strong technical foundation; others have developed utility-specific applications; a few have been in the market for a several

years; but only the leading suppliers possess all of these capabilities.

REAPING THE POTENTIAL BENEFITS

New geospatial solutions deliver many benefits. Today, geospatial systems assist utilities in realizing greater reliability, improved productivity, and greater efficiency. Geospatial solutions streamline business processes, enhance customer service, and maximize investors' return. Customers have realized many tangible benefits:

- 30% reduction in integration costs between GIS, DMS and OMS
- 50% reduction in data synchronization errors
- 10% reduction in customer outage time

CONCLUSION: THE TIME AND MEANS HAVE COME TO CONSOLIDATE NETWORK INFORMATION

In today's increasingly complex world, utilities face many challenges. Deregulation is taking hold; renewable energy sources play an increasingly important role in energy delivery; customer demands steadily increase; and technology advances at a rapid pace. To meet their mission statements, energy providers need to maximize investments in their network, the core of their business. Utilities must view it as an integrated whole, not a series of autonomous pieces. In response, geospatial systems are becoming the foundation for a new generation of operations, one where managers access updated information, business processes run smoothly, customers are well served, and the business flourishes.

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What GE's Digital Energy Business Delivers

GE's Digital Energy business is a major solutions provider and thought leader in the effort to modernize and optimize how utilities generate, move and consume energy. The company's global team of more than 4,000 employees are inventing, improving and integrating communications, automation, and power delivery technologies to give the century-old electric infrastructure new capabilities, unheard of just a generation ago.

From deploying solutions that enable consumers to understand and manage energy usage, to championing leading-edge technologies that make clean, renewable energy an everyday reality, GE's Digital Energy business is delivering the breakthroughs that will power our planet for the next hundred years. Its executives are leading the charge, serving on standards boards, industry task forces and government advisory committees, sharing their unmatched experience and expertise to help overcome the capacity and environmental challenges of an increasingly electrified world. They are building intelligent devices that protect, monitor, control and automate the grid, and visualization software that optimizes the grid. They provide products and services from the power plant to the end power consumer (commercial, industrial and residential). When evaluating geospatial systems for your business, the industry focused solution set provided by GE's Digital Energy business is the best place to start.