



Preliminary Report: NIST Approach to Accessibility and Usability Requirements

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Status

- Glossary definitions
- Assessment of current status of human factors and privacy
- Draft of augmented accessibility VSS
- Outline of augmented usability VSS
- Draft VVPAT requirements for accessibility, usability, and privacy
- Roadmap for HF&P work through November
- [Began collecting samples of actual election ballots]

General Approach for Accessibility, Usability, and Privacy

- Augmented vs. redesigned VSS
 - Current drafts are intended as small additions and corrections
 - The longer term “redesigned” VSS will be re-organized and will evolve as performance requirements lessen the need for very specific design requirements

- Equipment standards vs. process standards
 - April deliverables of augmented usability and accessibility requirements
 - Equipment standards
 - Implemented by vendors, tested by ITAs
 - Process requirements are also necessary to ensure successful elections
 - Set up
 - Polling place accessibility
 - Design of the ballot

- Accessibility requirements
 - Body of literature
 - Design requirements to ensure maximum coverage
 - But, design requirements do not capture everything; still need usability testing

Glossary

- **Accessibility:** Measurable characteristic that indicates the degree to which a system is available to, and usable by, individuals with disabilities. The most common disabilities include those associated with vision, hearing and mobility, as well as cognitive disabilities. The HAVA also includes accessibility requirements for Native American and Alaska Native citizens and alternative language access for voters with limited English proficiency.
- **Usability:** Effectiveness, efficiency and satisfaction with which a specified set of users can achieve a specified set of tasks in a particular environment. Usability in the context of voting system standards refers to voters being able to cast valid votes as they intended quickly, without errors and with confidence that their ballot choices as marked were recorded correctly. It also refers to the usability of the setup of voting equipment for the election and the running of the election by poll workers and election administrators.
- **Privacy:** The voting system is said to provide privacy when it makes it impossible for others to find out how the voter voted.

Assessment of Current Status of Human Factors and Privacy

■ Resources:

- VSS Section 2.2.7 on Accessibility
- Americans with Disabilities Act Accessibility Guidelines (ADAAG)
- CFR Part 1194 Section 508 amendment to the Rehabilitation Act
- W3C Web Content Accessibility Guidelines (WCAG)
- VSS Section 3.4.9 on Human Engineering - Controls and Displays
- Appendix C on Usability
- NIST HF Report
- HAVA
- IEEE P1583 draft
- UPA 2004 Workshop
- EU Guidelines
- NASED Technical Bulletins
- FEC/AIR usability guidebooks

Gap Analysis

- Better organization for VSS
- Improved standards and tests for accessibility
- Performance standards for usability
- Test methodology for summative usability testing
- Examine voter privacy issues (of the voter's choices)

Draft of Augmented Accessibility VSS: Issues

- Composed of the accessibility from all the resources identified in the assessment/gap analysis
 - Section 255 of the Telecommunications Act
- Consistent, generally accepted terminology
- Organization by disability type or not
- Includes accessibility requirements for Native American and Alaska Native citizens and alternative language access for voters with limited English proficiency (LEP)
- Needs a major revision
 - Alternative formats
 - Usability tests
 - Absentee ballots
 - Smart card

Outline of Augmented Usability VSS

- Major issue: augmented vs. redesigned VSS
- How much time do we put into pulling together and reorganizing design requirements vs. getting to the performance based usability testing (new, not a simple augmentation)

VVPAT: Tension between Accessibility, Usability, Privacy

■ Accessibility

- At least 1 accessible VVPAT
 - E.g., Accessible DRE prints out optiscan ballot; ballot fed into reader with alternate formats (audio, larger font, adjustable contrast)
 - VVPAT under glass, need to feed input to printer to an accessible reader
 - What about alternate format VVPAT, e.g., large print? →

■ Privacy

- To preserve privacy, VVPATs should be indistinguishable
- Print out all languages and alternate formats? →

■ Usability

- Readability of VVPAT for both voter and election officials
- Cognitive load of understand the process and verifying a long VVPAT against the ballot
- Usability of the setup, printer, paper, etc. →

Roadmap

■ April

- Augmented accessibility VSS
- Augmented usability VSS (capturing indication of the voter's choice)
- Revised polling place guidelines draft
- Usability performance measures defined
- Universal design assessment and plan
- Ballot design, instruction and error message collection, assessment, and plan
- Analysis of CRT spreadsheet
- VVPAT analysis

■ November

- Redesigned accessibility VSS
- Redesigned usability VSS (capturing indication of the voter's choice)
- Initial performance benchmarks and test protocol
- Revised polling place guidelines
- Universal design guidelines
- Ballot design, instruction, error message guidelines
- General human factors and privacy VSS standard draft
- Usability evaluation of redesigned VSS