



# Technical Background Human Factors and Privacy Resolutions

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Goal:

# Accessible, Usable Voting Systems

- Understand the voting application
- Apply existing standards, guidelines, best practices
- Develop standards
  - Objective measures to determine if voting equipment meets the standard
  - Tests must be feasible
  - Implementation- and technology-independent, where possible
  - Guidelines for voting system as a whole
- Sooner rather than later



## The HF Report <http://vote.nist.gov> Usability and Accessibility

- 1. Develop performance-based, high-level, precise voting system standards**
2. Specify user-related functional requirements
3. Avoid low-level, general design specifications for usability
4. Build a foundation of applied research to support the development of usability and accessibility standards
5. Review and use existing accessibility requirements
6. Develop ballot design guidelines
7. Develop a set of guidelines for facility and equipment layout, documentation and training materials
8. Encourage vendors: a user-centered design approach
9. Develop conformance tests of voting products against accessibility requirements
- 10. Develop usability conformance tests of voting products for the standards described in # 1**



# Terminology

- **Standard** -- a requirement that is suitable for ITA qualification/certification testing
- **Guidance, Guideline** --not enforceable via the ITA testing process (not testable or outside scope of equipment testing)
- **Conformance test** – test to determine if a standard is met
- **Usability test, human performance test** – in this context, a type of conformance test using voters interacting with the equipment



# Design vs. Performance Standards

- Design Standards—how the product is designed
- Performance Standards—how the product functions, e.g., time to vote, errors in voting, satisfaction/confidence
- Design
  - The system shall read, "Use the triangle shaped green next and yellow back buttons to move through the list of candidates. Press the round red select button to make choices or to cancel them. At the end of this list of candidates is a selection to exit to the next contest."
- Design, implementation-independent:
  - Provide audio information and stimulus that: ...Enables the voter to request repetition of any information provided by the system.
- Performance:
  - Systems shall be tested for usability... to ensure that voters can cast their votes: 1) Correctly – use the voting system to register their intended selections with minimal errors and easily correct errors when they occur

# Measurement for Performance-Based Standards

- At this time, usability performance of voting systems is not being measured
  - Following design standards and guidelines does not necessarily insure usability
  - Usability engineering and human factors provides measurement methods, but not necessarily to the degree we need for voting equipment
- Usability performance standards will require the development of benchmarks and test protocols suitable for conformance testing

