October 19, 2005

ELECTIONS

Development and Implementation of Statewide Voter Checklist System Could Be Improved

Randolph D. Brock
Vermont State Auditor
Rpt. No. 05-02

Mission Statement

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STATE AUDITOR

STATE OF VERMONT
OFFICE OF THE STATE AUDITOR

October 19, 2005

Speaker of the House of Representatives Gaye Symington
President Pro Tempore of the Senate Peter Welch
Governor James Douglas
Secretary of State Deborah L. Markowitz

Dear Colleagues,

     I am pleased to provide you with the following report, *Elections: Development and Implementation of Statewide Voter Checklist System Could Be Improved*. We undertook this pre-implementation review to provide timely information and actionable recommendations designed to minimize issues once the system is fully deployed. The objectives of our review were to evaluate (1) whether the statewide voter checklist system was developed in a manner that ensures that applicable federal and state requirements will be met and (2) how the statewide voter checklist system is being implemented.

     The statewide voter registration checklist will be an integral part of ensuring the integrity of the voter registration process, which is a critical element for a well-functioning democracy. Such an important system warrants the use of a disciplined and robust systems development process, which includes detailed requirements definition, robust testing, and strong security. Without these elements, the risk is greater that the system will not work as intended or in a secure manner. Nevertheless, we found deficiencies in the processes used to develop and implement the statewide voter checklist system. Accordingly, we make a variety of recommendations pertaining to actions that should be taken prior to using the statewide voter checklist system as the sole registration system for the state. We believe that taking these actions will help mitigate the risks associated with the development and implementation approach that was taken and, ultimately, will strengthen the system that is presently being put in place.

     Sincerely,

Randolph D. Brock
State Auditor

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Abbreviations

DII   Department of Information and Innovation
EAC   Election Assistance Commission
HAVA   Help America Vote Act
NEMRC   New England Municipal Resource Center

Introduction

Voter registration is a key element in ensuring the integrity of the American electoral process since a citizen's access to voting is primarily based on the appearance of his or her name on a registration list (known in Vermont as the voter checklist). Yet, problems with the registration process in the United States have persisted, including reports of ineligible persons registering to vote or people showing up at the polls thinking that they had registered but not being on the list.

In response to concerns that have been expressed about the efficacy of the registration process, the federal government has enacted laws requiring that states adopt certain measures designed to improve the process. Most recently, in October 2002, the Help America Vote Act of 2002 (HAVA) was enacted, which, among other provisions, requires states to implement a single, uniform, official, centralized, interactive, computerized statewide voter registration list. This system is to be defined, maintained, and administered at the state level and is required to contain the name and registration information of every legally registered voter in the state. According to the Committee on House Administration, the creation of such a system should modernize and improve the registration process by making the lists more accurate and easier to update.[1] Moreover, according to the League of Women Voters, the design of these statewide systems is key to establishing a well-administered election process.[2]

The federal government also provided funds to the states to enact the provisions of HAVA and required the states to submit a plan explaining how they would use such funds. Vermont has received about $16.6 million in HAVA funding[3] and its plan for using these funds provides for funding

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[1]U.S. House of Representatives, Committee on House Administration, *Help America Vote Act of 2001* (H.R. 107-329).

[2]League of Women Voters, *Helping America Vote: Safeguarding the Vote* (July 2004).

[3]Specifically, Vermont was provided (1) $5 million in HAVA Title I "early money" in fiscal year 2003 for improvements in elections administration and (2) $4,150,000 and $7,446,803 in fiscal years 2003 and 2004, respectively, in Title II funds, which are designed to assist states in meeting the uniform and nondiscriminatory election technology and administration requirements in Title III of HAVA. Vermont is using the Title I "early money" to fund its statewide voter checklist system.

of various activities, such as election official training and the procurement of a voting system for the disabled. The Vermont plan also included a proposal for the development and implementation of a statewide voter registration checklist system.

Since the statewide voter checklist system was funded by the federal government, we undertook an audit of the system under the State Auditor's authority (32 V.S.A. §163) to perform financial and compliance audits required by the Federal Single Audit Act of 1984. We also undertook this review in conjunction of our assessment of risks, as required by the Office of Management and Budget's Circular A-133, *Audits of States, Local Governments, and Non-Profit Organizations*.[4] Our review of the applicable federal and state election laws led to the development of the review's objectives. These were to evaluate (1) whether the statewide voter checklist system was developed in a manner that ensures that applicable federal and state requirements will be met and (2) how the statewide voter checklist system is being implemented. We performed this review in accordance with generally accepted government auditing standards. Appendix I contains our scope and methodology.

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[4]HAVA is a non-major, or Type B, federal program. §___.520(d) of the Office of Management and Budget's Circular A-133 states that "the auditor shall identify Type B programs which are high-risk using professional judgment and the criteria in §___.525." The determination of which Type B programs to audit is based on a risk assessment by the auditor. §___.525(a) states that "the auditor's determination should be based on an overall evaluation of the risk of noncompliance occurring which could be material to the federal program. The auditor shall use auditor judgment and consider criteria, such as described in paragraphs (b), (c), and (d) of this section, to identify risk in Federal programs." According to §___.525(b)(iii), "the extent to which computer processing is used to administer Federal programs, as well as the complexity of that processing, should be considered by the auditor in assessing risk. New and recently modified computer systems may also indicate risk."

Highlights: Report of the Vermont State Auditor

Elections: Development and Implementation of Statewide Voter Checklist System Could Be Improved

(October 2005, Rpt. No. 05-02)

Objectives and Recommendations

Objectives:

To evaluate whether the statewide voter checklist system was developed in a manner that ensures that applicable federal and state requirements will be met.

To evaluate how the statewide voter checklist system is being implemented.

Recommendations:

We made a number of recommendations pertaining to actions that the Secretary of State should take prior to using the statewide voter checklist system as the sole registration system for the state, including obtaining a required expert review and approval by the Commissioner of the Department of Information and Innovation. We also made recommendations related to improving the implementation of the system, including the development of performance goals and measures and tracking actual results against these standards.

Findings

The statewide voter checklist system is a work-in-progress and the Secretary of State's office expects to complete its implementation no later than January 1, 2006. Although we recognize that new systems often have their "bumps in the road" as they are being implemented, the Secretary of State's office's approach to the development of the statewide voter checklist system reduces the likelihood that the system will work as intended at needed performance levels. Specifically, the Secretary's office did not provide documentation that it (1) performed fundamental planning activities, such as documenting the systems requirements, (2) rigorously tested the system to ensure that it works as intended and at the capacity needed, (3) has adequate and current documentation that explains how the system works and which can be used to ensure that the system can be properly maintained and (4) employed adequate processes to ensure that the system is secure. For example, the testing phase of a systems development project is used to help ensure that system functions meet their specified requirements, but, contrary to fundamental practices identified by organizations such as the IT Governance Institute and the Government Accountability Office, the Secretary of State's office provided us with neither test plans nor test result documentation to demonstrate that the major functionality of the system works as intended and at expected capacity levels. In addition, multiple users in individual towns are allowed to share passwords, which is not in conformance with state policy or federal guidance. As a result, changes to the checklist data cannot be associated with a specific individual by an audit trail and the state has lost a mechanism to hold individuals accountable for unauthorized actions. These issues may have been found earlier in the development process and the development approach been improved had the Secretary of State's office requested the review and approval of the system by the Commissioner of the Department of Information and Innovation and had an independent expert review been performed, as required by Vermont law. Instead, the Commissioner stated that she has just recently become aware of the statewide voter checklist system effort and is beginning to request information from the Secretary of State's office.

Regarding the implementation of the statewide voter checklist system, the Secretary of State's office began to deploy the system on a county-by-county basis in May 2005. This deployment involved training town and city clerks (and in some cases their assistants) and converting data from each town's old system to the new statewide voter checklist system. Although many clerks had not begun using the system yet, the reactions of those that we spoke to that were using it were generally positive, particularly with respect to the training and user materials that the Secretary of State's office has provided and the responsiveness of that office. Nevertheless, there are still significant hurdles to be passed. First, the clerks had not used critical system features, such as the report function, which was not yet operational (it is expected to be completed by December 2005). Second, some problems that town or city clerks have encountered remain unresolved. For example, one town clerk found that the system was not properly processing the voter participation information that had been entered. Third, the true test of the system will come just prior to the next set of elections that are held statewide when all cities and towns data are expected to be in the database and as more clerks are expected to try to access the system simultaneously. Finally, confirmation of whether the integrity of the data transferred to the statewide system was maintained was incomplete and performance goals and measures for the system have not been developed.

Background

Voter registration is an important element of the American electoral process. According to the National Task Force on Election Reform, the voter registration and the accompanying election management systems that provide accurate voter registration lists help guarantee the application of the "one person, one vote" standard.[1] However, maintaining an effective voter registration process is not without its challenges. For example, ensuring that only eligible persons are registered to vote is an ongoing challenge for elections officials and is complicated by factors such as jurisdiction size, mobility of voters, and community diversity. Laws have been passed to try to address concerns about the integrity of the registration process. For example, HAVA and Act 59[2] require the development of a statewide voter checklist system, which is to serve as the official voter registration list for all elections in Vermont.[3] These laws also contain a variety of requirements pertaining to the development and maintenance of this checklist. In addition, Act 59 places the responsibility for the development of this system on the Secretary of State. Accordingly, the Secretary of State's office has been working on the development of the statewide system since 2003 and expects that the system will be able to operate as the state's "official" checklist by January 1, 2006, the date set by HAVA.

Voter Registration Process

The election process is made up of several interrelated stages, of which the registration process is the first, and it is implemented through a combination of people, processes, and technology (see figure 1).

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[1]National Task Force on Election Reform, *Election 2004: Review and Recommendations by the Nation's Election Administrators* (sponsored by The Election Center, May 2005).

[2]17 V.S.A. §2154.

[3]HAVA requires that the statewide checklist be used for federal elections while Act 59 states that the statewide checklist is to be used for all elections in the state.

Figure 1: Stages of Election Process

People

Process

| Registration | → | Absentee/ early voting | → | Vote casting | → | Vote counting and certification |

Technology

Source: Government Accountability Office.

In Vermont, the Town Clerk, in conjunction with the Board of Civil Authority, is the foundation of Vermont elections and is responsible for ensuring that eligible applicants are included as part of the town or city's checklist. A person is eligible to be placed on the checklist if he or she

- is a citizen of the United States,
- is a resident of Vermont and a resident of the town in which he or she apply to be added to the checklist,
- has taken the Voter's Oath, and
- is at least 18 years of age, or will be eighteen on or before the day of the election.

A person may apply to be on the checklist in a variety of ways, including (1) simultaneously with his or her application for, or renewal of, a motor vehicle driver's license, (2) by completing a voter registration application

at a voter registration agency,[4] and (3) by delivering or mailing a completed application form to the applicable Town Clerk's office. The clerk is to review all applications and applicants will be added to the checklist and become registered voters if they are found to meet all eligibility requirements. If a clerk questions an applicant's eligibility, the Board of Civil Authority is to review the application. A voter can also be added to the checklist at the polling place as long as the person signs a sworn affidavit that he or she completed and submitted a valid application for addition to the checklist of that town before the deadline for applications and who otherwise is qualified to be added to the checklist.

Town and city clerks, in conjunction with the Board of Civil Authority, also have the authority to remove voters from the checklist if they meet certain conditions. For example, 17 V.S.A. §2150 allows clerks to remove voters from the checklist when they become residents of other jurisdictions, file a written request to be removed, or have died. At a minimum, the Board of Civil Authority is required to review the checklist during the summer of each odd numbered year to find those voters whose residency cannot be determined to be within the town or city. This board must then send notices that conform to federal requirements to voters whose residency may no longer be within the jurisdiction.

To perform these registration maintenance tasks, the towns and cities used a variety of systems. In most cases, they used a system developed by the New England Municipal Resource Center (NEMRC), although some developed their own systems or used spreadsheets or a word processing application. According to the Secretary of State's office, Vermont had 444,508 registered voters for the November 2004 general election.

Ensuring that voter lists are accurate is a task that has challenged election officials across the country. For example, communities with large student populations must manage registrants constantly moving in or out of a jurisdiction. In addition, the Government Accountability Office recently

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[4]17 V.S.A. §2103 defines a voter registration agency as all state offices that provide public assistance, all state offices that provide state-funded programs primarily engaged in providing services to persons with disabilities, and any federal and nongovernmental offices that have agreed to be designated by the Secretary of State as a voter registration agency. Designated voter registration agencies are the Department of Social Welfare, the Department of Health, the Department of Disabilities, Aging, and Independent Living, and the Department of Mental Health.

identified other challenges associated with verifying voter registration eligibility.[5] For example, a difficulty associated with identifying duplicate registrants is the complexity of matching and validating names, particularly when aliases and name changes are considered. In addition, ensuring that a registrant resides in a particular jurisdiction can be complicated by missing information or by variations on how an address is listed, new streets, or untimely forwarding of new addresses. Establishing a voters' legal address is a particular problem in Vermont because, according to the Secretary of State, greater than half of the time, the legal address of the state's citizens is not the same town or city as the mailing address.

HAVA and Act 59 Contain a Variety of Requirements Pertaining to the Statewide Voter Checklist System

The federal government has enacted various laws addressing the voter registration process. In particular, in 2002, the government enacted HAVA, which requires that each state's chief election official implement, in a uniform and nondiscriminatory manner, a single, uniform, official, centralized, interactive computerized statewide voter registration list. This state-level list is to contain the name and registration information of every legally registered voter in the state. Among the HAVA requirements for this statewide system are the following:

- Any election official in the state, including any local election official, may obtain immediate electronic access to the information contained in the computerized list.
- All voter registration information obtained by any local election official shall be electronically entered into the computerized list on an expedited basis.
- File maintenance is to be conducted consistent with requirements contained in the National Voter Registration Act of 1993. This law created

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[5]U.S. Government Accountability Office, *Elections: Additional Data Could Help State and Local Elections Officials Maintain Accurate Voter Registration Lists* (GAO-05-478, June 10, 2005).

requirements for how states maintain voter registration lists for federal elections. For example, the act requires states to keep registration lists accurate and current, such as identifying persons who have become ineligible due to death or change of residence outside of the jurisdiction. At the same time, the act requires list maintenance programs to incorporate specific safeguards.

- Adequate security measures are to be in place to prevent unauthorized access to the computerized list.

HAVA also generally requires that registration applicants include either a driver's license number or, if the applicant does not have a license, the last four digits of a social security number.[6] Moreover, HAVA requires states to match information received on voter registration forms against driver's license and social security databases for the purpose of verifying the accuracy of the information received from the applicants.

In 2003, Vermont enacted Act 59, in part to implement the requirements of HAVA. Among its provisions, Act 59 requires the Secretary of State to establish a uniform and nondiscriminatory statewide computerized voter registration checklist. This statewide checklist is to serve as the official voter registration list for all elections in the state. In establishing the statewide system, the secretary was directed to

- limit the town clerk to adding, modifying, or deleting applicant and voter information on the portion of the checklist for that clerk's municipality,
- limit access to the statewide checklist for a local elections official to verify if the applicant is registered in another municipality in the state by a search for the individual voter,
- notify a local elections official when a voter registered in that official's district registers in another voting district,
- provide adequate security to prevent unauthorized access to the checklist, and
- ensure the compatibility and comparability of information on the checklist with information contained in the Department of Motor Vehicles' computer systems.

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[6]If an applicant does not have a driver's license or social security number, the state is to assign a unique identifier to that person for purposes of voter registration.

Status of the Development of the Statewide Voter Checklist System

On July 28, 2003, the Secretary of State submitted Vermont's HAVA plan. According to this plan, the Elections Division within the Office of the Secretary of State is responsible for defining, maintaining, and administering the single, uniform, official centralized interactive computerized statewide voter registration list on or before January 1, 2006. The plan estimated that the system would cost between $600,000 and $1 million, with an estimated maintenance cost of about $100,000 each year.

The Secretary of State's office has developed the statewide voter checklist system in-house. It is contained on a server located in Montpelier. Town and city clerks who have been trained and have received their passwords can access and use the system via the Internet. In towns with less than 500 registered voters, the system can be accessed using a public machine, such as at a library, school, or at home.

Training on the statewide system is being performed on a county-by-county basis. The first training session was held on May 10, 2005. As of September 10th, three counties remained to be trained. The Secretary of State's office plans to have the system running statewide as the official voter checklist by January 1, 2006, the date specified in HAVA.[7]

Development Approach Reduces Likelihood That Requirements Will Be Met

The Secretary of State's office's approach to the development of the statewide voter checklist system reduces the likelihood that the system

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[7]HAVA required that states implement a statewide voter checklist system that is compliant with the law by January 1, 2004, but it allowed states to request a waiver to extend the deadline to January 1, 2006. Vermont was one of 40 states and the District of Columbia that requested and were granted this waiver.

will work as intended at needed performance levels. Although we recognize that the system is still a work-in-progress, the work of the Government Accountability Office and other best practice research has found that the quality of IT systems and services is governed largely by the quality of the processes involved in developing or acquiring each. However, in the case of the statewide voter checklist system, the Secretary of State's office did not provide documentation that it (1) performed fundamental planning activities, such as documenting the systems requirements, (2) rigorously tested the system to ensure that it works as intended and at the capacity needed, (3) developed systems documentation that explains how the system works and which can be used to ensure that the system can be properly maintained, and (4) employed processes to ensure that the system is adequately secured. The issues we identified may have been found earlier in the development process and the development approach improved had the Secretary of State's office requested the review and approval of the system by the Commissioner of the Department of Information and Innovation (DII) and had an independent expert review been performed, as required by statute.

Planning

The Secretary of State's office's planning for the statewide voter registration system did not include basic planning analyses. Without such planning, this office cannot demonstrate that it has chosen the most appropriate solution or that the system was built to meet its requirements. Examples of specific planning analyses that were not completed include the following.

- *Cost/benefit analysis.* 3 V.S.A §2222 (a)(9) requires a life-cycle cost analysis, a cost/benefit analysis, and an analysis of the cost savings and/or service delivery improvements for any proposed new system with a cost over $150,000 be completed and reviewed by the Commissioner of DII. According to officials from the Office of the Secretary of State, the office did not have a documented business case for the statewide voter checklist system. In addition, this office did not provide us or the Commissioner of DII with a cost/benefit analysis. Moreover, the Secretary of State's office does not have documentation supporting that its choice of building the system in-house using FoxPro was the most cost effective alternative. The Secretary of State's office estimated that an in-house development would cost $600,000 to $1,000,000 while acquiring a system from a vendor would cost $1.5 million. However, according to officials from the

Secretary of State's office, there is no documentation to support these figures. In addition, according to an official at this office, it chose to build the system in-house using Visual FoxPro for the development effort because the office was familiar with this software. However, the individual who developed the system was not a FoxPro programmer and had to take a class in its use in order to develop the system. In addition, according to a consultant hired by the Secretary of State's office, Visual FoxPro is not designed as a high availability production-level platform and there are other platforms that would require fewer supporting infrastructure resources and would offer higher availability and manageability. Moreover, in an August 18, 2003 memo to the Secretary of State and others, the Director of Elections and Campaign Finance expressed concern about the use of FoxPro and laid out other options at a very high level. Without a more detailed analysis of these options, including the costs, benefits, and risks, it is not possible for us to determine whether the Secretary of State chose the most cost effective option.

- *Privacy impact*. 3 V.S.A §2222 (a)(9) requires that any proposed new computer system with a cost over $150,000 include a statement identifying any impact on the privacy or disclosure of individually identifiable information. The Secretary of State's sections of the five-year plans issued in 2005 and 2004 do not include such a statement and according to officials from the Secretary of State's office, they did not develop a privacy impact statement. This omission is important since the statewide checklist contains individually identifiable information, some of which, such as the voter name, is a pubic record and others, such as the voter's driver's license number, is not a public record.

- *Analysis and documentation of requirements*. Leaders in the review of software development and acquisition practices recognize the importance of analyzing and documenting requirements prior to the development of a system. For example, among the control objectives in the IT Governance Institute's CobiT framework is that the business requirements be clearly defined before a development, implementation, or modification project be approved.[8] According to this framework, functional and operational

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[8]IT Governance Institute, *CobiT: Governance, Control and Audit for Information and Related Technology* (July 2000).
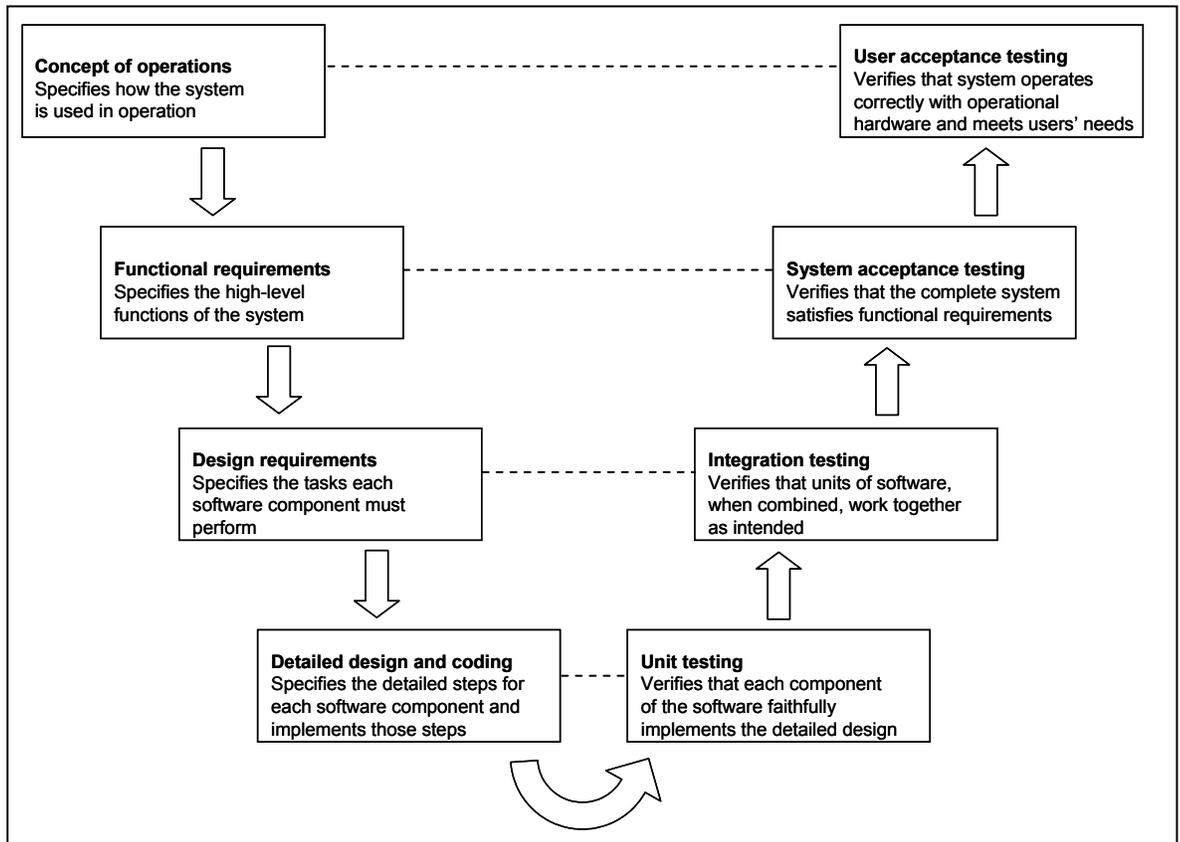
requirements should be specified, including performance, safety, reliability, compatibility, and security. In layman's terms, requirements development and management involves establishing and maintaining agreement on what the system is to do (functionality), how well it is to do it (performance), and how it is to interact with other systems (interfaces). The Secretary of State's office sought input from town clerks and others in developing the structure and content of the statewide voter checklist system. However, the system developer's documentation of the system requirements principally consisted of HAVA, the state's draft HAVA plan, draft guidance from the U.S. Election Assistance Commission[9] (EAC), memos from the Director of Elections and Campaign Finance dated in August 2003, September 2003, and January 2005, and undated/unattributed comments on various features that were needed. These documents do not constitute an effective requirements management process, which involves establishing an agreed-upon set of requirements and managing any changes to the requirements in collaboration with stakeholders. The importance of such a process is demonstrated by the fact that some of the "requirements" set forth in the developer's records were not implemented. For example, a September 2003 requirements memo (reiterated in a January 2005 memo), included a field for each applicant indicating how he or she applied (e.g., in person, through the Department of Motor Vehicles) in order to more easily comply with the reporting requirements of the National Voters Registration Act. However, in the system that was deployed, this field was no longer included. Instead the user is asked to enter such information in summary form at the end of each session, but can opt not to do so. Without a requirements document that is managed, it is unclear whether this "requirement" was changed for a reason, was optional, or was implemented incorrectly. Moreover, as the system transitions from a development effort to a fully operational system, it is critical that changes to the system are controlled. Establishing controls over the modification of application programs helps to ensure that only authorized changes are implemented and that revisions are adequately tested and implemented.

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[9]The EAC was established in HAVA to (1) manage the distribution of HAVA funding and oversee the related financial reporting and auditing activities, (2) serve as a national clearinghouse on administering elections under federal law, (3) provide guidance and outreach to state and local election officials, and (4) develop standards and guidelines.

Testing

The absence of a requirements document also hinders the testing phase of a systems development project, which is used to help ensure that system functions meet their specified requirements (see figure 2 for an illustration of the relationship between requirements development and testing). In particular, requirements must be complete, clear, and well documented to design and implement an effective testing program. Without effective requirements and testing processes, an organization is taking a significant risk that substantial defects will not be detected until after the system is implemented.

Figure 2: Relationship between Requirements Development and Testing

Concept of operations
Specifies how the system is used in operation

User acceptance testing
Verifies that system operates correctly with operational hardware and meets users' needs

Functional requirements
Specifies the high-level functions of the system

System acceptance testing
Verifies that the complete system satisfies functional requirements

Design requirements
Specifies the tasks each software component must perform

Integration testing
Verifies that units of software, when combined, work together as intended

Detailed design and coding
Specifies the detailed steps for each software component and implements those steps

Unit testing
Verifies that each component of the software faithfully implements the detailed design

Source: Government Accountability Office.

In addition, according to the CobiT framework, development efforts should (1) have test plans, (2) perform various types of tests, such as unit testing, application testing, and integration testing against established testing standards, (3) validate its operation as a complete product under conditions similar to, and in a manner consistent with, the expected environment, and (4) require that documented test results be retained. The Government Accountability Office has also issued a testing model, based on guidance and recommendations of such reputable organizations as the National Institute of Standards and Technology, the Institute of Electrical

and Electronic Engineers, Gartner, and the Software Engineering Institute, that discusses the need to plan for testing and to document the results.[10]

According to officials from the Secretary of State's office, test plans and test documentation were not developed and/or kept. For example, the checklist system developer stated that he, the Director of Elections and Campaign Finance, some town clerks, and another Secretary of State staff member had tested the system, but he had no documentation of the tests that were performed, the results of the tests, and the extent to which problems found during testing were fixed. Instead, the documentation in his files were generally limited to a few emails describing problems that were found. In addition, the developer acknowledged that he did not know whether all elements of the system have been tested.

In addition to the lack of test plans and results, the Secretary of State's office also did not test in an environment similar to that in which the system will be operating. For example, according to the developer and the Director of Elections and Campaign Finance, the testing included up to a dozen simultaneous users. However, a January 20, 2005 memo from the Director of Elections and Campaign Finance set simultaneous user volume requirements at 73 to 101 users. In addition, the number of users could be even higher if all of the 246 town or city clerks or their assistants try to use the system at the same time. Moreover, the town clerks are using a variety of operating systems and telecommunications methods to access and use the system, but there was no documentation to indicate that this varied environment was considered during the testing of the system.

Without documentation of the tests that were run, the results, and the environment in which the tests were run, the Secretary of State's office lacks evidence that the system works as intended or that it will work at the required performance and operational levels.

System Documentation

According to the Secretary of State's draft trustworthy systems guide, system administrators should maintain complete and current

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[10]U.S. Government Accountability Office, *Year 2000 Computing Crisis: A Testing Guide*, (AIMD-10.1.21, November 1998).

documentation of the entire system. [11] Moreover, this guide calls for the documentation to include information on the system's hardware, software, communications network, and connected systems. Further, it states that policy and procedure documentation should include programming conventions and procedures and applications and associated procedures, such as methods of entering/accessing data, and data modification, duplication, and deletion. Organizations such as the IT Governance Institute also indicate the importance of developing such documents.

The Director of Elections and Campaign Finance has also recognized the importance of documentation, stating in a August 18, 2003 memo to the Secretary of State and others,

> "My next greatest concern is that we make sure that the application is fully documented?[sic] All of the folks that have tried to interest us in having them do the project stress that unless we have adequate documentation, we will not be able to migrate to another system if that ever becomes necessary, or to fix and maintain the system in[sic] our IT staff changes."

Nevertheless, the Secretary of State's office has very little system documentation that explains how the system works and, according to the developer of the system, the documentation in his files is not current. This lack of documentation is a serious risk and will hinder the execution of plans for future changes to the system.

Security

HAVA and Act 59 both require that the statewide voter checklist system have adequate security to prevent unauthorized access to the checklist. However, the Secretary of State's office did not have sufficient documentation to demonstrate that it could meet this standard and the system's password policies and backup and recovery procedures were not

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[11]Office of the Vermont Secretary of State, *Vermont's Trustworthy Information Systems Handbook* (draft, April 5, 2005). Although this is a draft guide, the Secretary of State has posted it on the office's web site and has written an introduction to the document, stressing that it provides tools to state officials to "ensure that the government information systems create reliable, authentic, and accessible information and records."

in conformance with state and federal government policies and guidance. Specifically,

- *Security plan lacking.* Among industry best practices in this area is the development of system security plans, which provide an overview of the security requirements of the system, describe established controls for meeting the requirements, and delineate responsibilities and expected behaviors for all individuals who have access to the system. No such plan was developed for the statewide voter checklist system. Accordingly, the unavailability of a security plan, coupled with the lack of system documentation, does not allow us to evaluate whether sufficient security was built into the system and enabling technologies.

- *Password policy does not conform to federal or state guidance and policy.* Passwords are the foundation of virtually all access and user management security systems. The EAC's guide[12] on the implementation of statewide voter checklist systems recommends that voter registration systems track and record transactions, including documenting the identity of individuals who initiate such transactions. In addition, the state government's policy[13] on passwords states "all operational systems should allow for both normal use and comprehensive management without users being required to share passwords" and requires that a state entity that has a system that shares passwords notify the DII Commissioner and request annual waivers until all deficiencies are corrected.[14] Moreover, the Secretary of State's own draft guide on trustworthy systems states that each user should be assigned a unique identifier and password. Nevertheless, the statewide voter checklist system has been implemented with a single password per town. Accordingly, in those towns in which there are multiple users, passwords are being shared amongst these users. As a result, changes to the checklist data cannot be associated with a specific individual by an audit trail and the state has lost a mechanism to hold individuals accountable for unauthorized actions. According to the EAC, such accountability can

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[12]U.S. Election Assistance Commission, *Voluntary Guidance on Implementation of Statewide Voter Registration Lists* (July 2005).

[13]The password policy applies to all automated systems using passwords to manage access and that are owned, employed by, or employed for the state of Vermont.

[14]State Technology Collaborative, *Passwords* (policy number 0501.012005, April 8, 2005).

serve as an important security measure by deterring unlawful or inappropriate use of the statewide voter checklist.

- *Backup and recovery procedures.* According to the EAC, due to the important nature of the information stored on the statewide voter registration list, state election officials must ensure that the systems housing the list have adequate backup, recovery, and restoration capabilities that are routinely tested. Although officials from the Office of the Secretary of State said that this office backed up the statewide voter checklist system, this process was not documented. A documented and tested backup and recovery process is important because if such controls are inadequate, or incorrectly implemented, even relatively minor interruptions can result in lost or incorrectly processed data. In the case of the statewide checklist system, service interruptions close to an election could have widespread implications so it is particularly critical that backup and recovery procedures be stringent, documented, and tested.

Required Approval of System

22 V.S.A. §901 states that the Commissioner of DII must review and approve computer systems with a cost in excess of $150,000. In addition, 3 V.S.A §2222(a)(9) requires, for any system over $150,000, the review and approval by the Commissioner of DII of a system plan, which is to include (1) a cost/benefit analysis, (2) the expected cost savings and/or service delivery improvements, (3) a privacy impact statement, and (4) a public access to nonconfidential information statement. Moreover, 3 V.S.A. §2222(g) states that DII[15] shall obtain an independent expert review of any IT activity with an expected cost of $500,000 or more. The independent review is to include a technology architecture review, an implementation plan assessment, and a cost analysis and benefit model analysis.

Notwithstanding that the state's HAVA plan estimated that the statewide voter checklist system would cost at least $600,000, the Secretary of State's office did not seek approval from the Commissioner of DII nor request that the Commissioner's office obtain an independent review.

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[15]3 V.S.A. §2222(g) states that this is the responsibility of the Secretary of Administration, but 22 V.S.A. §901(6) delegates this responsibility to the DII Commissioner.

Moreover, in late July 2005, the Commissioner of DII stated that she had just become aware of the statewide voter checklist system effort. She explained that she has more visibility into system efforts that use contractors rather than in-house staff because Purchasing and Contract Administration (part of the Department of Buildings and General Services) seeks her approval of applicable requests for proposals.

According to the Secretary of State, her office had provided information on this system development effort in the 2004 and 2005 five-year IT plan and that DII had not asked to review the project. However, the five-year plans do not include very explicit information on the statewide voter checklist initiative. For example, in the 2005 plan, the project is described as "Elections Reform" with a business objective of "Meet recent federal election reform requirements based on the Help America Vote Act 2002." In addition, according to the Commissioner of DII, the requirement to seek approval and independent review is in statute and agencies are required to request these reviews when the thresholds are met. Moreover, the Commissioner noted that the five-year plans are not detailed enough for DII to know when system development efforts require DII review (for example, these plans do not include milestones). Nevertheless, the Commissioner stated that all state organizations may not be aware of this statutory requirement and that she is in the process of reaching out to the Secretary of State's office and others to further communicate these expectations.

On September 8, 2005, the DII Commissioner told us that now that she is aware of the Secretary of State's statewide voter checklist development effort, that she plans on holding discussions with that office and will request and review their plans. Once she has more information on the statewide voter checklist system, the Commissioner stated that she will determine whether an expert review of this system development effort is needed.

The required independent expert review of the statewide voter checklist system is important because it looks at many of the issues that have been raised as concerns in this report. For example, the template request for quote for hiring a contractor to perform the independent review includes certain minimum issues that are to be addressed by the contractor, including whether the (1) proposed hardware and software architecture is state-of-the-art and will meet the organization's needs, (2) project has

security plans and a security strategy, (3) project's backup/recovery plans and disaster recovery plan are adequate, and (4) implementation plan includes adequate design, conversion, and implementation planning and testing procedures. In addition, the independent assessment is supposed to review the new system's potential impact on the state's wide-area-network.

Implementation Progressing, But Critical Issues Remain Unresolved

The Secretary of State's office began to roll out the statewide voter checklist on a county-by-county basis in May 2005. The town and city clerks that we spoke to were positive in their assessment of the training and user materials that have been provided and several clerks stated that the Secretary of State's office had been responsive to their concerns and suggestions. However, the system's critical report feature was not functional and the clerks had not yet had the opportunity to use important system functions. Moreover, confirmation of whether the integrity of the data transferred to the statewide system was maintained was incomplete and performance goals and measures for the system have not been developed. Although we recognize that the system is still in the process of being implemented and that some amount of "bumps in the road" are to be expected, it is essential that outstanding issues be addressed prior to the system becoming the sole voter registration system of the state.

System Deployment

The Secretary of State's office began deploying the statewide voter checklist system in May 2005 when it held its first training session on the system for Brattleboro, Dummerston, Putney, and Rockingham. Since that time, the office has held training sessions for city and town clerks (and in some cases their assistants) at most of the state's counties.[16] Once a user has attended the training, provided a password to the Secretary of State's

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[16]In her October 11, 2005 response to a draft of this report, the Secretary of State said that all of the users will be on the system within two weeks.

office, and had its checklist data converted to the new system, the user is expected to begin using the system. In February 2005, the Secretary of State's office notified all city and town clerks that the statewide voter checklist system must be used by all towns and cities from the date that training was received. The Secretary of State's office also issued a bulletin on June 8, 2005 instructing town and city clerks to continue to also enter data into their existing system for the first few months as "a safety precaution."

Between mid-August and mid-September, we spoke with about 50 town and city clerks or assistant clerks from towns in the first five counties to undergo training. Of these, less than half had used the system. Fifteen clerks had used the system several times to perform various types of transactions. Of these clerks:

- Eight stated that they believed that the system would provide more functionality than the system that they had been using. For example, the Georgia and Wilmington town clerks stated that they expect that the statewide system will have more functionality than the system they had been using and anticipate that the new system will make maintaining the checklist easier. In addition, several clerks mentioned that they believe that the Secretary of State's office has been responsive to their concerns and suggestions.

- All stated that they found the training useful. For example, the Windsor Town Clerk found the Windsor County training "extremely helpful."

- All stated that they had found the user documentation useful.[17] In one case, a Swanton Assistant Town Clerk stated that she "couldn't do without" the user manual.

- Twelve stated that, consistent with the Secretary of State's June 2005 bulletin, they were running the new system in parallel with their prior system. However, three town clerks stated that they were only using the statewide system. For example, one clerk stated that she does not have

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[17]Two clerks did not have an opinion on the user documentation.

time to use both systems and that she is confident that the statewide system will work fine.

In addition, about half of the town clerks or assistant town clerks using the statewide system cited one or more problems that they had encountered. Examples of these problems included difficulties in accessing the system, an inability to verify driver's license information, and periodic difficulties in accessing the edit function. In some cases, these problems had been resolved while in others they remained outstanding at the time that we spoke to the clerk. For example, one town clerk found that the system was not processing the voter participation information that she had entered. This problem remained unresolved as of September 7, 2005.

Although the reactions of the users to the system have thus far been generally positive, there are still significant hurdles to be passed. First, the clerks had not used the report feature yet because this function was not yet available (according to the Secretary of State, the report function is expected to be available by December 2005). This is a critical feature because it allows clerks to print out the checklist and other reports. Second, the clerks had not had the opportunity to utilize a number of system functions. Finally, the true test of the system will come just prior the next set of elections that are held statewide when all cities and town data are expected to be in the database and as more clerks are expected to try to access the system simultaneously.

Data Conversion

To be effective, systems must contain high-quality data (e.g., data that is accurate, complete, consistent, and timely). There are risks when data is moved from one system to another, such as missing or incomplete records or data that is invalid or otherwise corrupted. Accordingly, it is important to perform pre-conversion, cutover, and post-installation tasks to ensure that data integrity is maintained. For example, according to CobiT, management should require that a data conversion plan be prepared, defining the methods of collecting and verifying the data to be converted and identifying and resolving any errors being found during conversion. Moreover, a detailed verification of the initial processing of the new system should be performed to confirm successful implementation.

Although the Secretary of State's office did not develop a data conversion plan, it has taken some actions to control the conversion process. For example, the office contracted with NEMRC, a vendor with experience in Vermont's checklist process, to perform the conversion and instructed the town and city clerks to take certain actions prior to the conversion, like purging applicable voters and ensuring that certain information was entered like dates of birth and legal addresses. In addition, the system developer stated that as part of loading the converted data into the statewide system, he (1) confirms that the record count received is the same as what was sent and (2) "skims" the data, looking for obvious problems.

These are positive steps, but the statewide checklist system effort may have benefited from a more systematic approach. In particular, although the clerks often stated that they were checking whether the number of records that they sent to NEMRC were the same as what is contained in the statewide system, not all had verified that the data within the records were correct. Some clerks checked only a few records, some were planning on performing a 100 percent verification pending the availability of the reporting function in the system, and still others did not plan on performing such a validation at all. According to the Director of Elections and Campaign Finance, as soon as a clerk finishes training, she expects them to review the data and notify the Secretary of State's office of any anomalies or concerns relating to the accuracy or integrity of the data. However, this expectation has not been conveyed to the clerks in writing. The importance of emphasizing that the data conversion be checked, is demonstrated by the seven town clerks or assistant town clerks who told us that they have experienced some conversion problems, mainly with addresses that were missing or in the wrong field. In addition, one town clerk told us that a record from the history file was incorrectly added to the active voters list while another clerk discovered that one active voter was not showing up on her list.

Performance Goals and Measures

HAVA required each state's plan to provide descriptions of the criteria that it will use to measure performance against its plan, the process used to develop this criteria, and which official is to be held responsible for ensuring that each performance goal is met. Vermont's July 2003 plan

asserts that the state will adopt performance goals and measures to determine the success of the state and local municipalities in carrying out the plan. However, according to Secretary of State officials, performance goals and measures have not been developed for the implementation of the statewide voter checklist system. Work by the Government Accountability Office has shown that an effective performance management system offers a variety of benefits, including serving as an early warning indicator of problems and the effectiveness of corrective actions, providing input to resource allocation and planning, and providing periodic feedback to employees, customers, stakeholders, and the general public about the quality, quantity, cost, and timeliness of products and services.[18]

Conclusions

The Secretary of State's office did not develop the statewide voter checklist system in a manner that is consistent with well-recognized information technology practices. As a result, the system is at risk of not working as intended at needed performance levels. It is not too late for the Secretary of State's office to rectify this situation. In particular, by following the statutory requirements requiring review and approval by the Commissioner of DII and for an independent expert review of the system—and implementing corrective actions, if needed—the Secretary of State's office will be positioned to be able to provide assurance that the system can meet its objectives. Other actions, such as documenting how the system works and backup and recovery procedures, conducting robust testing, and establishing password policies that are consistent with State policy would also reduce the risks associated with the development of the statewide voter checklist system.

To the credit of the Secretary of State's office, the town and city clerks were generally positive in their assessment of the training and user materials that have been provided and several stated that this office has been responsive to the clerks' concerns and suggestions. However, important implementation issues have been left up to the actions of

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[18]U.S. Government Accountability Office, *Executive Guide: Measuring Performance and Demonstrating Results of Information Technology Investments (*GAO/AIMD-98-89, March 1998).

individual town or city clerks, who have taken inconsistent approaches. In particular, the Secretary of State's office has not provided written instructions to the clerks on verifying that the data from their prior systems were accurately and completely converted into the new statewide system. Such verifications are critical, especially since data conversion problems have already surfaced. Another important implementation issue is the lack of performance goals and measures for the statewide voter checklist system as well as a mechanism to determine whether these goals and measures are being met. Such a feedback mechanism is important to provide management, stakeholders, and the public with assurance that the system is a worthwhile investment or, alternatively, that problems are being identified and corrective actions taken.

Recommendations

Before the statewide system is used as the sole Vermont voter registration system, the Secretary of State should

- Obtain an independent expert review of the system through the Commissioner of DII. Once this review is completed and any recommended corrective actions are taken, the Secretary of State should seek approval of the system from the Commissioner of DII.

- Document how the system works, including the security controls in place.

- Fully test the system using a formal testing methodology, which includes a test plan that is based on system and performance requirements, that demonstrates that the major functionality of the system is working as intended and that the system can maintain adequate performance during expected normal and peak capacity timeframes.

- Develop and document password policies, that include, at a minimum, prohibitions on sharing passwords.

- Document backup and recovery procedures.

To improve the implementation of the statewide voter checklist system at the town and city level, the Secretary of State's office should provide additional guidance to the town clerks on the verification of data that has been converted to the new system.

To determine whether the system is performing as intended, the Secretary of State's office should develop performance goals and measures and implement mechanisms to track actual performance against these standards.

Agency Comments and Our Evaluation

The Secretary of State provided written comments, which are reproduced in appendix II, on a draft of this report. In general, the Secretary of State stated that her office has planned for most of the recommendations that we made or does not believe that they are necessary. In addition, the Secretary made nine specific comments, which are summarized below along with our response, as necessary.

- The Secretary agreed that the system report function is not yet completed. She stated that it will be completed by December 2005. We added this date to the body of the report.

- The Secretary stated that problems with the system that are being experienced by the clerks are being resolved.

- According to the Secretary, the system is currently managing many simultaneous users and her office plans to perform a test simulating the expected increase in workload that occurs just before an election. We believe that a test of capacity as described by the Secretary is critical to be able to predict whether the system will likely meet the operational and performance requirements of its users during peak usage.

- Regarding the conversion of data into the statewide system, the Secretary emphasized that it is the responsibility of the municipalities to review and maintain their own data. She stated that the clerks are aware of this

responsibility and that they are performing their duties as required, with the assistance of the Elections Office. She added that if a voter's name is incorrectly removed from the checklist that Vermont law permits the voter's name to be added on the day of election by the Board of Civil Authority. Although the clerks may be responsible for reviewing the data for their town in the statewide system, we found that they were not always verifying that the data was correctly converted. For example, one town clerk told us that she had not planned on reviewing the accuracy of the data conversion because she assumed that such conversions were automatic and would not result in errors. Given that several clerks who have checked the accuracy of the conversion found errors, we continue to believe that it is prudent that the Secretary of State's office provide the clerks guidance that the data be verified *before* using the system during an election. A voter whose record was lost during the conversion should not have to rely on a decision by the Board of Civil Authority, which may—or may not—rule in the voter's favor in a timely fashion when the problem could have been found beforehand through a simple verification process.

- The Secretary of State stated that the statewide voter checklist project has only one performance goal—to meet the January 1, 2006 deadline. We do not believe meeting the January 1st deadline is an adequate measure of the success of the project because it does not measure *how well* the system is working. Without goals and measures associated with determining how well the system is working, the Secretary of State's office is not positioned to know whether the system is meeting the needs of its users and other stakeholders and whether corrective actions are needed. Examples of areas in which goals and measures could be established and tracked are whether the system is meeting expectations with respect to (1) system performance (e.g., the extent to which the system is available for use, how frequently the system prematurely terminates user sessions, or how long it takes for users to access the system), (2) functional performance (e.g., the degree to which users believe that individual elements of the system are meeting their needs, the extent to which the system contains erroneous data, or how often driver's license number or legal address verifications incorrectly fail), or (3) programmatic performance (e.g., the extent to which there are reductions in duplicate registrations or election-day affidavits by voters who were not on the checklist, but should have been).

- With respect to the state law pertaining to the independent review of IT systems that meet certain dollar thresholds, the Secretary of State asserted that this requirement did not apply to the statewide system because it was developed in-house. Further, the Secretary said that even if the statute did apply to in-house developments that the cost of the statewide checklist system would be below the threshold in the statute. First, the applicable statute does not distinguish between systems that are purchased and those that are developed in-house. The statute pertains to "any information technology activity," which is defined as the (1) creation, collection, processing, storage, management, transmission, or conversion of electronic data, documents, or records and (2) design*, construction,* purchase, installation, maintenance, or operation of systems that perform these activities. Second, regarding the statement that the system does not meet the $500,000 threshold in the statute for an independent review, the state's HAVA plan estimated the system cost at $600,000 to $1 million. It is on this basis that the Secretary of State's office should have sought an independent expert review in accordance with the statute. The Secretary's comments also did not provide any information on the current estimate for the system that would demonstrate that it no longer meets the statute's threshold. Lastly, it is also important to note that the threshold in the statute is based on the "total cost" of the information technology activity, which would include maintenance, operations, and planned future improvements to the system—not just what has been paid to-date.

- Regarding our recommendation that the Secretary of State's office fully test the system using a formal testing methodology, the Secretary stated that "a formal testing of each string of code is an extremely expensive and time consuming proposition" and that "we believe that a test of the code is not necessary at this time." The Secretary also stated that her office phased bringing users onto the system so that they could test and identify issues. We disagree with this view for a number of reasons. First, complete and thorough testing is essential to provide reasonable assurance that new systems process information correctly and will meet an organization's business needs. Second, according to software development experts, it costs more to fix problems after implementation than before. For example, according to the Software Engineering Institute, problems that are not found during system testing "can manifest themselves during operations in ways that can be very difficult to diagnose and fix, disrupting operations

and causing very expensive troubleshooting and repair activities."[19] Third, the users of the statewide voter checklist system are not testing the system—they are using it as a production system. This is an important distinction because the clerks to whom we spoke had not used all elements of the system so they could not know whether unused functions were working or not. In addition, disciplined testing processes also include test cases that expose the system to invalid and unexpected conditions and look for whether a program has unwanted side effects. The clerks are using the system to perform actual transactions and are not in a position to know whether unwanted side effects are occurring, especially since the reporting feature of the system is not yet working.

- The Secretary of State stated that her office plans to complete documentation of the system, its security controls, and backup and recovery procedures by January 1, 2006.

- With respect to allowing passwords to be shared among users of the statewide system from the same town, the Secretary of State said that the Elections Director, after consultation with municipal officials, determined that the decision on whether to allow shared passwords should be made at the town level. The Secretary asserted that the risk assessment is best made at the local level based on local needs. We strongly disagree and believe that allowing passwords to be shared is in violation of state policy and is not consistent with federal voter registration system guidance and the Secretary of State's own guidance on what constitutes a trustworthy information system. Furthermore, by allowing some users to share passwords, should one of these users perform an unauthorized action(s) in the statewide system, the Secretary of State's office has severely compromised its ability to hold that person accountable.

We also provided a draft of the report to the Commissioner of DII. In oral comments, the Commissioner agreed with our characterization of the statutory requirements pertaining to DII's review and approval of IT systems. The Commissioner noted that at the time the development of the statewide system was beginning in 2003, DII had just been established and

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[19]Carnegie Mellon University, Software Engineering Institute, *Robustness Testing of Software-Intensive Systems: Explanation and Guide* (CMU/SEI-2005-TN-015, April 2005).

its roles and responsibilities were in the process of being defined. In addition, the Commissioner stated that, after the January 1, 2006 implementation deadline for the system passes, DII plans to perform an analysis of the existing statewide voter checklist system, with an emphasis on ensuring that the system is adequately robust and will meet future needs. Because of the importance of the statewide voter checklist system and the plethora of concerns that we have raised regarding its development and implementation, we continue to believe that it is critical that DII obtain an independent expert review that covers critical areas, such as security, and which will provide DII with essential information with which to judge the current and future needs of the system.

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In accordance with 32 V.S.A. §163, we are also providing copies of this report to the Secretary of Administration, the Commissioner of Finance and Management, and the state library. In addition, the report will be made available at no charge on the State Auditor's web site, www.state.vt.us/sao.

Any questions or comments about this report can be directed to the State Auditor's Office at 828-2281 or via email at auditor@sao.state.vt.us. Linda J. Lambert, CISA, Director of Information Technology Audits was the primary auditor of this review, under the direction and supervision of Thomas G. Gorman, CPA, Deputy State Auditor.

Appendix I

Scope and Methodology

To evaluate whether the statewide voter checklist system was developed in a manner that ensures that applicable federal and state requirements will be met, we reviewed the voter registration provisions of HAVA, the National Voter Registration Act, Act 59, and the Vermont statutes pertaining to the review of information technology systems. We also reviewed the EAC guidance on statewide voter registration systems. In addition, we reviewed various information technology best practices and evaluation tools promulgated by the IT Governance Institute, Government Accountability Office, and others. To gather information on how the system works and the planning that was performed, we attended training on using the statewide voter checklist system held in Norwich and interviewed the Director of Elections and Campaign Finance, the system developer, and others at the Secretary of State's office. We also reviewed and assessed the system developer's documentation on the systems' requirements, testing, and set up. Lastly, we discussed the extent to which this project had been reviewed with the Commissioner of DII.

To evaluate how the statewide voter checklist system is being implemented, we interviewed applicable officials from the Secretary of State. Between mid-August and mid-September, we also called about 50 town clerks from the first five counties that had been trained in the system. For those clerks that had used the system to input transactions, we asked a series of questions pertaining to the registration process, development of the system, data conversion, and the training and use of the system.

This review was performed between mid-July and mid-September 2005 in accordance with generally accepted government auditing standards.

Appendix II

Comments from the Secretary of State

State of Vermont
Office of the Secretary of State

Deborah L. Markowitz
Secretary of State

William A. Dalton
Deputy Secretary

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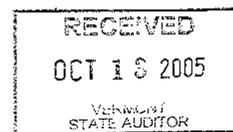OCT 1 3 2005
VERMONT
STATE AUDITOR

MEMORANDUM

TO: Randy Brock
Auditor of Accounts

FR: Deborah Markowitz
Secretary of State

RE: Review of preliminary report of Auditor of Accounts

DATE: October 11, 2005 _DM_

As we have discussed; a thorough review and development of a detailed written response to the preliminary draft report titled: *Development and Implementation of Statewide Voter Checklist Could be Improved* would require a significant additional time commitment from staff who have already spent well over 80 hours to respond to requests from your office, and who are under great pressure to complete the statewide checklist by the January 1st deadline. Accordingly, this memo focuses only on a limited number of items.

Note that the statewide checklist has been in development for nearly two years. We are only a few months away from its completion. Consequently, there are few suggestions that could be of help to us at this late date. That being said, we have already contemplated and planned for most of the recommendations made in the report, or based on risk assessments, we have determined they are unnecessary.

The draft report identifies (page four, last paragraph) five "significant hurdles" to be passed in implementing the statewide checklist. I'll list each hurdle and provide a brief response.

1. *Clerks had not yet used critical system features such as reports.*

   This is correct. Clerks are able to use the application to maintain their voter checklist, but the system report functions have not been completed yet. They will be complete by December, 2005.

2. *Some problems experienced by clerks remain unresolved.*

   The problems referred to in the draft report are being resolved. We expect to continue to field and resolve reports of problem as all clerks begin use of the application. So far, the majority of problems are related to initial configuration of

Appendix II

Comments from the Secretary of State

equipment and user initiation. We know from the experience of Michigan, Kentucky and other states that have had statewide checklists for over ten years that a statewide checklist is constantly being changed and improved based on suggestions from the clerks/users. We expect that to be the case in Vermont as well.

3. *The true test of the system will come just prior to the next statewide election when many clerks try to access the system simultaneously.*

   The system already manages many simultaneous users, since the majority of towns are now using the system to maintain their voter checklists. It is correct that the two weeks immediately prior to a statewide election will be the time of heaviest system use. We have already planned to perform a test of the system that simulates this workload prior to certification of the system. If we encounter problems, we'll have sufficient time before the first statewide election to correct them and re-test.

4. *Confirmation of data integrity for transferred voter information was incomplete.*

   The statewide checklist was designed to be able to electronically "import" voter information from towns so that clerks would not be required to manually enter existing voter information. As has been the tradition in Vermont forever, each town is responsible for reviewing and maintaining its own data. Clerks are aware of this responsibility, they are performing their duties as required, and the Elections Office will continue to work with them. We have advised clerks that towns will not be able to use the statewide checklist for an election until it is certified on or before January 1st, and that until that time they need to be sure that they can run a special election using their existing checklist.

   In the event that through some inadvertent error a name is incorrectly removed from the checklist, Vermont already has a provision in law that permits the voter's name to be added back to the checklist on Election Day by the Board of Civil Authority.

5. *Performance goals and measures for the system have not been developed.*

   This project has had a single performance goal – to meet the 1/1/06 certification deadline. The project is on schedule to do that. Once that is accomplished, work will begin on system improvements. Performance goals for the future will be set in part by evolving federal requirements, by experience in managing the checklist, and by feedback from municipal officials.

Other recommendations we believe require our response are as follows:

6. *Obtain an independent review of the system through the Department of Information and Innovation.*

   We do not believe that state law requires such a review. The statute cited in the report has been applied only to purchased computer systems – not those that are

developed in house. Moreover, even if the statute were to apply, the cost of this project will be lower than the threshold for the independent review requirement.

7. *End to End Test of the system:*

The report recommends a formal testing methodology and plan. A formal testing of each string of code is an extremely expensive and time consuming proposition. For example, other states that have purchased a system from a vendor have included end to end testing in their RFPs which has contributed to the extremely high pricing of these systems. For example, Wyoming, with only 256,000 registered voters, and only 23 counties, has paid 8.9 million dollars for a system that has not even been tried by the users yet. In New Hampshire they are spending over 2 million dollars, with no guarantee that the users will like what is produced.

In contrast, in Vermont we have purposely phased bringing users onto the system so that we could test and identify issues well before the certification deadline. In less than two weeks we will have all our users on the system using the data and checking for errors. We believe that a test of code is not necessary at this time.

8. *Documentation*

The report recommends thorough documentation of the system as built, the security controls, the backup and recovery procedures. We have already planned to have procedures in place, and documentation of the system by the January 1st deadline. Note that we are also cross-training staff so that several staff members will be able to maintain the IT components of the checklist.

9. *Develop password policies that include prohibition on sharing passwords.*

The statewide checklist is an application that has been designed to meet the needs of the over 250 municipal officials who must use it, and who have maintained the checklists in their office with success for years. The Elections Director, after consultations with municipal officials, determined that it made sense to permit each town to decide whether to allow multiple users to share a single password within a town, or to request additional passwords. We believe that the risk assessment is best made at the local level based on the needs of the individual offices.