

CASE STUDY**State of Hawaii: Integrating Disparate Election Systems**

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– **Dwayne Yoshina**, Chief Elections Officer for the State of Hawaii Office of Elections

OVERVIEW

State of Hawaii elections officials approached the November 2004 General Election knowing that big changes were in store. They were implementing accessible voting units across the state, training employees and poll workers to use the new system, and merging vote totals with the State's legacy system to create a single set of results reports.

Officials were confident that Hart InterCivic would deliver and support the accessible eSlate® units and complete training on time. But they also understood that the implementation would be considered successful only if combined results could be reported quickly and seamlessly on Election Night. That involved merging results from the Hart Tally™ system and the legacy ES&S Unity 2.1 tabulation system, a task that was beyond the scope of Hart's initial responsibility.

Yet Hart InterCivic's project management team readily took on the task of integrating results from the two systems.

"Hart was willing to handle the integration from the start, even though eSlate was the secondary system," notes Dwayne Yoshina, Chief Elections Officer for the State of Hawaii Office of Elections, "The Hart team said, 'we can do it,' and they turned around and did it. They were very service-oriented rather than system-oriented. We were impressed with their approach and the results."

INTEGRATION CHALLENGES

Integrating results required Hart project managers to understand the data structure of both systems and to develop a framework to match and map data between systems.

"Fortunately, we already had a system to do that," says Victor Babbitt, Hart's Election Services Engineering Systems Manager, who led the State of Hawaii integration project. "We had developed a program called Fusion™, whose job it is to sort out the myriad problems you encounter when merging data from disparate election systems."

One common problem is that election information entered into one system is never identical to information entered into another system. For example, in one system a race might be called "President of the United States" while another might label it as "President of the USA," "President and Vice President," or something similar. A political party might be listed as "Republican" in one system and as "Rep" or "R" in another. Similar differences can exist for candidates' names, precinct numbers, proposition titles, and everything else that appears on a ballot. Every difference, no matter how minor, complicates the process of integrating results from multiple systems.

Fusion provides the framework that matches different names for the same race, candidate, proposition, or precinct, and links them together

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**STATE OF HAWAII
TIMELINE****Mid-August, 2004**

Hart InterCivic is selected to provide eSlates equipped with Disabled Access Units (DAUs) to Hawaii's 353 polling places. Hart's tasks include delivering equipment, testing the system, and training State employees and poll workers.

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September 18, 2004

Hart provides deployment, set up, and management of eSlates and Judge's Booth Controller at each Election Day polling place. Hart also provides services for ballot set-up and tabulation.

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November 7, 2004

eSlate is used at 12 Absentee Walk-In sites as well as Election Day polling places. Hart provides services for ballot set-up, training, and tabulation.



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to create a single set of results -- a process called "aliasing." Hart's Fusion system uses the aliases to integrate results from all the voting systems used in a particular election, including optical scan paper ballots and other electronic systems.

"Fusion matches everything we know how to match and gives us a list of everything we don't know how to match. A human then looks at it and maps everything that's different from one system to another," explains Babbitt.

For example, Fusion tells the Hart Tally system to combine votes from races labeled "President of the United States" and "President and Vice President" into one set of results. For more complex issues -- such as a variety of jurisdictions that each has "Proposition 1" on the ballot -- appropriate aliases are created to make sure that votes are properly tabulated and clearly displayed.

"All this aliasing is done before Election Day, or early on Election Day before results come in," explains Babbitt. "That way, the focus is on tabulation, not on integration, after the polls close."

THE HAWAII EXPERIENCE

For the November General Election, the Hart team integrated the ES&S .asc file output with the Hart Tally output and produced combined reports in paper and .pdf format. The team received ES&S results from the ES&S system at the State Counting Center on Oahu, and Hart Tally output data, which had been transmitted by modem from nine different collection stations on five outlying islands, as well as Oahu. Statewide reports were provided to officials at the State Counting Center, and reports specific

to the islands were automatically transferred to reporting stations on the islands of Hawaii, Kauai, and Maui.

Hart also generated reports in Hawaii's traditional format for distribution to the press and the public.

"Hawaii has a results format that's very specific," says Scott Nago, State Counting Room Chief. "We have used the same format for 30 years, and it was important that the reports look the same since the press is used to them. Hart was able to achieve that goal."

While the extra step of merging results added a layer of complexity to the operation, it did not slow the tabulation process. Results for the Hart System were tabulated and reported completely within 100 minutes of the time polls closed for the Primary Election and within 75 minutes of the time polls closed for the General Election. The ES&S results took longer to complete, but were integrated to the Hart data within five minutes of the release of any new data by ES&S. "We were very pleased with the speed," Nago adds.

Hawaii initially selected the Hart Voting System because of its superior accessibility for voters with a wide range of disabilities. However, the eSlate units were made available to all voters, and much to the surprise of elections officials, many voters without disabilities chose to use the electronic units.

"The usage of the eSlate was not limited to individuals with disabilities," says Yoshina. "We got favorable response across the board from the people who used it."

BUILDING ON SUCCESS

The Hawaii experience challenged Hart's technical team to maintain its ambitious schedule while handling a range of integration challenges. Following the Fall 2004 elections, the Hart team developed system enhancements that are now available to all customers.

"We dealt with a lot of integration issues in Hawaii and learned some valuable lessons," says Babbitt. "For example, we developed a simpler system to double check the results and make sure each system was tabulated and combined properly. Now we can do it much more quickly and easily than we did in Hawaii."

The State of Hawaii benefited from Hart's extensive integration experience and service-oriented philosophy. Today, all customers benefit from Hart's success in one of the nation's most ambitious election integration projects.

As Yoshina notes, "Even with all the changes, it was one of the better elections we've ever had."

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