CIF for Voting Systems:   
A Modified Common Industry Format Template   
for Reporting on Usability Testing of Voting Systems

This document provides a template for a modified version of ISO/IEC 25062:2006, the Common Industry Format (CIF) for usability test reports. This modified version of the CIF has been tailored for testing voting systems as part of the certification of a voting system to meet the Voluntary Voting System Guidelines (VVSG) 2.0 requirements 8.3-A and 8.4-A.

It is one of ten companion documents to the [NIST VTS 400-5 Handbook for VVSG 2.0 Usability and Accessibility Test Strategies](https://doi.org/10.6028/NIST.VTS.400-5) and can be downloaded with the Handbook. All documents are also available on the NIST Voting Program website at <https://www.nist.gov/itl/voting/vts-400-5-documents>.

Related companion documents are:

* CIF for Voting Systems: Guidelines on How to Complete the Modified CIF Template for Voting Manufacturers
* CIF for Voting Systems: NIST Standard Test Ballot Specification and Instructions for Participants
* CIF for Voting Systems: Appendices of Sample Forms
* CIF For Voting Systems: Additional Sample Forms for Usability Testing Voting Systems

About the CIF for Voting Systems

This template is intended to be used by anyone conducting a usability test of a voting system or who is reporting on that usability test. It has been created to enable voting manufacturers to effectively communicate the results of usability testing conducted during the development of a voting system for certification to meet the requirements in VVSG 2.0 Principles 8.3, 8.4, and can be used for Principle 2.2.

**Principle 8.3** The voting system is measured with a wide range of representative voters, including those with and without disabilities, for effectiveness, efficiency, and satisfaction.

**Principle** **8.4** The voting system is evaluated for usability with election workers.

**Principle 2.2.** The voting system is implemented using best practice user-centered design methods, for a wide range of representative voters, including those with and without disabilities, and election workers.

This template is based on ISO/IEC 25062:2006 Common Industry Format (CIF), a format used to report the results of usability testing. You should be familiar with this standard and you must purchase ISO/IEC 25062:2006 from: <http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=43046>.

For detailed information about how to complete this template, voting manufacturers and their usability test administrator should refer to the companion document: “CIF for Voting Systems: Guidelines on How to Complete the Modified CIF Template for Voting Manufacturers”.

**Note that because this CIF for Voting Systems is based on the ISO CIF standard, it uses the ISO language structures “shall”, “should”, and “may”. The VVSG uses “must” rather than “shall”.**

**The data sample provided in this template is an example or placeholder of the types of content that may be useful in completing the modified CIF template.**

**Replace any gray background text (bounded in square brackets) with information from your own testing.**

The CIF for Voting Systems template begins on the next page

Usability Test Report of [Name of Product And Version Tested] with [XXXX] Participants for Requirement [XXXXXX]

Report Based on ISO/IEC 25062:2006 Common Industry Format for Usability Test Reports

[Full name of product and version tested]

Date of Usability Test: [Date usability test was conducted]

Date of Report: [Date report was prepared]

Report Prepared By: [Supplier Company Name]

[Supplier Contact Person]

[Supplier's phone number]

[Supplier's email address]

[Supplier's mailing address]

Report Prepared For: [Customer Company Name]

[Customer Company Contact Person]

[Customer's phone number]

[Customer's email address]

[Customer's mailing address]

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# 1.0 Executive Summary

A usability test of [name of product and its version] was conducted on [date] in [location] by [company]. The purpose of this test was to fulfill [the requirements] of the Voluntary Voting System Guidelines (VVSG).

During the usability testing, a total of [XX] voters used the [product] in a simulated election. The election consisted of [one] test ballot with [20] contests, including:

* Federal, state, and local contests
* Partisan and nonpartisan contests
* Single member and multimember contests
* Retention races
* Constitutional amendments
* Referenda and ballot initiatives

This ballot used for the test is based on the NIST Standard Test Ballot Specification developed by the National Institute of Standards and Technology (NIST), to provide opportunities for various voting tasks. The instructions include [28] tasks that model typical ballots from around the country, including:

* Voting for names at various locations within a list of names
* Voting a partial slate in a multimember contest
* Skipping elements of a ballot
* Changing a vote from the review screen
* Write-in votes

Following the conclusion of the testing, the results were analyzed to determine participants’ effectiveness, efficiency and satisfaction using the [product].

During the usability test, the testing team collected and analyzed the following types of data:

* [Number and percentage of ballots successfully submitted/completed (number and percentage)]
* [Percent of tasks completed without any errors]
* [Count of assists provided (number or percent of voters needing assists)]
* [Time to complete the voting session, showing range of times overall and by interaction mode)]
* [Voters’ confidence that they had used the system correctly]
* [Voters’ satisfaction with the system]

Below is a high-level summary of the results:

| Measure | Description | Usability Test Results |
| --- | --- | --- |
| Successful completion | Average success rate of the [28] tasks performed by voters from the general population. | [XX%] |
| Ballots cast without any errors | Count of the number of voters who were able to submit their ballot without any errors. | [X] of [XX] ballots (X%) |
| Count of assists provided | Number of voters and assists provided to voters during the usability test. | [X] Assists given to [X] Voters |
| Voting Session Time | Mean time taken per test participant to complete the process of activating, filing out and casting the ballot. | [X] Minutes |
| Voter Confidence | Mean confidence level expressed by voters that they believed they voted correctly and the system successfully recorded their votes. | [X] Confidence Level |
| Voter Satisfaction | Mean satisfaction level expressed by voters in response to a [6-question post-test satisfaction questionnaire]. | [X] Satisfaction Level |

# 2.0 Introduction

## 2.1 Full Product Description

During the usability test, the [name of product and its version] was evaluated. [This version is the same version that will be provided to the Voting System Test Laboratory].

Designed to present ballots to voters throughout the U.S. and collect voter responses, the [product] consists of [description of product and how it is used].

The [product] is typically used in federal, state, and local elections and is set up in designated voting locations. The usability testing attempted to simulate these environmental conditions and users’ real-world context of use.

## 2.2 Test Objectives

The usability test objectives include:

* [To assess the effectiveness of the [product] by measuring the abilities of users to successfully complete and submit a ballot.]
* [To assess the efficiency of the product by measuring the average time to complete a voting session.]
* [To assess the user satisfaction of the system by measuring average voter confidence.]

# 3.0 Method

## 3.1 Participants

Participants were recruited by [insert description of how participants were recruited and whether or not participants were compensated for their time].

A total of [XX] voters, with a varying mix of backgrounds and demographic characteristics, were selected to participate in the usability test. All participants were over the age of 18, eligible to vote in the U.S., and able to communicate in English.

Please see Appendix [A] for a full spreadsheet of participant demographics.

#### Breakdown by demographics for [XX] total participants

[ Add columns or comments about subsets of participants such as voters with different types of disabilities or using different access or language features.]

|  |  |  |
| --- | --- | --- |
| Demographic | All Participants |  |
| Sex | [X] Men  [X] Women |  |
| Age | [X] 18-24 years  [X] 25-34 years  [X] 35-44 years  [X] 45-54 years  [X] 55-69 years  [X] 70+ years |  |
| Education | [X] Less than high school  [X] High school  [X] Some college  [X] College degree  [X] Graduate/professional degree |  |
| Race/Ethnicity | [X] American Indian/Alaska Native  [X] Asian  [X] Black/African-American  [X] Hispanic/Latino  [X] Pacific Islander  [X] White/Caucasian  [X] Other |  |
| Geographic Distribution | [X] Area  [X] Area  [X] Area |  |
| Years of Voting Experience | [X] None  [X] Less than 2 years  [X] 2-5 years  [X] 6-10 years  [X] 11-20 years  [X] 20+ years |  |
| Number of elections in the past 4 years | [X] None  [X] 1-2  [X] 3-5  [X] 6+ |  |

## 3.2 Context of Use in the Test

### 3.2.1 Tasks

During the usability test, participants were instructed to vote in a simulated election consisting of [one] test ballot with [20] contests, including:

* Federal, state, and local contests
* Partisan and nonpartisan contests
* Single member and multimember contests
* Retention races
* Constitutional amendments
* Referenda and ballot initiatives

[Our usability testing team chose to use the test ballot created by NIST in order to cover all of the possible errors it incorporates].

Using this ballot, participants were asked to perform [28] tasks that were selected to model typical ballots from around the country, as well as to thoroughly test the voting system’s capabilities and usability, including:

* [Voting for names at various locations within a list of names
* Voting a partial slate in a multimember contest
* Skipping elements of a ballot
* Write-in votes]

Participants were instructed on how to vote and were asked to perform the tasks without assistance. A task was considered successful if the participant was able to cast a vote in a way that matched the instructions.

Data was collected for each task, including [successful completions, time to complete each task, number of errors on the task, number of assists provided, and voter confidence for each task].

Please see Appendix [B] for the test ballot.

### 3.2.2 Test Location

The [product] is intended to be used at designated polling locations across the U.S., including schools, libraries, churches and other public facilities large enough to house multiple voting stations.

In order to simulate this environment, the test was conducted at [insert location and description of location].

### 3.2.3 Voting Environment

During an actual election, voters are expected to use the voting system provided at the polling location. Voters may have experience with a wide-range of systems or may only have experience with one type of system.

During the usability test, all participants were instructed to use [product and release or version] just as if this system was implemented at their local polling location.

#### 3.2.3.1 Display Devices

The [product] uses [insert description of the display including, but not limited to, screen size, resolution and color settings, etc. If print-based, include the media size and print resolution.]

#### 3.2.3.2 Audio Devices

The [product] uses [insert description of audible cues if provided by the system.]

#### 3.2.3.3 Input Devices

During the test, participants used [insert description of any input devices, including but not limited to, assistive technology devices to accommodate voters with disabilities].

### 3.2.4 Test Administrator Tools

During the usability test, various tools were used to facilitate the test sessions, including:

* [Informed Consent (See Appendix [C])]
* [Instructions for Participants (See Appendix [D])]
* [Post-test Satisfaction Questionnaire (See Appendix [E])]

Participants’ votes were recorded by the system, similar to a real-world election. Test facilitators used a [stopwatch] to time voter sessions.

## 3.3 Methodology

During the usability test, participants interacted with the [product(s)]. Each participant used the system in the same location and was provided with the same ballot and instructions.

The system was evaluated for effectiveness, efficiency and satisfaction. To evaluate these factors, the usability team collected data on:

* + [Number of ballots successfully submitted/completed]
  + [Percent of tasks completed without any errors]
  + [Count of assists provided]
  + [Time to complete the voting session]
  + [Voters’ confidence that they had used the system correctly]
  + [Voters’ satisfaction with the system]

Additional information about the various measures and associated metrics can be found in the section on Usability Metrics.

### 3.3.1 Procedure

Upon arrival, participants were greeted and asked to complete a [Pre-Test Questionnaire (See Appendix [E])] to ensure that they qualified for the test. Participants who did not meet the qualifications were thanked for their time.

Participants meeting the qualifications were asked to review and sign an [Informed Consent (See Appendix [C])], which described their rights during the study. Participants were than escorted to a voting system and given the following instructions:

[“Please attempt to vote exactly as described on the following pages. Once you start, we will not be able to help you. Please do the best you can. If you are stuck and cannot continue, please inform the administrator.”]

During the usability test, test facilitators observed users’ interactions [(from a distance)] and monitored each test session with a [stop watch]. When the participants finished the test, they were asked to complete a [Post-Test Questionnaire (See Appendix [E])].

At the conclusion of the test, participants were thanked for their time and compensated $[XX].

[Two] staff members participated in this test, a [usability test administrator] and a [data logger]. [One person greeted each participant as they arrived, administered the Pre-Test Questionnaire and gave the participant the voting instructions. A second person escorted participants to the voting system, timed the participant during the session, and then escorted the person back to the greeter, who gave users the Post-Test Questionnaire, compensated users for their time, and thanked each individual for their participation.]

### 3.3.2 Participant General Instructions

The participants were instructed that they would work along during the test, but that [they could ask for the same sort of assistance or the same sort of questions they might ask an election worker].

### 3.3.3 Participant Task Instructions

Participants were also provided with instructions on how to vote in the mock election. These instructions were provided to users [describe – on paper or orally or a mix]

See Appendix [D] for the instructions for participants.

## 3.4 Usability Metrics

The usability test collected various metrics for effectiveness, efficiency and satisfaction.

| **Name** | **Measure** | **Description** |
| --- | --- | --- |
| Effectiveness: Completion Rate | Ballots successfully submitted/completed | Percentage of test participants who were able to complete the process of voting and cast their ballots so that their ballot choices were recorded by the system.  Failure to cast a ballot might involve problems such as a voter simply “giving up” during the voting session because of an inability to operate the system, or a mistaken belief that the casting has been successful. |
| Effectiveness: Errors | Tasks completed according to the instructions without any errors | Percentage of tasks that were completed without any errors. An error might involve a voter selecting the wrong candidate or failing to successfully add a write-in candidate, where instructed to do so. |
| Effectiveness: Assists | Number of participants needing assists | Count and percentage of the number of participants needing assists |
| Effectiveness: Assists | Count of assists provided | Count of the number of times assistance was given to participants.  Tasks that were completed with the assistance of the test facilitator were recorded as a failure. |
| Efficiency: Time on task | Average session time | Mean time taken per test participant to complete the process of activating, marking, and casting the ballot, both overall and by interaction mode |
| Satisfaction: Satisfaction Rating | Average voter satisfaction | Mean satisfaction level expressed by voters in response to a [6-question post-test satisfaction questionnaire]. |
| Satisfaction: Confidence | Average voter confidence | Mean confidence level expressed by voters that they believed they voted correctly and the system successfully recorded their votes. |

# 4.0 Results

## 4.1 Data Analysis

To analyze the data, each ballot was scored for [completeness, accuracy, errors, number of assists, and time to complete. Errors included missing votes, incorrect votes and unintended votes (votes in contests where the participants were instructed not to vote).

* For single member elections, retention races, constitutional amendments and ballot initiatives, only one error per task was counted.
* For multimember elections, the maximum number of errors was set to the number of candidates to be elected.]

In addition, the test team analyzed [voters’ satisfaction and confidence using various post-test questionnaires].

## 4.2 Presentation of the Results

This section details the performance results for [effectiveness (completion rate, errors, assists), efficiency (time on task) and satisfaction (satisfaction and confidence rating)].

| **Name** | **Measure** | **Results** |
| --- | --- | --- |
| Effectiveness: Completion Rate | Ballots successfully submitted/completed | Of the [XX] participants included in the test, [XX] were able to successfully cast their ballot. |
| Effectiveness: Errors | Tasks completed according to the instructions without any errors | Of the [28] tasks that could have been completed, [XX%] were successfully completed without errors.  During the testing, a total of [XX] errors were made by the participants  [XX] ballots were cast with no errors. |
| Effectiveness: Assists | Number of participants needing assists | [XX] [x%] of the participants needed assists |
| Effectiveness: Assists | Count of assists provided | A total of [XX] assists were provided to those participants. |
| Efficiency: Time on task | Average session time | The average session time was [XX] seconds. |
| Satisfaction: Satisfaction Rating | Average voter satisfaction | [ Describe the satisfaction rating ] |
| Satisfaction: Confidence | Average voter confidence | [ Describe confidence results and rating ] |

More detailed results can be found in Appendix [F].

# 5.0 Conclusion

[The conclusion describes the results of the testing, including any performance-based findings and recommendations.]

# Appendixes

Appendixes A - E to the CIF usability test report include detailed participant demographics, all of the forms and surveys used in the test, and both the instructions given to the participants and an image or specifications for the ballots used.

## Appendix A: Participant Demographics

## Appendix B: Informed Consent

## Appendix C: Post Test Satisfaction Questionnaire

## Appendix D: Test Ballot Specification

## Appendix E: Instructions for Participants

## Appendix F: Results

While Voting Manufacturers are not required by the VVSG or CIF to include detailed usability findings (such as specific problems that occurred) and recommendations for improvement. However, it is recommended that such information is included at the discretion of the Manufacturer, as it can provide helpful information about the overall performance and deployment of their product.