Overview of Voting Technologies

Committee on the Future of Voting: Accessible, Reliable, Verifiable Technology

April 4, 2017

Washington, DC
Overview

• Current State of the Future
• Short term view = now through 2020
• Process use to develop requirements for future
• How to get involved
HAVA & EAC

• Agency created by passage of HAVA in 2002
• Bipartisan Agency
• HAVA tasked EAC with:
  – Develop guidance to meet HAVA requirements,
  – Adopting Voluntary Voting System Guidelines (VVSG),
  – Serve as National clearinghouse for election administration information,
  – Accredit Voting System Test Laboratories (VSTL),
  – Certify voting systems,
  – And audit the use of HAVA funds.
HAVA Established Advisory Committees

- 37-member Board of Advisors (representing voter interest groups)
- 110-member Standards Board (composed of two election officials from every state and five territories), as mandated by HAVA
- 14-member Technical Guidelines Development Committee (in consultation with NIST)
TGDC & VVSG

• Assist EAC with developing VVSG
• Chair is NIST Director
• 14-member Technical Guidelines Development Committee (in consultation with NIST)
  – 2 Standards Board representatives
  – 2 Board of Advisors representatives
  – 2 ACCESS Board representatives
  – 4 Scientific/Technical experts
  – 1 ANSI representative
  – 1 IEEE representative
  – 2 NASED representatives
Former VVSG Development Process

1. NIST & EAC requirement development
2. Presentation to TGDC
3. Revision based on TGDC recommendations
4. Public Comment Period
5. Approval by TGDC
6. Presentation to TGDC
7. Revisions based on Comments
8. Presentation to EAC Commissioners
9. Approval & Implementation
Voluntary Voting System Guidelines (VVSG)

• **VVSG 1.0 (2005 VVSG)**
  – Adopted in 2005; all systems tested to this as of December 2007
  – Will be sunset July 6, 2017
  – **Modifications** to systems certified this can still be submitted for testing and certification **after** the transition to VVSG 1.1, until the system is determined to be a new system.

• **The next iteration (2007 VVSG)**
  – Never approved by EAC Commissioners
  – Sections from this imported in to 1.0 to create VVSG 1.1

• **VVSG 1.1**
  – revision to the 2005 VVSG
  – Approved by Commissioners in March 2015
  – Implementation plan approved in January 2016
  – Available for testing now; transition to 1.1 will be complete on July 6, 2017

• **VVSG 2.0** – currently in development
VVSG 2.0

• Currently working on VVSG 2.0
• 3 tiered structure:
  – Principles & Guidelines
  – Requirements
  – Test Assertions
• New development process to allow more stakeholders to get involved and increase transparency
• Change focus of requirements from design based to function based
• Plan to release draft requirements in September 2017
Current VVSG Development Process

Constituency Groups

Public Working Groups

TGDC

www.eac.gov
Current VVSG Development Process

TGDC develops VVSG from working group & constituency group data

Approves document & submits it to EAC Commissioners

EAC Commissioners approve & set implementation plan for VVSG
VVSG 2.0

• Focus on function based requirements
  – Allows for innovation
  – Provides path for function-based testing.
  – More flexibility to modify system configurations (e.g. add or remove components)
VVSG 2.0 17 Functions

- Input Data for Ballot Construct
- Associate Data for Ballot Construct
- Ballot Layout
- Ballot Generation
- Ballot Transfer
- Ballot Retrieval
- Ballot Presentation
- Capture Vote Selections
- Interpret Vote Selections
- Extract Vote Selections
- Present Vote Selections
- Transfer Vote Selections
- Store Vote Selections
- Retrieve Vote Selections
- Tabulate Vote Selections
- Transfer Results
- Present Results
• A voting system is a combination of devices that fulfill the 17 functions
• Combination of devices must meet the definition of voting system provided in HAVA
  – Section 301 (b) (1) defines voting system as:
    (1) the total combination of mechanical, electromechanical, or electronic equipment (including the software, firmware, and documentation required to program, control, and support the equipment) that is used—
      (A) to define ballots;
      (B) to cast and count votes;
      (C) to report or display election results; and
      (D) to maintain and produce any audit trail information
Testing & Certification

• How does it work?
  – Systems tested to comprehensive set of standards
    • Usability/Accessibility
    • Security
    • Functionality
  – Systems MUST meet all requirements
  – Purpose is to provide a baseline of functionality so states and locals can test to their needs
Testing & Certification

- 39 Certifications granted since 2009
- 8 full systems
- 31 modifications
- 4 systems under test right now
  - 3 full systems
  - 1 modification
Post Certification

• Quality Monitoring program
  – Manufacturing facility audit
  – Manufacturer QA audit (*as needed*)
  – Fielded system review
  – Field Anomaly reporting & investigation

• Post certification assistance to State Certification staff and/or County officials
State Use of EAC Certification

• Forty-seven (47) states rely on the EAC’s VVSG and/or its testing and certification program either directly or by reference.

• The three states not relying on the EAC guidelines are:
  – Nebraska,
  – New Hampshire,
  – and Oregon.
Legacy/First Generation HAVA Systems

• Equipment is more complex
• Monolithic voting system w/ custom hardware
• Process went from logistical to IT used to manage the logistics
• Increased efficiencies with technology
• Increased access/usability
• Ability to innovate around the voting system
Innovations in Last 5 Years

• Hybrid voting systems
• Modernizing in other areas of elections:
  – Ballot delivery systems
  – COTS-based systems
  – Online registration
  – Ballot-on-demand
  – Election night reporting
  – Electronic Pollbooks
• States looking at how to evaluate emerging tech
What does this mean?

• More and more election officials are being asked to be IT managers:
  – Manage co-dependent IT systems
  – Analyze risk
  – Evaluate current and future systems for application to operation
  – Educate on challenges and needs
  – Manage and protect the data within the systems
  – Every election is a pilot
Conclusion

• Voting system requirements & needs are different today than 10 years ago.

• Get involved with the working groups:

• We need you to join us now and stay involved as we move forward.
Questions?

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