
# The 2008 Okaloosa Distance Balloting Pilot Project

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## Contents

## Executive Summary

Voters covered by the *Uniformed and Overseas Citizens Absentee Voting Act* (UOCAVA) are one of the single most difficult-to-serve voting populations. The challenges that they face are an extreme version of problems faced by absentee voters, including ensuring they are properly registered to vote, getting and returning a ballot in a timely manner, and completing the balloting materials correctly so that the ballot is not excluded from counting. The primary issue of concern for election officials has long centered on addressing the long ballot transit times that these voters face. In 2008, elections officials in Okaloosa County, Florida, implemented the Okaloosa Distance Balloting Pilot (ODBP), a pilot program that sought to develop a solution model for other counties with large UOCAVA populations. The ODBP was a kiosk-based Internet voting approach in which electronic devices used by voters to obtain, mark, and cast their ballots were available in a limited number of overseas locations. The goal of the system was to overcome ballot transit time problems that are endemic to UOCAVA voting, while still maintaining high levels of control and auditability. Prior to the current report, no evaluation effort has been conducted examining this pilot project and its potential implications for further refinement or deployment.

### *Project Description*

The kiosk system worked by allowing election officials at remote locations to validate a person's identity and his or her eligibility to vote in Okaloosa County by using a computer that was directly connected to the Okaloosa County voter registration database. The voter would then use an Internet voting application to vote a ballot. When the voter completed voting, a paper record of the voted ballot was printed and deposited into a secure receptacle, and the electronic ballot was digitally signed by the voter, encrypted, and transmitted in near real time to a voting system server. Officials would later conduct a post-election vote comparison between the votes cast on the system and the paper records that were produced at the kiosk location and placed into the secure receptacles.

The kiosk system was implemented in three locations: Germany, Japan, and the United Kingdom, proximate to U.S. military installations in Mildenhall, England; Ramstein, Germany; and Kadena, Japan. The kiosks themselves were not located on military bases so as to not limit access to only military voters, and all qualified military and civilian voters in the vicinity who submitted a request to vote by this method could use the kiosks. The sites were open from October 24, 2008, through November 2, 2008, (with some variation for individual site issues) and were staffed by experienced Okaloosa County poll workers who traveled to the locations for this work.

### *Underlying Legal Structure Supporting the Okaloosa Project*

In general, few states have legal authorities that allow such pilots to be conducted. Fortunately, Florida has very clear rules that govern certain aspects of absentee voting for overseas voters, allowing UOCAVA voters to vote electronically using an electronic remote voting process that has been certified by the State Division of Elections. The certification process for the ODBP system took almost nine months, starting in December 2007 when Okaloosa County submitted its voting system application to the State. The system then had to be independently reviewed, a project plan had to be reviewed, and the system security and functionality had to be reviewed before the system was certified for use.

### *User Evaluation of the Kiosk System*

Ninety-three voters ultimately used the system. Upon completion of the voting process, each voter was given the opportunity to complete a brief paper survey and provide feedback based on his or her voting experience, which 91 did. These data indicated that all respondents found the system easy to use and indicated they would vote using an Internet kiosk again. The typical user of the system traveled for 10 minutes or less to get to the kiosk location. However, when asked how far they would be willing to travel to vote on a kiosk system, the average respondent said they would travel 30 minutes or less. Kiosk voters were more likely to be male, college graduates, and military personnel.

In January 2009, kiosk workers were also surveyed about their experiences. Each team responded that they were very confident that all votes that were cast were counted properly and that the system was secure. Further, all teams provided high praise for the training and technical support received and indicated they would be very likely to participate in a similar project in the future.

### *Ballot Count and Audit*

Officials conducted a post-election vote comparison between the votes cast on the system and the paper records that were produced at the kiosk location and placed into the secure receptacles. This comparison was conducted at a public meeting, and the two records matched completely. The kiosk system, therefore, allowed for full auditability of the electronic ballots.

### *Lessons Learned*

This review of the ODBP pilot project allowed for the identification of key areas that must be carefully considered before any similar project is implemented in the future:

*Legal Structure:* For any similar voting project to be successful, the state must have a legal structure that allows for kiosk Internet voting. Having a state law that allows for experimentation is critical for facilitating programs like Okaloosa's.

*Testing and Certification:* As each state has a different process and requirements, any future multistate kiosk-voting project will need to have a well-structured plan for testing and certification in place long before planned implementation.

*Advertising:* It is imperative that a comprehensive campaign for advertising the availability of the kiosk Internet voting option is conducted so that system use is maximized.

*Logistics:* An important question for future overseas voting projects will be how logistical issues, such as travel and materials transport, scale if more ambitious projects are implemented.

*Auditing:* Post-election ballot audits are becoming an increasingly important mechanism for verification of the integrity of an election, and for ensuring stakeholder and voter confidence. Future kiosk Internet voting projects should be designed and implemented to ensure post-election ballot auditing.

*Chain of Custody:* Given the issues related to logistics and auditing, it is also critical that any kiosk system have clear procedures for managing the chain of custody of the election process.

*Kiosk Workers:* Future implementations of kiosk Internet voting, in particular those that might have a larger scope and scale than ODBP, will need to consider carefully how to recruit, staff, and train kiosk workers for overseas kiosk operations.

*System Support:* Given the amount of equipment and time sensitivity of this process, the extent of technical support will be an important future consideration.

*User and Kiosk Worker Feedback:* It will be critical to the success of future efforts to design an effective evaluation of any system, including effective user and kiosk worker feedback components.

## Introduction

Voters covered by the *Uniformed and Overseas Citizens Absentee Voting Act* (UOCAVA) are one of the single most difficult-to-serve voting populations. The challenges that they face are an extreme version of problems faced by absentee voters, including ensuring they are properly registered to vote, getting and returning a ballot in a timely manner, and completing the balloting materials correctly so that the ballot is not excluded from counting (a problem that occurs with both provisional balloting and traditional absentee balloting).[1] The primary issue of concern for election officials has long centered on addressing the long ballot transit times—the length of time it takes for a ballot to get from the local election official to the voter and back again—that these voters face. Election officials in Okaloosa County, Florida, placed addressing the ballot transit problem high on their policy agenda, principally because of the County's large military population. Okaloosa County is home to several military bases with a relatively large number of military personnel and military dependents. According to U.S. Census Bureau estimates, 9,229 members of the Armed Forces resided in Okaloosa County out of a total population of 145,650.[2] Many of these military personnel are stationed at Eglin Air Force Base, which itself has 9,470 active duty military personnel.

In 2008, Okaloosa County implemented the Okaloosa Distance Balloting Pilot (ODBP). The goal of the effort was to develop "a solution [for the UOCAVA voting process] that could be implemented as a standard election administration process in the county… [and could] provide a solution model for other counties with large overseas military and/or civilian voter populations."[3] To date, no evaluation effort has been conducted examining this pilot project and its potential implications for further refinement or deployment.

As the Federal agency charged with assisting military and overseas voters in exercising their right to vote, the Federal Voting Assistance Program (FVAP) selected the team of Drs. R. Michael Alvarez and Thad E. Hall, in collaboration with Kinsey Gimbel and Brian

[1]The literature on overseas voting includes R. Michael Alvarez, Thad E. Hall, and Betsy Sinclair, 2008, "Whose Absentee Votes Are Counted?" Electoral Studies (27, 4: 673–683); R. Michael Alvarez, Thad E. Hall, and Brian Roberts, 2007, "Military Voting and the Law: Procedural and Technological Solutions to the Ballot Transit Problem," Fordham Urban Law Review (XXXIV, 3: 935–996); Bruce E. Cain, Karin Mac Donald, and Michael H. Murakami, 2008, "Administering the overseas vote," Public Administration Review (68.5: 802–813); Kevin Coleman, 2006, "The Uniformed and Overseas Citizens Absentee Voting Act: Background and Issues," Library of Congress, Washington, DC: Congressional Research Service; Thad E. Hall, 2008, "UOCAVA: A State of the Research," Vol. 69, CalTech/MIT Voting Technology Project Working Paper; Thad E. Hall and Claire Smith, 2012, "Barriers to Overseas Voting and Satisfaction with the Voting Process," Manuscript, University of Utah, Salt Lake City.

[2]These estimates are from the 2006–2010 American Community Survey 5-year Estimates for Okaloosa County, Table DP03, Selected Economic Characteristics. These estimates include those 16 years of age and older.

[3]Retrieved from http://www.operationbravo.org/pilot_projects.html on September 6, 2012.

Griepentrog of Fors Marsh Group, to address this gap by providing an overview of the Okaloosa Project and describing how the lessons learned from this project can be applied to future pilot projects. The research team benefits from the partnership that Drs. Alvarez and Hall had with ODBP during the pilot program. At that time, they worked with ODBP to conduct surveys of the kiosk workers who implemented the voting system and the voters who used the system. This research team, therefore, was able to bring unique data to the evaluation process. For this report, the team studied the publically available materials associated with the ODBP, utilized survey data provided by the Operation BRAVO (Bringing Remote Access to Voters Overseas) Foundation, interviewed key members of the ODBP and the ODBP system vendor (Scytl), and conducted other research relevant to UOCAVA voting and election technologies.

Specifically, this report addresses the following six sections:

1. a description of the project including the constraints, limitations, and results;
2. a description of the underlying legal structure supporting the initiation and conduct of the project and the challenges faced with revising statutes or administrative rules to support the ODBP;
3. an evaluation of voters' interactions with the system;
4. an evaluation of kiosk workers' experience in administering the system for voters;
5. an evaluation of the efficacy of the system, including the procedures for system operation and certification; and
6. an analysis that includes a series of "lessons learned" from the 2008 Okaloosa County Project relevant to the Okaloosa effort with specific identification of those issues that may apply to future similar efforts.

Thoroughly reviewing Okaloosa's kiosk Internet voting process and the issues faced during its implementation will help identify areas of focus or discussion in future pilot projects.

## Section 1: Project Description

### *UOCAVA Voting Issues*

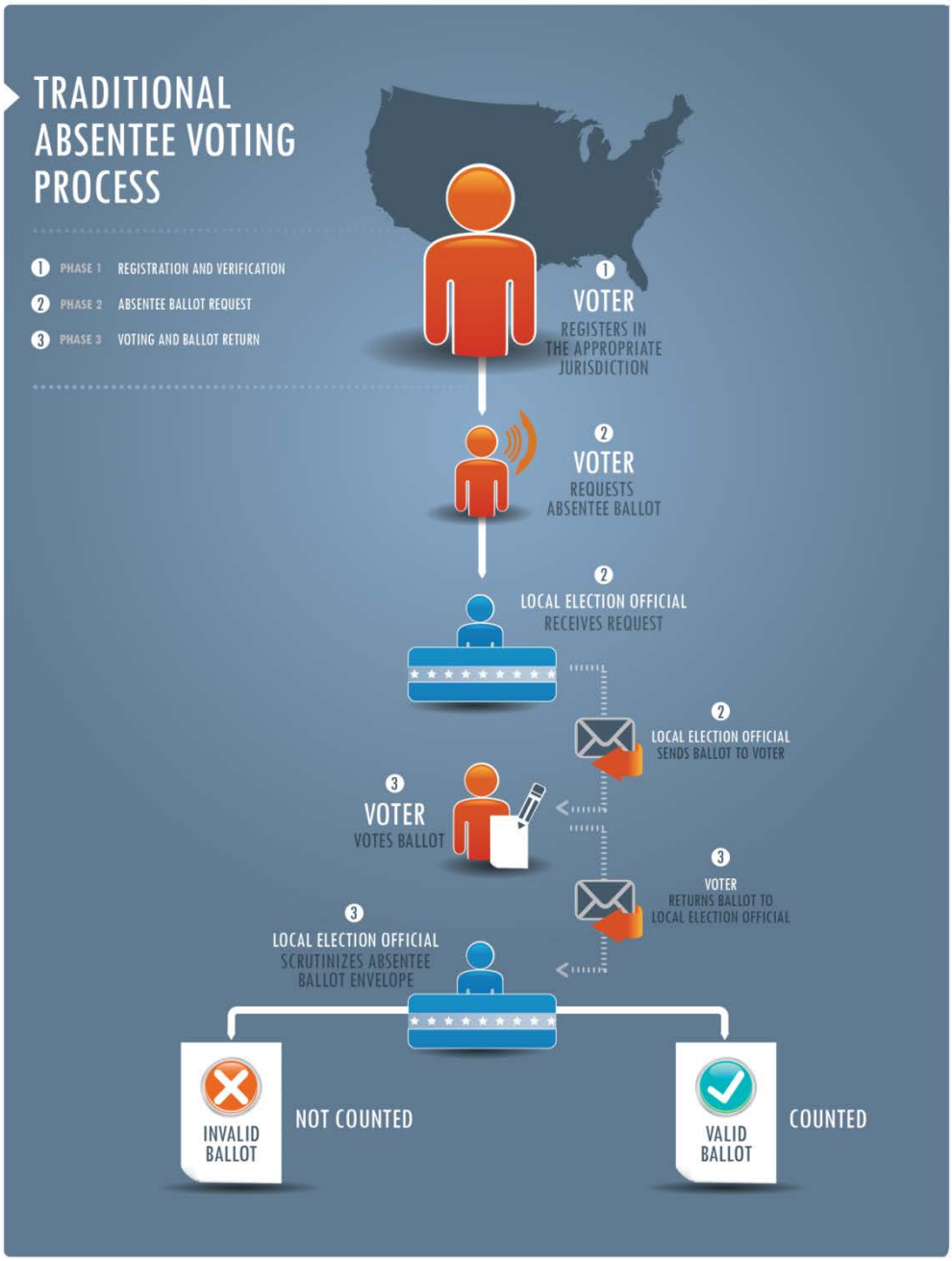
Studies have shown that UOCAVA voters face various problems and that ballot transit times are an especially critical issue. Numerous studies, including ones conducted by the Government Accountability Office (GAO) and the Department of Defense Office of Inspector General, have found ballot transit times to be a key barrier to ballot

transmission and receipt.[4] However, the problem with UOCAVA voting is not just one of ballot transit, as recent studies have shown. One key study by Kosuke Imai and Gary King examined UOCAVA ballots cast in the 2000 presidential election in Florida and found a specific set of problems. The authors examined overseas absentee ballots received after November 7, 2000, and examined by canvassing boards between November 17 and November 26. Out of 3,739 overseas ballots cast, local election officials counted 2,490 (67%) of them. Using the Florida regulations for what constitutes an acceptable overseas absentee ballot, Imai and King determined that 680 of the accepted late ballots (27%) were flawed. Further, they determined that if these 680 ballots had been rejected, 52% of late overseas absentee ballots would have been rejected in that election. The rejected ballots had different types of flaws, including issues with signatures (e.g., ballot return envelopes were not signed or envelopes had signatures that did not match those on file), envelope completion, and postmark issues. The problem did not solely center on ballot transit times; it was partly a process problem—the ability of voters to complete the absentee voting process correctly—that led to ballots being rejected. This problem has been reinforced by several studies. For example, the GAO found that "[M]ilitary and overseas voters do not always complete absentee voting requirements or use federal forms correctly. County officials said that problems in processing absentee voting applications arise primarily because voters do not fill in the forms correctly or do not begin the voting process early enough to complete the multiple steps they must take" (GAO 2001, 40-41).

However, ballot transit time remains a central concern. In many ways, the steps in the UOCAVA voting process are similar to those in the traditional absentee voting process. However, the distance between the voter and the election officials can create challenges for UOCAVA voters and election officials alike. Figure 1 illustrates the traditional absentee voting process.

[4]See U.S. Gen. Accounting Office, Report No. GAO-01-1026, Elections: Voting Assistance to Military and Overseas Citizens Should Be Improved (2001); see also Office of Inspector General, Department of Defense, Report No. D-2003-072, DoD Compliance with the Uniformed and Overseas Citizens Absentee Voting Act ii (2003); U.S. Gen. Accounting Office, Report No. GAO-06-521, Elections: Absentee Voting Assistance to Military and Overseas Citizens Increased for the 2004 General Election, but Challenges Remain (2006); Elections: Action Plans Needed to Fully Address Challenges in Electronic Absentee Voting Initiatives for Military and Overseas Citizens (2007).

**Figure 1: Traditional Absentee Ballot Process**




While the UOCAVA voting process is very similar to the traditional absentee process illustrated in the figure above, additional opportunities for problems can arise for UOCAVA voters at several points in the process. These problems points can include:

1. Registration and Verification. In the State of Florida, a voter has to be registered to vote in order to cast a ballot. Note that, should there be a problem with the form—an item missing, an illegible item, a missing signature—the local election

official (LEO) must resolve the issue. Communicating about these issues with a UOCAVA voter can require more time, given the longer time required for sending mail to a person who is overseas.[5]

2. Requesting an Absentee Ballot. A voter has to request an absentee ballot and be qualified to receive such a ballot. For UOCAVA voters, the filing of a Federal Post Card Application (FPCA) can accomplish both the registration and ballot request steps simultaneously, but which may also require additional time to navigate the postal service.
3. Voting and Ballot Return.
    - For the traditional voter, the ballot is sent via the U.S. Postal Service to a local address, but for a UOCAVA voter, the ballot is typically sent via the U.S. Postal Service and then via a second postal service, such as the U.S. Military Postal Service Agency (MPSA) or a foreign country's postal service. The transit time is longer and more problems can emerge, such as delayed or lost mail.
    - These problems are mirrored when the voter returns the ballot to the LEO.

Okaloosa County election officials, therefore, had multiple problems to address. First, they required a voting system for UOCAVA voters that could solve the problems associated with ballot transit time. Second, the voting system should also be one that informs voters of errors, and not just errors in voting—the over- and under-votes that caused problems on the ballots in the 2000 election—but also errors in completing other ballot information that can lead to the disqualification of absentee ballots.[6]

### *Why an Internet-Based Solution*

The Okaloosa County election officials selected kiosk-based Internet voting to address their UOCAVA voting issues. Internet voting has been studied for over a decade as a potential solution to the problems faced by voters who need to vote from remote locations and for whom mail balloting is difficult.[7] Technologically, Internet voting can address both of the problems UOCAVA voters face. First, UOCAVA voters can cast a ballot in near real time; there should be little to no ballot transit time beyond the few seconds it takes for the data to move from one computer to another. Second, the voting application can be designed in a way that helps ensure that voters can cast accurate ballots. Every required line of information can be programmed so that voters are

[5]Not all UOCAVA voters will be overseas–some are U.S. service members posted on bases in the United States for training or deployment–but they are all absent from their voting jurisdictions.

[6] An over-vote is when a voter chooses more candidates than are allowed for the race. An under-vote is when a vote choice is not recorded for a race, either because the voter skipped the race or the mark made by the voter is not captured by the voting technology.

[7]See, for example, R. Michael Alvarez and Thad E. Hall, *Point, Click, and Vote: The Future of Internet Voting,* Washington, DC: Brookings Institution Press, 2004.

informed if anything is incomplete. Further, data entry ensures that all data can be read and verified. The voter also can be informed if he or she skips a race or over-votes a ballot.

Okaloosa County election officials had several reasons for choosing an Internet-based system. In 2000, Okaloosa County participated in the Voting Over the Internet (VOI) project that was conducted by the Federal Voting Assistance Program (FVAP) to explore whether Internet voting was a viable option for UOCAVA voters. This "proof of concept" test was deemed a success because the system allowed voters to cast ballots remotely using their own computers and these ballots were received and tabulated without incident.[8] Thus, Okaloosa County officials deemed that Internet voting was a technically feasible solution to the ballot transit and ballot error problems. They also had some degree of familiarity with the uses of remote voting technologies due to their involvement in VOI. Additionally, Okaloosa County also participated in an earlier Internet-based solutions project, the Secure Electronic Registration and Voting Experiment (SERVE), which would have allowed voters to register to vote and then vote over the Internet using their own computers.

Based on their experiences with the VOI project and with SERVE, Okaloosa County experienced:

1. a kiosk system had the ability to mitigate the concerns raised regarding SERVE—that (a) voters were voting on computers outside of the control of election officials and (b) there needed to be an auditable record of the votes cast;
2. a kiosk system allowed for near real-time transmission of ballots so that ballot transit time problems were ameliorated; and
3. Okaloosa County election officials were comfortable with the Internet voting concept and that their staff could effectively work with contractors and others to make a pilot project work.

By using a kiosk system, Okaloosa County officials knew that there would be a paper record of the votes, providing an auditable record, which would address a key critique of remote Internet voting (Alvarez and Hall, 2008). This system would also overcome ballot transit time problems that are endemic to UOCAVA voting. Finally, the officials knew there were commercial off-the-shelf (COTS) technologies that could be used to address the issue. A system did not have to be built from scratch; instead, it could be based on an existing platform that focused on voting.

[8]See the evaluation report; Federal Voting Assistance Program, "Voting Over the Internet Pilot Project Assessment Report," (Department of Defense, June 2001); http://www.fvap.gov/resources/media/voi.pdf.

### *Overview of the Okaloosa Distance Balloting Project*

In 2008, Okaloosa County implemented the Okaloosa Distance Balloting Pilot (ODBP) project. The project was first developed in 2006 and the Office of the Secretary of State of Florida was briefed on the program in April 2007. A private entity was created, the Operation BRAVO (Bringing Remote Access to Voters Overseas) Foundation, to promote and manage this effort. The goal of the effort was to develop "a solution [for the UOCAVA voting process] that could be implemented as a standard election administration process in the county… [and could] provide a solution model for other counties with large overseas military and/or civilian voter populations."[9]

The pilot was designed to bring voting to overseas voters using an electronic voting technology. Remote Internet voting has been the way in which Internet voting has been implemented in national trials. In these trials, voters can vote from any location where they can access the Internet and the voting website. However, Okaloosa County decided to take a different approach than had been used in previous trials of remote Internet voting. Rather than allow voters to access the voting application through any Internet-accessible device (like a personal home computer, or computers in public locations like Internet cafes), the ODBP implemented "kiosk Internet voting." In the kiosk Internet voting approach, electronic devices used by voters to obtain, mark, and cast their ballots are available in a limited number of locations; the devices are programmed only for the purpose of voting; and they are under the control and supervision of the election officials and kiosk workers. Kiosk voters cast ballots over the Internet but do so using a computer at a specific location that has been dedicated for this purpose. This process allows election officials to retain the ability to authenticate voters and to maintain control over the voting equipment.

The election officials at remote locations would validate a person's identity and his or her eligibility to vote in Okaloosa County using a computer that was directly connected to the Okaloosa County voter registration database. The voter registration application would also inform the election workers which ballot style (that has the appropriate races for the part of the County in which they are determined to reside) the voter should receive. The election worker then would use the voter registration application to prepare the smart card that would activate the voter's voting session.

The voter would use the Internet voting application to vote a ballot. When the voter completed voting, a paper record of the voter's voted ballot would be printed. The voter would then verify the votes on the paper record and would deposit that paper record into a secure receptacle. The voter then would indicate on the computer that the ballot could be cast, and the electronic ballot would be digitally signed by the voter, encrypted, and

[9]Operation BRAVO Foundation website, "Pilot Projects," retrieved September 6, 2012, from http://www.operationbravo.org/pilot_projects.html

transmitted in near real time to the voting system server. The voters would also be given a receipt with a code that would allow them to check online to determine whether, in fact, their vote was included in the final tabulation. And, similar to absentee voting, the ballots would not be tabulated until after it was ensured that the correct number of ballots had been transmitted and that no problems had occurred in the voting process.

### *Absentee Voting Versus Polling Place Voting*

Although the ODBP had physical voting locations, the process itself more closely resembled the absentee voting process, rather than remote polling place voting. The closest analogy in American elections is the difference between in-person early voting (as is done in Florida) and in-person absentee voting (as is done in Virginia).

In both cases, a person votes before Election Day and votes in person. For in-person early voting, a voter participates in a polling place voting process before Election Day. That means the voter can avail him- or herself of all services that would be available in a polling place on Election Day, such as provisional voting (should there be a problem with the voter's registration) or same-day voter registration, if it is an option in the state. However, for in-person absentee voting, the election workers do not provide services that would be provided in the traditional in-person process. For example, voters cannot submit voter registration applications and are not provided with provisional ballots in the absentee voting environment.

Given that the ODBP was replicating the in-person absentee voting experience, the County did not address issues such as voter registration or provisional voting in its processes. However, registration and provisional voting are issues that other jurisdictions could address in the future, and will be discussed in the subsequent report.

### *System Overview*

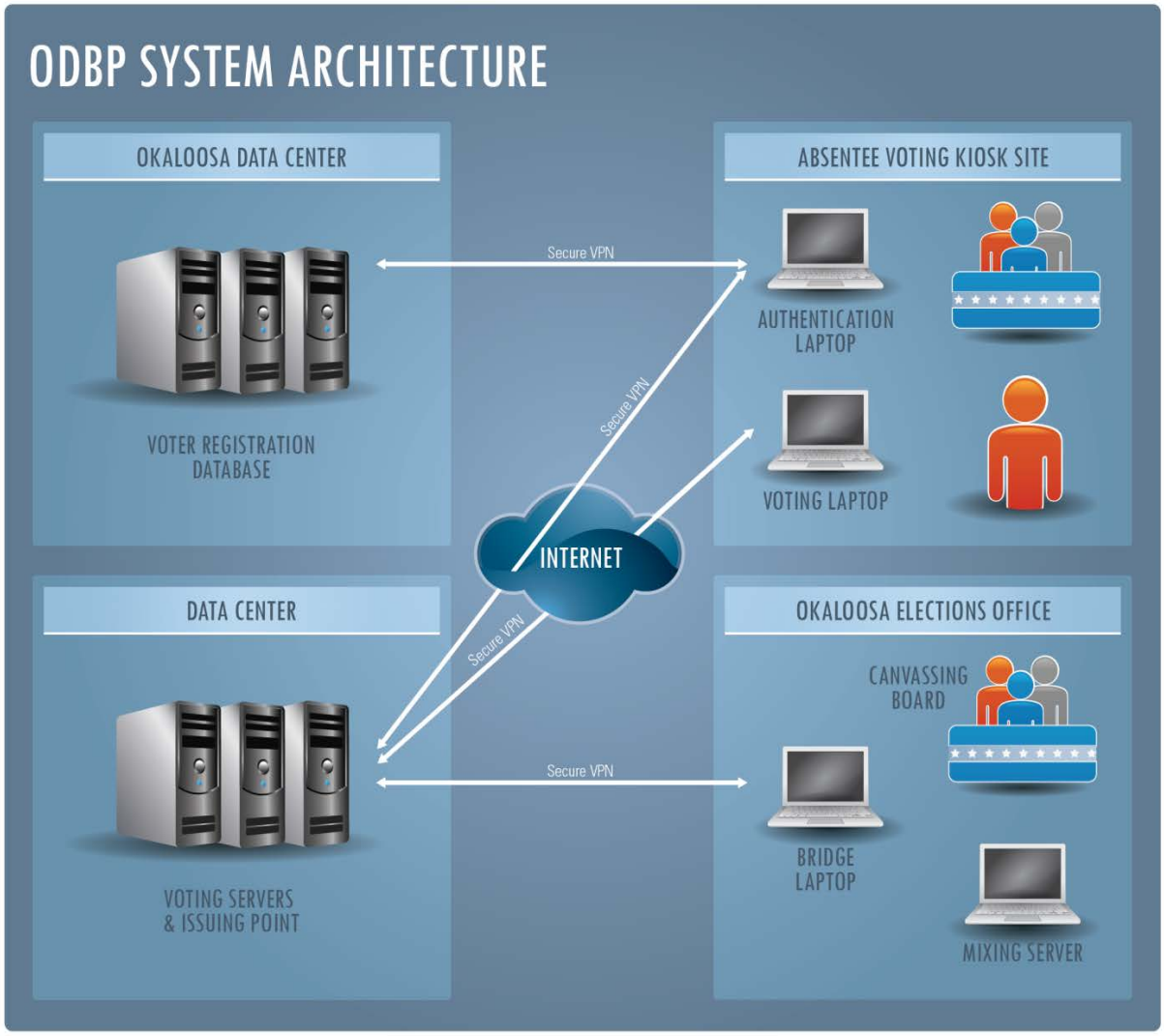
As seen in Figure 2, the system established by the Okaloosa County election officials had four primary components.

1. Absentee Kiosk Voting Sites. The system deployed in the overseas kiosk locations consisted of (1) an authentication component, which was used to authenticate the voter's registration status; and (2) a voting component, which contained the ballot rendering and voting software. The authentication application was operated by the kiosk workers, and the voting application was set up by the kiosk workers but used by the voters.[10]

[10]Because this was a small-scale pilot, issues like emergency backup power supplies for the kiosk, which might be important in a more robust implementation, were not addressed.

2. Okaloosa Elections Office. The Okaloosa County elections office component of the system included applications for loading ballots onto the system, for the voter registration component of the system, and for ballot downloading and tabulation.
3. Okaloosa Data Center. The kiosk locations and the election officials were connected by two sets of servers. The first set of servers handled voter registration, and was located in Okaloosa County, Florida.
4. Data Center. The second set of servers that connected the kiosk site and the elections office comprised the data center servers that housed the voting applications and were located in Barcelona, Spain.

**Figure 2: System Architecture Overview**



The central component the system employed was the front-end voting servers located in the data center.[11] The Okaloosa County elections office populated the servers with the various ballot styles governed by voter districts. Once the data center was operational—designed and populated with information—the kiosks were then connected to the system and made operational.

*Setting up the Kiosk.* Each day, kiosk workers had to engage in a set of activities in order to get the kiosk location ready for operations. This process required that the workers start the computers and then insert a voting CD-ROM that was authenticated as the correct software. As the Operation BRAVO technical documentation noted, "Booting from CD-ROM media reduces the risk of tampering with the software and prevents the execution of malicious software."[12] The workers then connected to the voter registration database in Okaloosa County and to the voting servers in Barcelona, Spain. A set of system checks were then conducted to verify the connections in the system and the correct operation of the voting laptop. Once these checks were completed, the authentication laptop was ready for use by the kiosk workers, and the voting laptop was ready for use by the voters.

*Voter Authentication.* Voter authentication is a critical aspect of the voting process in all voting environments. Here, the voter identification and authentication process had several steps.

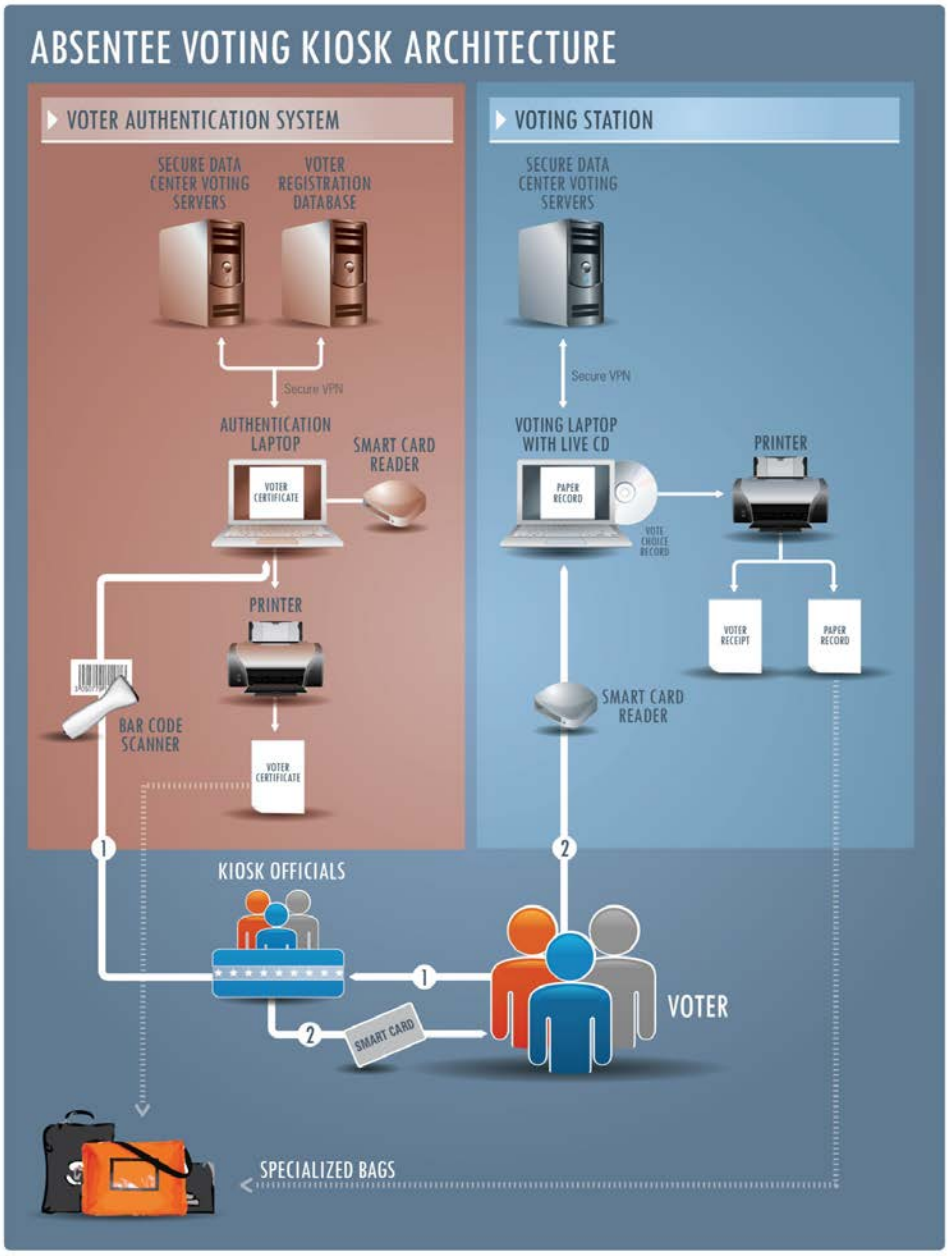
- The voter presented a form of identification to the kiosk worker.
- The kiosk worker then used the voter authentication laptop to connect to the Okaloosa County voter registration database to ensure that the voter was properly registered to vote.
- The kiosk worker then printed a voter certificate form that contained the voting information for that voter (see Appendix A for an example).
- The voter signed the form and the kiosk worker then compared the voter's signature on the paper form to the signature from the County's voter registration file.
- If the signature comparison produced a match, then the voter was allowed to vote.

Figure 3 illustrates the practical components from the system, as viewed in the voting location. The voter was authenticated on the authentication laptop, which was activated using a token. This laptop was connected to the data center through a network hub. Once the voter was authenticated, the voter certificate was printed, the bar code was

[11] The data center was certified according to the BS7799 standard as having a Tier 3 security level.
[12] Retrieved from http://www.operationbravo.org/documents/ODBP%20plan%20June.pdf, page 21, on September 6, 2012.

scanned, and the smart code that the voter used to activate the voting application acquired the correct ballot style. The voter then voted on the voting laptop and, once the voter finished voting, the card was deactivated. The kiosk workers had to keep these various chains of the system operational throughout the voting period.

**Figure 3: The Kiosk System**




*Getting the Voter the Correct Ballot.* One of the most important parts of the process of election administration is that each voter receives the correct ballot. This is not as easy of a task as it seems; in any given county, there may be hundreds of different ballot

"styles." These styles reflect differences in the political jurisdictions and boundaries. For example, two voters in the same county may live in different U.S. House of Representative districts, different Florida State House and Senate districts, different County Commission districts, and different County Board of Education districts. These voters receive different ballot styles that reflect the different races in which they are eligible to vote. There were 78 ballot styles in Okaloosa County in the 2008 general election. All ballot styles were available on the kiosk Internet voting system, and 23 ballot styles were ultimately used by ODBP voters.

With the ODBP system, the voter certificate contained a bar code that reflected the voter's ballot style. When the certificate was scanned, the system would configure a smart card that contained the voter's ID, PIN information, and ballot style. Then, when the voter put the smart card into the reader at the voting station, the remote server pulled up the voter's ballot and the voter was in a position to vote.

*Security Measures.* The ODBP used a variety of chain-of-custody procedures to ensure the integrity of the system during its use. These security measures included an array of basic physical security procedures, such as:

- keeping the voting laptops in a locked room;
- locking "live" CD-ROMs kept by kiosk workers in a sealed bag and then placing the bag in a safe when the kiosk was shut down;
- using tamper evident seals and/or locks on all voting laptops, peripherals, cables, and related items to allow for detection of any manipulation;
- disabling all ports, connections (including wireless connections), and devices that were not absolutely necessary for the functioning of the system;
- having seals and locks on the paper record receptacle;
- having appropriate security seals, bags, and containers to maintain the chain of custody of critical items used in the ODBP process.

In addition, the Okaloosa County election officials developed a set of standard operating procedures for all ballot handling and system activities to maintain the integrity of the process, including requiring kiosk workers to hand carry the secure receptacles containing paper records with them through airport security and onto flights during travel back to Okaloosa County. These physical measures existed alongside the cryptographic and computer-based security measures.

*Voting on the System.* Once the voter inserted the smart card, the voter's ballot was rendered on a touch screen monitor. The voter then made selections by using a touch screen interface, as would be done with a direct recording electronic (DRE) voting application. At the end of the voting process, the voter saw a vote confirmation screen on the touch screen and a paper record was printed that also contained the voter's

choices. The voter then compared the printed record with the electronic record. Once the voter confirmed the vote choices, the paper record was deposited in a secure receptacle. The voter then received a printed receipt with a code that the voter used to ensure that his or her vote had been included in the final tabulation of votes. If the voter changed his or her vote choices after printing out the record, each version of the paper record—which was marked with *A*, *B*, or *C* based on whether it was the first, second, or third record printed—was put in the secure receptacle. The final version of the paper record was the one compared with the electronic vote cast.

*Auditing, Security, and Fraud Prevention.* The key to any voting system is whether it can be audited and if it allows voting in a secure manner. The ODBP used a number of technological solutions to address security concerns that center around using the Internet for data transmission. For example, it applied digital signatures to the ballots and then encrypted the ballots with a key. The encrypted ballots were transmitted through a secure virtual private network (VPN) and the ballots were stored in a database with multiple levels of encryption. These activities are common forms of security for transmitting information securely over the Internet.

The second issue was to have a process to identify if two ballots had been received from the voter. Some participants in the ODBP voted using both the kiosk and traditional by-mail process. Okaloosa County developed a procedure for ensuring that no voter had more than one ballot counted. This was accomplished in two ways.

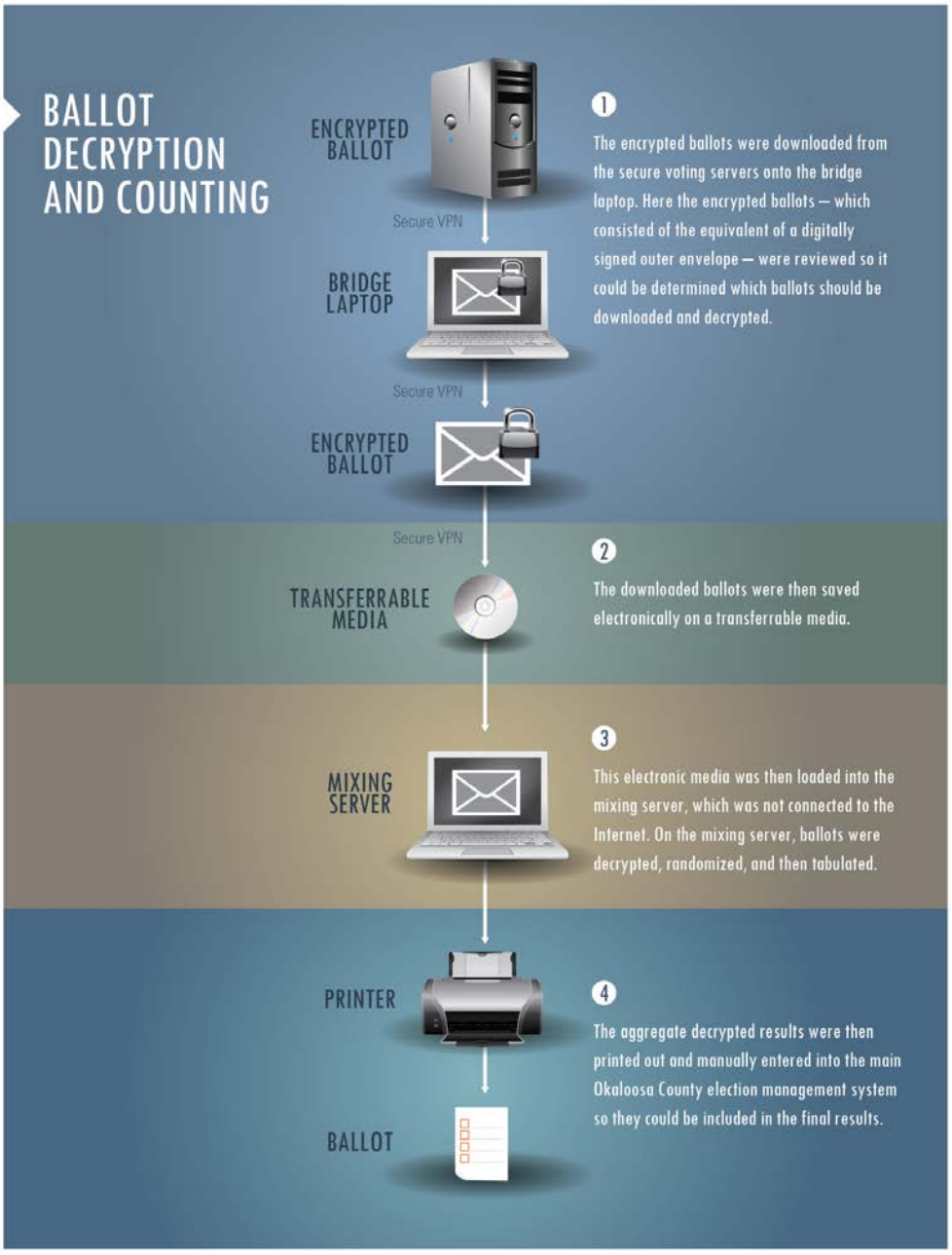
1. The kiosk workers in the kiosk voting process were able to know in real time, during initial check-in and during the credentialing process, whether the voter had sent in an absentee ballot by using the County's voter registration database. The connectivity to the voter registration system was done by having a dedicated computer in the County office connected to the authentication laptop at the kiosk site using GoToMyPC, which is the same process that Okaloosa County used in its early voting process.[13] The kiosk workers were able to use this connection to look up a voter in the system and program the voter access card so that it would provide the voter with the correct ballot. However, the kiosk workers did not have dynamic access to the voter registration system; they could not make any changes to the voter file.[14]
2. County election officials would know if they received an absentee ballot from a kiosk voter after the kiosk voter had voted in person because the voter's status as having voted was added to the voter registration database in real time. In

[13]An explanation of how this software functions can be found at http://www.gotomypc.com/remote_access/remote_access, last accessed September 30, 2012.
[14]Although the kiosk workers could not change the voter file, they could relay information, such as an address change, using this system.

addition, any mail ballots from kiosk voters would be held separately and the canvassing board would reconcile any issue that arose if there were two ballots from a single voter.

*Ballot Decryption and Counting.* The final issue with elections is ensuring that the electronic votes were transmitted accurately and tabulated correctly. Figure 4 illustrates the protocol that the County followed for the decryption and counting of ballots.

**Figure 4: Ballot Decryption Process**



Officials conducted a post-election vote comparison between the votes cast on the system and the paper records that were produced at the kiosk location and placed into the secure receptacles. The kiosk system, therefore, allowed for full auditability of the electronic ballots. This comparison was conducted at a public meeting, and the two records matched completely. By having a paper backup, it ensured that the election officials could audit the electronic records. However, under the procedures for the election, it was not defined whether the paper records could have substituted for the electronic votes if a decryption or downloading problem arose.

### *Administering the Kiosk Internet Voting System*

The implementation of the kiosk Internet voting system was managed by the staff of the Okaloosa County Supervisor of Elections, who has legal responsibility over elections held in the County. However, the reality of elections—and the management of most policy implementations today—is that a network of entities implemented the system and managed the process.

The overseas kiosk Internet voting system was implemented in three locations: Germany, Japan, and the United Kingdom. At each location, a team of kiosk workers were identified and recruited to implement the process remotely. The overseas kiosk locations were located proximate to U.S. military installations in Mildenhall, England; Ramstein, Germany; and Kadena, Japan. These locations were selected by the Okaloosa County election office after county officials examined the APO addresses contained in the County's voter registration database. It was determined that these three sites had 300 or more potential voters. The team chose to move forward with three locations because they wanted to ensure that enough voters used the system for an adequate pilot, and they were concerned that one location would not provide large enough numbers of voters. The kiosks themselves were not located on military bases because the project team wanted to ensure that they were accessible to civilian overseas voters as well as military personnel.

The system was publicized in a variety of ways. In early 2008, the Okaloosa elections office extracted a list of potential voters from its voter registration database. The office identified APO and FPO addresses at the bases near the selected kiosk sites, as well as others voters located close enough to participate at those sites. This list was updated monthly to reflect the movement of potential voters into and out of these areas. A letter was sent to voters in the kiosk regions on February 15, 2008, to announce the project and provide initial information. These voters were contacted by email to keep them apprised of the project progress, and a letter dated September 23, 2008, was mailed out to these voters as well. The Okaloosa Supervisor, Pat Hollarn, communicated directly with base officials at Kadena Air Force Base, Ramstein Air Force Base, and Mildenhall Air Force Base and requested that these individuals communicate information about the kiosk system to appropriate base personnel. Announcements about the availability of

voting kiosks were made at morning stand-up meetings on the bases. In addition, articles about the kiosks were published by the *International Herald Tribune*, *New York Times*, Associated Press, *Stars and Stripes*, and some base newspapers.

The kiosk location in England opened on October 24, 2008, and in Germany, on October 25. In Japan, the system opened on October 29, due to a delay caused when the kiosk location required permission from the Japanese government and this had to be coordinated through the State Department. The hours of operation were Monday through Friday from 10 a.m. to 6 p.m., and Saturday and Sunday from 10 a.m. to 4 p.m. (all times are local to the kiosk location). All locations closed on November 2, 2008 (the Sunday before Election Day), in order to ensure that voting materials could be returned to Okaloosa County before Election Day. All qualified military and civilian voters in the vicinity who submitted a request to vote by this method could use the kiosks.

The logistical issues associated with the deployment of the kiosk Internet voting locations, as well as the physical movement of election materials to those locations, was a significant issue. Interviews with Okaloosa County election officials, the ODBP project manager, and the vendor (Scytl) indicate that the physical deployment of kiosk Internet voting locations to overseas destinations presented a variety of logistical issues, including:

1. Transporting the voting materials and equipment overseas in a manner that was secure and met any specific importation and customs requirements.
2. Transporting the paper records back in a manner that would maintain the chain of custody of the ballots, even if the secured containers were opened by a foreign or domestic customs or security official. In this case, kiosk workers were not required to open the secure receptacles at any point during their travel, but they had been provided with additional bags and Okaloosa County Supervisor of Elections closures in case they were forced to open and then reseal the bags during transport.

The logistics for accomplishing these activities are critical for an effective deployment of any system.

## Section 2: Underlying Legal Structure Supporting the Okaloosa Project

Okaloosa County's ODBP effort required the County to navigate through a set of legal and regulatory hurdles to get the project under way. The project had to meet all Federal and Florida State laws related to elections in general and UOCAVA voting in particular. Okaloosa County administrators faced the challenge of conducting a pilot that would be compliant with State law but that would also allow them to serve the needs of UOCAVA voters using the Internet to vote. In general, few states have legal authorities that allow such pilots to be conducted. Fortunately, Florida has very clear rules that govern certain

aspects of absentee voting for overseas voters. Specifically, Section 101.697 of the Florida election code states:

> The Department of State shall determine whether secure electronic means can be established for receiving ballots from overseas voters. If such security can be established, the department shall adopt rules to authorize a supervisor of elections to accept from an overseas voter a request for an absentee ballot or a voted absentee ballot by secure facsimile machine transmission or other secure electronic means. If the department does adopt such a rule, the statute requires that "[t]he rules must provide that in order to accept a voted ballot, the verification of the voter must be established, the security of the transmission must be established, and each ballot received must be recorded.

In order to support the ODBP, the State of Florida has adopted rules that support the transmission of ballots to overseas voters. Florida Administrative Code Rule IS-2.030 Electronic Transmission of Absentee Ballots governs the electronic transmission of ballots to overseas voters. This rule (which had to be amended prior to the implementation of the ODBP) has several specific components:

- It allows for several modes for receiving an absentee ballot request, including telephone, writing, facsimile, electronic mail, and "other secure electronic means that is approved by the [State] Division of Elections."

- It clearly states what a request must include, such as voter name, legal address, date of birth, voter's location for ballot delivery overseas, and a signed application for electronic transmission of the ballot, if the voter selects that mode.

- It states how to log the transmission of the ballot and the required security of the ballot at the point of transmission origination.

- It provides that "An overseas voter may return a voted ballot either by facsimile, by mail, or by other secure remote electronic access," but that "[v]oted ballots returned by regular electronic mail will not be accepted."

This same rule also governs the way in which the notice of voting in the poll book—the Voter's Certificate—is transmitted when a voter votes remotely using an electronic format. Specifically, Rule 1S-2.030 F.A.C. states:

> Overseas voters submitting a voted absentee ballot by secure remote electronic transmission must send an electronic version of the Voter's Certificate directly to the supervisor of elections. A paper version of the

> Voter's Certificate may be placed in a separate ballot transmittal envelope for mailing. In order for the ballot to be counted the electronic version must be received by the supervisor of elections no later than 7:00 p.m. on election day in the time zone for the county in which the overseas voter is registered.

This section also elaborates on what the form of the Voter's Certificate should be.

This regulation makes clear that UOCAVA voters can vote electronically using an electronic remote voting process that has been certified by the State Division of Elections. However, as discussed below, the law in Florida is complex, requiring careful navigation of the legal process.

### *Legal Conflicts and Complexity—Paper Versus Electronic Ballots*

The Florida election regulations seem to be clear on how UOCAVA voters can cast ballots remotely. However, Rule 1S-2.030 F.A.C. runs into conflict with a more recent Florida statute related to voting methods. Section 101.56075 of the Florida Statutes says that "all voting shall be by marksense ballot utilizing a marking device for the purpose of designating ballot selections." A marksense ballot is an optical scan ballot that allows voters to either fill in a circle next to a candidate or connect two arrows next to a candidate to mark their choice. This choice is then read by an optical scanner. The only exception in the law is that "Persons with disabilities may vote on a voter interface device that meets the voting system accessibility requirements for individuals with disabilities pursuant to s. 301 of the federal Help America Vote Act of 2002." In short, Florida law suggests that the only way to cast a ballot in the State is on a paper ballot that is then scanned by an optical scanner.

### *Reconciling the Laws*

Okaloosa County officials had to determine how to reconcile these two laws. This issue was both legal and political; Florida was a swing state in the 2008 election and home of the 2000 election controversy. Fortunately, the County was able to get a legal opinion from the Director of the Division of Elections. The opinion, which was expressed in a letter to Dan McCrea of the Florida Voters Coalition, explains how the two laws were being interpreted by the State.[15]

The legal analysis states that UOCAVA voters have been treated uniquely in the election code for some time. For example, the deadline for receiving absentee ballots is different for regular and UOCAVA absentee ballots. The format for sending out

[15] A copy of this letter can be found on the Florida Voters Foundation website at http://www.floridavoters.org/downloads/OperationBravo.pdf.

absentee ballots is also different, depending on if the voter is a traditional or UOCAVA absentee voter. The bottom line of the analysis can be summarized as follows: "Because of this historical special treatment of overseas absentee ballots, and because there is no indication in the legislative history of section 101.56075 that the Florida Legislature intended to depart from this historical treatment by repealing section 101.697, we believe the two sections remain compatible."

What this clarification meant was that the County had to follow the procedures covered in Section 101.697, discussed previously. This section of the law provided the State and Okaloosa County a legal framework for conducting overseas voting for UOCAVA voters. The County had to show the Division of Elections that the voting system would be secure, would meet state certification standards, and would allow the Voter's Certificates to be transmitted correctly. Having a state law that allows for experimentation is critical for facilitating programs like Okaloosa's.

## Section 3: Voter Experiences with the System

Ninety-three voters used the system; 94 voters came to one of the kiosk Internet voting locations but one voter did not cast a ballot. Of the 94 voters:

- 40 were in England
- 33 were in Germany
- 21 were in Japan

After the 2008 election, the voters who used the Okaloosa County kiosk system were surveyed in order to evaluate the experience that they had using the system. Upon completion of the voting process, each voter was given the opportunity to complete a brief paper survey and provide feedback based on his or her voting experiences. Of the 93 voters who used the system, 91 completed the survey (a 98% response rate). The idea behind the survey was to determine the experience that these voters had using the system and to determine what types of people decided to use the system. The survey is important because it tells us about their voting experience.

### *Experience with the Kiosk System*

Participants were asked to rate several aspects of the system. First, they were asked how easy it was to follow the instructions on the voting system. All respondents said it was either "very easy" (92%) or "somewhat easy" (8%) to use the system. Second, they

were asked to provide an overall rating to their voting process. Again, all respondents said it was either “very easy” (97%) or “somewhat easy” (3%) to use the system.[16]

The respondents were also given the opportunity to provide open-ended responses to the question regarding the ease of using the system. The qualitative responses reflect the concerns that have been raised by many people regarding the by-mail voting process for UOCAVA voters. Consider the following unedited responses (:

- “Much less stress and concern than w/ mail-in ballots.”
- “Very easy and too hard to make a mistake.”
- “I believe the kiosk voting was very easy and wish it was available in prior years. Kiosk voting gave me more confidence that my vote counted than the absentee ballot.”
- “I'm not good at computers, but it was easy.”

The open-ended responses reflect that (1) UOCAVA voters worry about whether absentee paper ballots will be counted and (2) the kiosk system was very easy to use, even for those individuals who do not think of themselves as overly computer savvy.

Perhaps the most important evidence of the positive responses to the system is that all respondents said they would vote using an Internet kiosk again and all respondents but one said they found this mode of voting convenient.

### *Computer Skills of the Users*

The people who used the system are not only well educated but also expressed a relatively high level of computer savvy. All respondents said they had a computer in their home, and 86% stated they were very comfortable using a computer and 13% were somewhat comfortable. Only one respondent expressed being not very comfortable using computers. Given this relatively high level of comfort with computers, it is not surprising that 94% of them had Internet access at home. Table 1 provides an overview of voters’ responses on their comfort with technology.

[16]There are no comparative data on the ease of absentee voting. However, we do know from survey data in 2008 that, nationally, approximately 98% of voters reported no problems with the voting equipment that they used. See http://www.vote.caltech.edu/sites/default/files/Final%20report20090218.pdf

**Table 1: Voters' Comfort with Technology and Internet Security**

| | | Percent (Frequency) |
|---|---|---|
| Computer at Home | Yes | 100.0% (87) |
| How comfortable using a computer | Not very comfortable | 1.2% (1) |
| | Somewhat comfortable | 12.6% (11) |
| | Very comfortable | 86.2% (75) |
| Has Internet access at home | No | 5.8% (5) |
| | Yes | 94.3% (82) |
| How often use Internet from home | Daily | 83.1% (69) |
| | Nearly every day | 15.7% (13) |
| | Occasionally | 1.2% (1) |
| Do you shop online? | No | 3.5% (3) |
| | Occasionally | 33.3% (29) |
| | Often | 63.2% (55) |
| Do you bank and pay bills online? | No | 4.7% (4) |
| | Yes | 95.4% (82) |
| Comfort sending personal and financial information over the Internet | Somewhat comfortable | 43.7% (38) |
| | Somewhat uncomfortable | 5.8% (5) |
| | Very comfortable | 49.4% (43) |
| | Very uncomfortable | 1.2% (1) |

These individuals also used the Internet for a wide array of activities. Email and online banking were the two most common activities; 83% of them email daily and 16% email nearly every day. Almost two-thirds of them (63%) shop online often and another one-third shop online occasionally. Only 3.4% said they do not shop online. Just over 95% of these individuals use online banking or use the Internet to pay bills. Together, the number of respondents who use the Internet daily for email, who shop online often, and who pay bills online equals 47 of the 87 respondents (54%) who answered the questions about Internet use. Another 27 respondents (31%) were almost equally prolific users of the Internet; most just reported shopping online "occasionally" rather than "often."

When respondents were asked, "How comfortable are you sending personal and financial information over the Internet?" 43 of the 87 respondents who answered the question (one fewer than half) said they were "very comfortable" sending personal and financial information over the Internet. Only six respondents (7%) said they were either "somewhat uncomfortable" or "very uncomfortable" doing so. What makes these six respondents interesting is that their potential concern about sending such information

over the Internet did not affect their confidence that their votes would be counted accurately. All told, five of the six respondents were “very confident” that their ballot was counted accurately and the other was “somewhat confident.” However, the “somewhat confident” voter was also “not too confident” about the security of the kiosk Internet voting system. This voter, when asked about Internet voting, said: “Doesn't feel normal. Feels a little less safe for the vote.” This one user was also not a prolific Internet user, although the user did bank online. Interestingly, four of the six individuals who expressed a concern about the security of the kiosk system were still prolific Internet users for shopping, bill paying, and email.

### *Travel Times and Distance Traveled*

The typical user of the system traveled for 10 minutes or less to get to the kiosk location. However, 1 in 10 users traveled for more than one hour to vote on the system. If we consider distances traveled, most users traveled 10 miles or fewer. However, again we see that 7 users traveled 50 miles or more to use the kiosk system. When asked how far they would be willing to travel to vote on a kiosk system, the average respondent said he or she would travel 30 minutes or less.

## Section 4: Kiosk Worker Experiences with the System

Delegation is a critical issue in elections. The problem, from the perspective of the election official, is that the official cannot oversee all aspects of voting on Election Day.[17] Polling places are not typically under the direct control of the election official; instead, polls are located in government buildings, schools, community centers, churches, and even in private residences and businesses that agree to host the election for one day. Polling places are usually staffed by lightly trained individuals who are, in essence, paid volunteers, albeit typically conscientious volunteers who often do the job election after election.

With absentee voting, the delegation problems are similarly difficult.[18] The election official has to relinquish control of the ballot to the postal system, which then, hopefully, delivers the ballot to an address where the voter receives it. Next, the election official delegates to the voter the duty of completing the administrative aspect of returning the ballot—remembering to include the ballot, signing the outer envelope, and mailing it back in a timely manner. The ballot is then delegated to the postal system, again, for its return to the election office. In the case of UOCAVA voting, the mailing process is typically even more delegated. The ballot likely passes through both the U.S. Postal

[17]See R. Michael Alvarez and Thad E. Hall, “Controlling Democracy: The Principal-agent Problems in Election Administration,” *Policy Studies Journal*, *34*, 4: 491–510 (2006), for a full discussion of these issues.
[18]See R. Michael Alvarez, Thad E. Hall, and Betsy Sinclair, “Whose Absentee Votes Are Counted?” *Electoral Studies*, *27*, 4: 673–683 (2008).

Service *and* a second mailing bureau—either belonging to a foreign country or some part of the U.S. military (or a military contractor)—in both the delivery to the voter and back to the election official.

These delegation problems were especially acute in the case of the ODBP. In a typical election setting, even in some of the nation's largest counties, the most remote voting locations are in the same time zone and are usually no more than a relatively short drive away. In the situation of the ODBP, the kiosk workers had to be trained to be much more autonomous than the typical poll worker because they were separated by great geographic distances and many time zones from the election administration staff in Okaloosa County. Understanding these kiosk workers' training, experiences, and perceptions is critical for understanding how this pilot project fared and for determining ways to improve the training and procedures for future implementations of similar remote electronic voting projects.

Recently, scholars have studied poll workers, their experiences, and training, and this research indicates that well-trained poll workers are a key component to the successful conduct of an election, and to positive voting experiences by voters.[19] This research suggests that the quality of the training of the ODBP workers was important to the success of the program. In 2008, Okaloosa County identified individuals in the County to be kiosk workers and these people traveled to the kiosk locations to work. These individuals were experienced poll workers with previous experience in elections and were known to have strong technology skills. Because the kiosk workers and election officials alike were implementing a brand new system, Okaloosa County could not solely fall back on training materials that were already developed. Instead, the County worked with Scytl to provide both training and real-time support so workers would be well trained on how to run the system. The kiosk workers received approximately four hours of hands-on training and very clear manuals for operating the system. As one person from Scytl noted, the system materials and the hardware itself were color-coded and organized in a highly effective manner—blue cables went into ports with a blue color, for instance—to ensure there would not be problems implementing the system. They also had the ability to fall back on technical support whenever any problem arose that had not been addressed during the training.

[19]See, for example, Thad E. Hall, 2009, "Voter Attitudes Toward Poll Workers in the 2008 Election," Midwest Political Science Association; Thad E. Hall, J. Quin Monson, & Kelly Patterson, 2008, "Poll Workers and American Democracy"; Bruce Cain, Todd Donovan, & Caroline Tolbert, *Democracy in the States: Experiments in Election Reform*, Washington, DC: Brookings Institution Press; Thad E. Hall, J. Quin Monson, & Kelly Patterson, Forthcoming, "The Human Dimension of Elections: How Poll Workers Shape Public Confidence in Elections."

In January 2009, kiosk workers from each location were surveyed to determine their experience with the process. The survey, which was conducted over the Internet, included a series of closed- and open-ended questions regarding their training, the experience they had with the system, and their interactions with the various players in the implementation process.

When asked about the quality of their training, two teams thought the training was excellent and the third team thought the training was good. All three teams thought their training covered everything they needed to know to set up, operate, and troubleshoot the kiosk Internet voting system.[20] The timing of the training, close to when the system was used, was viewed as helpful by one kiosk worker team because there was little lag between training and system implementation. Most of the issues that arose were, as one team put it, "real life unknown-unknowns," or things that the training team could not have predicted. This same team stated, "we had to adapt and it turned out to be an exceptional experience." One of the three teams did experience some problems setting up the kiosk Internet voting systems and noted they needed assistance and substantial time to get the voting systems up and running. This team also noted that clarification of some procedures (especially operating hours) would have been helpful.

The kiosk worker teams provided an evaluation of their experiences setting up the voter authentication laptop and the voting stations. Two of the three teams had little difficulty when they went to set up both of these critical elements. One of the teams, however, encountered a significant problem regarding their access to the Internet from the kiosk location. The hotel where this team was located used an Internet Service Provider (ISP) to which the kiosk stations could not stay connected; the hotel's ISP would terminate a connection after a specified period. The solution required a technical support person from Scytl to come to the location and install a new hub to make the system work. This is just one example of a problem that had to be worked through—an "unknown-unknown."

Clearly, with various "unknown-unknown" issues cropping up, having responsive and useful technical support from both Okaloosa County and Scytl was important. In particular, Scytl established a support center that was open 24 hours a day, seven days a week, in order to answer questions from the kiosk workers. The kiosk worker teams rated the quality of the technical support they received from both entities as "excellent." Some of the comments the kiosk teams provided illustrate how important technical support was to them in this pilot project. For example, Scytl provided technical support

[20]This survey was completed between January 13, 2009, and January 26, 2009. The lead kiosk worker from each of the three sites completed the survey (100% response rate). The survey was administered via online survey. Each lead poll worker was contacted via email regarding the survey prior to being sent the link.

to fix an IP address problem in the United Kingdom, a router problem in Japan, and a setup problem in Germany. Similar evaluations were provided for technical support from Okaloosa.

The kiosk workers did not find closing the kiosk location to be problematic. Each team said the procedures for shutting down the kiosk location were quite clear and easy to follow and the kiosk teams reported no problems associated with the daily setup or shutdown procedures in their kiosk location. The kiosk workers had few problems with the daily verification of the votes. The problems reported were as follows:

- one team had trouble validating the first CD-ROM but used the backup CD-ROM;
- one team indicated in a self-report that they might have skipped a step in the verification process but that the system appeared to work properly; and
- one team indicated trouble with the Internet connection at their polling place location (the ISP problem discussed earlier).

We asked the kiosk teams whether the individuals who voted in their kiosk locations had any problems in the voting process. Only one of the teams said any voter had problems. The major problem that team encountered was that a voter started the voting process but decided not to finish voting and also did not want to restart the process.[21] Appendix B contains an example of the incident form that kiosk workers used to report issues such as these. Generally, when the kiosk teams were asked about their confidence that all votes that were cast were counted properly and that the system was secure, each team responded they were very confident. Another indication of their confidence in the system was that all of the kiosk teams said they were very likely to participate in a similar project in the future.

Toward the end of the survey, the kiosk teams were asked if they had any suggestions for how to improve the system or process. The teams made two recommendations:

1. the need for more information about the races and ballot issues; and
2. the need for better publicity of the system.

[21]This voter did not complete the process for personal reasons. The voter had already used the by-mail process but wanted to vote on the kiosk to ensure the vote was counted. Okaloosa County election officials were able to subsequently determine that this absentee ballot was included in the final tabulation.

## Section 5: Efficacy of the System

*System Certification and Approval*

The review of the ODBP was undertaken by the State of Florida in 2008. Two sections of Florida law and regulations played a role in this: §101.017 and DS-DE 101 Form (Voting System Standards), governing certification; and §97.021 and 1S-2.030, governing absentee ballots for overseas voters.

Florida has a Bureau of Voting Systems Certification (BVSC) within the Florida Division of Elections. As their website notes, "In accordance with section 101.017, Florida Statutes, the bureau establishes and implements Florida's voting system certification standards as well as provides technical assistance to the county Supervisors of Elections accordingly." The BVSC implements the requirements contained within the State's voting system standards. The certification statute requires the Department of State to adopt "rules governing standards and certification of voting systems to determine the adequacy and effectiveness of such rules in assuring that elections are fair and impartial."[22] The BVSC is required to review the state's rules and regulations governing voting system standards every two years and it states on its website, "The bureau strives to keep Florida's voting system standards current with evolving voting technology and with the Election Assistance Commission's Voluntary Voting System Guidelines [VVSG]." However, the BVSC standards[23] and the 2005 VVSG[24] are obviously different: the BVSC regulations are 67 pages; the VVSG is 374 pages and the draft follow-up to the VVSG is 598 pages.[25] That being said, the Florida standards cover all of the topics and issues that are contained within the VVSG.

The State of Florida does not require their voting systems to have an Election Assistance Commission (EAC) certification. Florida publishes its own Voting System Standards (VSS) document that serves as the source of functional testing requirements. The content of the version of the Florida VSS used for ODBP testing was nearly identical to the 2002 Voting System Standards document promulgated by the National Association of State Election Directors (NASED). This professional association sponsored a voting system testing program prior to the transference of that activity to the EAC pursuant to the provisions of the Help America Vote Act of 2002.

[22] http://election.dos.state.fl.us/division/bureau/voting-sys.shtml
[23] http://election.dos.state.fl.us/rules/adopted-rules/pdf/DSDE101Form.pdf The BVSC rules explicitly state (page 4): "Compliance with the FEC Voting Systems Standards does not establish compliance with the Florida Voting Systems Standards. Some of the work product necessary to establish compliance with the FEC standards can be used to establish compliance with some of the Florida requirements."
[24] http://www.eac.gov/testing_and_certification/2005_vvsg.aspx
[25] http://www.eac.gov/assets/1/Page/TGDC%20Draft%20Guidelines.pdf

Neither of these standards provided fully adequate testing requirements for the types of voting technology, communications systems, and security features employed in the ODBP system. Consequently, an agreement was reached between the State of Florida Bureau of Testing and Certification, the ODBP project manager, and the vendor that additional requirements would be integrated into the testing program to cover these elements. These requirements were drawn from a variety of recognized IT standards sources, such as the Federal Information Processing Standards (FIPS) and the International Organization for Standardization (ISO). This approach of enhancing and expanding the testing requirements is identical to that taken for the VOI and SERVE projects. The EAC testing and certification process also allows for modification of the testing requirements in the Voluntary Voting System Guidelines (VVSG), the EAC's testing requirements document, as required to be appropriate for the technologies being tested. The ODBP system also had to be tested for compliance with the requirements set forth in Florida Administrative Rule 1S-2.030, Electronic Transmission of Absentee Ballots. This rule permitted a supervisor of elections to provide the option of voting by secure remote electronic transmission for overseas voters if the requirements of the rule were met.

The Florida certification process requires the vendor to prepare a comprehensive Technical Data Package (TDP) that describes the components and processes of the voting system in great detail and includes the system source code. This is identical to the EAC process. However, the Florida Bureau of Voting Systems Certification (BVSC) conducts voting system testing in-house, but the EAC uses accredited Voting System Test Laboratories. The BVSC sometimes uses external labs to assist with highly specialized aspects, such as code review. The Security and Assurance in Information Technology (SAIT) Laboratory at Florida State University was tasked to put together a team of nationally recognized experts to review the source code and perform a security analysis of the ODBP system. The SAIT Lab had previously performed source code reviews for other voting systems undergoing Florida certification.

The ODBP project team coordinated closely with the BVSC throughout the process of refining the testing requirements and system specifications. The project team and the vendor spent considerable time and effort ensuring that BVSC staff was well informed regarding the technical details of system operation and functionality. This coordination process is similar to that which takes place between a system vendor, EAC certification program personnel, and the voting system test lab.

The biggest differences between the Florida and EAC certification processes are time and cost. For a variety of reasons, the EAC certification process can take more than a year to complete once the vendor has submitted the TDP. The ODBP system TDP was delivered in May 2008 and system certification was granted in late September of that

year. The BVSC does not charge for system testing and certification, and the SAIT code review team worked pro bono. In contrast, the EAC testing process is quite expensive.

The ODBP was given provisional certification under Florida law. As the BVSC states:

> The Florida Voting Systems Standards are applicable to all voting systems which are submitted to the Division for certification or for provisional certification. Because provisional certification is designed to allow for the approval of hardware and software for innovative use as well as new systems for actual election use, voting systems submitted to the Division for provisional certification are not required to have undergone the Hardware Qualification Tests prescribed in these standards.[26]

Under the provisional certification process, only the software for the ODBP was required to be tested. In addition, any standard COTS hardware is not required to be tested.

Compliance with this Rule was provided in two stages. First, a detailed report of the procedures and description of the ODBP system was submitted on June 19, 2008.[27] This report was received by the Florida Division of Elections, and reviewed on July 3, 2008.[28] At that time, approval was contingent on the Division of Elections testing of the electronic ballot transmission system with respect to three specific criteria:

- The verification of the voter must be established.
- The security of the transmission must be established.
- Each ballot received must be recorded.

A test team examined the ballot transmission system and on September 23, 2008, issued **Provisional Qualification Test Report, *Scytl Release 1.0, Version 1*.**[29] In that report, the testing team examined the ODBP system with respect to the three specific criteria above through source code review, functional testing, and system security analysis.

Functional testing was undertaken in two stages: (1) a system setup and configuration step, and (2) a subsequent step in which the testing team conducted seven elections that examined the functionality of the voting system. The functional testing process allowed the testing team to establish that the system verified the voter and that each ballot received was recorded. It also allowed the testing team to examine aspects of

[26]Quote from page 12 of the BVSC.
[27]http://election.dos.state.fl.us/voting-systems/pdf/ODBPplanJune_19.pdf
[28]http://election.dos.state.fl.us/voting-systems/pdf/PlanApprovalLetter_7-3-08.pdf
[29]http://election.dos.state.fl.us/voting-systems/pdf/ScytlRel1-0Version1-TestReport.pdf

system security; for example, the generation of election cryptographic keys, the communication channels, and the system audit logs.

The source code review and system security analysis were used to establish the security of transmission. The testing team was able to undertake a detailed source code review, examine the data system center, and finally to also undertake a detailed threat assessment analysis. All of these are presented in the Provisional Qualification Test Report.

Appendix C provides examples of the Certification Requirements, and a document mapping the ODBP Security Requirements to the 2005 Voluntary Voting System Guidelines (VVSG), guidelines adopted by the EAC for the certification of voting systems.

A summary of the project timeline is presented in the table below. The entire system certification took almost nine full months, starting in December 2007 when Okaloosa County submitted its voting system application to the State. The system then had to be independently reviewed, a project plan had to be reviewed, and the system security and functionality had to be reviewed. For each of the review tasks listed, there were numerous conference calls, exchanges of memos, requests for clarifications, and other information exchanges required to bring this project to completion.

| Time Frame | Review Process Task |
|---|---|
| December 7, 2007 | The Okaloosa County Supervisor of Elections and Scytl submit voting system application to the Bureau of Voting Systems Certification (BVSC). |
| May 20, 2008 | The Florida State University's Security and Assurance in Information Technology Laboratory is commissioned to perform independent review of Scytl's system source code. Analysis report issued. |
| June 19, 2008 | The final project plan submitted to the Division of Elections. |
| July 3, 2008 | The final project plan approved by the Division Director. |
| December 7, 2007, to August 12, 2008 | Application, technical data package, and system source code reviewed by the BVSC. |
| July 14 to August 8, 2008 | Functional system testing conducted by BVSC. |
| July 31 to August 3, 2008 | Physical security of the data center housing the servers to be used in the project reviewed by the Florida Department of State staff. |

Given the tight time frame for completing this review, effective project management was critical for guiding a project through each step. This review required coordination between Okaloosa County, the State Division of Elections, Operation BRAVO, Scytl,

and the entities that conducted the security and system functionality tests. Clear communication, rapid response, and attention to the legal review requirements are all required to make this process flow effectively.

### *System Costs*

A kiosk Internet voting system has four components:

1. a relatively fixed cost for the system software as well as for project management;
2. a fixed cost for system certification, which will increase based on the number of times the system has to be certified to meet the various state legal requirements;
3. a fixed cost for each kiosk, which would include costs related to the salary for kiosk workers, the kiosk hardware, the shipment of materials to the kiosk locations, the shipment of ballots and materials back to the LEO from the kiosk locations (including tariff costs); and
4. a cost associated with running a call center to support each kiosk.

ODBP team members provided approximate costs for system development and implementation for the Okaloosa County project that ranged from $400,000 to $580,000; this did not include a significant number of costs, such as travel and various elements of certification costs, which were provided pro bono or paid for by individual team members.

If the system were to be expanded to more counties or more states for future elections, additional certification costs would be required. Further, if changes were made to the system interface, it would have to go back through certification. In addition, there are a number of ongoing costs to operating such a system, including:

- Shipping materials to locations
- Paying poll workers
- Kiosk worker travel/hotels/per diem
- Site costs
- Salary for a project manager
- Running a call center (a cost absorbed by Scytl during this pilot)

Depending on specific needs, it would have been possible to use the ODBP technical system for additional elections with little additional system development. However, the ongoing travel, materials, and staff costs could be significant.

## Section 6: Lessons Learned

Since the 2008 election, Okaloosa County has not used a kiosk Internet voting system again. However, based on the evaluation of the ODBP, the following "lessons learned" can be identified, which could assist in any future efforts to implement a similar system.

### *Legal Structure*

For any similar future project to be successful, the state must have a legal structure that allows for kiosk Internet voting. In Florida, there were clear rules in place that allowed for experimentation with certain aspects of absentee voting for overseas voters. Having a state law that allows for this experimentation is critical for facilitating programs like Okaloosa's. At a minimum, such a statute must (1) allow ballots to be transmitted electronically, (2) address how paper records are to be secured and if such records can be considered the ballot of record should a problem occur with the electronic ballots, and (3) address the chain-of-custody requirements. Having a state law that allows for this experimentation is critical for facilitating programs like Okaloosa's.

### *Testing and Certification*

The testing and certification process for ODBP was challenging, particularly because of the unique nature of the system used and because of time pressures. However, as each state has a different process and requirements, a future multistate kiosk-voting project will need to have a well-structured plan for testing and certification. The process for testing and certification should begin well before the election that the kiosk Internet voting system deployment is planned for—our interviews with project stakeholders indicate perhaps as much as 16 to 24 months in advance.

### *Advertising*

An effective system is a system that is used by voters. It is imperative that a comprehensive campaign for advertising the availability of the kiosk Internet voting option is conducted so that system use is maximized. Given the usage of the ODBP kiosks, it is especially important that the availability of the kiosk system is made known to younger potential voters—especially enlisted military personnel. A kiosk Internet voting system has a certain set of fixed costs: the kiosk sites must be found, equipped, and staffed. Once those investments are made, the number of voters who take advantage of those investments should be maximized.

### *Logistics*

From virtually every person we talked with, we heard a constant refrain: the technology wasn't the issue, but the logistics were. Implementation of a kiosk system for UOCAVA voters in overseas locations takes one of the most difficult tasks facing election officials in the United States—finding, staffing, and equipping polling places–to a different level. For overseas kiosk Internet voting to work, kiosk sites need to be located in other nations, materials for those kiosks need to be shipped to those locations and returned,

and kiosk workers must be recruited and sent to these locations. An important question for future overseas kiosk Internet voting projects will be how these logistical issues might scale if more ambitious projects are implemented (for example, involving more kiosk locations, more overseas nations, and possibly a larger number of UOCAVA voters).

### *Auditing*

Post-election ballot audits are becoming an increasingly important mechanism for verification of the integrity of an election, and for ensuring stakeholder and voter confidence. A post-election vote comparison between the votes cast over the Internet and the paper records that were produced at the kiosk location and placed into the secure receptacle was conducted for ODBP. This comparison was conducted at a public meeting, and the two records matched completely. By having a paper backup, it ensured that the election officials could have counted the votes even if a decryption or downloading problem had arisen. Future projects should be designed and implemented to ensure post-election ballot auditing.

### *Chain of Custody*

Given the issues related to logistics and auditing, it is also critical that any kiosk system have clear procedures for managing the chain of custody of the election process. All aspects of the electoral process need to be documented and procedures need to be in place for securing the critical functions of the kiosk systems—the electronic ballots, the paper records, the voter registration function, and the list of voters who used the system. A system that has a strong chain-of-custody process will ensure that the system has fewer opportunities for failure and that any violations of the integrity of the process can be identified.

### *Kiosk Workers*

Successful implementation of any election requires that those who staff poll sites and who interact with voters are well trained and that they have adequate means to address the many unforeseen contingencies that might arise. This is a basic issue of delegation of authority, and this issue becomes more profound when voting locations are moved overseas (thousands of miles and multiple time zones distant from the election jurisdiction). Future implementations of kiosk Internet voting, in particular those that might have a larger scope and scale than ODBP, will need to consider carefully how to recruit, staff, and train kiosk workers for overseas kiosk operations. Any kiosk system will also need to examine state requirements for workers—such as a balance of partisans or the number of individuals required to staff a location—to ensure that the kiosk system does not violate some set state law requirements in this regard.

### *System Support*

One of the objectives of a pilot study is to uncover the “unknown–unknowns” and develop remedies and contingencies prior to full implementation. When ODBP was implemented in 2008, a variety of technical administration issues came up and were resolved by the technology vendors’ support staff. In one case, a technician flew in-country to replace a piece of hardware the next day. Given the amount of equipment and time sensitivity of this process, it is clear that 24/7 tech support was important for the success of ODBP and the extent of technical support will be an important consideration for future kiosk Internet voting projects.

### *User and Kiosk Worker Feedback*

The technology and the procedures utilized in the ODBP were seen by the users (both the kiosk workers and voters) as easy to use and inspiring confidence. Design issues are important for any voting system, but they take on additional importance for overseas kiosk voting situations. Voters participating in an overseas kiosk Internet voting project will likely be encountering a new voting system, and having a well-designed and accessible voting system will make the process easier for them, reduce errors and mistakes, and should provide an enjoyable voting experience. It will be critical to design an effective evaluation for implementation of the system that includes effective user and kiosk worker feedback components.

# Appendix A: Example Voter Certificate

Date: 10/28/2008
Time: 08:56:54 AM

**Patricia M. Hollarn**
Supervisor of Elections

Okaloosa, FL

## ODBP Kiosk Voter Certificate

Name: [redacted]
Address/ Dirección Residencial/Adrès Kay W: [redacted]

Birth Date:
Voter ID: [redacted]

Election Name: 2008 General Election
Election Date: Nov/04/2008
Voted Date: Oct/28/2008

**Picture ID Provided**

| | | |
|---|---|---|
| ☐ Debit or credit card | ☐ Neighborhood Assn. | ☐ US passport |
| ☑ FL driver's license | ☐ Public Assistance ID | ☐ Other |
| ☐ FL ID card | ☐ Retirement center ID | ☐ _____ |
| ☐ Military ID | ☐ Student ID | |

**Initials of Inspector at check-in**

I, **Mary A Sharp,** am a qualified elector in this election and a registered voter of Okaloosa, Florida. I do solemnly swear (or affirm) that I am the person so listed on the voter registration rolls of Okaloosa and that I reside at the listed address. I understand that if I commit or attempt to commit fraud in connection with voting, vote a fraudulent ballot, or vote more than once in an election I could be convicted of a felony of the third degree and both fined up to $5,000 and imprisoned for up to 5 years. I understand that my failure to sign this certificate invalidates my ballot.

### Certification and Receipt for Ballot

I acknowledge and understand the certificate above, I understand how to properly mark my ballot, and I have been issued the following:

Precinct: **35 (35.1)** Ballot Style: **G35** Ballot #: **(T/Scrn)**

**X** [redacted]

**Initials of Inspector issuing ballot** _____

**Bod Printer #** _____
**(if applicable)**

## Appendix B: Example Kiosk Worker Incident Report

GERMANY

**ODBP INCIDENT REPORT**

**(To be used at the kiosk sites)**

TO: SUPERVISOR OF ELECTIONS, OKALOOSA COUNTY, FLORIDA

The undersigned do(es) hereby acknowledge that on this 28TH day of OcT, at Kiosk Site (please, select one) ☐ UK ☐ Germany ☐ Japan, during the hours while the polls were open for the election "General Election 2008", an incident occurred that interfered with or hindered the administration of the election and voting by electors. (Please describe incident and person or group causing it:)

The printer printed the voter certificate on two sheets instead of one ???
Everything on each piece was OK so we taped the two together

KIOSK OFFICIAL [redacted]

WITNESS: [redacted]

[redacted]
REGISTERED VOTER

[redacted]
PRINT NAME of signature above

Street Address: [redacted]

City: [redacted] Zip Code: [redacted]

TIME OF INCIDENT: 2:42 pm

TELEPHONE:

## Appendix C: System Certification Checklists