Report on IVAS 2006

As Required by Section 596 of the
*National Defense Authorization Act
for Fiscal Year 2007*

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INTRODUCTION

This report is an assessment of the 2006 Integrated Voting Alternative Site (IVAS) developed for use in the November 7, 2006 general election by the Federal Voting Assistance Program (FVAP) to further improve ballot request and delivery procedures and provide enhanced voting assistance for citizens covered by the *Uniformed and Overseas Citizens Absentee Voting Act (UOCAVA)* of 1986. Included as background in this report is an overview of previous electronic voter assistance projects undertaken by the FVAP leading up to the implementation of 2006 IVAS.

Challenges to Absentee Voting

UOCAVA requires the states and territories to allow certain citizens to register and vote in elections for federal office using absentee voting procedures and provides the authority for the administration of federal voting assistance responsibilities. The Secretary of Defense is the presidential designee for administration of the federal functions of the *Act*. The Director, FVAP carries out the program on behalf of the Secretary. *UOCAVA* covers the voting rights of absent uniformed services members (including the Coast Guard, the Commissioned Corps of the Public Health Service, and the National Oceanic and Atmospheric Administration), and the Merchant Marine, their dependents of voting age, and all other U.S. citizens residing outside the United States. The *Act* covers more than 6 million citizens, including approximately 3.7 million overseas citizens not affiliated with the government, 1.4 million military service members, 1.3 million military dependents, and 100,000 federal employees overseas. Management of the program requires coordination with Executive Branch departments and agencies, the Congress, state and local governments, political parties, U.S. corporations, and national and international organizations.

The FVAP's mission is to facilitate the absentee voting process for *UOCAVA* citizens living around the world. This includes consulting with state and local election officials, providing absentee registration/ballot request forms along with Federal Write-in Absentee Ballots (FWAB), and distributing descriptive material on state absentee registration and voting procedures. The primary method of transmitting absentee balloting materials between the voter and local election offices is by mail. While this method works in most cases, it is a challenge to deliver balloting materials in a timely manner to a voting population that lives or serves in remote areas or distant places and is mobile (e.g., ships at sea, combat areas, missionaries and Peace Corps workers). Voters may not be able to receive their mail in a timely fashion if they are temporarily away from their place of residence, or, in the case of active uniformed service members, away from their current duty station on temporary assignment. Many *UOCAVA* citizens remain in their current locations for less than 2 years (Source: The FVAP 1996 Post Election Survey Final Report); they may not receive a ballot at all if they have moved without notifying their local election officials of their new address. Generally, absentee ballots are not forwarded by the postal system. Post-election surveys conducted by the FVAP have shown that insufficient ballot transit time is a significant barrier to absentee voting by a number of *UOCAVA* voters. The Government Accountability Office (GAO) reported that one-way transit times for first class mail to *UOCAVA* voters can range from as little as five days to as much as a month. The FVAP estimates that 45 days are needed to ensure that transient *UOCAVA* citizens and those

in remote areas have sufficient time to receive, vote and return their ballots in time to meet the state deadlines for counting.

Absentee voter registration and ballot request requirements vary by state and territory. The FVAP releases a *Voting Assistance Guide* every two years informing absentee voters about state requirements for completing and submitting the Federal Post Card Application (FPCA). The FPCA is used by the voter to register and request an absentee ballot. If the absentee voter, particularly the *UOCAVA* voter, has not begun the ballot request process early enough, the voter may not receive his/her ballot package in time for the election, particularly if the FPCA contains errors that need to be addressed prior to the local election official's approval of the ballot application.

In recent years, as the deployment tempo of military forces has increased, a growing number of military voters are faced with situations where it may be more difficult to register and vote by mail because of their mobility or remote location where mail service is inconsistent, untimely or otherwise compromised. That, combined with the late scheduled primaries in many states and the possibility of late mailing of absentee ballots, can create an unfeasible timeframe for the voter to receive and return his/her ballot in time to be counted. The DoD and state cooperative efforts to institute faxing and emailing of balloting materials have worked to enfranchise *UOCAVA* citizens who otherwise might not be able to vote. As the FVAP learned from past elections, forward deployed military may not have access to fax machines, but they have email capabilities. Therefore, the implementation of processes that allow for a variety of alternatives to the by-mail process are crucial to enfranchisement. Many states and territories have proactively expanded their electronic transmission capabilities to include email, and the FVAP continues to aggressively urge states to consider using email as an integral part of their ballot request and delivery process for *UOCAVA* citizens.

Voter participation in mid-term elections is historically less robust than that of presidential elections. For the 2006 mid-term election, the FVAP realized that *UOCAVA* voters in particular may be late to learn about the candidates and issues and postpone requesting balloting materials until the transit time becomes too tight to accommodate their requests. Quick and easy methods for requesting and returning ballot materials help to eliminate that perceived stumbling block to voter participation and encourage voter involvement.

Addressing the Challenges

Acknowledging these impediments to voter involvement in the 2006 election, the FVAP responded by developing considerable enhancements to its website and outreach that combine to support its ongoing mission of voter education, assistance and enfranchisement of *UOCAVA* voters.

Additionally, recognizing that election administration in the United States is primarily a matter of state law, the Department is engaged in an ongoing process of pursuing *UOCAVA* state legislative initiatives to improve and bring simplicity, uniformity and clarity to the absentee voting process. These efforts by the Department continue to reduce real and perceived barriers to voter participation by *UOCAVA* citizens.

PREVIOUS AND ONGOING ELECTRONIC VOTING ASSISTANCE EFFORTS

Internet Voting Projects

The 2006 IVAS project is not the first electronic solution to be developed by the FVAP to extend access to the polls for *UOCAVA* voters. For seventeen years the FVAP has developed and promoted electronic transmission alternatives to the by-mail absentee voting process, with a goal of meeting voters' needs and improving the absentee voting experience.

Voting Over the Internet Project

In 2000 (after a 2½ year cooperative development process involving the FVAP, state and local election officials, supporting DoD agencies, and the firm Booz Allen & Hamilton), the FVAP announced the implementation of the Voting Over the Internet (VOI) Pilot Project for use in the November 2000 general election. The goal of this small scale VOI project was to examine the feasibility of using the Internet as an alternative method for remote absentee registration and voting for *UOCAVA* citizens. As changes in the voters' physical location is transparent to the Internet, the VOI system was able to mitigate some of the mobility issues experienced by those citizens as the VOI system enabled citizens to register and/or vote regardless of physical location.

The Director, FVAP managed the project. The participating state jurisdictions were Florida, South Carolina, Texas, and Utah. The states of Florida, Texas and Utah designated specific counties to participate; the state of South Carolina chose to make the Pilot available to any *UOCAVA* citizen in the state.

The VOI Pilot Project, certified for use as electronic equipment in Florida, was the leading edge of development for secure Internet voting systems and provided the first opportunity for binding votes to be cast over the Internet in a general election for federal, state, and local offices, including the president and Members of Congress. In 2003, the FVAP received the Excellence.Gov award for the Voting Over the Internet project from the Federal CIO Council and The Industry Advisory Council. The Caltech/MIT Voting Technology Project rated the VOI voter registration application a best practice for elections.

Secure Electronic Registration and Voting Experiment (SERVE)

Although the VOI Pilot Project was carried out on a small scale, its success was deemed sufficient to direct the DoD to continue electronic voting experiments and to gather data and make recommendations regarding the continued use of the Internet for registration and voting for *UOCAVA* citizens.

Section 1604 of the Fiscal Year 2002 *National Defense Authorization Act* (Public law 107-107) directed the Secretary of Defense to carry out a demonstration project that would enable absent uniformed service voters to cast ballots through an electronic voting system in the 2002 or 2004 general election. The Director, FVAP, established a project management office to manage the Secure Electronic Registration and Voting Experiment (SERVE). The objectives of

the project were twofold: 1) to assess whether the use of electronic voting technology could improve the voting participation success rate for *UOCAVA* citizens and 2) to assess the potential impact on state and local election administration of an automated alternative to the conventional by-mail process of absentee registration and voting.

Building on the technical and security foundation established with the VOI Project, the FVAP and Accenture eDemocracy Systems (the vendor that built the SERVE) worked closely with seven volunteer states to develop a larger scale, integrated, secure web-based registration and voting system for use in the 2004 elections. This system envisioned allowing the voter to register and vote using any computer with Internet access anytime and from any location. It would allow the voter to register from one physical location and vote from another without having to notify his/her election official of a physical address change. This flexibility and location independence was ideally suited to the circumstances of many *UOCAVA* voters. Additionally, the electronic nature of the registration process meant that many of the problems associated with Federal Post Card Application (FPCA) rejections in the by-mail process such as illegible handwriting or incomplete applications were eliminated, ensuring accurate and timely ballot delivery to the voter. Other components of the system design included delivering the correct ballot style to the voter; ensuring ballot design integrity; accurately capturing voter intent and voter ballot verification; and maintaining ballot secrecy.

It was with these parameters in mind that the FVAP and the cooperating federal and state agencies undertook the design and development of the project. Recognizing that security was of critical importance for any voting technology, engineering expertise was applied to the task of designing and developing a robust and highly secure registration and voting process. To provide this high degree of protection, the SERVE security design relied on multiple layers of redundant checks and balances throughout the hardware, software, and human elements of the system.

The resulting system was the latest in a series of innovative technological initiatives undertaken by the FVAP as part of its mission to improve access to the polls for overseas citizens and uniformed services personnel. In addition to the voter and local election official interfaces, the FVAP also developed extensive testing, implementation and post-election evaluation strategies that would serve to determine whether the SERVE project had satisfied its original objectives.

A minority membership of the SERVE peer review group independently publicized security concerns regarding the use of the Internet for the transmission of balloting materials. Subsequently, then-Deputy Secretary of Defense Wolfowitz decided that the system would not be used as planned in the 2004 election, fearing that these concerns could undermine voter confidence in votes cast through the system. Subsequently, the *National Defense Authorization Act, Fiscal Year 2005* authorized the delay of implementation of the electronic voting project providing that "the Secretary may delay the implementation of such demonstration projects until the first regularly scheduled general election for Federal office which occurs after the Election Assistance Commission notifies the Secretary that the commission has established electronic absentee voting guidelines and certifies that it will assist the Secretary in carrying out the project."

While not taken to its intended conclusion, the SERVE project nonetheless yielded a considerable amount of useful information and lessons learned for the design and certification of electronic registration and voting systems, and for the direction of future innovation in the absentee voting process. A copy of the internal SERVE assessment was provided to the Election Assistance Commission for consideration in the development of future guidelines for electronic voting.

Electronic Transmission Services (ETS) and Fax to Email Conversion

In the Fall of 1990, the FVAP established its Electronic Transmission Service (ETS) in support of Operation Desert Shield, allowing voters deployed in the Persian Gulf to receive their blank absentee ballots and return their voted ballots via fax. The DoD continued to undertake a variety of initiatives in its efforts to effectively support absentee voting by members of the Armed Forces deployed outside the United States engaged in Operation Iraqi Freedom, Operation Enduring Freedom, and all other contingency operations. For those citizens who may be unable to vote because of their mobility or because of sporadic mail delivery to remote locations, the use of technology can provide alternative means for voters and election officials to send and receive voting materials.

In October 2003, the FVAP expanded the ETS capabilities to include fax to email conversion. An email account was established as an option for voters and states to transmit election materials and absentee ballots as email attachments, where permitted by state law, specifically to assist citizens who may not have access to a fax machine, but did have email access. This access provided the opportunity to transmit election documents electronically. Some states did not allow election officials to email ballots directly to absentee voters, but their laws did allow the official to fax to the ETS. With the state's consent, the ETS would then convert the fax to a PDF attachment to an email which could be transmitted and received by the voter. The voter would print and vote the ballot, scan and email the completed ballot to the ETS, which in turn would convert the email to a fax and transmit the ballot in fax format back to the local election official.

Currently, the ETS exists as a toll free option for local election officials and voters to send and receive applications, blank ballots, voted ballots and other official election materials. Voters have the ability to send and receive absentee balloting materials through toll free fax numbers in 51 countries. The ETS service is one of many electronic alternatives which allow uniformed service members and U.S. citizens overseas who may not be able to receive ballots by mail to remain part of the electorate wherever they serve or live. The FVAP website includes links to all toll free fax numbers associated with the ETS service. These toll free numbers are also published in the *Voting Assistance Guide.*

2004 IVAS

Expanding on the previous progress made to increase *UOCAVA* voter access to the election process the Defense Manpower Data Center (DMDC) and the FVAP serving as subject matter expert, developed a method for secure ballot request and delivery to deployed military service members and other DoD affiliated *UOCAVA* citizens. The tool was designated the

Interim Voting Assistance System (IVAS). States volunteered to participate in using the tool which was designed to allow previously registered absentee voters (active duty military, activated Guard and reserve personnel, their dependents, DoD personnel overseas and DoD contractors overseas) to request and receive absentee ballots over the Internet from the dedicated website www.myballot.mil.

In order to take advantage of IVAS, voters must have been registered in the Defense Enrollment Eligibility Reporting System (DEERS), a DMDC managed database; a U.S. citizen covered under *UOCAVA*; and registered to vote in a state and county that volunteered to participate in the project. Participation was limited to DoD affiliated *UOCAVA* citizens because their names could be verified as existing in DEERS. Using IVAS, the registered voter could submit an unsigned request for a ballot from his/her voting jurisdiction via www.myballot.mil. After the local election official approved the request and the ballot was finalized, IVAS notified the voter via email that the ballot was available for the voter to download and print. The voter could then mark the ballot by hand and mail it back to his/her local election official. One hundred and eight counties in nine states agreed to participate in the 2004 IVAS project. At the conclusion of the election, 28 of those counties had received and processed ballot requests, and uploaded ballots for voters. Voters downloaded a total of 17 ballots. Many states did not participate in 2004 IVAS for a variety of reasons including state legislative restrictions on accepting a ballot request without a signature and the use of electronic transmission of election material, increased workload on election officials surrounding other election responsibilities and additional *Help America Vote Act* of 2002 (*HAVA*) requirements, lack of access to required technical equipment, election procedural requirements and barriers, and lack of Internet access.

In September, 2006, the Government Accountability Office (GAO) testified before the United States Senate Committee on Armed Services ("Elections: DOD Expands Voting Assistance to Military Absentee Voters, but Challenges Remain") and offered these observations of the FVAP's 2004 IVAS: "Despite low usage of the electronic initiatives and existing security concerns, we found that service members and Voting Assistance Officers at the installations we visited strongly supported some form of electronic transmission of voting materials…Service members also commented that the implementation of a secure electronic registration and voting system could increase voter participation and possibly improve confidence among voters that their votes were received and counted. Additionally, service members said that an electronic registration and voting system would improve the absentee voting process for those service members deployed on a ship or in remote locations". The GAO concluded that "the integration of people, processes and technology are very important to the United States' election system".

2006 IVAS

Supplemental Provision

On June 13, 2006, President Bush signed the *Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006 (*"Supplemental") legislation which directed the Secretary of Defense to continue the Interim Voting Assistance System ballot request program with respect to certain citizens covered by the *Uniformed and*

Overseas Citizens Absentee Voting Act (UOCAVA) for the 2006 general election and all elections through December 31, 2006. Congress appropriated $2.5 million for the project.

The Supplemental legislation also required the DoD to submit a status report to the Congressional defense committees no later than September 13, 2006. In September, 2006 the DoD and the FVAP submitted to Congress the Report of the Status of the Interim Voting Assistance Program (IVAS) Ballot Request Program. The report detailed the actions taken by the FVAP to improve ballot request procedures and voting assistance for *UOCAVA* citizens. Additionally, the report documented the current status of the IVAS system, its technological development, enhanced voter benefit features, budget summary, publicity campaigns and public information efforts undertaken by the FVAP.

Research and Development

In light of DoD goals and the sense of Congress recognizing the importance of ensuring that absent uniformed service voters, DoD personnel and their dependents have the opportunity to exercise their right to vote, the DoD decided to increase and expand the capabilities of the 2004 IVAS effort. For 2006, the Interim Voting Assistance System was renamed and launched as the Integrated Voting Alternative Site which included a new portion of the FVAP website listing the electronic alternatives provided by all 55 states and territories.

Through the 2004 IVAS effort, the FVAP struggled with the fact that some states and localities were unable to utilize the technologies offered by the DoD, or that state law did not allow for electronic or online provision of blank absentee ballots. For the 2006 IVAS effort, the FVAP offered the states, in addition to the tool equivalent to that of 2004, a less secure tool with a lower level of functionality which required less time and effort for the local election officials to use. There was also a concern that some *UOCAVA* citizens may be discouraged from voting if they heard their state was not participating in the DoD sponsored effort. Therefore, the 2006 IVAS effort included information on transmission of balloting materials by all states and territories regardless of their use of one of the offered DoD tools. To provide overall transparency, this information was also presented through a single point of entry on the already well publicized FVAP website as opposed to the 2004 IVAS which had a separate website.

As directed by the Supplemental legislation, and in a continuing effort to further improve communication of ballot request and receipt procedures for uniformed services voters and *UOCAVA* citizens, the FVAP quickly and aggressively moved forward to develop the 2006 IVAS website for use in the November 7, 2006 general election. At the same time the Principal Deputy Undersecretary of Defense for Personnel and Readiness, PDUSD (P&R), ordered an independent assessment of the IVAS development efforts in order to determine the best possible capability for absentee voters. As a result of that assessment, the PDUSD (P&R) decided to develop a strategy in which two competing technical solutions would be developed to meet the Department's business needs. To accommodate this mandate in the face of an extremely short timeframe, the FVAP shifted staff energies significantly and initiated the development of the two-tool strategy while continuing to carry out all other ongoing mission requirements. The FVAP carried out this effort under a series of formidable constraints – the system needed to be available for full deployment by September 1, 2006 to support Armed Forces Voters Week

(September 3-9, 2006); the system had to be accessible; it had to be consistent with the current state requirements summarized in the online *Voting Assistance Guide*; it had to be consistent with *UOCAVA* and it had to use the FVAP website as the single, convenient point of entry for the voter. The FVAP worked with two primary offices in this effort – the Defense Manpower Data Center (DMDC) and the DoD's Business Transformation Agency (BTA), who facilitated a contract to provide Tool Two. The roles of these offices in these processes and the resulting two tools are detailed below.

Beyond overseeing the technical development of the system, the FVAP continued its responsibility for outreach and interface with state and local election officials. Concurrent with the development process the FVAP conducted an education and information campaign with all 55 states and territories to introduce them to the capabilities that IVAS could provide, solicit their input, address their questions and concerns, and facilitate their participation by obtaining contact information from and arranging training for local election officials. In addition, the Department was responsible for providing technical help desk services for election officials and voters utilizing Tool One, and overseeing the help desk and training operations provided by the contractor for Tool Two.

To implement IVAS, the FVAP coordinated with federal and state agencies and organizations including the Department of Justice, the U.S. Election Assistance Commission, National Association of Secretaries of State, the Defense Manpower Data Center, the Business Transformation Agency, contractors, as well as the 55 states and territories. A series of timelines was employed in order to chart the progress of the project for all involved parties during the development process.

Technical Solutions

IVAS 2006 not only includes each state's specific electronic transmission regulations, which are accessible to anyone, but offers two tools for voter ballot request and delivery. Both tools are accessed through the IVAS portion of the FVAP website (www.fvap.gov) and require a unique DoD identifier. Citizens possessing this unique identifier are uniformed service members, their family members, and overseas DoD employees and contractors. All *UOCAVA* citizens can access the IVAS link on the FVAP website and select their state page to obtain information regarding electronic ballot request and delivery alternatives available to them. If their state is utilizing one of the two DoD options, voters are required to log in using their DoD credentials to gain access to the tools. The development process and the two tools are described below.

Tool One Provided by Defense Manpower Data Center

For the 2004 IVAS project the DoD's Defense Manpower Data Center (DMDC) worked with the FVAP to develop a website for on-line request and delivery of election materials. In June 2006 the FVAP requested that DMDC continue their cooperative effort by improving the site with a goal of providing an improved process for users and more direct electronic access to election materials. Pursuant to that request the DMDC assisted the FVAP by developing a new portion of the FVAP website which was more intuitive for the users; consolidating information

on electronic capabilities for each of the states and creating an automated Federal Post Card Application (FPCA) form. DMDC also coordinated and sent three email messages during specified periods to approximately 1.2 million active duty members and mobilized reservists informing them about IVAS and the FVAP website. Additionally, the DMDC is fielding post-election questions on their surveys to three voter groups – DoD civilians, reserve component members, and active-duty members. The survey asks questions relating to voting behavior in order to provide data on the effectiveness of IVAS on voter access and participation. Results of these surveys will be available by Spring of 2007 and the DoD plans to include the evaluation of those results in the May, 2007 report by the Secretary of Defense to the Congress detailing plans for expanding the use of electronic voting technology for *UOCAVA* citizens. The DMDC provided the website improvements and created the automated FPCA for 2006 IVAS by re-prioritizing existing resources.

The DMDC tool is an online ballot request system which allows previously registered voters who successfully logged in using their unique DoD identifier to complete an automated version of the FPCA. The FPCA is completed online, and voters are prompted if any required data are not included. Upon completing and saving the form as a PDF on the user's computer, the voters email the FPCA (which does not include the voter's signature, but does include text indicating that the FPCA was generated via IVAS) directly to their local election official as a PDF attachment. Upon approval, the local election official provides a blank ballot to the voter in accordance with state law. In order to participate in this option, the FVAP required states to provide a list of the participating local election offices and their email addresses.

Tool Two Provided by PostX

The DoD's Business Transformation Agency (BTA) facilitated the development contract to provide a second tool to match the capability of the 2004 IVAS effort. On August 15, 2006, BTA signed a contract with Merlin International, Incorporated who subcontracted with PostX to design a customized implementation of the user interface layer of a commercially available, secure messaging software product, which is licensed to the DoD for a six month period. Professional, consulting and operational services included:

- Project planning and staffing
- Requirements confirmation and documentation
- Providing software licenses
- Solution design, including work flow definition and user interface design
- Custom component identification and design
- MessageCenter installation
- System testing
- Production deployment planning and deployment execution

Other PostX services stipulated in the contract include operations and help desk support through December 31, 2006; training of local election officials in "webinar" (online and teleconference combined) sessions and weekly usage reports.

The PostX tool is an online ballot request and delivery system which allowed previously registered voters who had successfully logged in using their unique DoD identifiers to complete and save an automated FPCA (which does not include the voter's signature but does include text indicating that the FPCA was generated via IVAS) onto a secure server hosted by the BTA. As with the DMDC tool, the FPCA is completed online, and the voter is prompted if any required data are not included. The local election official logs onto the secure server using a DoD issued password and downloads the completed FPCA for approval. When ballots are ready, the local election official posts a PDF of the blank ballot onto the server and the voter is automatically alerted that the ballot package is available for him or her to print, complete and submit in accordance with state law. Upon receipt of the voted ballot, the local election official has the ability to notify the voter via the server that the ballot was received. In order to participate in this option, the states provided the FVAP with a list of participating local election offices and the names and email addresses of individuals from each office in order to issue them a password to login and access the FPCAs and upload ballots to the secure server.

2006 IVAS Launch

On August 30, 2006, both completed technical solutions were demonstrated to the PDUSD (P&R). The PDUSD (P&R) decided that since each of the system architectures was viable, that both would be implemented. States selected the option that best complied with their specific absentee voting laws and requirements. Fielding both tools would also maximize the number of citizens able to use electronic methods in keeping with the FVAP's overarching goal of providing both states and *UOCAVA* citizens the widest possible range of options and assistance in the voting process. Usability testing of the tools was undertaken with King County, Okanogan County and Chelan County in Washington State (Tool One) and with Christian County in Kentucky (Tool Two). During the DoD's discussions with the states, several preferred Tool One and others, Tool Two. To promote uniformity within the state, the PDUSD (P&R) decided that each state could only select one tool for use by the local jurisdictions for the 2006 election.

IVAS 2006 was launched on September 1, 2006, and was accessible through the FVAP website at www.fvap.gov. It included consolidated information from the 55 states and territories on electronic transmission alternatives for ballot request, blank ballot delivery and voted ballot return available to citizens covered by *UOCAVA*. If their state utilized IVAS Tool One or Tool Two, voters were allowed to request and receive election materials via the tool their state had selected.

Participating States and Counties

As a result of vigorous outreach by the FVAP to the states and territories, state participation in IVAS for the 2006 general election far exceeded that of previous electronic voting alternative projects (Voting Over the Internet, SERVE, 2004 IVAS). However, many states elected not to participate for a variety of reasons. Most often cited were state legislative restrictions to accepting a ballot request without a signature and of the use of electronic transmission of voting materials; the short time frame for implementation and local election official training; increased workload on local election officials above and beyond that of the

regular election process; lack of Internet access at the local level; or the state had already extended its electronic transmission capabilities and had systems in place. The FVAP will continue to pursue legislative initiatives with the states encouraging their expansion of electronic transmission alternatives allowing broader access to voting materials by *UOCAVA* citizens in future elections.

The need to provide flexibility and a variety of tools to maximize state participation in future electronic voting projects was clearly demonstrated in the 2006 IVAS project. Vermont, a Tool One participant, preferred to establish a central state office to which ballot requests were sent. That office then forwarded the requests to local election officials. Indiana, although participating in Tool Two, uploaded ballots to the secure server only after a signed FPCA ballot request was received, as required by state law, so FPCA ballot requests had to be mailed or faxed to election officials as well as flow through the secure server.

The following states and territories used Tool One:

- Arkansas – 75 out of 75 counties
- Illinois – Suburban Cook County and the City of Chicago
- Mississippi - 6 out of 82 counties
- North Carolina – 100 out of 100 counties
- Puerto Rico – 1 out of 1 county
- Vermont - 14 out of 14 counties (246 municipalities participating)
- Virgin Islands – 1 out of 1 county
- Washington – 39 out of 39 counties

The following states used Tool Two:

- Indiana – 29 out of 92 counties
- Kentucky – 72 out of 120 counties
- Montana – 2 out of 56 counties

Pre-Election Training of Local Election Officials

Tool One required no formal training on the part of local election officials because of the simplicity of the email communication conduit between the voters and their local election office. They simply used the email protocol already in place at their jurisdiction to respond to voter ballot requests. The participating state office notified the jurisdictions of the procedural changes for the 2006 election, since the completed FPCAs were not signed. Any user questions regarding procedures for ballot requests were directed to the FVAP, and those questions regarding passwords or logging into the system using their DoD credentials were addressed by the DMDC.

Local election official training seminars were available to all participating localities participating in Tool Two by PostX because of the increased functionality and security provided by Tool Two. Sessions were conducted online simultaneously with a conference call between election officials and PostX support staff. An FVAP staff member was also on the call to address any non-IVAS *UOCAVA* voting questions that might arise. Training included the

following components: log in and password registration; managing absentee ballot requests; uploading absentee ballot packages; sending absentee ballot packages; logging voted ballot receipts; and viewing processed requests. Twenty- four training sessions were scheduled beginning October 3, 2006. Each session lasted approximately 40 minutes. Three local election officials participated in the scheduled seminars, and 57 local election officials contacted PostX on an individual basis to receive training assistance on the use of the PostX tool. All local election officials using Tool Two were sent training slides to familiarize themselves with the ballot request and delivery process. As with Tool One, the participating state office notified the jurisdictions of the procedural changes for the 2006 election, since the completed FPCAs were not signed.

Post-Election Survey of Local Election Officials

Just prior to the election, the FVAP sent a letter to the Secretaries of State and/or Chief Election Officials in the 11 states and territories who participated in IVAS alerting them to a survey the FVAP would be sending to local election officials. Participating local election officials were given a response request date of either 10 days after the election, or, in the case of states with late counting, the Friday after the last day of late counting. The purpose of the survey was to gain feedback from local election officials on both their quantitative and qualitative experience with IVAS Tool One or Tool Two. Among the data solicited were the total number of ballot requests received via IVAS, number of ballots sent to voters who requested ballots via IVAS, and number of voted ballots received from voters who had requested ballots via IVAS. Additionally, local election officials were asked to comment on their overall experience in terms of ease of use, effectiveness of training, quality of assistance, and whether they would like to continue the use of IVAS in future elections. Participation in the IVAS survey by state election officials was voluntary, so data gathered by the FVAP on 2006 IVAS may be representative, but is not definitive or complete.

Voter Activity

Tool One

Between the September 1, 2006 IVAS launch date and November 5, 2006, the IVAS section of the FVAP website received 34,857 hits. As of November 7, 2006 the automated FPCA was accessed 1,351 times. Because users of IVAS Tool One submitted their FPCA ballot requests directly to local election officials using their personal email accounts, the FVAP is not able to track the number of absentee ballot requests submitted using this Tool. Surveys were sent to 470 participating jurisdictions; 22 completed surveys were returned. Of these, 19 indicated that they would like to use IVAS in future elections. An official from one large jurisdiction commented that voters were surprised to receive their ballots so quickly and that IVAS "opened a line of communication with the voters that is invaluable in the process". Election officials who contacted the FVAP help desk with questions reported that their questions were quickly and satisfactorily addressed. No respondents indicated that they had any technical difficulties facilitating ballot request via IVAS.

Tool Two

For the 2006 election, 103 counties registered to use PostX Tool Two. PostX reported that 147 voters successfully logged into the system and 63 ballot requests were submitted. Of those, 35 ballot requests were approved; 14 requests were denied; 9 requests were deferred and 5 requests were not processed. Of the 35 ballots approved and sent to voters, 29 were viewed by the voters. After viewing the ballot, the voter cannot submit the voted ballot using Tool Two. Local election officials utilized the tracking feature in Tool Two to report that 8 voted ballots had been received. It should be noted that since FPCAs could be accessed by voters using Tool Two, but printed and submitted to local election officials by mail or fax rather than sent via the secure server, PostX cannot accurately report the total number of FPCA ballot requests that Tool Two facilitated. For example, Indiana participated in Tool Two, but required that the FPCA ballot requests be returned to local election officials via fax or mail because under state law a signature was required.

Of the 103 surveys sent to participating jurisdictions, 24 completed surveys were returned. Fourteen officials indicated that they would like to continue the use of IVAS in future elections. Of those respondents who answered questions about the relative ease or difficulty of the use of IVAS, a majority indicated that the tool required too much technical expertise and that they never really became comfortable with its use. They also indicated that they did not have enough time prior to the election to learn how to utilize the tool.

Budget

The chart below displays how the $2.5 million appropriated by Congress for IVAS in Public Law 109-234 has been allocated or spent to date. Three different government agencies used portions of the appropriated funds to carry out various aspects of the IVAS effort. Those three agencies include: The FVAP, the Business Transformation Agency (BTA), and the Defense Manpower Data Center.

Budget Allocation and Expenditures as of November 24, 2006

Office	Purpose	Allocated	Spent	Total Remaining
DoD Business Transformation Agency	System Implementation	$1,500,000	$834,363.74	$665,636.26
Defense Manpower Data Center	Blast Email and IVAS Survey	$198,186	$198,186	$0
Mid-Atlantic Cooperative Administrative Support Unit, starting 9/11/2006	IVAS Support Contractor	$263,577	$59,757.60	$203,819.40
Colorado Secretary of State Office, 9/25/2006	IVAS Demonstration	$3,000	$3,537.20	< $537.20 >
Total		$1,964,763	$1,095,844.54	$868,918.46

Line One displays the $1.5 million transferred to the BTA for the development of Tool Two by PostX, a subcontractor to Merlin International, Inc., which offers their products to the government on a General Services Administration contract. The software is licensed for a six-month period. Other services the PostX team provided include help desk operations, training and reporting. The hardware for the system - including servers, load balancer and tape back-up system - remain the property of the federal government.

Breakdown of BTA expenditures

Item	Description	Amount on Contract
Initial Contract	Software licenses for 6 months; Customization of workflow and presentation; Training; Help Desk and Operational Support; Estimated travel costs	$792,790.94
Modification 1	Additional Customized Reports	$10,316.17
Dell Servers	3 servers	$17,445.54
Tape Back-up for servers		$9,000.00
Load Balancer for servers		$10,211.09
Hosting of servers for six months		$3,600.00
Totals		$834,363.74

Line Two displays a task order awarded to Data Recognition Corporation (DRC) against an existing contract with DMDC in the amount of $198,186.00. Under this task, DRC provided information to service members via email on assistance that is available to help them vote, performs administrative functions for Fall 2006 Human Resources Strategic Assessment Program (HRSAP) surveys as required to evaluate the FVAP efforts including any over sampling required to provide separate estimates for personnel stationed overseas or on deployments, and to prepare information to use in planning the survey and evaluation efforts for the 2008 elections.

Line Three displays the FVAP portion of the appropriated funds allocated for contractor administrative support. The FVAP hired two contractors to evaluate and analyze IVAS data, prepare a comprehensive assessment of IVAS to help determine a strategy and prepare an implementation plan for the 2008 election. The contractors were hired on an existing administrative support services contract with the Mid-Atlantic Cooperative Administrative Support Unit.

Line Four displays the FVAP portion of the appropriated funds allocated for system demonstration. The FVAP demonstrated the IVAS tools to election officials from the State of Colorado. Their travel expenses were compensated with IVAS funds.

Of the $2.5 million made available by Congress for IVAS in Public Law 109-234, $1,095,844.54 has been allocated or spent as of November 24, 2006.

Outreach to the State and Local Election Officials

National Election Official Conferences

Following enactment of Section 1212 of Public Law 109-234, the FVAP immediately began pursuing an outreach plan directed towards the states and territories as well as uniformed service members, their families, and overseas DoD employees and contractors. The Director, FVAP, discussed IVAS during the joint session of the National Association of Secretaries of State and the National Association of State Election Directors, and the annual meeting of the International Association of Clerks, Recorders, Election Officials and Treasurers held in July of 2006. After initially introducing IVAS through special presentations at these conferences, the Director also personally discussed the possible IVAS implementation with election officials from various states.

On September 21-22, 2006, the FVAP Deputy Director discussed IVAS as part of a presentation on *UOCAVA* issues at the U.S. Election Assistance Commission's public meeting in St. Louis, Missouri.

Letters to the States

On July 25, 2006, the FVAP sent a letter formally introducing the 55 states and territories to IVAS 2006. This letter reiterated the Director's initial presentations regarding IVAS during the previous national conferences, and provided a description of IVAS while urging each state to expand its electronic alternatives to the by-mail absentee voting process.

On August 4, 2006, as in July of 2004, the DoD in cooperation with the Department of Justice (DoJ) sent a joint letter to the states and territories articulating the importance of electronic alternatives to the by-mail process of absentee voting. This letter highlighted the importance of electronic transmission alternatives and the combined efforts by both the FVAP and the DoJ to ensure that there is sufficient ballot transit time through the monitoring of absentee ballot mailing dates.

On November 13, 2006, the Director, FVAP sent a letter to the Chief Election Officials of all 55 states and territories acknowledging the support they provided to uniformed service members and overseas citizen voters during the 2006 primary and general elections, and alerting them to the continued work on legislative initiatives the FVAP will be undertaking for the 2008 presidential election. Special thanks was offered to the 11 states and territories that participated in IVAS and specifically recognized those individuals at the state level whose efforts allowed the successful implementation of IVAS.

State Phone Calls

From July 21 – August 8, 2006, the Director, FVAP contacted all the states and territories regarding IVAS 2006 to follow up on the earlier letters and conference meetings. Through these contacts, the Director began the implementation process with interested states and territories.

Throughout the months of August and September, 2006, the Deputy Director and the FVAP staff continued to engage in teleconferences with states interested in implementing one of the IVAS tools. These calls allowed the states to discuss technical and security issues, while consulting their state election laws and Attorneys General in order to ascertain the legality of implementation, the level to which they wished to participate, and the tool best suited to their needs.

State Demonstrations

On September 11-13, 2006, the FVAP staff participated in a workshop in New Mexico for the state's local election officials at which the two IVAS tools were presented and discussed.

On September 25, 2006, two members of the Colorado Secretary of State's Office, along with the Executive Director of the National Association of Secretaries of State attended presentations at the FVAP offices to view demonstrations of the 2006 IVAS Tool One and Tool Two as they would be used by both voters and local election officials.

Outreach to the Services, Overseas Voting Assistance Officers and Voters

Senior Service Voting Representatives, Service Voting Action Officers and Service Manpower and Reserve Affairs Personnel

The Undersecretary of Defense for Personnel and Readiness held monthly meetings with the Senior Service Voting Representatives from June through October during which he announced and discussed the implementation of IVAS 2006. The Director and Deputy Director of the FVAP informed the services of IVAS, and asked for participation in outreach and testing through meetings with Service Voting Action Officers and Service Manpower and Reserve Affairs officials. On October 11, 2006, the Director, FVAP participated in a Fleet Reserve voting conference call which included a discussion of the IVAS portion of the FVAP website and its features and benefits.

Workshops at Overseas Military Installations and Embassies

On September 8-13, 2006, the FVAP presented IVAS at workshops for Voting Assistance Officers (VAOs) at Camp As Saylayah in Quatar, Naval Support Activity at Manama, Bahrain, and The United States Embassy in Kuwait. Participants included VAOs from the Army, Navy, Air Force, Marines, Department of State, DoD Contractors, as well as federal employees, representatives of American corporations overseas, and the United States Ambassador to Kuwait and General Counsel.

Media Outreach

In the weeks prior to the September 1, 2006 launch date of IVAS, the FVAP Director and Deputy Director engaged in a variety of public affairs events in order to alert service members to this new project. An interview with the Pentagon Channel and Armed Forces Information Service was held on August 24, 2006 discussing available electronic alternatives to the by-mail absentee voting process and announcing the 2006 IVAS project. Interviews were also conducted with the *Army Times, Stars and Stripes*, WTOP Radio (Washington, DC), and Federal News Radio announcing IVAS 2006.

On September 5, 2006 the Principal Deputy Undersecretary of Defense for Personnel and Readiness and the FVAP Director and Deputy Director participated in a round-table press conference announcing both IVAS 2006 and the 2006 Armed Forces Voters Week. Following the announcement the FVAP Director and Deputy Director participated in over 20 interviews with commercial and military media.

Email Messages

To inform uniformed service members, their family members, and overseas DoD employees and contractors of IVAS 2006, the FVAP in cooperation with the Defense Manpower Data Center sent three email blast messages (September 1, September 15 and October 2) each reaching approximately 1.2 million active duty members and mobilized reservists encouraging them to take advantage of the IVAS features of the www.fvap.gov website as well as reminding them to register to vote and request a ballot.

FVAP News Releases and Voting Information News

The FVAP issued a news release discussing IVAS on September 11, 2006. This news release was sent out to thousands of Voting Assistance Officers (VAO) worldwide. IVAS was also featured in the October and November, 2006 *Voting Information News,* an FVAP publication for VAOs. All FVAP news releases and newsletters are available electronically on the FVAP website (www.fvap.gov).

Armed Forces Voters Week and Absentee Voting Week

Armed Forces Voters Week, September 3-9, 2006, is designated by the Secretary of Defense every two years, and signifies when both stateside and overseas Service members and their families should submit their voter registration and absentee ballot request forms. Military Voting Assistance Officers take time during this week to conduct voting workshops, awareness events and registration drives. During this period, the FVAP promoted IVAS along with other useful absentee voting information to uniformed service members.

Absentee Voting Week, October 8-14, 2006, also designated by the Secretary of Defense every two years, publicizes when voters should return their voted ballots to their local election offices. The FVAP continued to encourage voters to consult the IVAS website in order to obtain

specific state and territorial regulations regarding electronic alternatives to the by-mail process for ballot return.

Briefings to Congressional and Departmental Officials

Following the September 1, 2006 launch, the DoD engaged in a series of Congressional staff demonstrations of the IVAS tools in order to fully inform all interested parties of the Department's efforts and to solicit input and feedback that could contribute to future program development. On September 8, 2006, the Department briefed the House Armed Services Committee and House Military Legislative Assistants. Additional demonstrations included the staff of the Speaker of the House (September 12); the Senate Armed Services Committee staff and Senate Military Legislative Assistants (September 26); the staff of Senator Burns of Montana (September 29); and a system demonstration for the Deputy Secretary of Defense (October 2).

ASSESSMENT

At the core of the democracy Americans enjoy is the right to vote for their governmental representatives and ballot measures. Great care has always been taken to ensure that the election process is fair and accurate, and voters have an absolute right to demand a voting process that is efficient and transparent, and that the integrity of the election outcome is above reproach. This is essential to maintaining public confidence in the election process and encouraging citizen participation. It is foreseeable that public and political pressure to pursue electronic voting paradigms will only increase as the Internet and other technologies become more integral to our social and cultural fabric. With this in mind, the question of using new advancements in technology to improve our elections is a reasonable one. In addressing the special challenges to election participation faced by *UOCAVA* citizens, the DoD determined that exploring these new technologies might yield systems that could effectively address those challenges and dramatically improve the election experience for this considerable population while maintaining the integrity of the process. This report has provided an overview of those efforts over the years culminating in 2006 IVAS.

Any assessment of IVAS must, at its foundation, acknowledge that the system is not mature. Its tools respond to only a portion of the *UOCAVA* population and part of the absentee voting process – that of ballot request, and in the case of Tool Two, ballot delivery to the voter. No provision is in place as part of IVAS for voter registration or delivery of the voted ballot to the election official. A future system requires a development period spanning several election cycles to fully fund, develop, test and evaluate. This process should include the participation of federal, state and local agencies, as well as members of the scientific and technical communities, internet security experts and academia. Additionally, there can be no doubt that the strictures of the mandated 30 day post-election reporting timeframe render an analysis and assessment of IVAS 2006 that is not as complete as it could be. The May 15, 2007 report on IVAS will include data from the system's users that were not available for this report due to the short reporting timeframe.

At the heart of both IVAS Tool One and Tool Two is the use of an automated Federal Post Card Application (FPCA) for ballot request which alleviated some of the traditional barriers to election participation experienced by *UOCAVA* voters, and also ameliorated problems faced by local election officials. Not only did ballot request using the automated FPCA save considerable mail transit time, it also eliminated incomplete and illegible applications. IVAS prompted users to complete all required fields in the form before it could be submitted, and the keystroking of information replaced handwriting. Additionally, the automated FPCA could not be submitted without use of the voter's unique DoD Identifier.

The 2006 IVAS Tool One uses a more familiar technology. However, being strictly email based, it carries the least security and is more vulnerable to interference. For example, some email users may be blocked from opening attachments (ie. from libraries, schools, places of business) and would therefore be unable to download the automated FPCA. Additionally, the transmission of voting materials by unsecured email presents security and privacy concerns. These vulnerabilities can exist on both the voter side and on the local election official side of the communication.

The 2006 IVAS Tool Two relies on an intermediary secure server hosted by a commercial site capable of supporting a high volume of transactions that has been secured against network attacks. All requests and responses between voters and local election officials flowed through this portal. The use of the automated FPCA and its benefits are similar to those in Tool One. Tool Two does provide a slightly higher level of identification because the user's name, address, date of birth and social security number cannot be changed in the automated FPCA. And, as in Tool One, access is limited to those voters who could provide a DoD identifier. Tool Two has a more involved user interface requiring more effort on the part of local election officials to administer, but with that layer of involvement comes additional security. To protect and maintain the integrity of the electoral process the DoD, through IVAS Tool Two, endeavored to provide a system that could: a) reliably identify and authenticate voters, b) prevent alteration of the unvoted ballot, c) create a document trail for auditing purposes, and d) comply with all legal requirements. The FVAP believes that limiting access to either of the IVAS tools to *UOCAVA* voters who possess a unique DoD identifier provided a measure of voter verification and allowed election officials to compare the voter's information against voter registration rolls. The secure socket layer server utilized in Tool Two helps to ensure that the ballot uploaded by the local election official was delivered to the voter in an unaltered format. Additionally in Tool Two, copies of the email ballot request and confirmation that the voted ballot was successfully transmitted to the local election official provided a reasonable document trail of the transaction. IVAS 2006 Tool Two did not allow local election officials to automatically recall and substitute a corrected ballot per state law should there be a change for such reasons as a court order or death of a candidate. Future versions would need to include this feature.

It is clear that ensuring the integrity of elections while preserving public confidence in the election process becomes more difficult when moved to the realm of electronic communications. As attractive as the use of electronic alternatives may seem as tools for participation in elections from remote locations, the security risks are numerous and in many cases may not be fully resolved using even the most sophisticated available technology. These risks include but are not limited to: Denial of Service attacks, Trojan Horse attacks, Worms, Viruses and Spoofing. There should be a formal process at the beginning of any future demonstration project to identify the risks associated with the system, the likelihood of these risks, and address ways in which these risks can be mitigated. This process should be open and involve participants from across the array of views on Internet voting. Because risk analysis is not only about identifying and mitigating against actual risks but also about identifying perceived risks, there should also be a concomitant public relations effort designed to educate the public, the media, and key stakeholders about the system, its purpose, and the comparative costs and benefits of the system. This public relations effort will serve to allow the broader public to understand how the system functions, the program's goals, and to educate people about the actual risks of the system, as opposed to perceived risks and to understand all risks in the correct context.

As part of the risk analysis, the project must evaluate all commercial operating systems, to determine which will not only meet the requirements, but will also support the largest number of voters.

To mitigate these security risks IVAS Tool Two employed a secure server as a portal between the voter and their local election official. This server is protected against network attack and utilized a customized version of subcontractor (PostX's) MessageCenter, WebSafe and WorkFlow products. MessageCenter provides a web-based secure messaging capability. All access is via a secure message portal using 128 bit single socket layer encryption technology. Each user has access only to messages in his/her message store. MessageCenter is in use at major health and financial organizations around the world with the largest current implementation supporting more than 5 million users. For IVAS, MessageCenter was adapted to support the specific user interface, work flow, and security requirements of state and local election officials and the absentee voting process. Additionally the tool included integration of WebGuard, a tool provided by the Defense Manpower Data Center (DMDC) to determine the status of an individual enrolled in the DMDC database using name, social security number and date of birth. With this information WebGuard can verify that an individual has an occurrence in the database, but not authenticate the user's identity.

LOOKING FORWARD

As the FVAP and cooperating agencies continue to investigate electronic alternatives to the *UOCAVA* voting process, the Department will integrate lessons learned from its own previous electronic voting projects, from the experiments of other countries, and observations and conclusions from independent research agencies and academia on the issues, risks, and opportunities surrounding electronic voting.

Electronic Data Transmission Standards

One prevailing observation is clear – that since existing election management systems differ widely from jurisdiction to jurisdiction across the country, future efforts to create effective end-to-end voting solutions for *UOCAVA* citizens will be much easier to develop and implement if election data transmission standards are in place. First, because electronic data transaction standards and common file formats for election materials do not exist nationally it is currently impossible to seamlessly plug new innovations onto existing election management systems. Second, the lack of standards restricts the ability of the states to develop integrated voter registration systems. Third, the ability of election officials to produce consistent and effective post-election audits is hindered. When electronic transaction standards are adopted and included in all electronic voting systems, states can improve the quality of their voter registration lists, and local jurisdictions can innovate and improve their service to voters. Where *UOCAVA* voting is concerned, these standards would allow easier integration of the absentee voting protocol into the nation's election systems. The 2002 *Help America Vote Act* (*HAVA)* required states to develop electronic voter registration databases, and has kindled movement in the states toward greater uniformity in election administration procedures and voting technologies. The FVAP will continue to pursue legislative initiatives with the states and to work in conjunction with the U.S. Election Assistance Commission (EAC) toward a more cohesive set of national standards. It needs to be acknowledged, however, that there are risks associated with greater homogeneity of voting systems. A benefit of the current de-centralized system is that it is very difficult to perpetrate wide-spread election fraud. Greater consistency among election systems and standards could conceptually make it easier to disrupt or influence elections on a large scale.

The EAC (established by *HAVA)* in conjunction with the National Institute of Standards and Technology, was assigned the task of developing electronic absentee voting guidelines. In 2007, the EAC is expected to release the results of a study of Internet voting and the transmission and receipt of absentee ballots for overseas voters covered under *UOCAVA*. The study will include a review of the practices of voting jurisdictions that use technology to transmit or accept ballots and that may allow Internet voting, as well as a survey of *UOCAVA* voters who participated in some form of electronic voting. It is hoped that the study will effectuate further understanding of the problems, resources and potential solutions for *UOCAVA* voting challenges. The release of the EAC recommended voting guidelines, as well as the insights provided by the study and from a follow-up conference of state and local officials from jurisdictions who participated in remote electronic voting will be useful to the DoD as it pursues its legislative mandate to carry out an electronic voting demonstration project.

Conclusions and Recommendations

Comprehensive, effective and secure electronic voting systems should not be developed, tested, or implemented hastily. The development of a long-term strategic plan, which is necessary to ensure that all related initiatives are effectively integrated is dependent on time to assess, improve and evaluate new or evolving electronic alternatives. Systems should be functioning in all aspects and to all reasonable standards well in advance of the election period, with key, measurable milestone goals satisfied for each stage of the development process. Anecdotal evidence indicates that the states concur. Deborah Markowitz, Secretary of the State of Vermont and President of the National Association of Secretaries of State, testified before the Senate Armed Services Committee in September, 2006. In commentary prepared for the testimony, she noted, "We are very excited about the IVAS initiatives the FVAP is implementing for the November, 2006 elections. The challenge we all face is timing. In order for any program to be successful, it must be implemented effectively, but it must also be implemented early. The states need time to put the proper procedures (and in some cases new laws) in place and time to notify and train local election officials. Our local election officials will be responsible for ensuring that any new election practice is successfully implemented".

Typically, the maturity of a voting system takes a series of election cycles. There must be enough time for gathering and analyzing post election data, re-training, and re-developing or updating the voting system to meet the demands of emerging technologies. Subject matter specialists within the election administration community are crucial to the system build as these experts must define the system requirements in consideration of state and local laws, practices, procedures, and the interoperability with state and local election systems. The system design must consider the voter's requirements and ease of use. An incremental development, implementation and evaluation plan should be articulated at the beginning of future projects and milestones should be specified for each stage of the project.

The major recommendations for future electronic voting projects are: work up to a large scale system starting with a small number of states or limiting capabilities; recognize the variation in state and local laws, procedures and systems, and the complexity this introduces in the development of a uniform registration and voting system; build consensus of key stakeholders; identify and mitigate against actual and perceived risks by educating people about risk management practices; ensure that the system will be testable and that those tests can be reproduced; standardize the interfaces for the voting systems for easier interconnectivity; develop guidelines for electronic or Internet based registration and voting systems which echo the integrity provided for poll site equipment; assess methods for voter identification and authentication involving digital certificate technologies as used in VOI and SERVE; monitor other electronic voting experiences and experiments worldwide; and, obtain secure funding for long range electronic voting projects to avoid interruption in the development and deployment process.

The DoD will proceed carefully and methodically toward the next iteration of IVAS. The development process should include the early involvement of scientific and commercial enterprise, state and federal policymakers, and groups involved with and advocating for *UOCAVA* citizens. In the interest of providing as many tools as possible for local election

officials to select from, multiple strategies could be developed. The process should explore the technological tools available beyond fax and email for use in remote electronic voting, among them touchtone telephone, text messaging, interactive television and the Internet. Creating a system that supports multiple platforms adds significantly to the complexity of the design, and to the cost associated with development, testing and certification. Live election testing should begin on a small scale and increase in scope over a series of election cycles to avoid expansion of flawed technology. All technologies should be examined with not only their efficacy in mind, but with their vulnerabilities to the risk factors previously detailed and new threats that may develop. Moreover, all of these platforms can be expected to evolve between election cycles, requiring an ongoing development, testing and certification process, as well as the dedication of appropriate funding to that process.

As newer technologies become integrated into commonly used systems, the trade-offs between security and convenience can improve, although in a world of constant technological evolution, the means to balance convenience with the need for accuracy, privacy, security and transparency that is fundamental to any electoral process will have to be continuously re-evaluated and adapted. The FVAP fully acknowledges this challenge, and, in its SERVE project (designed but ultimately not tested or deployed for the 2004 election), developed a strategy that employed a robust, multi-layered security framework. A minority of members of a peer review group for SERVE commented, "We want to make it clear that in recommending that SERVE be shut down, we mean no criticism of the FVAP, or of Accenture, or any of its personnel or subcontractors. They have been completely aware all along of the security problems we described, and we have been impressed with the engineering sophistication and skills they have devoted to attempts to ameliorate or eliminate daunting security problems. We do not believe that a differently constituted project could do any better job than the current team. The real barrier to success is not the lack of vision, skills, resources, or dedication; it is the fact that, given the current Internet and PC security technology, the FVAP has taken on an essentially impossible task. There really is no good solution. The project is thus too far ahead of its time, and should wait until there is a much improved security infrastructure to build upon." The FVAP contends, however, that the development of a secure protocol is a challenging but not impossible task, and that the time to attack the challenge is now. Adapting a reactive, "wait and see" attitude is of no benefit to overseas voters whose needs are, in fact, immediate. The FVAP vision does not include waiting for an improved security infrastructure, but rather creating a mandate for an improved security infrastructure.

Some maintain that any procedure for electronic registration and voting from remote locations cannot provide enough safeguards to guarantee electoral process integrity. However, every voting system carries a level of risk and no technologies are adequate to prevent all system tampering. Additionally, there are personal risks inherent in the transmittal of personal identification information and voting materials electronically. Ultimately, it is up to the voter to weigh the convenience of electronic alternatives and the urgency of their situation against his/her own requirements for privacy and security. The traditional *UOCAVA* absentee by-mail registration and voting process has a level of risk that is generally regarded to be outweighed by the benefit of enabling this population to vote. The pivotal issue going forward will be to determine whether electronic modes of voting access provide more benefits to *UOCAVA* citizens

and local election officials than those of the traditional by-mail process and if the risks are acceptable in light of those benefits.

Beyond the critical domain of security, a paramount consideration in the advancement of electronic voting technologies for *UOCAVA* citizens is ease of use. The amount of information required by the voter to cast an informed vote, the length of ballots, and the frequency of elections in the United States already pose a challenge for remote voters. A complex technical solution, the implementation of which would require advanced technical expertise and/or expensive software or hardware upgrades, would likely cause participants to reject the system rendering the entire effort moot. It is the goal of the FVAP to provide *UOCAVA* citizens with the best possible voting options enhanced with robust but reasonable security systems, with accessibility and voter confidence in the integrity of the election process being the Department's top priorities.