Context Description: Posted Dec. 1, 2006

This draft report was prepared by NIST staff at the request of the Technical Guidelines Development Committee (TGDC) to serve as a point of discussion at the Dec. 4-5 meeting of the TGDC. Prepared in conjunction with members of a TGDC subcommittee, the report is a discussion draft and does not represent a consensus view or recommendation from either NIST or the TGDC. It reflects the conclusions of NIST research staff for purposes of discussion. The TGDC is an advisory group to the Election Assistance Commission, which produces voluntary voting system guidelines and was established by the Help America Vote Act. NIST serves as a technical advisor to the TGDC.

The NIST research and the draft report's conclusions are based on interviews and discussions with election officials, voting system vendors, computer scientists, and other experts in the field, as well as a literature search and the technical expertise of its authors. It is intended to help in developing guidelines for the next generation of electronic voting machine to ensure that these systems are as reliable, accurate, and secure as possible. Issues of certification or decertification of voting systems currently in place are outside the scope of this document and of the TGDC's deliberations.

Discussion paper on testing for VVSG voting system requirements

1 Summary

The activity performed by test labs has been defined as a conformity assessment activity. A logical consequence of this is that test labs should only be concerned with assessing conformity to the Guidelines, and not be concerned with testing vendor-specific features that are outside of anything that the Guidelines specify. This conflicts with the testing volume of VVSG'05, which directs test labs to evaluate vendor-specific functionality, as well as with the expressed desires of TGDC members and others who envision the test labs fulfilling assorted other requirements expressed by the EAC or the 50 states.

Test labs are entitled to provide whatever services their customers are prepared to buy. The question here is which tasks should be specified in and required by the Testing Standard of the VVSG.

If the scope of test lab responsibility were limited to conformity assessment, it would not mean that parts of the system would go completely untested. General requirements, such as reliability and security, apply to the system as a whole, and therefore to every part of the system. Rather, it would mean that the test lab would not be required by the VVSG to define and execute operational tests to determine that nonstandard, vendor-specific features function as advertised. Additionally, tasks outside of the test lab's core competence and mission would not be assigned to the test lab.

NIST consensus is that, in the VVSG, the scope of test lab responsibility should be limited to assessment of conformity to VVSG voting system requirements. This does not preclude the EAC from

adding requirements and/or criteria beyond the VVSG for certification, nor does it preclude test labs from performing additional tests.

2 Argument in favor of limited scope

The test lab is expected to report a finding to the EAC. For conformity assessment, this finding is either that the voting system satisfies the requirements of the Guidelines or that it does not. If the test lab finds that it does not, this finding must be justified by the citation of a requirement that is not satisfied and the presentation of test results that demonstrate the nonconformity.

To the extent that it differs from "mere" conformity, fitness for use is inherently subjective. Where the test lab is required to go beyond the requirements of the Product Standard, the criteria to justify a finding are not available. This leaves the test lab vulnerable to legal coercion.

The current VVSG'07 draft contains a mechanism (classes) to handle product requirements and related testing that only apply when the vendor claims support for them. In cases where optional features are consistent with the Federal standard, they can be brought into the VVSG using this mechanism. This has already been done for voting variations such as straight party voting that were unspecified in previous versions of the Guidelines.

Non-testing tasks such as software escrow are simply outside of the realm of services that a test lab is accredited to perform.

3 Opposing argument

Conformity assessment is necessary, but not sufficient. The obligation of the EAC is not merely to certify voting systems as conforming to the Guidelines, but to certify voting systems as being fit for use in Federal elections and to enable the states to satisfy their obligations under Federal law.

Test labs are "deputized" by the EAC to perform those tasks for which their technical expertise is required. Inasmuch as the Testing Standard of the VVSG is the primary vehicle for specifying the technical tasks that are required of test labs, all such tasks should be specified in the VVSG. Specifying them elsewhere would make it appear that there are multiple standards, when in fact there is only one.

4 Impact relative to VVSG'05

If the scope of test lab responsibility were limited to conformity assessment, the following requirements appearing in the testing standard of VVSG'05 would be removed or adjusted as necessary to respect the limited scope.

Volume II, Section 3.2.3: Testing to Reflect Additional Capabilities

"The requirements for voting system functionality provided by Volume I, Section 2 reflect a minimum set of capabilities. Vendors may, and often do, provide additional capabilities in systems in order to respond to the requirements of individual states. These additional capabilities shall be identified by the vendor within the TDP, as described in Volume II, Section 2. Based on this information, the accredited test lab shall design and perform system functionality testing for these additional functional capabilities."

Volume II, Section 6.3: Testing Interfaces of System Components

"The accredited test lab shall design and perform test procedures that test the interfaces of all system modules and subsystems with each other against the vendor's specifications. These tests shall be documented in the National Certification Test Plan, and shall include the full range of system functionality provided by the vendor's specifications, including functionality that exceeds the specific requirements of these Guidelines."

Volume II, Section 6.7: Functional Configuration Audit

"The Functional Configuration Audit encompasses an examination of vendor tests, and the conduct of additional tests, to verify that the system hardware and software perform all the functions described in the vendor's documentation submitted for the TDP."

5 Impact on future policy and standards

There have at various times been suggestions that states should obtain certified voting system software directly from test labs, who would consequently be obliged to become escrow agents, or that test labs should be assigned responsibilities beyond assessing conformity to the Guidelines, such as testing to state-specific requirements that are not covered in the VVSG. If the scope of test lab responsibility were limited to conformity assessment, these suggestions would be out of scope for the VVSG.

Requirements related to the final system build (a.k.a. "trusted build," "witnessed build") are at the trailing edge of the conformity assessment process. The test lab would need to do some of these things anyway to ensure that the system that it evaluated could be unambiguously identified; hence, they could be viewed as an essential part of the conformity assessment process. At the point that the requirements went much beyond that, they would be out of scope of the VVSG.

6 Draft resolution text (if needed)

Whereas, The Technical Guidelines Development Committee considers the responsibility of the test lab to be limited to assessing conformity to the Voluntary Voting System Guidelines;

Resolved, That the Testing Standard of the 2007 Voluntary Voting System Guidelines shall not require the test lab to perform activities that are beyond that scope.