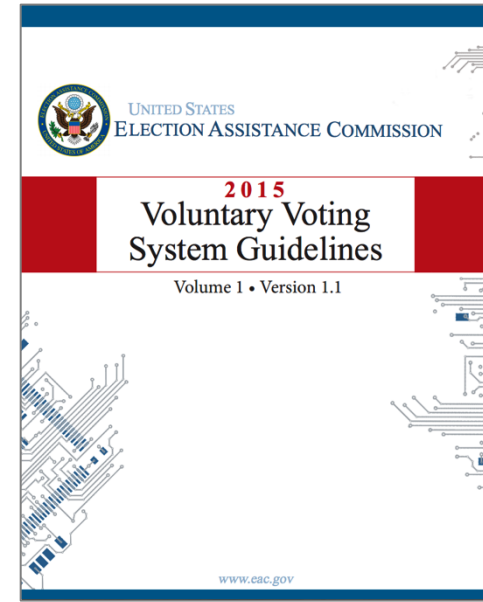
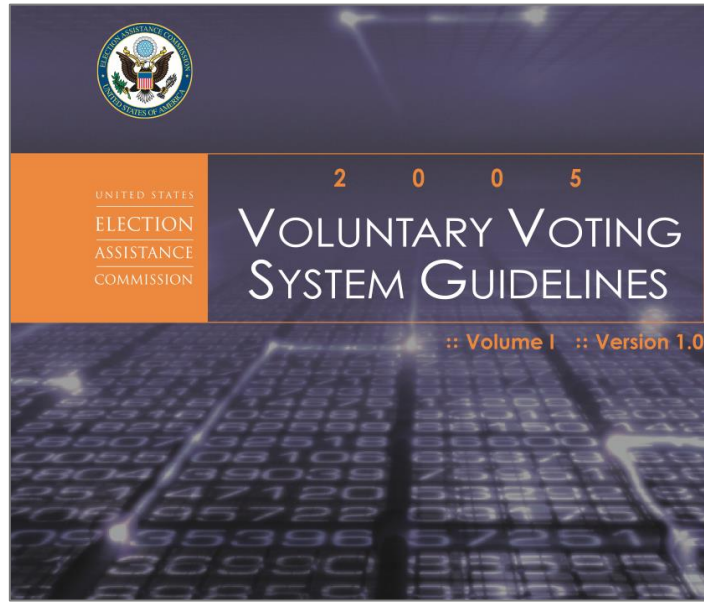
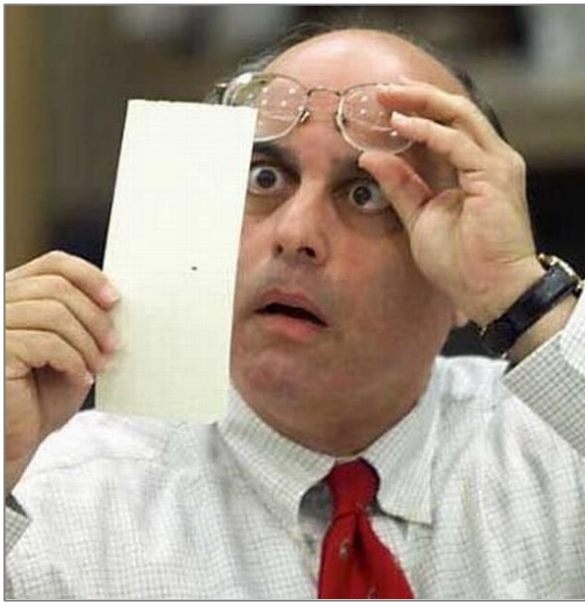


# The Voters' Perspective: Next generation guidelines for usability and accessibility

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# Usability and accessibility guidelines: Where we've been




# Next Generation: Improvement and innovation in election design

Official Ballot for General Election  
Springfield County, Nebraska  
Tuesday, November 07, 2006 1 / 5

**Instructions**

**Making selections**



Fill in the oval to the left of the name of your choice. You must blacken the oval completely, and do not make any marks outside of the oval. You do not have to vote in every race.

**Do not cross out or erase, or your vote may not count. If you make a mistake or a stray mark, ask for a new ballot from the poll workers.**

<p><b>President and Vice-President of the United States</b></p> <p><b>Vote for 1 pair</b></p> <p><input type="radio"/> Joseph Barchi and Joseph Hallaren Blue</p> <p><input type="radio"/> Adam Cramer and Greg Vuocolo Yellow</p> <p><input type="radio"/> Daniel Court and Amy Blumhard Purple</p> <p><input type="radio"/> Alvin Boone and James Lian Orange</p>	<p><b>U.S. Representative</b></p> <p><b>Vote for 1</b></p> <p><input type="radio"/> Brad Plunkard Blue</p> <p><input type="radio"/> Bruce Reeder Yellow</p> <p><input type="radio"/> Brad Schott Purple</p> <p><input type="radio"/> Glen Tawney Orange</p> <p><input type="radio"/> Carroll Forrest Pink</p> <p><input type="radio"/> or write-in: .....</p>	<p><b>State Governor and</b></p>
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Settings    ? Help    Review your votes

**United States Senator**

**Vote for 1.** You can choose **1** more.

Victor Martinez	Orange
David Platt	Yellow
Heather Portier	Tan
Touch here to write in another name	



# 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

Preparing to vote

Choosing how to vote

Getting to the 'polling place'

Getting a ballot

Marking the ballot

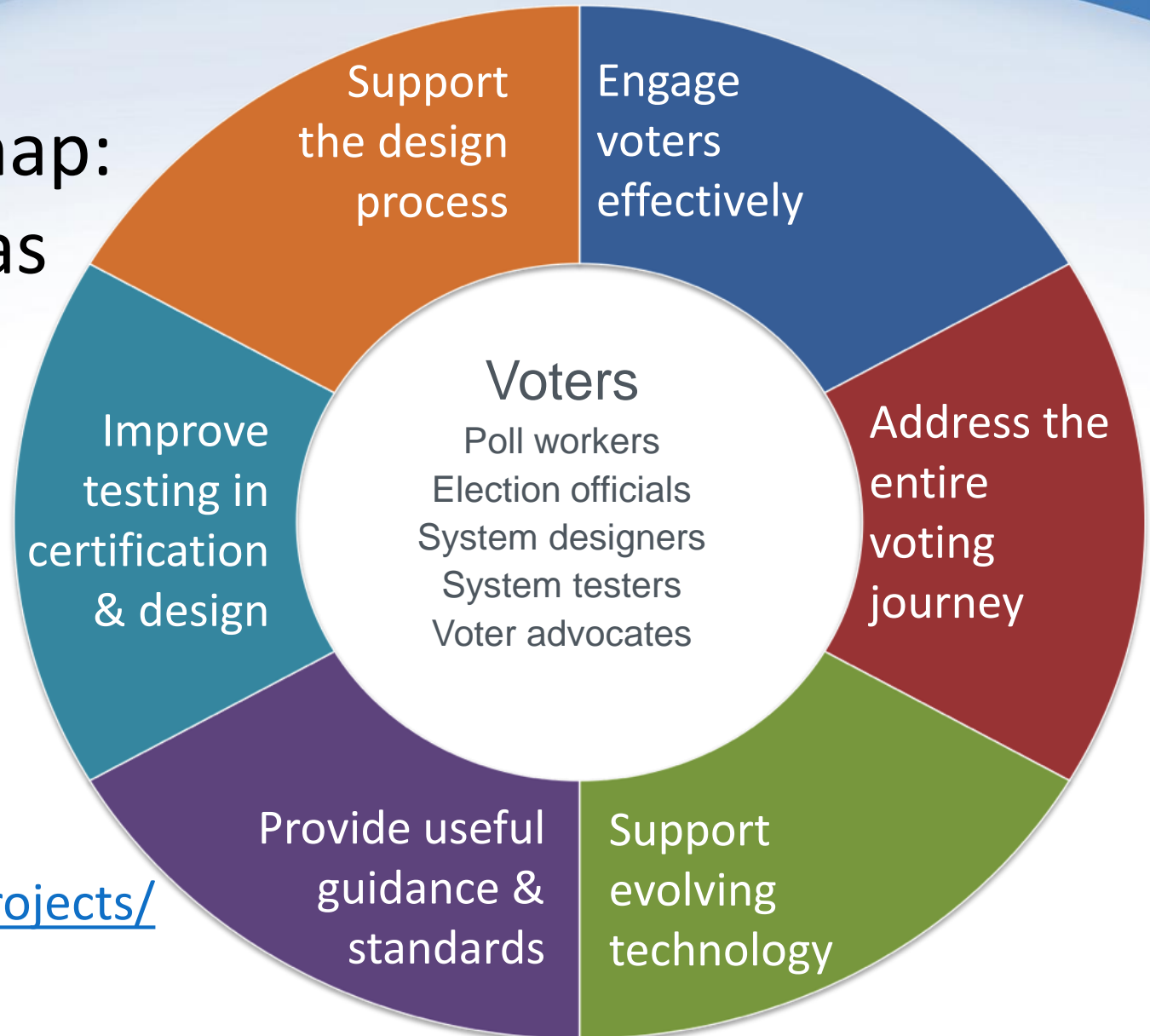
Casting the ballot

Getting the results

## 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



[civicdesign.org/projects/roadmap/](http://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

Preparing  
to vote

Choosing  
how to  
vote

Getting  
to the  
'polling  
place'

Getting a  
ballot

Marking  
the ballot

Casting  
the ballot

Getting  
the  
results

- 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



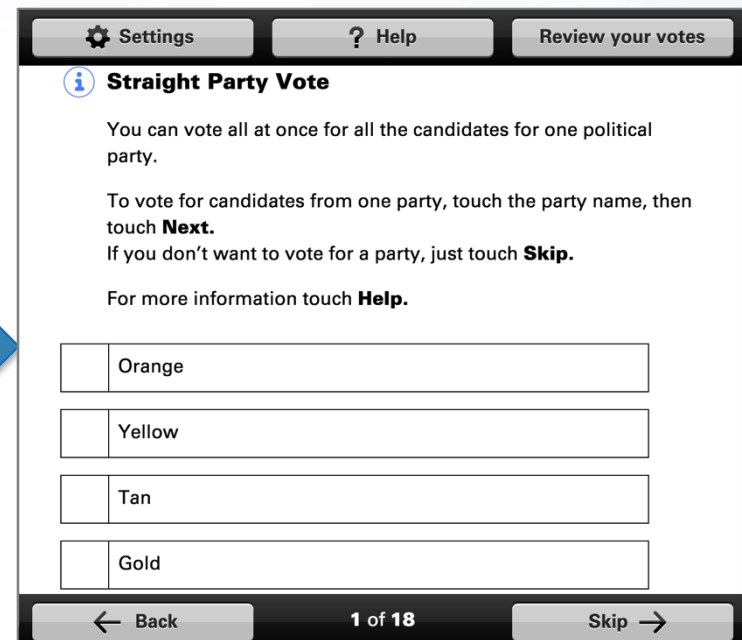
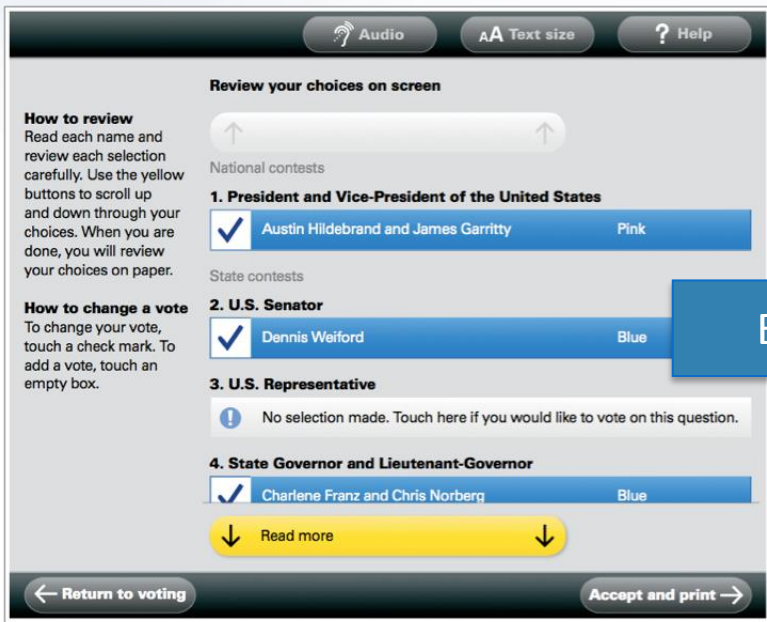
I feel like technology is finally catching up with what I truly need.

Glenda Watson Hyatt  
[DoltMyselfBlog.com](http://DoltMyselfBlog.com)

PCEA recommendation: Establish advisory groups for voters with disabilities and limited English proficiency.

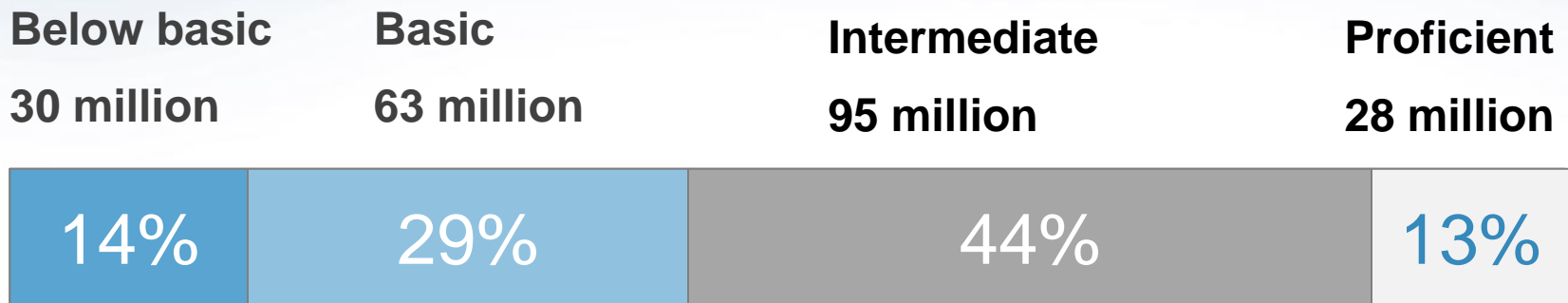
# Improving the voter experience

# Plain interaction



Voters can miss instructions that are on the side of the screen because they are focused on the main interactive area.

# Plain language



43% of Americans don't read well

U.S. National Assessment of Adult Literacy

[http://nces.ed.gov/naal/kf\\_demographics.asp](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



KnowINK



EveryoneCounts



Votec

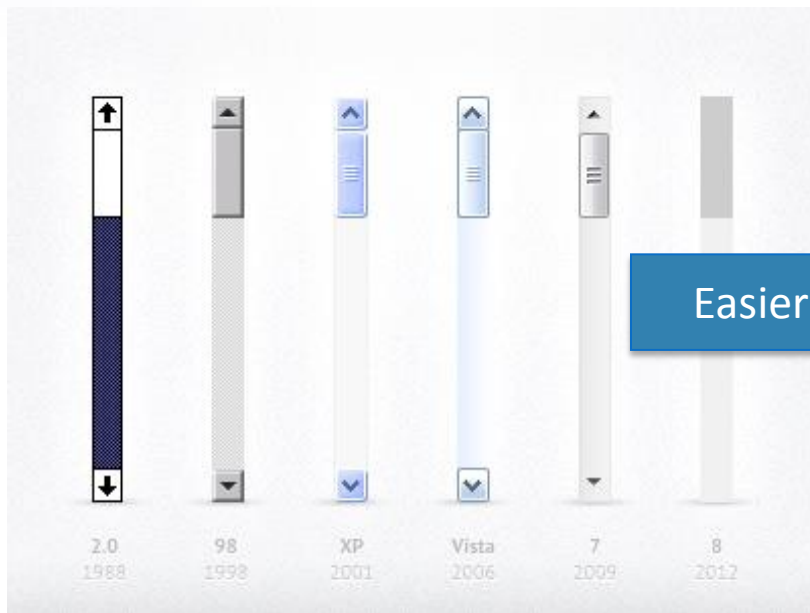


Robis Elections

PCEA recommendation: Transition to electronic poll books.

# Changes in technology: Scrolling

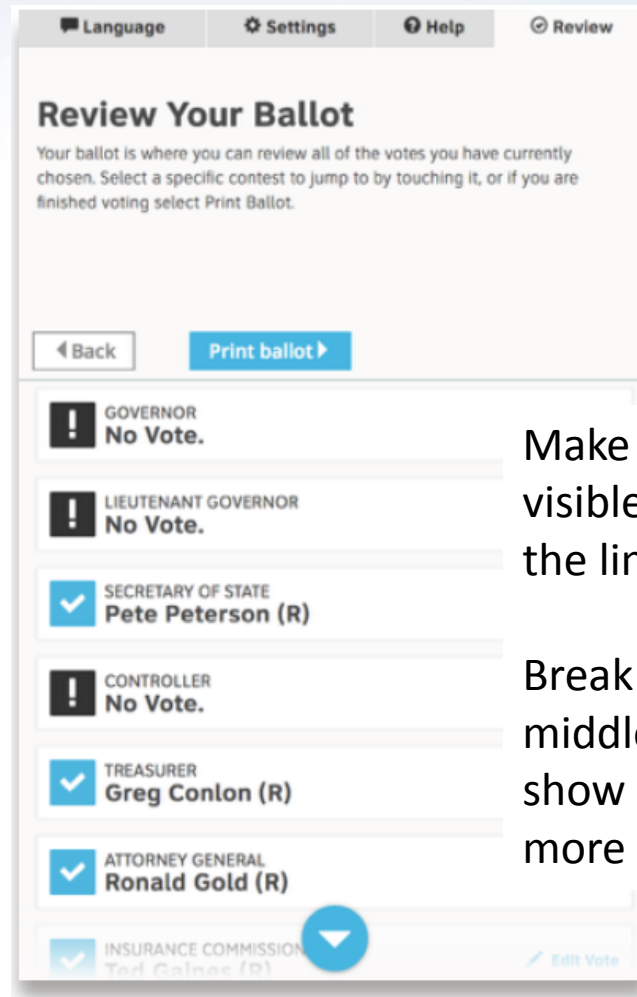
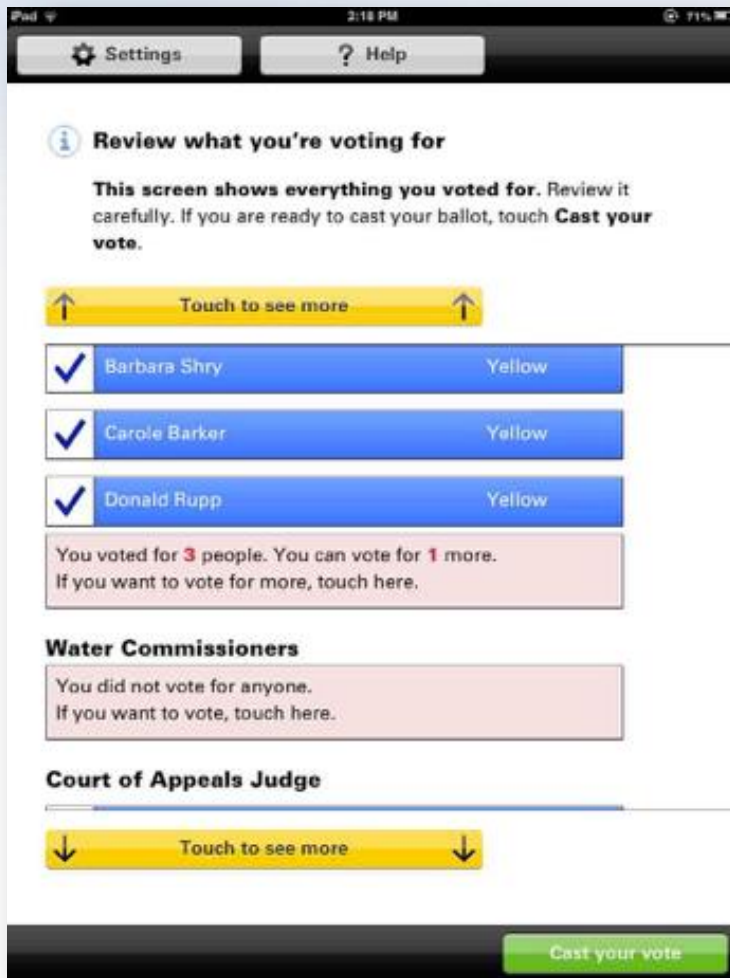
VVSG 3.2.6.a The electronic ballot interface **shall not** require page scrolling by the voter



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.

Helvetica:	Official Ballot
Arial:	Official Ballot
Univers:	Official Ballot
Verdana:	Official Ballot
ClearView ADA:	Official Ballot

Clearview font

<http://www.terminaldesign.com/fonts/clearviewada-complete-family/>

# Contrast

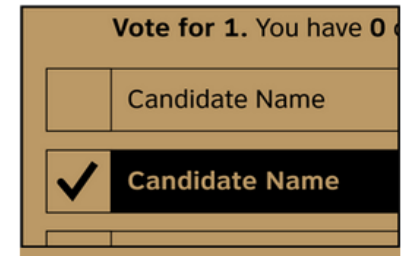
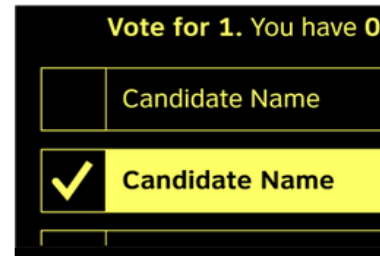
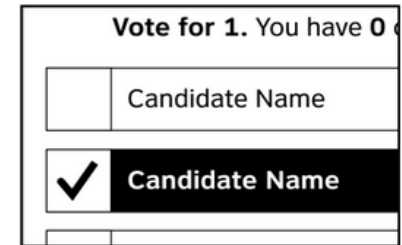
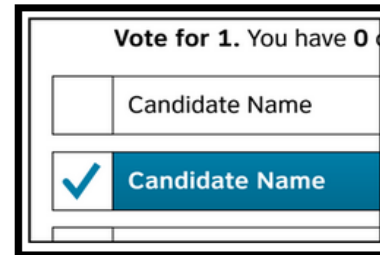
VVSG 3.2.5.a - Minimum uniform diffuse ambient contrast ratio for 500 lx illuminance: 10:1

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**



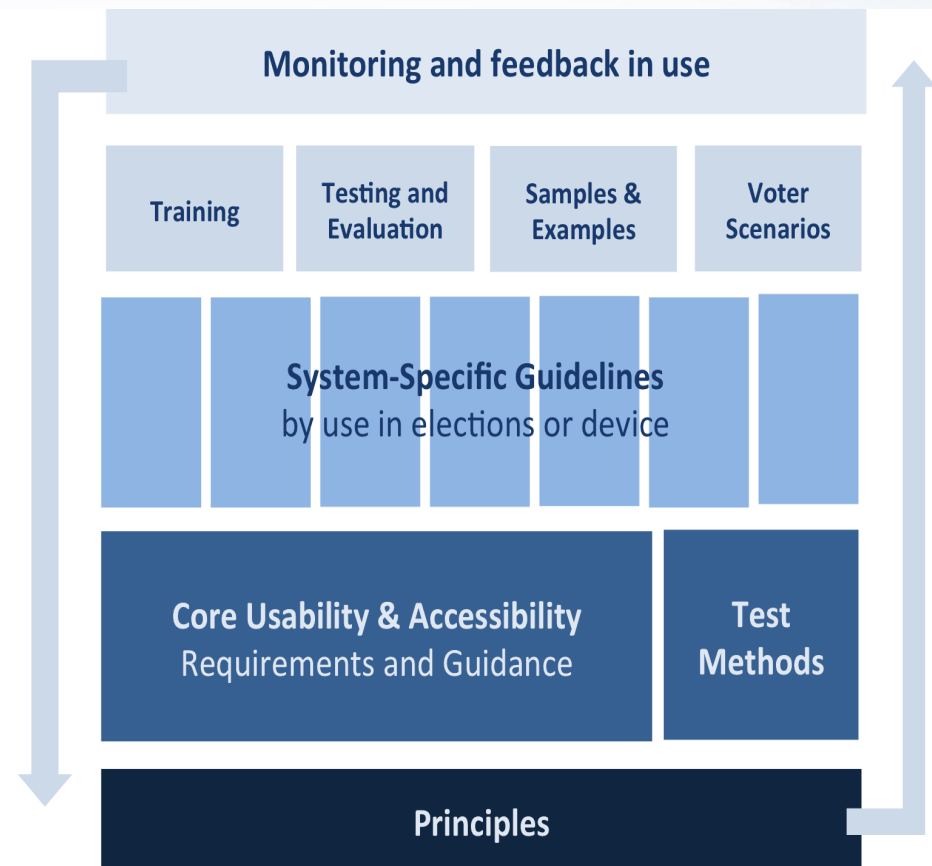
# Can we achieve universal design?

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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[civicdesign.org/projects/roadmap/](http://civicdesign.org/projects/roadmap/)