



Independent Review
Final Report
for the
Interim Voting Assistance
System (IVAS)

August 2006

Prepared for the Principal Deputy Under Secretary of
Defense for Personnel and Readiness

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Executive Summary

This assessment was conducted by direction of the Principal Deputy Under Secretary of Defense for Personnel and Readiness to provide an independent review of the status of the Federal Voting Assistance Program's compliance with Public Law 109-234 §1212 and to make recommended options on the best way to proceed.

In an effort to comply with PL 109-234 §1212, the Federal Voting Assistance Program (FVAP) office is overseeing the development of an interactive website that will provide voters with voting options available in their state (eg, fax, e-mail, etc). To facilitate the Federal Post Card Application (FPCA) and electronic delivery of ballots, FVAP is making the e-mail address of Local Election Officials (LEOs) available to the voters. The Defense Manpower Data Center (DMDC) is providing the technical team to develop the web pages, which will be hosted on the FVAP website at Defense Technical Information Center.

This review found significant security concerns surrounding the e-mailing of voting materials.

PL 109-234 §1212 is clear that what is intended is a continuation of the IVAS effort initiated in 2004. While the FVAP effort does offer some value to the voters, it does not appear to meet the intent of §1212.

FVAP's decision to implement an alternative to IVAS may have been reasonable considering the short amount of time between the legislation and the election. Concerns over the inability to properly compete this contract to the private sector are valid.

Dreifus Associates, LTD (DAL) is developing an updated version of IVAS using private funds. Although still in development, IVAS 2006 was demonstrated and showed a mature level of development. Developers estimate that it will take two weeks to complete the application. Because of this advanced development, DAL is the only company that has a solution mature enough to even be considered for the 2006 election cycle.

If DoD is able to contract with DAL very quickly, there is a good likelihood that the technical portion of IVAS can be completed in time to support the 2006 election. This option is recommended as the only way to comply fully with §1212 given the short timeline to the election. However, concerns remain over the ability to successfully address non-technical tasks, such as training and effective communication with voters, Voting Assistance Officers (VAOs) and LEOs. Strong DoD leadership and oversight will be required to ensure that this option does not fail due to poor communications or organizational resistance. Additionally, there is concern over the ability of DoD to properly compete this contract in accordance with federal law.

Successful outcomes from either the current FVAP effort or the continued IVAS effort are questionable at this point. Both efforts require significant effort to establish communication with the LEOs and to ensure that state legislation or voting authorities are prepared for, and allow, electronic transmission of voting materials. At best, a small increment in absentee voting should be anticipated.

This assessment only reviewed the Interim Voting Assistance System (IVAS) in the context of the 2006 Emergency Supplemental Bill signed into law on 15 Jun 2006. FVAP is involved in a wide range of voter initiatives that include electronic ballot and ballot request transmission through methods other than IVAS. In no way should this report be extended to reflect negatively on those efforts.

Background

The Interim Voting Assistance System (IVAS) was a voluntary program implemented in September 2004 that allowed eligible absentee voters to request and receive their absentee ballots via the Internet from the www.myballot.mil website. The DoD E-Government Act Implementation Report (2004), report indicates that the system was "especially beneficial to those citizens in remote areas who could not rely on the mail service."

Following the 2004 election, IVAS was discontinued and no further development or improvements were pursued by FVAP.

On June 15th, 2006, Public Law 109-234 was signed into effect. Section 1212 requires that:

The Interim Voting Assistance System (IVAS) Ballot Request Program shall be continued with respect to all absent uniformed services voters, Department of Defense personnel, and dependents covered by the Uniformed and Overseas Citizens Absentee Voting Act (42 U.S.C. 1973ff et seq.) with the objective to further improve ballot request procedures and voting assistance with respect to such persons.

On August 2nd, 2006, the Principal Deputy Under Secretary of Defense for Personnel and Readiness requested an independent assessment of the IVAS project.

Assessment Methodology

The assessment was conducted by individually by Captain Joel Rothschild (USNR), who reviewed relevant documents and interviewed key personnel.

Interviews

- 2 Aug 2006 Mr. Henry Dreifus, Dreifus Associates, LTD
- 2 Aug 2006 Ms. Polli Brunelli, Director, Federal Voter Assistance Program
- 3 Aug 2006 Mr. Cayce Ullman, CEO, PostX
Robert Olsen, PostX
Kevin Monahan, Lead Developer PostX
Brian Matthews, PostX
- 3 Aug 2006 Mr. Mark Breckenridge, Acting Deputy Director, DMDC
Kevin Cummins, DMDC, Identity Authentication Office Software
Development Team Lead
Paul Zaren – SRA International, Inc., FVAP/IVAS Development
Support Lead
Mark Kellogg, SRA International, Inc., Senior Developer
William Lieu, Developer

Documents

Public Law 109-234, Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006

Federal Voting Assistance Program Briefing (2 Aug 2006) provided by Ms. Polli Brunelli

Report on DoD Actions to Support Voting Assistance to Armed Forces Outside the U.S. As required by Section 568 of the *Ronald W. Reagan National Defense Authorization Act* for Fiscal Year 2006 (Dec 2004)

GAO Report to Congress, *Absentee Voting Assistance to Military and Overseas Citizens Increased for the 2004 General Election, but Challenges Remain* (April 2006).

Department of Defense E-Government Act Implementation Report (2004).

A Security Analysis of the Secure Electronic Registration and Voting Experiment (January 2004), by Drs. Jefferson, Rubin, Simmons and Wagner.

Detailed Findings

Interim Voter Assistance System (2004)

In 2004, the FVAP contracted with Dreifus Associates, LTD (DAL) to develop a method to delivering ballots securely to deployed military members. IVAS was developed and implemented in 30 days. The system provided a way for military members to request an absentee ballot from participating LEOs. Once the request was approved, the ballot was made available to the voter to print and mail back to the precinct. Only 108 counties agreed to participate in the pilot and of those, only 25% actually received requests from voters. The system achieved minimal success with 17 voters downloading ballots.

There appeared to be significant friction between FVAP and the contractor on this effort. FVAP reported that the software was difficult and cumbersome for the

LEOs to use. DMDC stated that due to the lack of e-mail notification that they had to manually send e-mails to the voting officials. FVAP also prohibited the vendor from talking directly to any of the voting officials. Since many of the questions were technical in nature, this responsibility also fell to DMDC, who was not prepared for the additional workload. DMDC also reported that the closer it got to election day, the less attention the LEOs paid to IVAS. DMDC had to continually remind LEOs to check the system for ballot requests.

There was no published lessons learned report from the 2004 IVAS program or plans to address identified shortcomings for future elections.

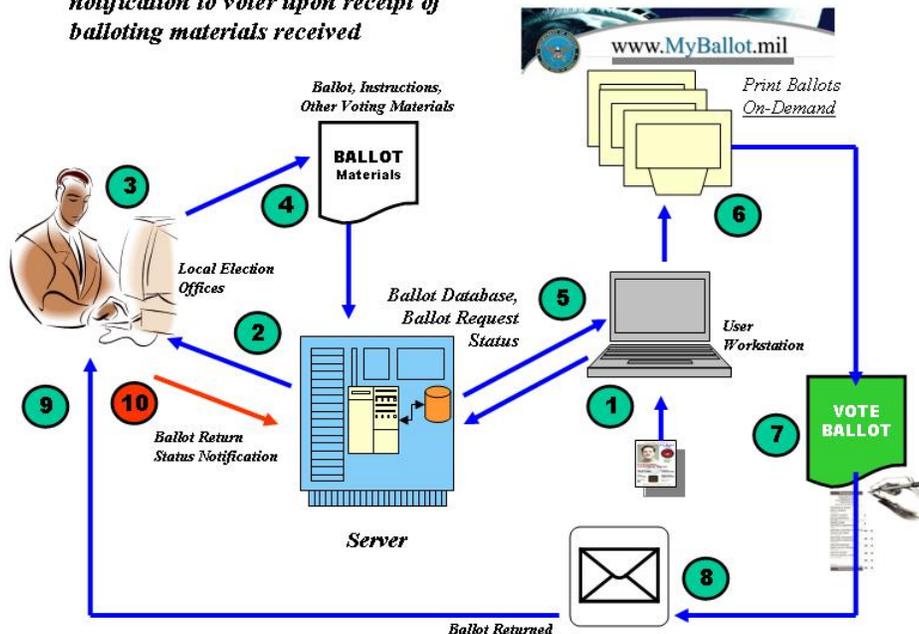
Interim Voter Assistance System (2006)

IVAS 2006 is modeled after the 2004 version, but has been completely rebuilt from the ground-up. Using private funds, DAL has arranged with PostX to develop the software. Using a commercial-off-the-shelf (COTS) framework, PostX has developed an application that provides for secure delivery of the Federal Post Card Application (FPCA) and the blank ballot.

PostX was contacted by DAL following a selection process that considered a number of COTS products following the 2004 pilot program. The selection process sought to maximize security and privacy in a manner that was acceptable to as many states as possible. DAL and PostX have rebuilt the application from the ground up, using private R&D funding and volunteer time from the developers.

IVAS-II Notional Approach

Includes optional return status notification to voter upon receipt of balloting materials received



IVAS basically uses a secure messaging server to store messages between the voter and the LEO. The voter registers on the system and is validated through DMDC's WebGuard by checking the voter against the DEERS database. Once validated, the user fills out a PFCA online, which is transmitted to the LEO. The LEO then has the option to approve/disapprove that request and optionally e-mail the voter a blank ballot, or returns the ballot by postal mail or fax. IVAS 2006 provides ballot management for the LEO and support multiple ballots for a given district. If the ballot is returned electronically, the voter would log back into the system and print and mark the ballot, then return it by either e-mail, fax or postal mail.

Notification to external e-mail addresses is optionally provided so that individuals are notified when there is an IVAS message waiting. This is an expanded feature from 2004, where voters did not receive e-mail notifications. In addition, a feature has been discussed is an electronic ballot receipt that would allow a LEO to enter a random code that is printed on the back of the ballot transmittal envelope in to IVAS, which would notify the voter that their ballot had been received by the LEO.

The system, as demonstrated on 3 Aug 2006, was unfinished, but showed a mature state of development. PostX developers estimated that they could complete the application, including integration of WebGuard (DMDC authentication) within 2 weeks. WebGuard will be used to authenticate the voter requesting a ballot.

Security Concern WebGuard is a tool provided by DMDC to determine the status of an individual enrolled in DEERS using a name, social security number and date-of-birth. Since this information is readily available, it does not effectively authenticate the user. WebGuard provides verification, but not authentication. Additionally, it does not provide any validation as to whether the user is covered as a UOCAVA voter.

The use of WebGuard was approved by DEPSECDEF for IVAS 2004 as a reasonable method of authenticating a subset of the UOCAVA voters.

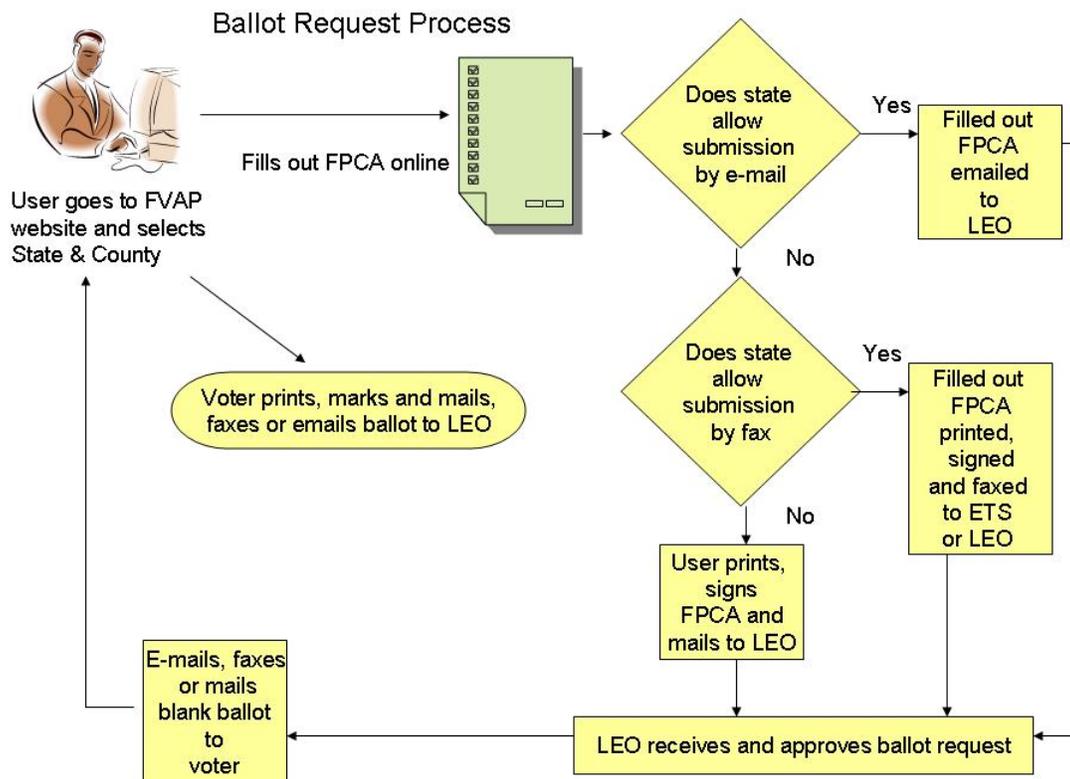
The proposed system would not reside on a government or DMDC computer. It has been suggested that the system be hosted on a commercial site capable of supporting high-volume transactions and one that has been secured against network attack.

The non-technical communications problems that arose in 2004 are likely to occur again. FVAP is the only agent authorized to communicate with voting officials. Unless FVAP delegates this authority, it will be difficult for the contractor to staff support lines in order to answer technical questions regarding the software. DMDC is likely to find itself in the middle once again and unprepared to support the software.

IVAS	
Strengths:	Relatively secure
	Controlled environment
	Possibly good framework for future effort
Weaknesses:	Weak authentication
	High cost per voter use
	Contracting challenges

Integrated Voting Alternatives Website

FVAP is establishing a website that displays the voting options for a given state. Specifically, it indicates whether the state supports e-mail or faxing of the Federal Post Card Application (FPCA), blank ballots, or voted ballots in addition to postal mail.



During this review, FVAP and DMDC refined their approach making subtle, but very important changes in their approach. Initially, the system was described as a collection of e-mail links that would help a voter communicate with their LEO by e-mail. The subsequent design provided the ability to fill out an FPCA online and transmit it directly to the LEO if e-mail transmission is permitted. Otherwise the FPCA could be printed and e-mailed or faxed.

The proposed system design is still conceptual at the time of this report and a comprehensive assessment could not be conducted. The following security concerns are based on assumptions about the software, but may or may not prove to be vulnerabilities in the final product.

The fact that the system is being redesigned with only 90 days before the election is a cause for concern. However, the simple and straightforward approach seems to be achievable within the short timeframe.

Security Concern. The transmission of voting materials by unsecure e-mail is a concern from both a privacy and security concern. E-mail traffic can flow through equipment owned and operated by various governments, companies and individuals in many different countries. It is easily monitored, blocked and subject to tampering. In addition, the publication of e-mail addresses of voting officials subjects those offices to attack, effectively blocking voters.

E-mails can be easily and reliably signed and encrypted to reduce the risk of tampering. If LEO servers are configured to only accept signed communications, it will also reduce the risk of a "spam" attack. However at the time of this report, there is no plan to digitally sign or encrypt e-mail communications.

Security risk for the current FVAP/DMDC e-mail effort is not a direct DoD or FVAP liability as the voter communication is direct between the voter and the LEO. However, the risk that tampering could occur is significant and may reflect negatively on FVAP or DoD.

The use of e-mail is a quick fix and is likely to be effective in improving voter communication with the LEOs. However, the security concerns are significant and could expose the DoD/FVAP to criticism about encouraging this method.

Current FVAP System	
Strengths:	Easy to implement
	Low cost
	Limited liability for FVAP/DMDC
Weaknesses:	No authentication
	E-mail is not secure

How Big is the Threat

The threat should not be underestimated. As noted in the SERVE Security Analysis, there are serious vulnerabilities in transmitting personal identification information or voting materials over the Internet. There are techniques that will mitigate and reduce those vulnerabilities, but no technologies are adequate today to prevent all tampering.

Of the 9 states where electronic transmission of the FPCA, blank ballot, or voted ballot is accepted, many require that the signed paper documents be mailed as the official copy. The voting process uses a series of steps to validate absentee ballots: registration, request for absentee ballot, and returned voted ballot. Ultimately it is the responsibility of the LEO to ensure that the integrity and privacy of the voting process is maintained.

There are threats to the process other than FPCA or ballot tampering. E-mail traffic to or from LEO e-mail servers can be blocked or disrupted by non-US owned nodes on the Internet. Or attackers could flood LEO e-mail boxes with junk mail (SPAM) in an effort to prevent legitimate votes from being delivered. There are many other modes of attack and hackers continue to demonstrate the willingness to spend the time and effort to compromise web-based systems.

Finally, any disclosure of personal identification data, which is required on the PFCA poses a serious financial risk to our soldiers, sailors, airmen and marines. The unencrypted transmission of name, social security number, date of birth and address should not be encouraged under any circumstances.

Comparison Matrix

	2006		2008	
	IVAS	FVAP	IVAS	FVAP
Cost	●	●		
Security	●	●	●	
Privacy	●	●	●	
Liability	●	●	●	
Ease of Use	●	●	●	
Schedule Risk	●	●	●	
Technical Risk	●	●	●	
Political Risk	●	●		

Participation in Electronic Delivery of Voting Materials

	E-Mail	IVAS
# States that accept FPCA	8	9*
# States that allow transmittal of blank ballot	10	**
# States that accept marked ballot	6	**

*Based on 2004 IVAS Project

**Unknown at this point

Recommendations

Of the three recommendations below, the first is most important. There is significant Congressional interest in improving absentee voting options for military personnel, not only in current legislation, but in draft legislation for FY07. Regardless of the option selected to support the 2006 elections, DoD must establish a strategy and roadmap to improve electronic voter options for future elections.

Recommended Action #1

Prior to September 2006, DoD should initiate the development of a strategy and implementation plan for expanding the electronic election support options for the 2008 election cycle.

Recommended Action #2

DoD should strongly consider implementing IVAS for the 2006 election to bring DoD into full compliance with PL 109-234 §1212. With less than 100 days before the election, the only viable option is to award a contract to Dreifus Associates, LTD.

Recommended Action #3

If DoD proceeds with IVAS 2006, the technical effort should be managed and executed by the Defense Business Transformation Agency. Technology acquisition programs should be managed by a workforce specializing in information technology to ensure proper integration and compliance with federal law, DoD policy and DoD IT Frameworks.

Other Observations

It has been reported that Senator Warner intends to conduct hearings on Military Voting in September 2006. In addition, the conference version of the FY07 NDAA contains language to continue the IVAS effort. Because of this, it is essential that DoD develop a roadmap for electronic support to military voting at its earliest opportunity.

Acronyms

DAL	Dreifus Associates, LTD
DEERS	Defense Enrollment Eligibility Reporting System
DMDC	Defense Manpower Data Center
DoD	Department of Defense
DTIC	Defense Technical Information Center
FPCA	Federal Post Card Application
FVAP	Federal Voting Assistance Program
IVAS	Interim Voting Assistance System <i>Alternative definition</i> – Integrated Voting Alternatives Site
LEO	Local Election Official
PostX	Not an acronym. PostX is a company that provides secure, encrypted e-mail
UOCAVA	Uniformed And Overseas Citizens Absentee Voting Act
VAO	Voting Assistance Officer

IVAS as used in this report refers to the **Interim Voting Assistance System** as referenced by Congress and in the 2004 pilot program. The Federal Voting Assistance Program also uses the acronym to stand for ***Integrated Voting Alternative Site***, which is a website that provides information about absentee voting.