

# VVSG 2.0 Human Factors Requirements Updates

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# Overview

- Meaning of “voting methods” and “interaction modes”
- Accessibility of E2E receipts
- Scope of “common” touchscreen gestures
- Updates to wheelchair accessibility and ADA harmonization based on US Access Board comments
- Edited 8.3 and 8.4 with consistent and parallel wording to clarify “usability test” and “reasonably easy”
- Plan for guidance for deploying ballot marking devices to support “no discrimination”

## **Principle 5/Guideline 5.1**

### **Voting methods and interaction modes**

Revised Requirement 5.1-A wording and discussion to clarify intended meaning of “voting method” at a higher level and use of a combination of “interaction modes” in context.

## Principle 5/Guideline 5.1

### Voting methods and interaction modes

**5.1** Voters have a consistent experience throughout the voting process within any method of voting.

#### **5.1-A – Voting methods and interaction modes**

Within any method of voting, all interaction modes including audio, tactile, enhanced visual, and non-manual must have the same capabilities as the visual interaction mode including ballot activation, voting, verification, and casting.

#### **Discussion**

Methods of voting that a voting system might support include in-person voting, vote-by-mail, remote ballot marking, among others.

## **6.2-A Voter Independence Accessibility and E2E receipts**

Revised 6.2-A to include any features voters use after casting a ballot, which includes E2E systems and clarified this scope in discussion.

## 6.2-A Voter Independence Accessibility and E2E receipts

### 6.2-A - Voter Independence

Voters must be able to mark, verify, and cast their ballot or other associated cast vote records independently and without assistance from others.

1. If a voting system includes any features voters might use after casting a ballot, they must be accessible.

### Discussion

...Examples of features for voters after casting their ballot include E2E system ballot tracking features, forms or notices to cure problems with a vote-by-mail ballot, and sites to learn whether a provisional ballot was accepted for counting.

## 7.2-E Touchscreen gestures

### Scope of “common” gestures

No change to 7.2-E is needed but we re-ordered the list of conditions in 7.2 for clarity. The discussion identifies the “common gestures”, and the 6 required conditions on the interactions effectively restricts the use of complex (multi-finger or timed) gestures.

## 7.2-E Touchscreen gestures

### Scope of “common” gestures

#### 7.2-E – Touchscreen gestures

Voting systems with a touchscreen may use touchscreen gestures (physical movements by the user while in contact with the screen to activate controls) in the interface if the following conditions are met:

1. Gestures are offered as another way of interacting with a touch screen and an optional alternative to the other interaction modes.
2. Gestures work consistently across the entire voting interaction.
3. Gestures do not include navigation off the current contest.
4. Gestures are used in a way that does not create accidental activation of an action through an unintended gesture.
5. Gestures are limited to simple, well-known gestures.
6. Gestures do not require sequential, timed or simultaneous actions.

## **7.2-P Floor space, 7.2-Q Physical dimensions, and 7.2-R Control labels visible US Access Board harmonization and minor edits**

New US Access Board ADA Technical Guides and clearer text added to Discussions.

## 7.2-P Floor space, 7.2-Q Physical dimensions, and 7.2-R Control labels visible

### US Access Board harmonization and minor edits

U.S Access Board Technical Guide: Clear Floor or Ground Space and Turning Space (<https://www.accessboard.gov/attachments/article/1553/clear%20floor%20space-ABA.pdf>) and the U.S. Department of Justice ADA Checklist for Polling Places (<https://www.ada.gov/votingchecklist.htm>) to ensure a voter using a wheelchair can reach the voting station. ...also consider space needed if a voter's assistant also uses a mobility device.

Requirements for reach height and depth with illustrations <https://www.access-board.gov/guidelines-and-standards/communications-and-it/about-the-ict-refresh/final-rule/text-of-the-standards-and-guidelines#407-operable-parts>

Guide to meeting the ADA requirements for ensuring that voters can reach and use all operable parts: <https://www.access-board.gov/guidelines-and-standards/buildings-and-sites/about-the-ada-standards/guide-to-the-ada-standards/chapter-3-operable-parts>

## Guidelines 8.3 and 8.4

# Usability testing with voters and election workers

Revised **both Guidelines 8.3 and 8.4 and associated requirements** for consistency and parallel construction to make the intention clearer.

## Guidelines 8.3 and 8.4

### Usability testing with voters and election workers

Current 8.3 – The voting system is evaluated with a wide range of representative voters, including those with and without disabilities, for effectiveness, efficiency, and satisfaction.

Suggested edit 8.3 – The voting system is evaluated for usability with a wide range of representative voters, including those with and without disabilities.

## 8.3-A – Usability tests with voters

### 8.3-A – Usability tests with voters

The manufacturer must conduct usability tests on the voting system, including all voter activities in a voter session from ballot activation to verification and casting.

1. The test participants must include voters who represent the following:
  - General population, using the visual interface
  - Voters who speak all supported languages as their primary language
  - Blind voters, using the audio format plus tactile controls
  - Voters with low vision, using the enhanced visual features with or without audio
  - Voters with limited dexterity, using the visual-tactile interface
  
2. The manufacturer must submit a report of the results of their usability tests, **including effectiveness, efficiency, and satisfaction measures**, as part of the Technical Data Package (TDP) using the version of the Common Industry Format modified for voting systems (CIF-for-Voting Systems).

## Guidelines 8.3 and 8.4

### Usability testing with voters and election workers

Current 8.4 – The voting system is evaluated for usability by election workers.

Suggested edit 8.4 – The voting system is evaluated for usability **with** election workers.

## 8.4-A Usability tests with election workers (Edited)

The manufacturer must conduct usability tests of the voting system setup, polling, and shutdown as documented by the manufacturer, with representative election workers, to demonstrate that election workers can learn, understand, and perform these tasks **successfully**.

1. The tasks to be covered in the test must include:
  - Setup and opening for voting
  - Operation during voting
  - Use of assistive technology or language options that are part of the voting system
  - Shutdown at the end of a voting day during a multi-day early voting period, if supported by the voting system
  - Shutdown at the end of voting including running any reports
  - Providing ballots in different languages
  - Selecting the correct ballot type (for example, for vote centers)
  - Setting up the voting system to use different interaction modes
2. The test participants must include typical election workers representing a range of experience.
3. The manufacturer must submit a report of the results of their usability tests, as part of the Technical Data Package (TDP) using the Common Industry Format modified for voting systems (CIF-for-Voting Systems).

## How should accessible voting systems be deployed to support Principle 3?

All voters can access and use the voting system regardless of their abilities, without discrimination.

- Plan to discuss and document the issues around deployment of accessible voting systems (primarily ballot marking devices)
  - Discuss via the NIST Human Factors Public Working Group which has a large number of usability and accessibility experts/advocates and vendors.
  - US Access Board leads with support from NIST
  - Invite election officials (through NASED, NASS) and accessibility advocates to participate and inform other NIST Public Working Groups.
  - NIST has written an outline for guiding the discussion.
- Findings used to develop guidance for election officials.