The Voters’ Perspective: Next generation guidelines for usability and accessibility

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Usability and accessibility guidelines: Where we’ve been
Next Generation: Improvement and innovation in election design
NIST Roadmap for usability and accessibility of next-gen elections

Goals

• Increase the level of knowledge of usability and accessibility in elections
• Make systems more usable for everyone
• Guidance in the right form for the right purpose (not just certification requirements)
• Set priorities and objectives for research to fill gaps in knowledge
We need to consider the entire voter journey, not just systems

At each stage
- Learn: voter questions
- Do: voter activities
- Use: election systems
- People: voters interact with
- Policy: election law
- Design challenges
- Barriers to voting
- Risks to elections
NIST Roadmap: Priority areas for work

- Engage voters effectively
- Support the design process
- Address the entire voting journey
- Provide useful guidance & standards
- Support evolving technology
- Improve testing in certification & design

Voters
- Poll workers
- Election officials
- System designers
- System testers
- Voter advocates

civicdesign.org/projects/roadmap/
Objectives: Guidance, standards and testing

Priority Area 5: Provide useful guidance and standards
- Merge usability and accessibility into a single universal standard
- Simplify guidance by focusing on principles
- Develop performance metrics
- Develop process standards

Priority Area 6: Improve testing in design and certification
- Improve ways to test systems, including pilot testing as part of certification
- Certification of open, component-based election systems
- Establish qualifications of human factors evaluators
Objectives: Design process and technology

**Priority Area 1: Support the design process**
- Design standards and guidance so they are easier to use

**Priority Area 3: Address the entire voter journey**
- Create a risk model that includes both human factors and security

**Priority Area 4: Support evolving technology**
- Use universal design to create systems that work for more voters
- Enable the use of personal devices and assistive technology to vote
- Update voting guidance to address new technologies and interactions
Changes throughout the voter journey change voter expectations

- Voter registration
- Information from official and other sources
- More options for voting
- New technologies in and out of elections
- More accessibility of everyday technology
Voting options and convenience voting have expanded

“Voting should be the most convenient government service as voting is a right and not just a privilege.”

- Stephen Booth, NFB

PCEA recommendation: Expand opportunities to vote before Election Day.
Everyday technology has changed lives

The explosion of mobile devices came after the VVSG 1.0 and 1.1 were drafted

I feel like technology is finally catching up with what I truly need.

Glenda Watson Hyatt
DoItMyselfBlog.com

PCEA recommendation: Establish advisory groups for voters with disabilities and limited English proficiency.
Improving the voter experience
Plain interaction

Voters can miss instructions that are on the side of the screen because they are focused on the main interactive area.
43% of Americans don't read well

U.S. National Assessment of Adult Literacy
http://nces.ed.gov/naal/kf_demographics.asp

PCEA recommendation: Test all election materials for plain language and usability.
E-pollbooks as design examples

Election Administrators

EveryoneCounts

KnowINK

Votec

Robis Elections

PCEA recommendation: Transition to electronic poll books.
Changes in technology: Scrolling

VVSG 3.2.6.a The electronic ballot interface shall not require page scrolling by the voter.

Scroll bars are difficult for many to understand and use. But swipe gestures on mobile devices are more intuitive.
Alternatives to scrolling

Make the controls visible and part of the linear flow.

Break content in the middle of a line to show that there is more information.
Font sizes

VVSG 3.2.5.d A voting system that uses an electronic image display **shall** be capable of showing all information in at least two font sizes: 3.0-4.0 mm and 6.3-6.9mm

Given a choice, participants in usability testing chose the largest size available – larger than the largest size in the VVSG.

How do we set sizes so that they work appropriately on different sized devices?
**Font and typography**

VVSG 3.2.5.f Text intended for the voter **should** be presented in a sans serif font.

<table>
<thead>
<tr>
<th>Font</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helvetica:</td>
<td>Official Ballot</td>
</tr>
<tr>
<td>Arial:</td>
<td>Official Ballot</td>
</tr>
<tr>
<td>Univers:</td>
<td>Official Ballot</td>
</tr>
<tr>
<td>Verdana:</td>
<td>Official Ballot</td>
</tr>
<tr>
<td>ClearView ADA:</td>
<td>Official Ballot</td>
</tr>
</tbody>
</table>

Clearview font

Contrast

VVSG 3.2.5.a - Minimum uniform diffuse ambient contrast ratio for 500 lx illuminance: 10:1

WCAG 2.0 - The visual presentation of text and images of text has a contrast ratio of at least 7:1

This is 7:1
This is 10:1
This is b&w
Can we achieve universal design?

All voters have the same options for marking and casting their ballots

- Flexible for personal preferences
- Built-in accessibility functions
- Ready to be used when voters arrive
- Options to use personal assistive technology
Improving the structure of the standards

- **Principles**
- **Standards and test methods**
- **System or device-specific guidelines**
- **Guidance like training, scenarios, samples**
- **Monitoring in use**
Some areas for new guidance

- How to use the WCAG 2.0 accessibility standards and the Section 508 refresh, especially for web-based systems
- Usability, accessibility and security for remote ballot marking tools
- New ways to represent voter choices beyond opscan: voter-selection-only ballots, QR and bar codes
- Expanded use of personal assistive technology
- Usability of new approaches to security, such as E2E cryptography
Areas for work in testing & certification

- Establish qualifications for people or labs testing usability and accessibility
- How to test components and ensure that they provide good usability and accessibility as part of a complete voting experience
- Guidance for usability testing throughout the design process, and for submitting test reports for certification
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