



**Interdisciplinary Roundtable Monday, May 5, 2008
EAC Offices 1225 New York Ave, Suite 150 Washington, DC 20005**

Discussion Questions

- Response to questions is provided by Carolyn Coggins QA Director - Voting and Gail Audette Quality Manager
1. **What specifically can be done with the proposed VVSG standards and with the certification testing procedures and infrastructure, to reduce the cost of the voting systems, without compromising core functions of the voting system?**
 - Revise the proposed VVSG to provide clear, correct, unambiguous, concise, and verifiable functional and performance requirements. Requirements must be well-defined with a purpose that is clearly tied to valid and testable criteria. All requirements must have pass/fail criteria with an identified test method. In the current document there are a large number of requirements that are not testable; rather they are assessments that do not contain pass/fail criteria. Additionally complete definition of important functions, such as, voting variations has been side stepped.
 - Abandon the proposed VVSG class structure format. It adds unnecessary complexity and repetition. As written, any difference in a voting system incorporates a new class and functions are treated as classes. This structure does not lend itself to a nimble or easily understood test process.
 - The standards should not be released without all applicable test methods identified and documented.
 - The approach to the VVSG should be from a practical, holistic, and cohesive perspective. The document appears to have been designed to manage the writing of the standard and not to facilitate its use by manufacturers, state certification reviewers, jurisdictions, test labs, EAC reviewers, and interested members of the public. Not only should the testing of voting systems be standardized but the output of the testing should be standardized so test cases, test plans and test reports look alike for ready comparison. In the proposed VVSG the sections are written as separate pieces which do not interrelate. If the construction of the standard could be formatted so it seamlessly lends itself to identification of required tests, design of the test method, traces for the test plans, cases and report this would be a major time savings to all stakeholders. Manufacturers could use this to design internal pre-certification tests; VSTLs could use this throughout their process (review manufacturer testing, prepare test plans, test cases and test reports); EAC reviewers would have a uniform trace, regardless of lab or voting system, to confirm if test plans are acceptable; test plans and test report could be more readily compared and reviewed by EAC reviewers, state certification reviewers and members of the public.
 - Ensure the VVSG, NIST and EAC standards and processes don't conflict with one another; ideally have a single entity empowered to synchronize both processes.
 - Limit the VVSG to functional and performance requirements; put policy in the EAC program manuals.
 - Ensure that the EAC has policies that address all aspects of the VVSG and NIST standards.
 2. **What specifically can be done with the proposed VVSG standards and certification testing procedures and infrastructure to reduce time-in-process of a candidate systems?**
 - Apply Dr. W. Edwards Deming's¹ quality theory that improvements in quality lead to lower costs and higher productivity because they result in less rework, fewer mistakes, fewer delays, and better use of time and materials. Each requirement must represent a well-defined need or condition that is driven by the needs of all stakeholders. Test methods must be incorporated into the VVSG prior to release of the standard, so that the manufacturer can use them to design their systems. The VVSG must permit the manufacturer to efficiently design to quality. Deming's third point (of his Fourteen Points to cure the quality crisis) is to cease dependence on testing and instead design and build in quality. Quality has to be designed and built into a product. Reliance only on inspection of a final product does not 'assure' quality and adds expense. Rather than a manufacturer throwing a production system over the wall to the test lab for inspection, the requirements

of the VVSG must provide unambiguous and vetted functional and performance requirements that allow for incorporation into the design phase. Manufacturers need to be able to perform their own internal pre-certification testing so that they know when a system is ready to submit for independent verification and validation by a test lab.

- The entire approach to source code review should be overhauled from a line by line qualitative assessment of +/-35 requirements to quantitative metrics.
- The purpose of the Technical Data Package is to provide information needed by the jurisdiction and the test lab. The manufacturers always say the jurisdictions don't want most of this material. These documentation requirements should be revisited to determine what jurisdictions and test labs really need to perform their functions. If it isn't needed to perform an election or test a voting system, it should be removed.

3. What specifically can be done to increase the efficiency and economy of efforts within the testing process at the federal, state, and local levels?

- See #2;
- Harmonization federal, state and local requirements where possible; identify and group state and local requirements.
- Define state/locality approved test methods for optional voting variations and performance criteria so that manufacturers can coordinate with states/localities to incorporate the testing as part of their federal certification.

4. How important is the timing of the passage and implementation of the next iteration of the VVSG?

a. In an ideal world when would you choose to have the next iteration of the VVSG become effective?

It is only appropriate that the VVSG is released when it is a complete document. We would define this as:

- Containing functional and performance requirements that have gone through a process to determine that they are essential to the federal minimum requirements of a voting system, such that they fulfill the needs of all stakeholders.
- Identification of benchmarks and test processes which are appropriate to the realistic voting environment and not appropriated from other programs unless it has been proven to be appropriate to the voting environment.
- Containing test methods for all requirements.

Optional implementation of the VVSG should occur:

- Six months after standard test methods have been defined and approved.

Required implementation of the VVSG should occur:

- At a time that addresses the appropriate engineering design and testing cycles.

5. How necessary is innovation in voting technology?

We do not believe that innovation should be treated as a separate class. Innovation cannot be mandated nor discouraged. Innovation is the product of meeting functional and performance requirements in new ways. The assistive paper ballot marking devices was an innovation but required no innovative testing. They just required interpreting the standard appropriately.

a. How can the EAC's program and the VVSG address the desired level of innovation?

- Innovation can occur if the program and VVSG shy away from design requirements in favor of practical functional and performance requirements. Requirement VVSG 2005 v.1: 2.4.1.c, *The voting system shall provide the means for incorporating a visible indication of system status*, is a practical requirement. Innovation may occur in how the designer chooses to provide the indicator

b. What are the possible sources of capitol to reach the desired level of innovation i.e. from the vendor? From Congress? From private enterprise? From academia?

- No response

6. Every voting systems stakeholder shares risks with other stakeholders and experience risks unique to their constituents.

a. What risks do you view as being shared?

- All stakeholders (government, voters, manufacturers, advocates, and test organizations) are sharing the undulating environment of the direction of voting systems today. Each entity is trying to react to the continued onslaught of changes. As there is no clear direction, there is no opportunity to be proactive.
- All stakeholders are financially strained and yet they are facing either increasing costs or diminishing markets.
- Most stakeholders are in fear of their reputation. There is a potential to draw possibly unfounded criticism due to a lack of knowledge or passion of opinion.

b. What risks do you view as being unique to your sector?

- Accreditation is costly and it is no guarantee of work. The market is small and unhealthy. Two of the four accredited labs do not have any VSTL projects.
- The accreditation process requires a lab to prepare a complete set of test processes for testing voting system because test methods expected for the 2002 and 2005 standards have never been delivered. Each lab has had to go through a separate expensive custom created process and test method development. The VVSG draft is such a drastic change from the other standards that it is likely to require a complete reworking of the lab's test processes. To my knowledge no consideration is being given to incorporating any of the labs' methodologies into the promised test methods, or a the practical conversion for the methods of 2002/2005 to 200X.
- There is a substantial demand to participate in non-revenue generating projects, reviews and forums. This can impact the progress of certification testing.
- The training and qualifications demanded of staff does not match the actual work required such that retention of staff or staff qualifications can be an issue. (CISSP can't keep their certification by testing voting systems.) The unique knowledge and training required for the testing of voting systems will be made much more difficult if the approach of the proposed VVSG is not radically changed.

c. Has there been an adequate assessment of those risks?

- I don't think so.

d. In the absence of an adequate assessment of those risks, how can those risks be prioritized and mitigated?

- As an ISO/IEC 17025 accredited lab I can't recommend setting priorities without assessment. It contravenes my Quality Policy and Quality Management System.

7. How do you prioritize the features (i.e. security, accessibility, usability, reliability) of a voting system?

a. What are the best ways to strike a balance between these sometimes competing features?

- VSTLs are prohibited from participating in the design of a voting system. Hence setting priorities is out of our scope.
- Practicality is lacking in the program.
- It's not the priorities, it's the approach that there must be trade-offs. Get rid of the "all or nothing" policy, but make sure the stakeholders involved understand the policy before going forward. Identify a multi-tiered approach based upon who needs what requirements met and how can we get it in an efficient manner. Define level 1, 2 and 3 voting systems and what each level must have and allow certification to a specific level.

1: <http://www.referenceforbusiness.com/management/Pr-Sa/Quality-Gurus.html>