

Guidance for voting system standards
Evaluating election systems for usability and accessibility

How to conduct a usability test with voters

An overview of what you need to know to meet the requirements in VVSG 2.0 and test a voting system to evaluate whether it is usable for all voters and accessible for voters with disabilities.

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Testing election systems for usability

A key practice in user-centered design—and a key requirement in the Voluntary Voting System Guidelines 2.0 (VVSG 2.0)—is ensuring that the product you’ve made is usable by the end users, in this case voters and election workers.

This document is an outline of a protocol for usability testing.

Usability testing is part of a user-centered design process (to meet VVSG 2.0 requirement 2.2-A) and is a final check on the overall system (8.3-A). Many of the basics in this workbook are also relevant to usability for election workers (8.4-A).

Before you begin, read ***Designing and testing a user-centered, accessible, and usable voting system***, which provides a general overview of user-centered design (UCD) and usability testing. Product managers, election officials, and others who are not familiar with UCD will find that a good starting point.

This document is a more detailed companion to help people experienced with usability testing learn how to meet VVSG requirements. It also includes guidance for successfully conducting a usability test of a voting system, including tips for recruiting the broad audience required by the VVSG as well as conducting usability test sessions in this specialized environment.

Related documents you will need for conducting your own usability tests on voting systems and electronic poll books include all the materials for completing a report using the Common Industry Format (CIF) for Voting Systems:

- [CIF Template-Guidance-Start Here](#)
- [CIF Template for Voting Systems](#)
- [CIF Template-Ballot-and-Instructions](#)
- [CIF Template-Sample-Forms-and-Appendixes](#)

About usability testing

The best way to ensure that a voting system is usable by the end users, in this case voters and election workers, is through directly observing users like voters as they perform typical tasks to reach their own goals. A report on usability testing is part of your certification materials for meeting requirement 8.3-A in VVSG 2.0.

This is a practice called usability testing. Doing a usability test is one part of meeting the usability and accessibility requirements for the VVSG. You'll see that it is quite different from some of the other tests required for VVSG conformance testing the usability and accessibility requirements.

By testing the voting system's usability, you can ensure that voters can use the equipment in the polling place. In a usability test, you directly observe voters interacting with the equipment in realistic ways, so you can see what is frustrating and understand why they're encountering the problems you see.

You can use this observational data to inform decisions about changes you might want to make to improve the system and documentation. When end users can perform required tasks as they intend, without frustration, you are on your way to meeting the principles and guidelines for accessibility and usability in the VVSG.

Usability testing ethics and human subject protection

Most usability tests do not require special permissions, but some institutions have special requirements. This may include:

- Anyone subject to the Department of Health and Human Service Common Rule¹
- Anyone conducting usability testing in an institution with an Institutional Review Board (IRB) or under a federal grant
- Anyone who plans to publish results for academic research

In general, this won't apply to vendors developing a product. Others may work under a general exemption from IRB requirements for quality testing.

¹ Details on the Common Rule can be found online at <https://www.hhs.gov/ohrp/regulations-and-policy/regulations/common-rule/index.html>

Basic testing resources

Simple, generic instructions for running usability tests

The Usability Test Kit at ElectionTools.org includes tools to help you run simple tests, tests of prototypes that are closer to being complete, and structured usability tests that are more formal. The kit has sample moderator's guides, instructions to test, and note-taking guides. There's even a practice usability test.

→ Go to the [usability test kit](#) at ElectionTools.org

Training for running usability tests

The Election Academy at the University of Minnesota offers a course called *Election Design*. This course covers many aspects of user-centered design, and includes designing and running usability tests.

→ Go to Election Academy [Certificate in Election Administration](#)

The Center for Technology and Civic Life also offers courses that include usability testing.

→ Go to the [Professional development course listing](#)

There are several good books on usability testing. One of these is the *Handbook of Usability Testing, Second Edition* by Jeffrey Rubin and Dana Chisnell.

Planning a usability test

A usability test typically consists of several one-on-one sessions with one person moderating the session and one user(or participant). To run a usability test for an election system, you need:

- Someone to recruit and schedule the participants
- Someone to develop a detailed plan for the test
- Someone to run the test (a *moderator*)
- Someone to help observe and take notes (a *notetaker*)
- Someone who will use what you're testing (*participants*)
- Something you want to test (electronic poll books, voting systems, ballot-on-demand systems, election night reporting systems, online sample ballots, and so on)
- A quiet place to conduct the test. It does not have to be set up exactly like a polling place, but you will learn more from usability test participants if it is.

Someone from your staff, or a contractor you hire specifically for this purpose, will be the moderator. The role of the moderator is to provide instructions, observe the participant, and ask follow-up questions (but not teach or coach). Generally, the moderator sits or stands close enough to the participant so they can observe what the participant is doing, and so that the moderator and participant can talk, but not so close that it invites on-going dialog.

Each session should be scheduled for adequate time to introduce the session, have the participant perform all of the tasks you'd like to observe, and then close the session with a short debriefing interview.

Considerations for planning your usability test are:

- The goals for the usability test (for example, whether the report will be submitted for certification or if it is part of your user-centered design process during development)
- Who to test with
- How many participants to test
- How much time it will take
- Where to do the usability test

- Whether you will offer a financial incentive

Where you are in the development cycle

Where you are in development will determine the goals for your usability test. The goals will then determine how you set up your test and the types of data you collect.

Early in development, you might have one or more design ideas that you want to get feedback on to determine which direction to take. This kind of testing is usually done in several iterations so that the feedback helps to inform the evolving design. This information will help you make decisions that result in a more usable design for everyone.

As you reach milestones in the development process (and for the usability test you run to meet requirement 8.3-A) your usability test can focus on collecting quantitative data to measure things like how long it takes to vote or the type and number of errors.

There are some differences in how you conduct the test based on what kinds of information about the product's usability you want to gather. For example, if you are gathering quantitative data, participants are not asked questions about their reactions until they have completed their tasks—in this case, marking and casting a ballot.

Tip

In real voting, users may become so confused or frustrated that they can't continue. During a usability test, you want to know if this happens, but you can also ask them to continue in your usability test so you get data on all of the tasks.

Who to test with

The VVSG specifies that voting systems need to be usable by the following groups:

- Voters in the general population, using the visual interface
- Voters who speak all supported languages as their primary language
- Voters who are blind, using the audio-tactile interface
- Voters with low vision, using the enhanced visual features with or without audio
- Voters with low dexterity, using the visual-tactile or non-manual interface

You don't need to include all of these groups in each of your usability tests during development. But you should plan to include them all at some point, especially when you need to make decisions that affect a particular group. For example, how users using the audio-tactile interface or visual-tactile interface navigate within and between contests or how easy they find the instructions for using the different interaction modes or language options.

The final usability test that is part of your certification materials must include all of the user groups, as listed in VVSG 2.0 requirement 8.3-A.

How many participants to test

The number of participants depends on when and why you are doing the usability test. For example, if you are at the beginning stages of your design and want to explore issues, you can start with a small number—about 5 participants in each group that you are testing. However, if you are doing your final usability test, you'll want to include 10 or more participants from each group.

Tip

It's a good idea to recruit one or two backup participants for each group, in case someone has an emergency or can't make it to their session.

How much time it will take

You'll need some time for planning and recruiting, so start that process with enough time before you want to conduct the test.

Plan on each session taking about an hour, though this depends on the test plan. The full session includes:

- check-in,
- an introduction to the usability test,
- voting, and
- follow-up such as a questionnaire and check-out, thank you, and payment.

Tip

To be prudent, allow two weeks after your test plan is complete to run a pilot test and recruit participants.

Where to do the usability test

Ideally, the location of the testing is somewhere that makes it easy for participants to get to, has parking, and is accessible to public transit.

You can set up the session in a conference or training room in your company, or you can rent space in a hotel, conference center, or other location.

Tip

Hotels or rental work spaces can be good places to work because they are accessible and have amenities for waiting areas.



“We set up a mock polling place in the La Jolla Social Room at the La Jolla Marriott Hotel in La Jolla, CA. This provided us with a large space where we set up three polling stations and a common ballot box so we could test up to three participants at the same time. There was space near the entrance and away from the polling stations for participants to check in and sign necessary forms, as well as comfortable seating for participants and assistants to wait. The room was close to the main entrance of the hotel but had a separate exterior door and was close to restrooms in the hotel lobby. We provided light snacks (coffee, juice, and cookies).” – Mile 7

Offering a monetary incentive

Offering a monetary incentive lets participants know you value their time and encourages them to show up for their session. Even a small amount can make a big difference.

Tip

A typical industry incentive for a 1-hour test is \$75 - \$100, depending on how far participants need to travel. If they need to take public transportation or your test location doesn't include free parking, you might also consider providing a transportation stipend.

In addition to a monetary incentive, consider:

- Reimbursing (or adding funding for) public transit, ride services, and parking.
- Compensating drivers and personal care assistants for voters with disabilities as well as the participant.
- Offering other small tokens of appreciation, such as coffee mugs or "I participated in a usability test" stickers.

Recruiting test participants

You should include people with disabilities in all your usability tests and user-centered design activities. This can be easier than you think, especially if you make it clear that they are welcome. You will also find that many people you recruit, especially older voters, often have severe or obvious disabilities, including their vision, hearing, and dexterity. From that perspective, you can think of all of your testing as covering the full range of human ability. Everything you learn will be useful for all of your users.

Where to find voters with disabilities

The best way to find participants is to build relationships with organizations that support the types of people you want to have in your usability tests.

Local organizations can often help you find participants by connecting you to individuals or putting recruiting notices in a newsletter.

- State or county elections offices may have an accessibility or language access advisory group. The local HAVA coordinator will also know local resources.
- Local and state offices for people with disabilities, such as independent living centers, that can advise you on local resources
- Local chapters of organizations that represent specific disabilities or conditions can be a good source of participants, such as:
 - American Council of the Blind
 - National Federation of the Blind
 - Local Lighthouses for the Blind and Visually Impaired
 - United Cerebral Palsy
 - Easter Seals
 - Dyslexia Foundation or International Dyslexia Foundation
 - Cross-Disability Coalition
 - National Disability Leadership Alliance

You can find participants through many sources, including²:

- College and university programs for students with disabilities
- Local disability-related support groups
- Local or regional government rehabilitation or disability services agencies
- Organizations for seniors and local senior centers
- Independent living organizations
- Local “meet-up” groups and events related to accessibility
- Consulting and market research companies that specialize in recruiting people with disabilities, senior citizens, or those who are not native English speakers
- Email lists or online forums
- Social media, including Twitter, Facebook, or LinkedIn
- Manufacturers of specific assistive technologies that are part of the voting system

Screening and scheduling participants with disabilities

As you begin to identify appropriate people to participate in testing, consider the kinds of assistive technologies candidates use, as well as the different methods people may have for using their assistive technology. Just as you do for participants without disabilities, select participants with a range of experiences with voting.

For your early usability testing (or other user-centered design activities) you might need to screen participants for each test, so you can focus on different ways of interacting with the voting system.

Resources

There is a sample recruiting screening questionnaire in the appendix that you can use or adapt.

Consider technology choices

When recruiting people with disabilities to participate in tests of voting systems, recruit based on how people interact with the assistive technology that a voter uses, rather than recruiting by specific disability. For example:

² Many of these ideas come from the online book, [Just Ask: Integrating Accessibility Throughout Design](#), by Shawn Lawton Henry. This website has a good page for more information about planning a usability test with people with disabilities: http://www.uiaccess.com/accessucd/ut_plan.html

- Not all participants who prefer audio output from the voting machine are blind or have low vision. Voters may have a cognitive disability that makes reading difficult or use the audio to help them read in English.
- Voters who have low vision may choose to enlarge text, or they may change the color setting (such as switching from black on white to white on black).
- Some voters who have low vision use a range of magnification settings to enlarge text on the screen, based on visual acuity.

So, you want to recruit people who use magnifiers or who change other settings – if that’s the behavior you’re interested in – not just people who meet your criteria for having low vision. This way, you get a much broader range of participants – some who identify as having disabilities, and some who don’t – but all who use the features you want to test.

Remember that new technologies also change behavior. That’s true for assistive technologies as well. As new assistive technologies come to market, or existing ones become more common, it will be important to recruit users who use them, even if they are not built into the voting system yet.

Scheduling considerations

As you schedule usability test sessions, include time for arriving and checking in, getting around the space you’re holding the test in, and getting settled. Everything may take a bit longer than it does for most people who don’t have disabilities, so make time and don’t rush. Plan and practice so you know about how much time a session might take, and then add extra time.

Things to think about:

- Schedule sessions in the first half of the day when older adults and others are not tired.
- Leave plenty of time for reviewing and signing consent forms and filling out demographic information (or send everything by email and give directions for responses ahead of time).
- Allow for flexible start and stop times.
- Allow for breaks during your usability test sessions.

Confirmation and reminders

After scheduling each participant, it's a good idea to follow up with a confirmation letter, sent in email or through the U.S. Post Office. In this message, clearly identify the study and provide the arrival time, address, parking or public transit instructions, and contact information in case the participant has questions or needs to reschedule their session.

The day before, you can send a second reminder email or letter, confirming the name of the study, session time, and address, and emphasizing who the participant should contact if they are running late or need to reschedule.

Conducting a usability test

Usability testing is designed to reveal places in the voting process that are frustrating to voters or where they unwittingly make mistakes.

What you'll need

- **Voting system** configured for voting, including a test ballot. NIST recommends using the Medium Complexity Reference Ballot (this ballot specification and notes about how it is used in testing is in a related document).
- **Consent forms** explaining what the participant will do during the session and their rights as a participant.
- **Usability moderator's script** with an introduction to the usability test, voting instructions, and follow-up questions you want to ask participants.
- **Data collection form** where you can note participant errors or confusion, assistance provided, participant comments or quotes, and answers to your questions.

You might also want:

- Someone from your staff who can address technical questions or overcome bugs. (Optional)
- A video camera for recording the test sessions. If you do record the session, be sure to get the participant's permission on the consent form. (Optional)

Tip

Video recordings are useful for data analysis in case you missed something in your notes or need to review what happened in order to understand an issue.

You might also want to make the recordings available within your organization so management and others can get a feel for how voters of varying abilities use the system.

First, conduct a “pilot” test

It's always a good idea to conduct a practice, or pilot, test. This means setting up your equipment before the actual usability test and having 1 – 2 participants go through the test (including your introduction and instructions), vote, and go through the final

debrief. This is a “test of the test” to make sure everything works, your instructions make sense, and participants can complete the test within your allotted timeframe.

Steps for completing the usability test

1. The participant checks in at the scheduled time, and reads and signs an Informed Consent Form.

Tip

You will need to consider is how to provide the consent form and any written survey in a way that is accessible to all participants.

We have tried various online options so participants who are blind can use a screen reader, participants who have low vision can enlarge the text and change the background or foreground colors, and participants with hand or dexterity impairments can use a keyboard.

Unfortunately, none of these options is satisfactory in all cases. For example, many people don't use screen readers or know how to enlarge text on a computer, and many people with hand or dexterity impairments can't use a keyboard. In fact, you will find that many people, especially if they are older, don't know how to use a computer at all. Our final solution has been for the greeter to offer to read the consent form out loud and accept a verbal consent, depending on the participant's abilities and their wishes.

Similarly, with the survey, the moderator can read the questions and mark the participant's answers.

2. The session moderator greets the participant and accompanies them to the testing location. (Throughout the session, the moderator and an optional notetaker stay with the participant, observing and taking notes.)
3. The moderator introduces the usability test and gives instructions about the test.
4. The participant sets up the voting interface as desired. Note that the moderator, acting as a poll worker, might need to help the participant set up the audio or tactile interface.
5. The moderator, reading from the test script, instructs the participant on who or what to vote for in each contest.

Tip

The reason to tell participants how to vote in each contest is so we can count the number of voting errors. For example, if a contest says to vote for two candidates and participants only vote for one, you need to understand if this is due to the design or layout of the ballot or poor voting instructions.

We have also found that if we tell participants that they can vote for whomever they want, they typically pick the first candidate on the ballot, which doesn't allow us to test the design or layout of long ballots. Similarly, they tend to skip reading measures and just choose one of the Yes or No answers.

The other reason to read the instructions to the voter is to create a consistent experience for all participants. Blind and many low vision participants aren't able to read print on paper, the participant may not read well, or may not know how to use a computer well. Making them read extra information or switch between using the voting system and using a second digital system to read the instructions adds complexity and difficulty to the task, which can skew the results.

6. The participant votes and casts the ballot.
7. When the participant finishes voting, the moderator asks the participant about their overall experience.
8. Optionally, the participant fills out an ease-of-use survey, such as the System Usability Scale (SUS).
9. The moderator thanks the participant and walks them out.
10. The greeter gives the participant the incentive and checks them out.

Session materials

Samples of all of the materials you will need are included in the Appendix.

Asset	Description
Check-in form	This is a list of all of the participants and their session times. You should plan on assigning a member of your staff to greet participants when they arrive and mark the participant's name on the check-in form.
Consent form	The greeter asks the participant to read and sign the consent form.

Asset	Description
Introduction	This is a script that the moderator reads to introduce the test session. The introduction should briefly describe the goals of the usability test; the roles of the participant, moderator, and notetaker; and give instructions for starting and ending tasks.
Voting instructions	This is a script that the moderator reads that tells the participant how to vote in each contest.
Survey	If you include an ease-of-use survey, we recommend the System Usability Scale (SUS). SUS is an industry standard rating scale that is easy to administer, produces reliable results with small sample sizes, and is valid, that is, it can effectively differentiate between usable and unusable systems. It consists of ten questions with five response options, from Strongly agree to Strongly disagree.

What kind of data to collect

The type of data you collect will depend on where you are in the development cycle and the goals of the usability test.

During development, you will mostly likely be doing several iterative tests using design prototypes to get qualitative feedback about what works well and what is confusing. This type of data is obtained by observing participants while they use the prototypes and taking notes about what they do, what they say, and their body language. For example, if participants look surprised or frustrated, this indicates a usability problem. You will want to explore the issues you observe by asking participants what they were trying to do or what they expected to happen.

The data from qualitative tests is the list of things that worked well and the list of issues you observe.

Prior to release of the product, you should plan a final usability test of the complete voting system to determine whether the final design allows users to vote in a reasonable amount of time without assistance and without errors. This type of test results in quantitative data, including the time it takes to vote, number of errors, and number of times participants needed assistance to continue. You can also take notes about your observations, participant comments, and body language, but you will not want to interrupt with questions until after the participant completes each task.

Working with people with disabilities

If you have not worked with people with disabilities before, it can be daunting. We have some general tips and guidance on working with people with specific disabilities.

- Use common sense. Don't panic.
- Don't touch people or their aids without asking, unless they are in danger. That includes assistive technology, devices, service animals, canes, wheelchairs, and guide dog.
- Talk directly to the voter, just as you would any other voter, rather than talking to their attendant or aide.
- Ask if you can help, but don't be offended if help is declined.
- Let the person guide you in how best to help, unless how you help may impact testing results.
- Be patient. Remember that the voter wants to finish as quickly as you want them to.
- Factor in additional time to accommodate the voter's special needs.

Resources for interacting with people with disabilities

These resources are useful as background or training

- [Disability Sensitivity](#). Training video about interacting with people with disabilities in a work environment.
- [The do's and don'ts of disability sensitivity](#). Short article from the Rick Hasen Foundation with simple human interaction guidelines.
- [Solutions for Five Common ADA Access Problems at Polling Places](#) and [ADA Checklist for Polling Places](#). These web documents from the Department of Justice can be useful in reviewing whether your test location is physically accessible for participants.
- [Disability Language Style Guide from the National Center on Disability and Journalism](#) can help you make your written communications "people first."

Specific disability considerations

Voters who are blind or have low vision

- Ask if the voter would like you to read any informed consent forms or other materials that come before the tasks begin to them, or if they prefer a braille version.

Tip

You can also email informed consent forms to participants in advance in an accessible format.

- Ask if the person who is using a white cane would like to take your arm. Usually, those who use service animals (typically a dog) will have their guide dog follow you. If the person will be there for a while, ask if you can get the dog some water or if they will need help finding a relief area. (Note that if the person is just coming to vote, it shouldn't be necessary to arrange a relief area.)
- Ask if the voter would like you to put their hand on the back of the chair or primary area for controls on the voting machine.
- Ask whether the voter has used an accessible voting system before. This question will help you to gauge their level of familiarity with the system. While you likely have this information, based on screening, you may find it helpful to ask for more detail.
- When it is necessary to write a signature, a voter who is blind may have a signature guide that you can place for them, they may ask you to put your finger where they should begin to write, or they may ask you to position their hand where they should begin to write.

Voters who use wheelchairs or other mobility aids

- Make sure there is a clear path of travel to the voting machine.
- Offer help to adjust the height of the machine or make other appropriate physical adjustments.

Voters with low or no use of their hands

- Ask them how they want to sign any consent forms, including consenting verbally and having you or an assistant sign for them.

- Offer help to adjust the voting system setup before the voting tasks begin.

Voters who are deaf or hard of hearing

- Often, people use text on their phones to communicate, rather than pen and paper.
- If the voter has an interpreter to assist them, be sure to look at and talk to the voter, rather than the interpreter.
- Do not speak loudly, unless asked to. Speak clearly, but don't over-enunciate.
- Try to eliminate unnecessary background noise if you will be communicating with the voter for more than a few minutes.

Voters who have a communication-related disability

- Be patient and listen carefully.
- The voter may have a special augmentative communication device or perhaps a mainstream tablet that will "speak" for them.
- Speak to the person as you normally would, unless they indicate that they prefer that you communicate with them in another way.

Voters with low literacy

- Be prepared to read forms and instructions to them.

Voters who have cognitive disabilities³

- People with disabilities that affect their attention or memory may need information repeated.
- Break instructions into short sections and make sure they are ready to move on before proceeding.
- If the participant brings an aide, they may want them to help them during the test, just as they would when voting in an election.

³ Guidelines in this section are adapted from material from the W3C Cognitive and Learning Disabilities Accessibility Task Force: <https://www.w3.org/WAI/PF/cognitive-a11y-tf/> and information about the diversity of web users from the Web Accessibility Initiative: <https://www.w3.org/WAI/intro/people-use-web/diversity#cognitive>

- Position the voting system so that there is nothing distracting in front of the participant while voting.

Understanding your data

How you interpret and report on the results of your usability test depends on the type of data you collect.

Qualitative data

Usability issues from qualitative tests should be grouped into categories that help you understand the kinds of problems voters have and how to improve the design of the voting system to fix them.

For example, you might want to report issues for the following:

- Finding, reading, or understanding instructions
- Navigating through the ballot
- Making voting selections
- Issues with specific types of contests, for example, write-in votes and multi-candidate contests
- Language translation or localization
- Finding and setting font size and contrast
- Using assistive technology or preference settings

Tip

For usability tests that are part of your user-centered design work while developing the voting system, you might also want to record notes or direct quotes from participants to help the team understand—and fix—the problems found in the test.

For each issue, assign a severity rating and give a recommendation for fixing the issue. These definitions for severity focus on the impact on the voter and their success in casting an accurate ballot that reflects their intent.

- **High** – Issue that will likely result in an error, such as not being able to complete the voting process or making a voting error, including under- and over-voting.

- **Medium** – Issue that causes confusion or frustration but likely won't result in users not being able to vote or making an error.
- **Low** – These are enhancement requests or things that might improve the voting experience, but not having them won't cause confusion or frustration, or result in errors.

Quantitative data

Quantitative data, such as the time it takes to vote, the number of errors, and the number of assists should be analyzed and reported separately for each user group.

Common usability metrics include effectiveness (or accuracy), efficiency, and satisfaction (or confidence using the system).

Assists

An assist is defined as an action taken by the test moderator to help a voter beyond what a poll worker, caretaker, or personal attendant might generally be expected to perform.

For example, the test moderator, acting as a poll worker or caretaker, might need to help voters with disabilities to set up their accommodations and guide voters with visual disabilities to the ballot box (if it is separate from the voting booth). These are considered common or usual poll worker or caretaker duties and should not be included in the count of assists.

Assists that need to be counted are actions that aid voters to understand the voting instructions, navigate the ballot, enter write-in candidates, or complete any part of the test that would usually be done by the voter without any help.

The table below lists some common quantitative measures you might collect in a usability test.

Measure	Description
Effectiveness	Completion rate: Percentage of ballots that were cast so that the voter's choices were recorded by the system.

Effectiveness	Accuracy or error rate: Percentage of ballots cast without errors.
Effectiveness	Ballots cast without assistance: Percentage of ballots cast without assistance.
Efficiency	Time to vote: Average time required to complete the process of activating, filling out, and casting the ballot.
Satisfaction	Voter confidence: Average confidence level expressed by voters that they voted correctly and the system recorded their votes.
Satisfaction	Voter satisfaction: Average satisfaction level expressed by voters in response to 6 ease-of-use ratings.

Data Analysis

To analyze the data, each voting session look at the results of each of the quantitative measures you have collected: the ballot was cast successfully, the number of errors, the number of assists, time to complete the voting task, and voter confidence and satisfaction.

Errors include missing votes, incorrect votes, and unintended votes.

- For single member elections, retention races, constitutional amendments, and ballot initiatives, only count one error per contest.
- For multi-member contests, set the maximum number of errors to the number of candidates in the contest.

Reporting Results

Usability test reports that are being submitted to meet the usability testing requirements 8.3-A and 8.4-A must follow the format specified in the Modified Common Industry Format (CIF for Voting Systems).

The CIF is an industry standard template, ISO/IEC 25062:2006 for reporting the results of usability testing. This modified version of the CIF has been specifically tailored for testing voting systems and the requirements of the VVSG 2.0.

→ Download the CIF for Voting Systems template from [add location]

Appendixes

The appendixes for this document are in a separate file. They include:

- A sample screener for recruiting participants
- A sample consent form
- A sample moderator script for conducting the session
- A data collection form

Another file contains a sample ballot specification. This “medium complexity ballot” includes a variety of types and length of contests and instructions to ensure that all interaction features of the ballot are exercised during the test.