Solid Arguments to Re-Evaluate Your Original "Dinosaur" SCADA System

Most SCADA solutions have histories dating back decades. It probably took years to install and master the system, and many more years to implement the required improvements and upgrades. Thus, when considering a replacement of your existing SCADA, you might feel you have too much invested. It is easy and understandable to become complacent and stick with a product that your team knows and has used in the past. Afterall, this product is familiar and presents little if no disruption to workflows. Nowadays, companies are realizing that their existing original old-style SCADAs are cumbersome, problematic, and difficult to maintain and support to get out any significant automation value. But industry players deserve more; they deserve modern and intelligent software platforms which can handle the many requirements on-premise, on the edge, and in the cloud. In recent years, SCADA has changed radically, and it is likely time for you to re-evaluate your original "dinosaur" system.

Original SCADA Systems Were Not Designed for the Challenges End Users Face Today

When older original systems were designed and built, it was a very different world. These systems simply were not architected or designed for the challenges end users face today. Additionally, existing SCADA systems are difficult to configure, maintain, and support and have inherent limitations like the inability to:

- Address both intentional and unintentional breaches of security.
- Effectively deal with outbound communication from the OT world into the IT world.
- Support the innovations that the cloud technology provides in terms of data storage and applications running on the cloud.
- Be easily scalable to new cloud-based architectures which means the inability to be configured to support highly distributed systems or add supplementary devices on the fly.
- Support open standards like OPC UA for connectivity to automation devices.

Fortunately, modern systems exist that provide many advantages. Here are some solid arguments for re-evaluating your original "dinosaur" SCADA.

Argument 1: Modern SCADA Systems Provide Substantial Advantages

Modern SCADA systems support industry standards and specifically data structuring and information modeling inclusive of multiple vendor interoperability and device independence. Most importantly, it is possible to swap devices from different vendors when all support the same device standards. New systems have increased life since these have both hardware and software devices that have a greater ability to gather real-time information for assessing performance and maintenance information. In addition, since new SCADA systems capture more data intelligence, there is significant improvement of systems maintenance allowing companies to take advantage of both Condition Based Monitoring and Preventative

Maintenance opportunities. These new systems also support best-of-breed choices made by end users rather than being tied into existing proprietary systems and have the ability for remote operations and remote monitoring – especially crucial during pandemic time. Ultimately, new SCADA systems are 24/7/365 reliable with complete support for automated maintenance and system redundancy.

Argument 2: Modern SCADA Systems Provide IoT Fundamentals

Modern SCADA systems provide IoT fundamentals including:

Compatibility – These systems have the connectivity to existing controls and provide support for standards like OPC UA and new technologies such as Cloud, virtualization, mobile, and advanced analytics.

Security – These systems have security built into the architecture and provide role-based and user-based security, Multi-Factor Authentication (MFA), Operating System Security, Cyber Security, and Patch Management.

Foundational Technologies – These systems have software upgrades and patch support, a regular version release frequency, compatibility with current and future operating systems and reasonable support for past operating systems. Today, any serious SCADA delivers a 64bit implementation. Any less and you're dealing with legacy technology.

Advanced Levels of Functionality – These systems provide enhanced User Functionality, Administration Functionality, Audit Trails, Vertical Market Functionality, and Integration with business, engineering, supply chain, CPM/MES, plant equipment, and automation systems.

Company Stability – These systems have a local and global presence and are designed for suppliers' long-term visions for market longevity.

Value Proposition for Both Integrators and End Users – These systems are scalable, extensible, flexible, and cost effective providing a solid ROI. When system integrators can install a system and support it cost effectively, when their efforts in one application can be reused in the next application, and when they can train operators to handle the day-to-day administration and upkeep, then they've found a quality reliable solution that works for them and end users.

Argument 3: Specific Areas of Change Positively Differentiate Modern SCADA Systems

With specific areas of change, Modern SCADA systems are positively differentiated from older original systems. Let's review some:

Support for Standards – As markets mature, technologies become more settled, and standards will continue to proliferate. A modern SCADA supports most current and newly emerging standards.

OPC Classic and OPC UA Support – While most SCADA support OPC for Data Access, a modern SCADA offers far greater support for OPC Standards including Historic Data Access, Alarm and Events, and others.

MQTT and Sparkplug-B Protocol – As two widely used protocols in the IoT and smart factories, a modern system supports MQTT with Sparkplug-B protocols. In addition, such a system offers connectivity to numerous other devices and protocols such as 61850, 660870, ModBUS, EthernetIP, BACnet, and many others.

ISA 18.2 Alarm Standard for Rationalization and Management - A modern SCADA offers ISA 18.2 support for its own alarms and has the capability to generate alarms with other products and to acquire these through database of OPC A&E connectivity.

ISA/IEC 62443 Cyber Security Standards - As a supporter of visualization on "Any Glass," modern SCADA is designed with built-in Cyber Security and access management especially for remote access.

Visualization - Modern SCADA systems are database and information model driven, capable of automatically generating displays on the fly using display templates and tag structures thus leading the way with innovative visualization technologies. These include Sankey Diagrams, 3D visualization, progressive detail, GeoTagging, Tool Tips, and drilldown links. Additionally, modern displays are responsive, automatically scaling and re-arranging objects to fit mobile phones, tablets, and SCADA displays. Modern SCADA graphics also support progressive disclosure and high-performance graphic schemes such as those outlined in ISA-101 Guidelines. All of these capabilities lead to greater operational performance, reduced development time, and configuration error.

Historization - A modern SCADA, coupled with a modern historian, supports a wide variety of data sources, and even manual sources such as Excel Spreadsheets, USB, or Flash Chips from disconnected sources. Modern historians allow for crucial data archiving and retrieving especially with new Industry 4.0 capabilities such as Cloud Computing, Artificial Intelligence, Machine Learning, and Digital Twins. The modern historian is an on-premise, high-fidelity, and high-performance repository that delivers the innovations of IOT and the edge to the cloud with seamless solutions for interoperability from the OT world to the IT world.

Argument 4: Modern SCADA Are Easy to Use & Provide Advanced Functionality and Vertical Market Support

A new SCADA system lets operators on the floor and in the field do their jobs easier, faster, and better. Here's how:

Ease of Use
Operator Perspective – Modern SCADA systems are becoming more autonomous with the ability to support powerful notification scenarios and workflows for event management. These systems provide visualizations that are dynamic, moving from glass to glass, from a control room display to a mobile display that can be carried around the process.

Developer Perspective – Configuration in a modern SCADA is minimized and largely benefits from data structures and templates that can be created once and used repeatedly. Configuration changes and upgrades can be performed remotely and while a SCADA is in operation. For greater speed and efficiency, powerful symbol libraries can marry with data structures to deliver hundreds or thousands of operator interfaces, which can be generated on the fly or as needed.

Administrative Perspective – Modern SCADA brings administration front and center by maximizing reliability and easing regular tasks such as disk management, security management, and equipment health monitoring. Additionally, audit trails are kept for change management and anomaly detection.

Advanced Functionality
Modern SCADA can display data on maps and automatically create displays for objects or sets of objects based on filter criteria. These systems also offer advanced integrations with other business critical systems such as workorder systems and asset management systems from leading vendors in the market and support custom integrations through toolkits, so integration questions are never met with a negative answer.

Vertical Market Support
Modern SCADA systems deliver vertical market support such as building management, energy management functionality, and solutions for field workers and remote user management without the need for customization. These modern systems also deliver canned functionality for industry trends such as Carbon Monitoring and Sustainability, Downtime Monitoring, Energy Analytics, and other common KPIs.

When Choosing Your Modern SCADA, Check Under the Hood to See What's Really Powering It

In the early days, SCADA was about technologies - scripting, VBA, and ActiveX. Later, SCADA became about low cost and Internet ready. Few vendors made all the right architecture and technology choices when designing their original SCADA systems which led to substantially varied solutions. However today, new technology and standards have rapidly developed, resulting in some extremely advanced and improved SCADA solutions. This means that if you are still using your original "dinosaur" SCADA, it makes good sense to consider a change. And, when you do decide to choose a modern SCADA system, know that there are significantly differentiated solutions on the market which are NOT all created equal. Therefore, it's worthwhile to take a look under the SCADA hood to see what's really powering the solution.