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THE POWER TO KNOW®

■ **Business Impact**

"SAS Visual Analytics helps business users to visually explore data on their own. But it goes well beyond traditional query and reporting. Its high-performance in-memory architecture delivers answers in seconds or minutes instead of hours or days."

Jim Goodnight
CEO, SAS

■ **Challenges**

- **Complicated systems.** Current systems are difficult to use, and analysts can't easily explore and understand data without first going through extensive data profiling exercises.

- **Trial and error.** There's no way to quickly identify and explore visual patterns in data, and because even basic data exploration takes so long, analysts often resort to trial and error to identify areas to analyze further.

- **Data volume and complexity.** Due to the volume and complexity of sensor and smart grid data, it takes a lot of time to understand and process information, which results in delays in reporting or information sharing.

- **Limited IT infrastructure.** Limitations in the current infrastructure prevent analysts from accessing the huge amounts of data they need for analytic purposes.

- **Lack of information sharing.** Not only is it difficult to generate reports that are meaningful and useful, but even when such reports exist, it's hard to get them into the hands of those who could use them.

How can we visually explore *all* our data assets and make analytical insights available to a broader class of users?

YOUR GOAL: Easily analyze and visualize data sets of any size

Asset health is a critical factor in mitigating outages and meeting performance requirements for minimal system interruptions. Unplanned downtime can mean a significant loss of revenue and potential brand damage. As utilities put asset sensors on more and more devices – from transformers to communication boxes to smart meters – the sheer complexity that results from the growing volumes of sensor data makes this additional data increasingly hard to manage, much less analyze. While sensor data anomalies may indicate a problem, that's only useful if you can isolate where the problem occurred and correlate that event with other non-sensor variables, such as weather and line sensor signals. Additionally, the cause of underperforming assets may not be evident unless the information is analyzed in comparison with network-wide data tabulated across multiple systems each night.

Sensors can also help utilities detect fraud or collusion. This is critical, as every day that fraud goes undetected is another day that revenues might not be collected for services provided. By combining smart meter data with enhanced line sensors, utilities can engage in tighter tracking of power delivery – from the point of distribution all the way to the home or business. However, in order to detect fraud or collusion, utilities must have a comprehensive understanding of a customer's behavior as well as associated drivers (weather, special events, seasonal use of property, etc.).

OUR APPROACH

Using SAS Visual Analytics, utilities of any size can get lightning-fast insights through visual data exploration, robust reporting and flexible information sharing. SAS Visual Analytics broadens the use of sophisticated analytics, enabling everyone – from non-technical business users to advanced analysts – to:

- **Visually explore all available data – no subsetting or sampling required** – to look at more options, identify key relationships, make more precise decisions and drive success faster than ever before.

- **Answer complex questions faster, and quickly identify opportunities or concerns** using an enhanced data discovery and exploration process that provides extremely fast results to enable better, more focused analysis.

- **Create and share meaningful reports** with anyone anywhere by enabling even those with limited technical skills to quickly produce, view and interact with reports via the Web or mobile devices, while IT maintains control of the underlying data and security.

- **Liberate IT** by enabling analysts to dynamically explore data, add data from local sources, create reports and share information on their own, once IT loads the data and makes it available.

SAS Visual Analytics also gives you room to grow, with an infrastructure based on highly scalable commodity hardware that supports increasing demands for access to more and more data.

THE SAS® DIFFERENCE: Advanced analytics, visual data exploration and easy sharing of insights

SAS Visual Analytics combines our industry-leading business analytics software with high-performance technologies, so you can get fast answers to previously unsolvable problems. Only SAS delivers a market-leading approach that extends the power of high-end analytics to a wider array of users. With SAS, you get:

- **A scalable, in-memory solution for visually exploring data on commodity hardware.** Designed from the ground up to perform high-speed analytical calculations in memory, SAS Visual Analytics goes far beyond traditional query and reporting capabilities, providing the unprecedented ability to visually explore data sets of any size quickly and efficiently, glean insights, and create meaningful reports that can be shared easily via mobile devices.

- **More approachable analytics.** Anyone in your organization can use the solution, thanks to unique features – such as on-the-fly forecasting, autocharting, "what does it mean" and drag-and-drop capabilities – that make it easy to use, even by those with nontechnical or limited analytic backgrounds.

- **In-memory technology that provides larger volumes of analytic computations and guided analyses.** SAS has combined the sophistication of visual data exploration with in-memory analytic computations so that large numbers of users can understand and benefit from complex data.

- **The ability to perform descriptive analytics in memory without having to develop SQL code.** Out-of-the-box capabilities make it easy to explore and seek correlations among extremely large numbers of variables very quickly.

SAS enables you to take advantage of a highly scalable and reliable infrastructure that is optimized for any size data set and complex computations – even as your requirements evolve to tackle larger problems and more complex scenarios.

SAS® VISUAL ANALYTICS IN UTILITIES

■ Asset intelligence

SAS Visual Analytics enables utilities to assess the state of their assets on the grid by geospatially visualizing their asset inventory, the health of their assets and key performance indicators (SAIDI). Operations staff can quickly isolate where problems occur and correlate that information with non-sensor variables (e.g., weather) to gain a greater understanding of the nature of the problem. In addition, operations staff can visually identify relationships between variables that may indicate declining asset performance, and correlate SAIDI and other operational performance indicators to uncover opportunities for improvement.

■ Fraud/theft detection

SAS Visual Analytics enables the visual tracking of power delivery – from the point of distribution all the way to the home or business – using smart meter data combined with enhanced line sensors. By analyzing this information in conjunction with information on customer behavior and associated drivers (weather, special events, seasonal use of property, etc.), utilities can identify potential fraud or collusion quickly, so measures can be taken to stop it.

■ What if you could …

Visually explore all available data
What if you could derive meaning from large collections of sensor and smart grid data – visually and in seconds?

Quickly identify opportunities or areas for concern
What if you could visualize correlations in usage data to identify fraud or collusion?

Easily create and share meaningful reports
What if analysts out in the field could get answers to urgent queries back from their mobile devices in seconds?

Liberate IT
What if you could visually explore large quantities of smart grid and asset sensor data without the need to involve technical specialists?

■ You can. SAS gives you The Power to Know®… by visualizing your data.

SAS FACTS

- SAS has been in business since 1976 and today has customers at more than 60,000 sites worldwide.

- SAS works with more than 500 energy customers worldwide, including 160 North American investor-owned utilities.

- SAS was honored for analytics innovation by KMWorld, which named SAS as one of the 100 Companies That Matter in Knowledge Management.

Learn more about SAS software and services for utilities at: sas.com/industry/utilities

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