

# THE NIAGARA<sup>AX</sup> FRAMEWORK®

Creating Intelligent, Energy-Efficient Buildings



Commercial and industrial buildings use about 40% of the energy consumed in the United States and 72% of the nation's electricity. Buildings and facilities account for 80% of all electric expenditures.

# THE NIAGARA<sup>AX</sup> FRAMEWORK<sup>®</sup>

## Intelligent Energy Management Technology for Managing, Controlling and Reducing Energy Costs.

Energy costs represent huge expenses for any organization. As energy use and costs continue to increase in this challenging environment, so does the responsibility of building owners and managers to address energy efficiency and energy conservation within their organization. Controlling energy costs and environmentally sound energy use is paramount today.

Smart energy management solutions control and manage energy-consuming systems in facilities such as HVAC, lighting, etc. In addition, these solutions also ensure these systems operate properly and are optimized for maximum performance and energy efficiency that result in lower energy bills.

Perhaps no other technology has had as profound an impact on smart energy solutions and making buildings more energy efficient than the Internet. At the forefront, driving this technology is the Niagara<sup>AX</sup> Framework<sup>®</sup>.

Built on an open architecture, the Niagara<sup>AX</sup> Framework merges multi-vendor automation systems and real-time integration into a single, extensible platform that monitors, manages and controls the power consumption of all building systems, drives energy efficiency and reduces energy costs. Niagara<sup>AX</sup> takes into account all critical areas that form the subsystems that make a building function including lighting,

heating, ventilation and air-conditioning (HVAC), security and energy management. It allows devices to share information with each other and streamlines them into a common system where management can control and monitor the buildings' operations. Niagara<sup>AX</sup> is ideal for both small and large organizations as well as campuses and geographically dispersed enterprises.

In addition to integrating energy consuming devices and systems, Niagara<sup>AX</sup> also includes energy management verification tools that allow users to implement the most efficient and sustained energy strategies.

The technology also enables you to collect information and benchmark buildings to expose operational inefficiencies and facilitate solutions. From a green building perspective, Niagara<sup>AX</sup> allows you to capitalize on accurate and concise intelligence relating to the energy performance of a building in order to achieve lower energy consumption, enhanced efficiencies and lower carbon emissions.

Today, there are over 140,000 instances of Niagara<sup>AX</sup> operating in more than 43 countries worldwide in office buildings, manufacturing plants, mission-critical facilities, hospitals, educational and government campuses, military bases, hotels, retail stores and airports.



▶ *Buildings are an integral part of our nation's new energy system. From being a consumer of energy to being the facility that houses much of our energy systems, it will be difficult to uncouple building systems from the rest of the future of smart energy solutions.*



▶ *Niagara<sup>AX</sup> Creates Better Buildings — by integrating today's diverse building systems such as environmental controls, security, lighting, energy, fire and life safety. The Niagara<sup>AX</sup> Framework is creating better buildings — ones that are smarter, use less energy, are more efficient, have lower operating costs, are safer and contribute to a sustainable environment.*

Niagara<sup>AX</sup> allows buildings to automatically recognize when employees arrive, by the swipe of an access card, and turn on the lights and environmental controls in only the selected and occupied part of the building. Doing so can contribute to a savings of up to 15% in the energy bill.



## Real-World Applications



### Retail

#### *Upscale Retailer*

An upscale retailer with multiple locations and regional offices is using a Niagara<sup>AX</sup>-based energy management system for controlling costs; monitoring fuel usage and sub-metered loads for high energy use equipment; and receiving energy savings from more efficient operation of the store's equipment and limiting usage during peak rate periods. Within 24 months, they've experienced more than \$8 million in energy savings.

#### *Convergence Retailer*

By using energy data generated by Niagara<sup>AX</sup> to determine future equipment selection and store design as well as shaping loads to reduce power costs, a major convergence retailer with 550 locations is reducing energy usage and receiving cost savings of 10 – 12%.



### Education

#### *K-12*

A 10,000-acre K-12 school system had three classroom buildings, 109 student homes, a performing arts center and more with their own controls and devices, and no central monitoring or system. By uniting the campus through a Niagara<sup>AX</sup>-based energy management system, monitoring and control became much more efficient and the school system reduced its annual utility spend by over 25%.

#### *University*

A leading university with outdated HVAC equipment in many of its buildings was very limited in its ability to monitor and manage energy usage. Through a Niagara<sup>AX</sup>-based energy management system, the university integrated cost-effective control upgrades into one system, achieved the Web-based management it desired, and lowered its monthly utility costs by 20%.



### Office Buildings

Using Niagara<sup>AX</sup>, a multi-site, multi-location, national financial institution gained savings of 10-15% — translating to millions of dollars annually — within one year. Energy consumption and Greenhouse Gas Emissions have decreased by 11% and maintenance costs have been cut by 12%. In addition, the institution is enjoying reduced service calls, fewer truck rolls and an increase in performance of HVAC and lighting systems.



### Manufacturing

#### *Aerospace*

A large aerospace company not only wished to reduce energy costs in its production facility, but also had specific needs for managing flexible lighting zones for a safe working environment. The chosen Niagara<sup>AX</sup>-based energy management system provided Web-based control for managing lighting and environmental schedules as well as load shedding during peak periods. The result was reduced electric consumption by 20% during peak usage and 50% on weekends.

#### *Pharmaceutical*

Integration of multiple systems and meters through a single Web-based interface was a requirement for a large pharmaceutical company, as was a tool for shedding loads and verifying reductions. Through the updated Niagara<sup>AX</sup>-based energy-management system, the company integrated legacy systems with new BACnet<sup>®</sup> systems for real-time control from any onsite Web browser. The company can now shed a 1.5 MW load within 30 minutes and has measurement and verification tools in place to better manage and control energy use.



### Government

Managers of government buildings are receiving real-time energy and operational data and sending commands to and from different devices so they can take immediate action — managing energy consumption and reducing costs — from anywhere. They are reducing energy costs by an average of 15% per building.

## About Tridium, Inc.

Tridium is the global leader in application software frameworks, automation infrastructure technology and device-to-enterprise integration solutions. Our technologies extend connectivity, integration and interoperability to the millions of devices deployed in the market today.

The Niagara<sup>AX</sup> Framework<sup>®</sup> is the leading software platform that integrates diverse systems and devices, regardless of manufacturer or communication protocol, into a unified platform that can be easily managed and controlled in real time over the Internet using a standard browser.

Today, there are over 140,000 instances of Niagara<sup>AX</sup> operating in 43 countries in applications that include: energy and sustainability management, intelligent building automation, M2M, telecommunications, security automation, lighting control, home automation, convergence retailing and smart facilities management. Niagara<sup>AX</sup>-based solutions make buildings better — ones that use less energy, have lower operating costs, are safer, contribute to sustainable environments and deliver significant ROI.

The Sedona Framework<sup>™</sup> is a software platform for developing, deploying, integrating and managing pervasive device applications at the lowest level. The Sedona Framework distributes decision-making control and manageability to any device and brings intelligence and connectivity to the network edge and back.



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