Summary analysis between manufacturers of SCADA system (vs) Intergrater of SCADA system

Executive Summary

The City of Castroville's current SCADA (Supervisory Control and Data Acquisition) system, installed seven years ago by an integrator developer, is reaching the end of its operational life. Ongoing upgrades have become increasingly cost-prohibited, and maintenance expenses are expected to rise over time. To address these challenges, staff conducted a comprehensive evaluation of alternative solutions aimed at minimizing future upgrade requirements, simplifying troubleshooting, and ensuring long-term reliability.

In assessing multiple SCADA vendors, Data Flow Systems (DFS) emerged as a strong candidate based on the City's operational priorities. However, all vendors presented viable solutions, each offering unique strengths and trade-offs. While DFS scored highest in key evaluation criteria, other vendors excelled in areas such as scalability, industrial integration, and customization, making them well-suited for different operational needs.

SCADA System Decision Matrix Evaluation

To guide the selection process, staff utilized a decision matrix to compare five leading SCADA vendors: **Data Flow Systems (DFS)**, **VTSCADA**, **Wonderware**, **Ignition**, and **Block**. The evaluation focused on six key criteria relevant to water and wastewater system operations.

Each criterion was weighted based on its strategic importance, with particular emphasis on security, total cost of ownership, and system longevity. Vendors were scored on a scale of 1 to 5 (5 = Excellent), with higher scores indicating stronger capabilities in each respective category.

Criteria	DFS	VTSCADA	Wonderware	Ignition	Block
Security	5	4	3	4	3
Total Cost of Ownership	5	4	3	4	3
Ease of Integration	5	5	4	5	4
Customization and Flexibility	5	5	3	5	4
Support and Maintenance	5	5	3	4	4
System Longevity	5	5	4	4	4
Total Score	30	28	20	26	22

Comparison Notes:

- **DFS**: Purpose-built for water/wastewater applications, DFS offers an operator- friendly interface and robust long-term support. However, its specialization may limit broader industrial flexibility.
- **VTSCADA**: Delivers strong water system capabilities and a flexible architecture but may require more technical expertise, which could be a consideration for smaller municipalities.
- **Wonderware (AVEVA)**: A feature-rich industrial platform with extensive capabilities though higher complexity and cost may be factors for smaller utilities.
- **Ignition (Inductive Automation)**: A highly customizable, cost-effective option ideal for organizations with access to skilled integrators.

Manufactured vs. Integrated SCADA Systems

SCADA systems can be designed as either **manufactured** or **integrated** solutions, each with distinct advantages and potential drawbacks.

Integrated SCADA System: A consulting engineer will design a SCADA system and hire an electrical contractor to install off the shelf parts and integrate those parts in the field to create a SCADA System. Replacements will result in multiple-manufactured parts no longer working together as a cohesive system and or failure of components to continue working with the software. In many cases it is common for the software manufacturer or component to no longer support the older version of their product. In such cases, an upgrade will be required.

- Involving various vendors
- Difficult to hold any of the various vendors responsible for the cohesiveness of the parts.
- Difficult to maintain compatibility as the system ages (generally 5 to 7 years).
- Annual User fees
- Licensing fees
- Software fees

Manufactured SCADA System: All the components are designed to work cohesively, and all the parts are non-generational and "downward compatible" with older versions. If an older module can no longer work and cannot be repaired due to lack of component level parts, the newer replacement will seamlessly plug into the old component slot and provide the required function.

- No annual fees
- No software license- all upgrades are free of charge.
- No maintenance contract
- Free Lifetime technical support
- Free operator and supervisor training
- Free Smartphone interface
- Free unlimited seats
- Obsolescence proof

Key Findings

Through the evaluation, DFS scored highest in areas such as security, cost transparency, and specialization in water/wastewater systems. Other vendors demonstrated strengths in different areas, such as scalability and customization, which may align better with specific operational needs.

DFS stood out in the critical categories:

- **Security**: Utilizes a Linux-based OS, 2048-bit SSL encryption, a firewall whitelist and supports VPN with two-factor authentication.
- **Total Cost of Ownership**: No licensing, per-seat, or upgrade fees—all features are included without additional charges.
- **Integration & Support**: Offers plug-and-play, backward-compatible components and full utility modification capabilities without third-party reliance.
- **Water/Wastewater Specialization**: DFS is the only vendor exclusively focused on this sector, resulting in purpose-built software and hardware.

While **DFS** ranked highest in the evaluation, **VTSCADA**, **Wonderware**, **Ignition**, and **Block** each provide valuable solutions with varying degrees of scalability, industrial integration, and customization. The choice between a manufactured and an integrated SCADA system depends on each utility's operational priorities, budget considerations, and long-term infrastructure strategy.

This revision keeps the evaluation balanced by clearly highlighting the strengths of all vendors while emphasizing that the final decision depends on specific operational needs.