ENTERPRISE AUTOMATION
A TETRA TECH COMPANY

PROJECT PROFILE
VTSCADA Upgrade for Water Production
City of Huntington Beach

Client background

The City of Huntington Beach, California is a predominantly residential city with a population of about 200,000 located in northwestern Orange County. The City owns and operates both the water utility and wastewater collection system serving its 200,000 citizens. Their assets include 27 sewer lift stations, 10 wells, 5 reservoirs, 16 flood stations, and 9 turnouts where imported water from Metropolitan Water District (MWD) is resold to several local cities and agencies.

Project background

Prior to this project, the City used a Wonderware-based SCADA system which had grown and evolved through the work of several previous integrators. With a mix of programming styles from the many different entities who were involved over the years, the system lacked a standard structure from the start. Years of "quick fixes" by multiple integrators added to the lack of general cohesion, making troubleshooting and incorporating new infrastructure difficult and time consuming. While the existing system was functional on a day-to-day basis, the cost and difficulty of upkeep led the City to seek out new options. The City asked EA to help find an alternative software solution and standardize operations.

Project Manager

Clarence Go

Project Technical Lead

Steven Drooz

Key Insights:
- Collaborative agile delivery enabled just-in-time decision-making
- Reduced annual SCADA costs while increasing ease of maintenance and support
- Templatized a highly standardized system for screens, graphics, tags, and alarms

Key Technologies:
- VTScada
- VMWare

EA Solutions

Based on a comparative selection process and evaluation, the City and EA selected VTScada as a replacement SCADA product. Shortly after, EA and the City began the transition process from Wonderware System Platform to VTScada. Typically, EA projects follow a waterfall project management approach, first creating a specification or defining document that becomes the basis for systems to be built thereafter. In this particular case, EA and CoHB decided on a more agile project management approach to allow for more adjustment throughout the development process. This would allow for co-development of the product and make changes possible without having to commit to significant development costs. Scheduling in-person bi-weekly meetings enabled just-in-time decision making and gave the City direct involvement in the development. In the end, the entire system was documented through this adjusted process.

Before starting the design, EA completed extensive reverse-engineering to classify the different types of screens and graphics, list the different tags, and understand the alarms. Once the existing process was documented, EA engineers created a strong set of standards for equipment such as pumps, valves and transmitters. When this step was complete, EA was able to templatize entire sites.

Once the templates were complete, EA executed a deliberate commissioning plan with a single site for each asset type, running the new system in parallel with the existing system for almost six months. During this time, the City made direct comparisons between the new and existing systems and continued to work with EA to tweak and finalize the template's tag structures and screen graphics template. Operators were also able to train and familiarize themselves with VTScada while still having the outgoing system available. Once the City felt the templates were complete and operations staff were familiar, they were rolled out across each site type and brought online in mere hours.

As an example, the 16 flood station control sites are all built from the same template, screen graphic template, and tag template, allowing for consistency throughout operation. Once the first flood station control site was operational, the remaining 15 were commissioned in very little time. The same procedure was used for the wells, reservoirs, sewer lift stations, and pump stations.

Although an agile development process and just-in-time decision making may have added to the total cost of development, the client was incredibly happy with the approach and service they received along the way, as well as with the final product. The project's return on investment made itself evident through the reduced annual costs of VTScada and the ease of maintaining and supporting the new system.