County of Los Angeles
VSAP Interactive Sample Ballot 4.0 RAVBM
Software Test Report

CAF-25014-SCRTR-01

Vendor Name	*Los Angeles County*
Vendor System	*VSAP Interactive Sample Ballot 4.0* *Remote Access Vote By Mail*

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Revision History

Date	Release	Author	Revision Summary
January 19th, 2026	1.0	*B. Roberson* *M. Santos*	Initial Release

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INTRODUCTION

The California Voting Systems Standards (CVSS) are applicable to a wide variety of voting technology. Therefore, the relevant portions of the CVSS are reviewed as they relate to the Remote Accessible Vote By Mail (RAVBM) for the purposes of this report. The use of "voting system" shall apply to the RAVBM.

This report outlines the testing SLI Compliance (SLI) followed when performing Software Testing on the **Los Angeles County Voting Solutions for All People 4.0 Interactive Sample Ballot Remote Access Vote by Mail System** (**VSAP ISB 4.0 RAVBM)** against the California Voting System Standards (CVSS).

Coding languages involved in the **VSAP ISB 4.0 RAVBM** application are shown in Table 1.

*Table 1 – **VSAP ISB 4.0 RAVBM** System Languages*

Languages			
Java	JavaScript	C/C++	SQL

Source Code Review tools utilized by SLI included:

- ExamDiff Pro: a commercial application used to compare revised code to previously reviewed code.
- Checkmarx: a commercial application to perform automated reviews of source code.
- Modulefinder: a custom, in-house application used to parse module names from source code and populate review spreadsheets.

REVIEW SPECIFICATIONS

The following are the specifications for source code testing conducted on the **VSAP ISB 4.0 RAVBM**.

Source Code Review

The **VSAP ISB 4.0 RAVBM** includes proprietary software; the code base was tested to the applicable CVSS requirements.

Review of the code included:

- Evaluating adherence to the applicable standards in sections 5 and 7 of the CVSS.
- Evaluating adherence to other applicable coding format conventions and standards including best practices for the coding language used.
- Analyzing the program logic and branching structure.

- Evaluating whether the system is designed in a way that allows meaningful analysis, including:
  - Whether the architecture and code are amenable to an external review.
  - Whether code analysis tools can be usefully applied.
  - Whether the code complexity is at a level that obfuscates its logic.

Security considerations reviewed against the code base included:

- Searching for exposures to commonly exploited vulnerabilities.
- Evaluating the use and correct implementation of cryptography and key management.
- Analyzing error and exception handling.
- Evaluating the likelihood of security failures being detected including:
  - Whether audit mechanisms are reliable and tamper resistant.
  - Whether data that might be subject to tampering is properly validated and authenticated.
- Evaluating the risk that a user can escalate his or her capabilities beyond those authorized.
- Evaluating the design and implementation to ensure that sound, generally accepted engineering practices are followed, checking to verify that code is defensively written against:
  - Bad data
  - Errors in other modules
  - Changes in environment
  - User errors
  - Other adverse conditions
- Evaluating for embedded, exploitable code (such as “Easter eggs”) that can be triggered to affect the system.
- Evaluating the code for dynamic memory access features which would permit the replacement of certificated executable code or control data or insertion of exploitable code or data.
- Evaluating the code for use of runtime scripts, instructions, or other control data that can affect the operation of security relevant functions or the integrity of the data.

REVIEW RESULTS

Discrepancies

Discrepancies are reported such that the California Secretary of State (CASOS) is provided with a basis for evaluating the extent to which the source code meets applicable standards.

VSAP ISB 4.0 RAVBM Software Test Review

- Evaluate adherence to the applicable standards in sections 5 and 7 of the CVSS.
    - ♦ The expected outcome for this review was that no issue would be found.
    - ♦ The actual outcome for this review was a determination that no issue was found.
- Evaluate adherence to other applicable coding format conventions and standards including best practices for the coding language used.
    - ♦ The expected outcome for this review was that no issue would be found.
    - ♦ The actual outcome for this review was a determination that no issue was found.
- Analyze the program logic and branching structure.
    - ♦ The expected outcome for this review was that no issue would be found.
    - ♦ The actual outcome for this review was a determination that no issue was found.
- Evaluate whether the system is designed in a way that allows meaningful analysis, including:
    - o Whether the architecture and code are amenable to an external review.
    - o Whether code analysis tools can be usefully applied.
    - o Whether the code complexity is at a level that obfuscates its logic.
        - ♦ The expected outcome for this review was that no issue would be found.
        - ♦ The actual outcome for this review was a determination that no issue was found.

Security considerations reviewed against the code base included:

- Evaluate the use and correct implementation of cryptography and key management.

- ♦ The expected outcome for this review was that no issue would be found.
- ♦ The actual outcome for this review was a determination that no issue was found.

- Analyze error and exception handling.
  - ♦ The expected outcome for this review was that no issue would be found.
  - ♦ The actual outcome for this review was a determination that no issue was found.
- Evaluate the likelihood of security failures being detected including:
  - Whether audit mechanisms are reliable and tamper resistant.
  - Whether data that might be subject to tampering is properly validated and authenticated.
    - ♦ The expected outcome for this review was that audit mechanisms would be determined to be reliable and tamper resistant, and that any data that might be subject to tampering is properly validated and authenticated.
    - ♦ The actual outcome for this review was a determination that audit mechanisms are properly implemented to be reliable and tamper resistant and evident, as well as that data that might be subject to tampering is properly validated and authenticated.
- Evaluate the risk that a user can escalate his or her capabilities beyond those authorized.
  - ♦ The expected outcome for this review was that no issue would be found.
  - ♦ The actual outcome for this review was a determination that no issue was found.
- Evaluate the design and implementation to ensure that sound, generally accepted engineering practices are followed, checking to verify that code is defensively written against:
  - Bad data
  - Errors in other modules
  - Changes in environment
  - User errors
  - Other adverse conditions
    - ♦ The expected outcome for this review was that no issue would be found.

- ♦ The actual outcome for this review was a determination that no issue was found.

- Evaluate for embedded, exploitable code (such as “Easter eggs”) that can be triggered to affect the system.
  - ♦ The expected outcome for this review was that no issue would be found.
  - ♦ The actual outcome for this review was a determination that no issue was found.
- Evaluate the code for use of runtime scripts, instructions, or other control data that can affect the operation of security relevant functions or the integrity of the data.
  - ♦ The expected outcome for this review was that no issue would be found.
  - ♦ The actual outcome for this review was a determination that no issue was found.

During this review, no issues were noted within the **VSAP ISB 4.0 RAVBM** code base.

Vulnerabilities

For any vulnerabilities discovered, SLI was tasked with identifying the particular standards applicable to each vulnerability.

To the extent possible, reported vulnerabilities include an indication of whether the exploitation of the vulnerability would require access by:

- Voter: Usually has low knowledge of the voting technology design and configuration. Some may have more advanced knowledge. May carry out attacks designed by others.
- Elections official insider: Has a wide range of knowledge of the voting technology design and configuration. May have unrestricted access to voting technology for long periods of time. Their designated activities include:
  - o Set up and pre-election procedures;
  - o Election operation;
  - o Post-election processing of results; and
  - o Archiving and storage operations.
- Vendor insider: Has great knowledge of voting technology design and configuration. They have unlimited access to voting technology before it is delivered to the purchaser and, thereafter, may have unrestricted access

when performing warranty and maintenance service, and when providing election administration services.

SLI will not verify or demonstrate exploitability of the vulnerability but the report of the vulnerability will identify factors involved in the exploitation.

Any vulnerability theories developed by the source code review team members shall, to the extent possible, be referred to CASOS staff.

VSAP ISB 4.0 RAVBM Software Code Vulnerability Review

The source code was reviewed for exposures to commonly exploited vulnerabilities, such as buffer overflows, integer overflow, inappropriate casting, or arithmetic.

- The expected outcome was that no issue would be found.
- The actual outcome was a determination that no issues were found.

The source code was reviewed for evaluation of potential vulnerabilities and related issues (code quality and standards compliance), considering that an exploitable issue in a component that is not in itself security relevant could be used to subvert more critical data. This is an issue whenever the architecture of the system does not provide strong separation of the components.

- The expected outcome for this review was that no issue would be found.
- The actual outcome was a determination that no issues were found.

The source code was reviewed for evaluation for dynamic memory access features which would permit the replacement of certificated executable code or control data or insertion of exploitable code or data.

- The expected outcome for this review was that no issue would be found.
- The actual outcome was a determination that no issues were found.

No vulnerabilities were identified within the **VSAP ISB 4.0 RAVBM** code base.

Final Report

No issues were found within the **VSAP ISB 4.0 RAVBM** code base.

No vulnerabilities were identified within the **VSAP ISB 4.0 RAVBM** code base.

As directed by the California Secretary of State, this software testing report does not include any recommendation as to whether or not the system should be approved.

End of VSAP ISB 4.0 RAVBM Software Test Report