

Aligning Control Systems with Business and Operational Requirements

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Introduction

A water utility's SCADA system represents a significant investment in capital dollars and operating resources. This investment is necessitated and justified by the high-level of reliance water agencies have on their SCADA systems for maintaining regulatory compliance and meeting mandated service levels. SCADA is an asset that enables business continuity, optimization of operations and maintenance, and utility planning. The criticality of a utility's SCADA system means that agencies cannot risk running their control systems to failure.

In order to ensure continued operations, conduct core functions, optimize performance, or maximize their return on investment, utilities' need a clearly-defined plan that guides the maintenance, growth and enhancement of their SCADA system.

Why bother with planning?

Managers want to avoid surprises and deliver projects on time and within budget. Spending a small percentage of total program budget and schedule on planning is a proven strategy to reduce overruns and rework; improve resource utilization; and ensure that desired business and operational benefits are attained.

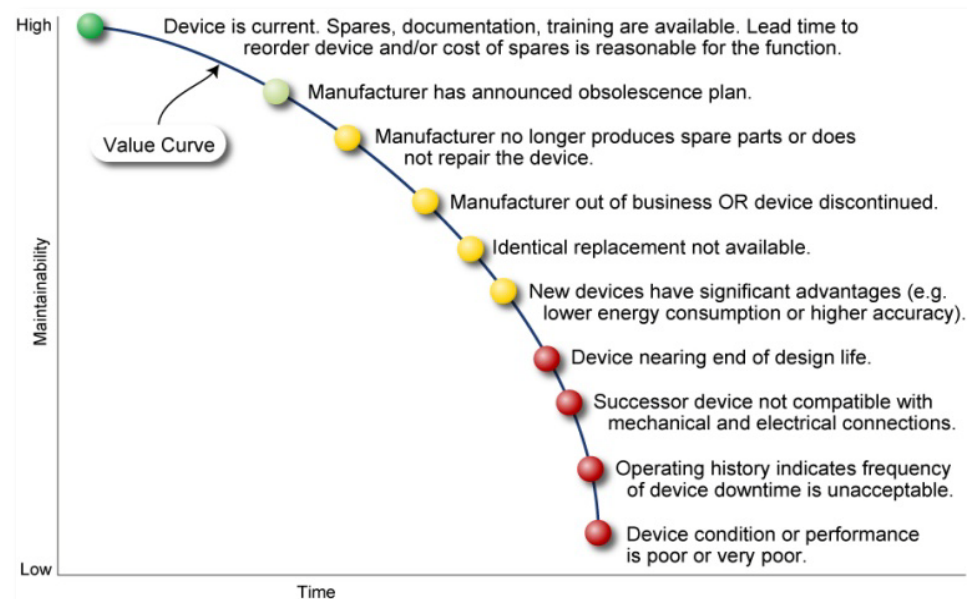
SCADA systems have operating lifecycles that are much shorter than other water system assets as a direct result of technological obsolescence. Understanding the lifecycles differences between SCADA components is key to managing and maintaining SCADA system reliability. As systems age, frequency and duration of downtime will increase. Operating a SCADA system that is at or near the end of its expected service life increases a utility's operational risk:

- **Regulatory compliance** – agencies must continuously monitor critical process parameters and collect data for compliance reporting;
- **Protection of health and safety** – loss of continuous, real-time monitoring and control puts public and staff members at risk;
- **Service levels** – without monitoring and control, operations and distribution may be shut down;

- **Increased operations costs** – more staff overtime is required to run and maintain facilities, at a lower efficiency and higher risk;
- **Increasing cost** – as PLCs, HMIs, I&C, and communication equipment ages, maintenance and support requirements increase; and
- **Equipment/facility damage** – the loss of automated process and equipment interlocks increase the likelihood of harming plant equipment and even facilities.

In addition to obsolescence-related considerations, utility managers require operations data for planning and decision making. In most cases, accessing operational data requires significant time and effort by a SCADA specialist who can export, validate and correct reports. This drives many managers to gather and report numbers in a spreadsheet, despite the fact that this approach is prone to introducing discrepancies and data quality problems that can ultimately paralyze decision making. To conduct their jobs, managers require easy access to reliable data that is managed in a central location and presents a single version of the truth.

Finally, SCADA systems provide a powerful means to improve performance, whether at the process level or across the enterprise. When properly planned, SCADA systems can enable optimization strategies such as reducing power usage, enhancing water quality, decreasing water loss, measuring performance, and improving asset management. Today, most agencies use a fraction of the functionality their SCADA systems can provide – capability that could be put to use to improve efficiency and effectiveness in utility business and operations. Planning is the best means to set a vision for optimization and establish a path to leverage the SCADA system as a tool to achieve these goals.



Technology follows a predictable pattern through its lifecycle.

PROACTIVE

What will a SCADA Master Plan do for you?

In contrast to the challenges and opportunities outlined above, progressive utilities realize they can overcome these concerns by applying structured planning methods to establish the future of their SCADA systems. They apply much the same discipline to planning their SCADA programs as they apply to other critical infrastructure. These agencies take a proactive approach to SCADA master planning to ensure that their SCADA system will meet their business needs and help attain their strategic vision. There are several justifications to engage in a SCADA master planning endeavor, including:

- Develop program implementation strategies to ensure adequate budget, resource allocation, and timeline in context of dependencies and competing priorities;
- Identify and prioritize business requirements – What does the agency need to be to meet regulations, maintain service levels, and improve efficiency? Planning helps utilities apply their SCADA systems to address business needs. For example, attaining unattended operations may help address issues of staff retirement while process optimization can reduce operating costs.
- Align technology with enterprise business needs – Does the SCADA system integrate with other business systems? Is it scalable? While SCADA systems often contain features and functions that could be applied to improve performance, the organization's executives, managers, and operators need to know what level of performance is appropriate and attainable, and what their system can do to help them reach their targets for automation or integration with other business systems;
- Identify and address "low-hanging fruit" – What projects can be completed quickly to improve performance, alleviate frustrations, and build confidence in the system;

Ottawa's Proactive Approach to SCADA Planning

The City of Ottawa, Water Services is committed to fully automating operations as part of its strategy to improve operational and business efficiency.

As a first step toward upgrading to their third generation of SCADA, Ottawa prepared a master plan. While the project was driven by the need to replace aging control system technology, they used planning as an opportunity to identify, prioritize and coordinate business and operational imperatives including data management, network communications, alarm management, monitoring and control philosophy, asset management, instrumentation and process control narratives.

Ottawa's SCADA Master Plan identified stakeholder's business and operational requirements. Through risk-based needs and opportunities analysis (short and long-term), Ottawa expedited decision making; prioritized remediation, rehabilitation and replacement projects; and maximized return on investment.

Ottawa's structured effort guided them in developing a comprehensive and prioritized program that established a road map of projects to help them attain their goals.

- Establish organization, practices and skills to maintain the SCADA system in an evergreen state;
- Develop guidance and standards to ensure that system changes occur in a controlled, consistent, and prioritized manner; and
- Establish service level goals and objectives to support continuous operations and planning.

Outcomes of SCADA Planning

A comprehensive SCADA planning process must address all aspects of your system including technology, communication, security, staffing/organization, standards, and operation. A SCADA master plan must:

- Articulate the long-term vision for leveraging SCADA for effective, system-wide operations;
- Identify business, operational and technical requirements in context of appropriate levels of automation;
- Identify and address challenges to attaining the vision and a strategy to reach the goal;
- Address immediate concerns and issues in the control system;
- Eliminate surprises in project costs by defining specific, short-term and long-term project definitions and the path to meet the agency's operational goals. Prioritized projects should include estimates of cost and resource commitment, dependencies; and
- Establish buy-in to the vision and priorities among stakeholders and executive sponsors.

By assessing your SCADA system, business and operational requirements, and addressing change through a formal, proactive planning effort, agencies can streamline system replacement, attain higher productivity from existing systems, and establish a platform for integrated water system management and enterprise-wide optimization. ■

Additional Information

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