Modernize your grid: Simplify smart metering with an intelligent partner.

Turn to a trusted partner to decrease the complexities of building and maintaining a smart grid infrastructure and stay focused on the business at hand.

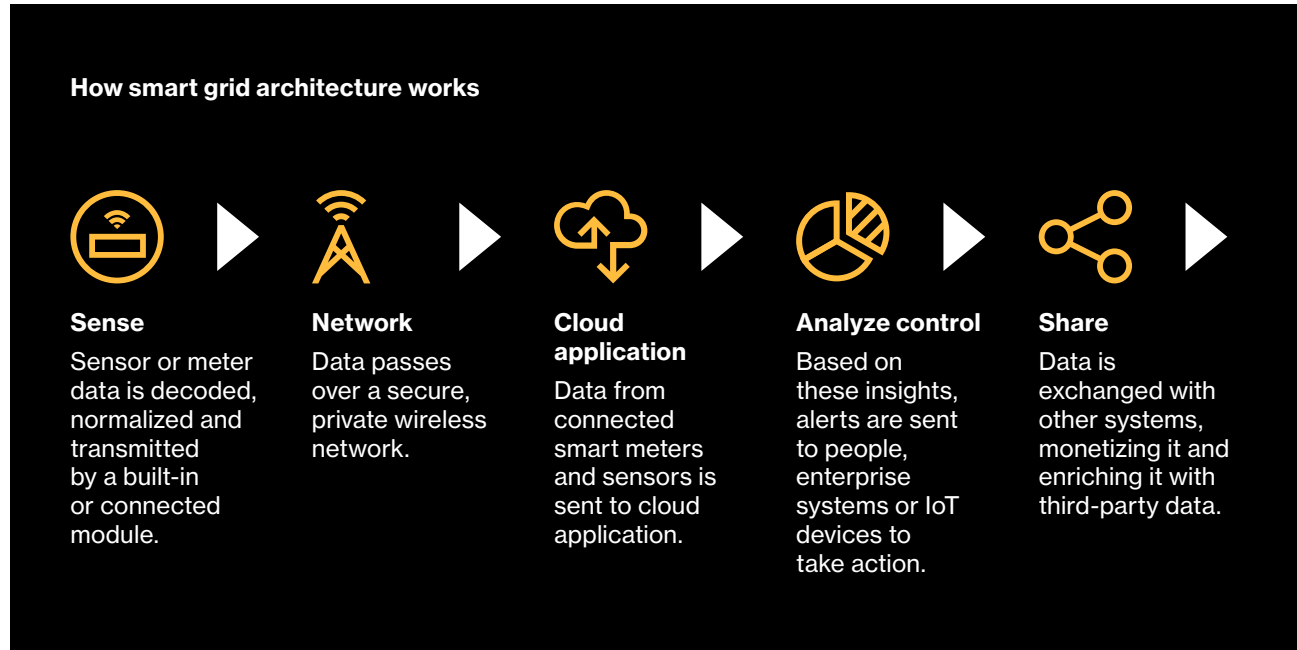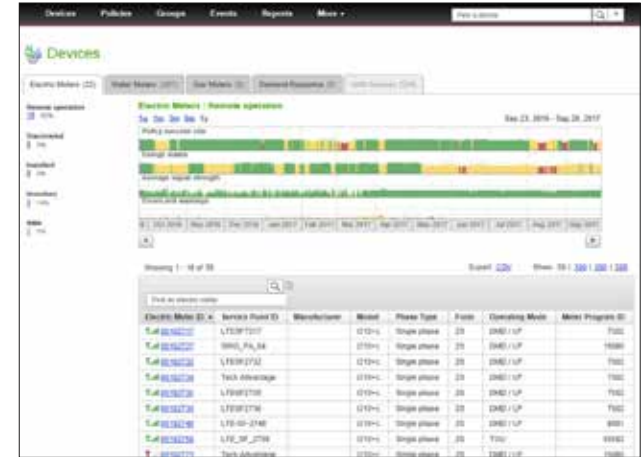**Patrick D. Caustrita**
Strategic Planning — IoT, Verizon

Robert Gustin
Principal Solutions Architect — Energy & Utilities, Verizon

verizon√

The utility industry has an enormous responsibility: to power our communities and reliably deliver potable water and natural gas services that people require every day. Thanks to a growing utilization of the Internet of Things (IoT), utilities are now also entrusted with powering the digital economy.

These new challenges require new solutions. It's an exciting time for utility companies that now have the rare opportunity to rethink their approach to yesterday's core business functions while defining the path for the next generation. Addressing these increased demands is going to take a fundamental shift in how utilities operate and deliver services. Utility companies have always taken great pride in providing consistent and dependable service to their customers. Which explains why the industry as a whole has been cautious and pragmatic when it comes to adopting new technologies and processes. But when it comes to modernizing the grid, the time is now.

Across the board, industries have never been more interested — or invested — in IoT technologies. In fact, according to a report by the International Data Corporation (IDC),[1] worldwide spending on IoT is expected to hit $1.4 trillion by 2021. The utility industry is projected to spend $66 billion in IoT investments this year alone. And the biggest share of that investment? Smart grid technologies.

How smart grid architecture works

Sense
Sensor or meter data is decoded, normalized and transmitted by a built-in or connected module.

Network
Data passes over a secure, private wireless network.

Cloud application
Data from connected smart meters and sensors is sent to cloud application.

Analyze control
Based on these insights, alerts are sent to people, enterprise systems or IoT devices to take action.

Share
Data is exchanged with other systems, monetizing it and enriching it with third-party data.

The smart grid: a new standard for modern utilities

The modern smart grid is truly transformative, promising to dramatically enhance the industry, from the way services are delivered to the way they are regulated to the way they are consumed. It incorporates integrated communications, smart sensor technologies, security and cloud-based services into the grid to improve system reliability, increase productivity and support evolving customer needs. Because it's automated, it's a major time saver and far less prone to errors. And that just scratches the surface.

Today's advanced metering infrastructure (AMI) systems have evolved beyond simple billing to include significant operational data that provides crucial information to improve overall operations. Those smart meters collect and immediately report many types of critical data, ranging from near real-time, deterministic outage notifications to power-quality readings and tamper indication. More accurate and timely data helps a utility operate more efficiently and maintain

regulatory compliance, which ultimately results in a more satisfied customer base. When correctly deployed, it can make utilities more efficient and agile. It's no wonder that the smart grid is quickly becoming the new industry standard.

So utility companies understand what the future of the industry looks like (smart grid infrastructures and IoT technologies) and when they need to make changes to their operations (now), but many are still struggling with how to make the leap to a more modern infrastructure. That challenge can be further compounded by limited manpower and financial resources to aggressively move forward. For an easier path to a modern grid, there's smart grid as a service (SGaaS).

Maintain control while increasing simplicity.

An SGaaS solution allows you to leverage an existing and configured technological infrastructure for your smart grid. SGaaS combines physical components like smart metering with a cloud-based platform, allowing for easier and affordable deployment, integration, configuration and management of smart grid devices.

The SGaaS provider is responsible for providing and maintaining the different components needed to support the smart grid, including managing servers, security, data transport storage and analytics. This leaves the utility to remain focused on core service delivery and other business needs.

Some examples of components that might be built into SGaaS:

Security infrastructure and services

Communications network infrastructure

Head-end server infrastructure

Smart metering head-end software

Meter data management

Distribution, monitoring and control

Integrated reporting

Dashboard analytics
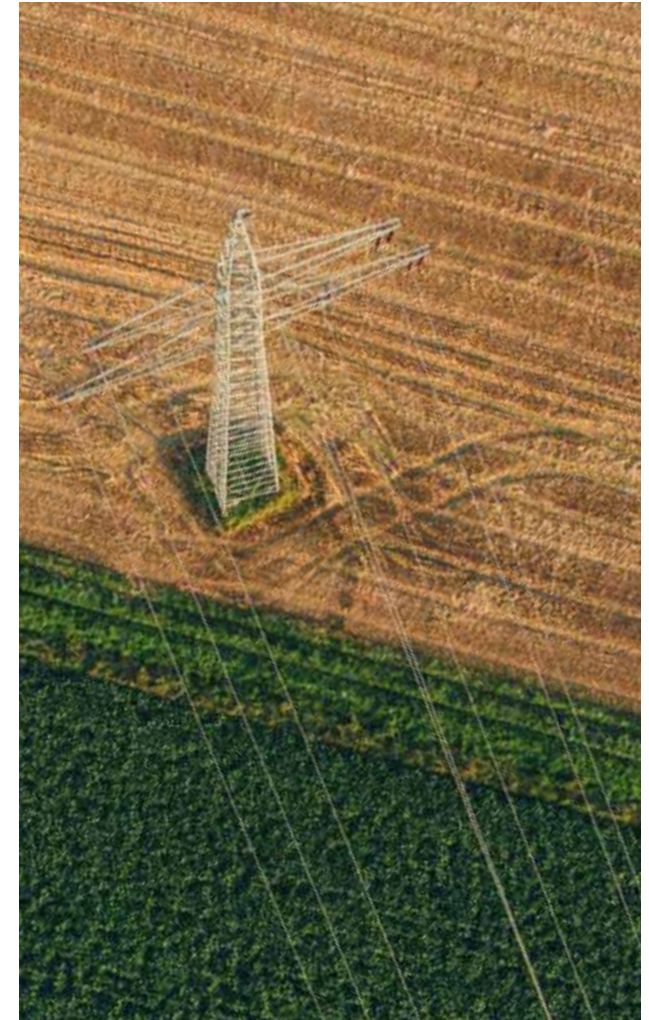
For example, with an SGaaS solution for smart metering, a cloud-based platform will allow the utility to automatically and remotely gather metering and operational data, manage remote service disconnects, perform remote meter programming, detect outages in near real time, monitor consumption—all without having to make large capital investments in software, server infrastructure, and networks or communications equipment. Plus, this frees up internal IT teams to focus more on core business functions.
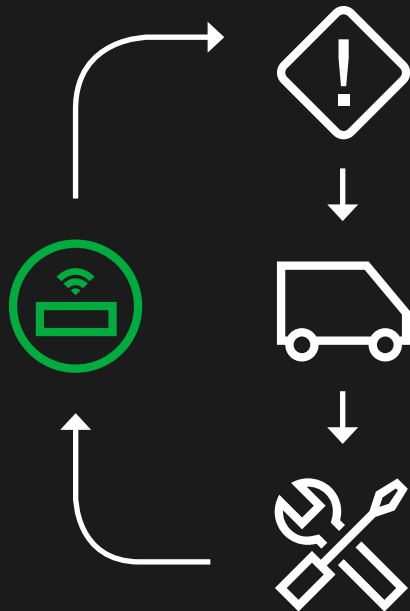
Smart metering use case: service interruption

The meter's communications card automatically notifies the utility head end, which then notifies the OMS, CIS, interactive voice response (IVR) and the customer's portal—all in near real time.

As a result of this automatic notification, a truck is dispatched to the precise location of the issue.

The issue is quickly corrected and power is restored. When power is restored, the meter's communications card automatically notifies all of the same systems and people of the fix.

Not all SGaaS offerings—or providers—are created equal.

The problem with many SGaaS solutions available today is that they only offer a portion of the total solution. This results in utilities having to contract with multiple vendors to secure all the functionality they require. Not only does working with multiple providers add unnecessary complexity, but working with disparate solutions comes with its own set of challenges. If a provider only offers a proprietary

platform solution, you may have limited options for application support. A piecemeal solution might not integrate with existing back-office business systems, meaning you'll have to reinvest in compatible tools and technologies. Or it might be too limited in its capabilities in a way that doesn't allow for customization or growth.

Ideally, an SGaaS solution should provide a comprehensive suite of applications on a single platform of integrated technologies that is both adaptable and scalable. Not only should an SGaaS offering include all the business applications needed to support daily functions—including AMI, SCADA, DA/DMS, DR and other custom IoT and machine-to-machine (M2M) applications—but it should also integrate with legacy enterprise applications, such as customer information systems (CIS), outage management systems (OMS), customer care and billing (CC&B), geographic information systems (GIS) and more. It should have built-in security to keep data safe at every step of the journey. It should be easy and timely to implement. It should be hardware agnostic, to give you the freedom needed to build the integrated infrastructure that works best for your utility. It should allow open development of IoT and M2M solutions to support fundamental business needs and provide end customers with new features. And it should be offered by a provider that has the network, resources, tools and experience to deliver these services as reliably as you deliver yours.

Strengthen operations and customer relationships at the same time.

With the right SGaaS solution, you can do much more than just improve operational efficiencies; you can improve your customer relationships. The widespread adoption of IoT has empowered customers as never before, and they are continually demanding more. Customers want more information about the services they use and greater control over their consumption.

They want access to their historical data, as well as near real-time notifications whenever service is interrupted. SGaaS leverages automation throughout the smart grid to help utilities meet these customer expectations by:

• Generating accurate and timely bills.

• Providing near real-time information to CSR reps to resolve customer concerns in a timely manner.

• Providing near real-time messaging and historical data to enable customers to better manage their consumption and billing.

• Improving the quality of electric, water and natural gas services for their customer base.

Getting the right solution means asking the right questions.

So how can you make sure you are making the right investment with your SGaaS solutions? Being aware of limitations with many SGaaS offerings will help you understand what to look for when researching solutions. Here are a few areas that should be considered when comparing different SGaaS providers and their offerings.

• Does this offering support the business applications I require?

• How easy and timely will it be to implement this solution?

• Will I have to build complicated communications networks?

• What security features are integrated into the platform?

• Is this platform agnostic in hardware and applications support to enable my utility services to evolve over time?

• What will be the expected total cost of ownership?

• Is the software and servers that support it ready to use or do I have to build for it?

• What is the data-storage time frame?

• Will this platform be able to grow and evolve with my business?

• Does this solution support standards-based application programming interfaces (APIs) or will I be limited to a proprietary system?

Be ready for whatever the future holds.

The bottom line is, the evolving needs of both utilities companies and consumers are driving a fundamental change to the way utilities do business. There's no way around it; adopting new technologies is an inevitability in today's challenging utility landscape. The longer you wait, the harder it will be to catch up. And evolution has no endpoint. You can be sure that the utility grid of tomorrow will build on the foundation of today's smart grid. Adopting a comprehensive SGaaS solution can provide your utility with the agility and efficiencies needed to meet current needs while preparing you to take on future technology evolutions, whatever they may be.

To learn how Verizon is working with utility companies go to: VerizonEnterprise.com/GridWide

A truly comprehensive platform will address all of your needs, not just some of them. Look for a solution that includes:

• Built-in security features

• Built-in device management

• Optional meter data management

• Application integration and support

• Comprehensive analytics

• Data storage

• Remote data connectivity

• Easy implementation

• Open development

• Pre-built communications networks

• Communications networks that have the speed and scale to support future needs

[1]*Worldwide Semiannual Internet of Things Spending Guide*, International Data Corporation, June 2017.

Network details & coverage maps at **vzw.com**. © 2017 Verizon. WP1691017

5