



# **Next Vision, Next Game-Change, NextAxiom**

**SAIC Smart Grid-as-a-Service Case Study:**  
NextAxiom Intelligent Information Flow Platform





### **The Smart Grid Vision: 21st Century Utility Industry Transformation**

*Forward-thinkers in the electricity industry have unified around the 21st century vision of the ‘smart grid’—an intelligent, IT-advantaged approach to power delivery and power markets. Over the long term, the smart grid vision seeks to transform the utility industry by making it more customer-interactive, more self-healing (in the event of a power disruption), and more defensible in the event of a cyber-attack or natural disaster.*

### **The Smart Grid Vision**

In the near term, the smart grid vision is focused on:

**IT & Energy Operations Convergence:** Baked into the smart grid vision is the notion of Advanced Metering Infrastructure (AMI), also referred to as ‘smart meters’. Smart meters, unlike legacy meters, enable always-on 2-way interactivity between utilities and their customers. Smart meters enable improved operations, labor savings, and enhanced visibility into energy consumption.

**Consumer Participation & Empowerment:** The smart grid vision also speaks directly to the issue of empowering consumers to participate directly in the future success of the grid through more intelligent and cost-effective consumption of electric power, as well as to profitably make their own renewable energy (e.g. home based solar) available for resale by the utility industry.

**New Market Emergence:** While IT/operations convergence and expanded customer empowerment are outstanding benefits in and of themselves, the smart grid vision goes further—enabling new energy-related markets to emerge. For example, with a smart grid foundation in place, a new generation of ‘smart appliances’ are on the horizon, as well as consumer self-directed ‘smart home’ management services. Additionally, the smart grid vision will accelerate adoption of green renewable energy (solar, wind), as well as greener battery-powered vehicles.

**Improved Security & Reliability:** In the post-9/11 world, critical infrastructure like electric utilities are now perceived as potential targets for both physical and cyber-attack—and can benefit from the improved security and system reliability baked into the smart grid vision. Additionally, when outages do occur, the system as a whole is more reliable and self-healing—while providing utilities and consumers with near-real-time visibility into events occurring on the grid.



*“Smart grid-as-a-service will deliver the immediate advantage of on-demand meter reads, improved operational efficiency, as well as reduced energy cost, and will support critical energy management decisions throughout the remote regions of Alaska.”*

*- Assistant Vice President of Smart Grid, Steve Root, SAIC*

For large, well-capitalized utilities, smart grid experimental pilots and field deployments have been underway for some time. But for many utilities, the large capital investments necessary to deliver on the promise of the smart grid have become prohibitive, especially against the background of a challenged economy. This economic speed bump can really slow down smart grid adoption. Technology innovator SAIC has creatively addressed this through their game-changing Smart Grid-as-a-Service offering.

### **SAIC Smart Grid-as-a-Service: Changing the Game in Smart Grid Adoption**

SAIC is a FORTUNE 500® scientific, engineering, and technology applications company that uses its deep domain knowledge to solve problems of vital importance to the nation and the world, in national security, energy & environment, health and cybersecurity. The company’s approximately 41,000 employees serve customers in the U.S. Department of Defense, the intelligence community, the U.S. Department of Homeland Security, other U.S. Government civil agencies and selected commercial markets. Headquartered in McLean, Va., SAIC had annual revenues of approximately \$10.6 billion for its fiscal year ended January 31, 2012.

Within the smart grid industry, SAIC has emerged as a first mover and first prover in delivering cloud-advantaged Smart Grid-as-a-Service or SGS. SAIC’s SGS offering was designed from the ground up to remove smart grid barriers to adoption for local utilities. How? By providing a modular, customizable, affordable subscription service that enables utility management to focus on their core business of energy operations—not the complexity of IT systems development and integration that goes hand in hand with smart grid enablement.

SAIC’s SGS also enables local utilities to leapfrog beyond the pilot phase of smart grid experimentation, and move confidently into a smart grid future with total ROI clarity and zero obsolescence. Additionally, SAIC’s SGS offering, while leveraging the systems best practices and scale economics of large utilities, is not tied to any one infrastructure vendor roadmap—making SGS a true game changer in the smart grid market.

SAIC’s Smart Grid-as-a-Service makes available the full spectrum of smart grid functionality, including:

- **Smart Meters:** installation and deployment of meters and smart meter head end
- **Field Communications:** including real-time outage alerts
- **Enhanced Security:** for defense against cyber-attacks
- **Cross-Application IT Integration:** including back-office applications, business process customization, and both consumer and management portal development.



Validating its game-changing SGS strategy, SAIC was awarded a contract by Intelligent Energy Systems (IES) for smart grid solutions for four Alaskan communities. SAIC and IES implemented SAIC's Smart Grid-as-a-Service at these locations, and services have been on-line and running since December 2011.

The Alaskan deployment of SGS, an integrated hardware and software solution, provides advanced metering infrastructure, outage alerts, remote connection capabilities, as well as lays the foundation for the future integration of fuel, water, temperature, and alternative energy metering. SAIC's SGS provides a complete community energy management environment on an OPEX subscription basis—just what was needed to lower energy costs and reduce dependence on expensive diesel fuel that has historically devastated local village economies.

"The challenges of climate, environment, and information technology are especially great in these regions," said SAIC Assistant Vice President of Smart Grid, Steve Root. "Smart Grid-as-a-Service will deliver the immediate advantage of on-demand meter reads, improved operational efficiency, as well as reduced energy cost, and will support critical energy management decisions throughout the remote regions of Alaska."

As a core ingredient of the SGS solution, SAIC leveraged NextAxiom's *hyperService* Platform to provide must-have cross-silo integration and unified intelligent information flow.

### **NextAxiom *hyperServices*: Intelligent Information Flow for Smart Grid-as-a-Service**

An important design criteria for SAIC's offering was to enable intelligent information flow across all devices and line of business applications encompassed by the game-changing vision of cloud-powered Smart Grid-as-a-Service. Rather than get locked in to the capital-intensive roadmaps and proprietary add-ons of legacy enterprise middleware vendors, SAIC selected NextAxiom's *hyperService* Platform to serve as the foundation of, and provide the universal building blocks for, all cross-silo integration within the SGS cloud service.

In the words of Tim Crowell, Lead Architect of SAIC's SGS offering, "With NextAxiom *hyperServices* we get a built-in services oriented architecture or 'automatic SOA' right out of the box."

With the automatic SOA capability inherent in the NextAxiom Platform, any *hyperService* can be consumed as a standards-based Web Service operation by line-of-business applications—and vice-versa, any external Web Service operation can be consumed automatically as a managed *hyperService*. A *hyperService* solution is composed of in-memory *hyperService* building blocks all the way down the solution stack, and is inherently service-oriented at both design-time and runtime.

In addition to NextAxiom's automatic SOA capability, the SAIC Smart Grid-as-a-Service offering leverages many additional capabilities of the NextAxiom Intelligent Information Flow Platform, including:

**Universality:** To deliver on the promise of SGS, many different line-of-business applications need to be coherently orchestrated to support a unified user experience. This requirement is addressed via the *hyperService* approach pioneered and proven by NextAxiom. A NextAxiom *hyperService* is a universal building block that can represent any application or system function, regardless of the underlying architecture. This capability of the NextAxiom platform enables *hyperServices* to transform functions from heterogeneous systems into universal, homogenous building blocks, thus incrementally eliminating application silos. This capability is foundational to NextAxiom's mission of enabling the silo-free enterprise. For example, within the SGS offering, NextAxiom *hyperServices* serve as building blocks of intelligent information flow connecting the outage and GIS systems to the customer portal—a must-have capability for a smart grid system.

**Location Transparency:** The *hyperServices* utilized by SAIC's breakthrough cloud-based, Smart Grid-as-a-Service are essentially virtualized programming building blocks that are transparently distributed across cores, servers and datacenters whether on-premise or in the cloud. For example, once an on-premise application function is represented as a *hyperService*, it can be accessed seamlessly from the cloud or a device, e.g. a smart meter.



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**Granular Management:** In mission critical infrastructure like Smart Grid-as-a-Service, full granular management is a must-have. NextAxiom *hyperServices* are fully managed building blocks that are automatically secured, traced, logged, monitored, metered, provisioned and governed. Any *hyperService* can also be automatically cached or scheduled. With *hyperService* solutions, granular management and instrumentation is not an afterthought; it is built-into the core of the *hyperService* Virtual machine.

**"Metered" Pay-for-Use Pricing:** SAIC's Smart Grid-as-a-Service was built to drive adoption—not only with outstanding functionality—but with its breakthrough subscription pricing model. NextAxiom's Intelligent Information Flow Platform is well-positioned to support this game-changing approach with its innovative 'metered pricing' plan. NextAxiom's metered model dramatically drives down the level of innovation risk by enabling cloud innovators like SAIC to engage with NextAxiom via pay-for-use pricing for each invoked *hyperService*. Simply stated, the metering model is based on the number of *hyperServices* that are executed by the *hyperService* platform. So, each time a *hyperService* runs, the *hyperService* meter registers a click. To put this in the context of well-known industry standards, a Web Service Operation (WSDL/SOAP) once imported into the *hyperService* Platform becomes one atomic *hyperService*, and when that *hyperService* executes, a click is registered on the meter.

By experiencing a compelling ROI on each incremental *hyperService* developed, the customer and partner benefits to be derived from wider adoption of the NextAxiom platform become self-evident. In the words of Tim Crowell of SAIC, "NextAxiom's metered subscription use pricing is well-aligned with our own game-changing approach to driving adoption of smart grid innovation. And their responsiveness to our requests for SGS-centric enhancements, e.g. strong security, demonstrates their commitment to partnering with innovators like SAIC."



### **Summary: Next Vision, Next Game-Change, NextAxiom**

The 'smart grid' vision—embraced by electric utilities in the U.S. and around the world—promises a cleaner, more reliable, more cost-effective and more customer-friendly approach to meeting the challenge of 21st century energy markets.

SAIC, a market and technology innovator, built its cloud-powered Smart Grid-as-a-Service offering to change the game in smart grid adoption by enabling world class functionality on a subscription pricing model.

SAIC's breakthrough offering leverages the power of NextAxiom *hyperServices* to provide cross-application, cross-silo intelligent information flow: a core ingredient of Smart Grid-as-a-Service.

To find out more about the NextAxiom *hyperService* Platform, and NextAxiom's commitment to enabling the silo-free enterprise, go to [www.nextaxiom.com](http://www.nextaxiom.com).



600 Montgomery Street, Suite 800  
San Francisco, CA 94111  
T 415 373-1890 F 415 373-1899  
[info@nextaxiom.com](mailto:info@nextaxiom.com)