



## **EAC Decision on Request for Interpretation 2013-04 (Usability Testing)**

**2005 VVSG Volume I, Section 3.1.1, 3.2.2.1a, 3.2.2.2a & 3.2.3a**

***Date:***

June 13, 2013

***Question:***

How should voting system manufacturers interpret the somewhat vague requirements regarding usability testing contained in Section 3.1.1 of the 2005 VVSG?

***Section of Guidelines:***

### **3.1.1 Usability Testing**

The vendor shall conduct summative usability tests on the voting system using individuals representative of the general population. The vendor shall document the testing performed and report the test results using the Common Industry Format. This documentation shall be included in the Technical Data Package submitted to the EAC for national certification.

*Discussion:* Voting system developers are required to conduct realistic usability tests on the final product. For the present, vendors can define their own testing protocols. Future revisions to the *Guidelines* will include requirements for usability testing that will provide specific performance benchmarks.

### **3.2.2.1 a Partial Vision**

The vendor shall conduct summative usability tests on the voting system using partially sighted individuals. The vendor shall document the testing performed and report the test results using the Common Industry Format. This documentation shall be included in the Technical Data Package submitted to the EAC for national certification.

### **3.2.2.2 a Blindness**

The vendor shall conduct summative usability tests on the voting system using individuals who are blind. The vendor shall document the testing performed and report the test results using the Common Industry Format. This documentation shall be included in the Technical Data Package submitted to the EAC for national certification.

### 3.2.3 a Dexterity

The vendor shall conduct summative usability tests on the voting system using individuals lacking fine motor control. The vendor shall document the testing performed and report the test results using the Common Industry Format. This documentation shall be included in the Technical Data Package submitted to the EAC for national certification.

#### **Discussion:**

Summative Usability Test reports submitted to the EAC and included in the Technical Data package pursuant to the requirements of Section 3.1.1, 3.2.2.1a, 3.2.2.2a and 3.2.3a of the 2005 VVSG have generally been inadequate to effectively communicate any true determination of the usability of a voting system for the wide variety of abilities represented in the general voting population. This RFI provides additional information to voting system manufacturers to better interpret and define the phrase “*individuals representative of the general population.*” This document also includes as an attachment the NIST modified CIF template for voting system manufacturers. Information contained in this RFI was taken from the NIST document “**Guidelines on How to Complete the Modified CIF Template for Voting Manufacturers.**” (*Please note that NIST developed the template and guidance documents for VVSG 2.0 so the requirement. numbering scheme is different and includes requirements for alternative language and pollworker testing. This document is provided for guidance purposes only.*)

The Modified CIF Template requires voting system manufacturers to list the number and types of participants included in the usability test. These participants must provide a representative sample of the voting population. To comply with the VVSG requirements noted above, this section shall include:

- Total number of participants tested
- Types of user groups tested:
  - Voters from the general population.
  - Voters with low vision.
  - Voters who are blind.
  - Voters with dexterity disabilities.
- Key characteristics and demographics of the participants. This information can be expressed in a table, a bulleted list or even in a graph/chart.

After adequately describing the voters who participated in the usability test, it is important to note how these users were selected. Manufacturers should describe their recruiting strategies and detail any compensation given to participants. Voting system manufacturers shall also describe how the voters were selected and their recruiting strategy to find test participants matching their target profile. Any differences between the users profiled as recruits and the users who participated in the actual study, should be noted as well.

## Specific Guidance

- ✓ Voting System Manufacturers shall recruit at least eight test participants within each user group, including at least eight general voters, eight voters with low vision, eight blind voters, and eight voters with dexterity disabilities. Using fewer than eight participants makes it difficult to ascertain issues with the product because of the variability between subjects. Recruiting people with disabilities may actually be easier than expected because of the high rate of civic engagement within the disability community. Places to look for participants with disabilities include the following:
  - Organizations for specific disabilities or conditions
  - Cross-disability organizations
  - Mailing lists
  - College and university programs for students with disabilities
  - Local disability-related support groups
  - Local or regional government rehabilitation or disability services departments
  - Seniors organizations and local senior centers
  - Independent living organizations
  
- ✓ Although a minimum of eight participants is required, it is strongly suggested that test administrator(s) consider testing with larger numbers of voters in order to gather additional data to support the study's conclusions. For greater statistical analysis, studies with 30 or more users are recommended. In addition, the initial recruitment should target at least 10 - 12 participants in order to ensure that at least 8 individuals are able to complete the testing sessions.
  
- ✓ Not only is it important to recruit a sufficient sample size, but it is also crucial to recruit as representative a sample as possible. Manufacturers should recruit a mix of voters including users of different ages, genders, levels of education, ethnicity, voting experience, geography, etc. Detailed tables of participant demographics should be included as an appendix to the test report.

### **Conclusion:**

This RFI is provided to improve the content of the Summative Usability Test Reports received by the EAC, to more closely match the intentions of Section 3.1.1, 3.2.2.1a, 3.2.2.2a and 3.2.3a of the VVSG and to prepare the voting industry for the more rigorous requirements related to usability in future versions of the VVSG. Most importantly, if a voting system is not usable by the vast majority of voters, security, accuracy and auditability of the system are also compromised. All future usability test reports submitted

to the EAC shall follow the guidance and interpretation provided in this document and the accompanying materials.

***Effective Date:***

Effective immediately for all systems without an approved application.

# MODIFIED CIF TEMPLATE FOR VOTING SYSTEM MANUFACTURERS

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## INTENDED AUDIENCE

This document provides a template for the modified version of *ISO/IEC 25062:2006, the Common Industry Format (CIF)* usability test report. This modified version of the CIF has been specifically tailored for voting manufacturers and is intended to be used by voting manufacturers' usability test administrator(s) and data logger(s).

This template has been created to enable voting manufacturers to effectively communicate the results of usability testing.

In addition to this template, a set of guidelines on how to complete the modified CIF template has been created to assist usability test administrator(s) and data logger(s) in developing a usability report.

## INTENDED PURPOSE OF THIS DOCUMENT

This template has been prepared to help voting manufacturers meet the Voluntary Voting System Guidelines (VVSG) developed by the Technical Guidelines Development Committee (TGDC).

These guidelines require that voting manufactures conduct usability testing with:

- Voters from the general population (Section 3.2.1.2)
- Voters who need alternative languages (Section 3.2.7-A.4)
- Voters with low vision (Section 3.3.2-A)
- Voters who are blind (Section 3.3.3-A)
- Voters with dexterity disabilities (Section 3.3.4-A)
- Poll Workers (Section 3.2.8.1-B)

NOTE: This template is an example of the study conducted with voters from the general population (Section 3.2.1.2). It must be tailored to report the results of the studies for other participant groups.

In addition, the VVSG requires that “manufacturers conduct summative usability testing on the voting system using individuals who are representative” of the population being tested and that results shall be reported using the Common Industry Format (CIF).<sup>1</sup>”

This document provides a modified version of the CIF to assist voting manufactures in meeting this requirement.

## STRUCTURE OF THIS DOCUMENT

This template includes sample content for each section of the modified CIF (and any related subsections). The content provided in this document is just a sample. This template includes the following sections:

- 1.0 Executive Summary
- 2.0 Introduction
- 3.0 Method
- 4.0 Results
- 5.0 Conclusion
- 6.0 Appendices

In addition to these sections, the modified CIF shall also include a title page. A sample title page has been included on the following page.

## HOW TO USE THIS DOCUMENT

This document is based on ISO/IEC 25062:2006 Common Industry Format (CIF), a format used to report the results of summative usability testing. Before using this document, you must become familiar with this standard. ISO/IEC 25062:2006 can be purchased from:

[http://www.iso.org/iso/iso\\_catalogue/catalogue\\_tc/catalogue\\_detail.htm?csnumber=43046](http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=43046).

It is important to note that the numbering format included in this template is identical to the numbering used in “Guidelines on How to Complete the Modified CIF Template for Voting Manufacturers” document that provides guidelines and instructions for completing the modified CIF template for voting manufacturers.

When completing the modified CIF template, it is highly recommended that voting manufacturers, their usability test administrator(s) and their data logger(s) refer to the instructions and guidance in order to properly complete this template.

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<sup>1</sup> Voluntary Voting System Guidelines Recommendations to the Election Assistance Commission, Aug. 2007

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. Gray background text (bounded in square brackets) needs to be replaced by the manufacturer’s supplied information. For detailed information about how to complete this template, please refer to the “Guidance on How to Complete the Modified CIF Template for Voting Manufacturers”.

# 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 test, [XX] voters from the general population 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

The test ballot developed by the National Institute of Standards and Technology (NIST), was used to simulate the tasks that users will be asked to perform during the usability tests conducted by the Voting System Test Laboratory.

This ballot includes [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
- Write-in votes

During the usability test, participants worked alone and were [not] provided assistance or help by the test administrators.

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 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]

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%]
Number of 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
Count of assists provided	Count of the number of assists provided to voters during the usability test.	[X] Number of Assists
Average Session Time	Mean time taken per test participant to complete the process of activating, filing out and casting the ballot.	[X] Minutes
Average Voter Confidence	Mean confidence level expressed by voters that they believed they voted correctly and the system successfully recorded their votes.	[X] Confidence Level
Average Voter Satisfaction	Mean satisfaction level expressed by voters in response to a [10-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.

The usability test specifically focused on [product features].

## 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

A total of [XX] general voters, with a varying mix of backgrounds and demographic characteristics, were selected to participate in the usability test.

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

All participants were over the age of 18, eligible to vote in the U.S., and fluent in English. The following tables show additional participant demographics.

#### Gender

Men	[X]
Women	[X]
<b>TOTAL (participants)</b>	[X]

#### Age

18-24	[X]
25-34	[X]
35-44	[X]
45-54	[X]
55+	[X]
<b>TOTAL (participants)</b>	[X]

#### Education

High School	[X]
Some College	[X]
College Degree	[X]
Graduate Degree	[X]
<b>TOTAL (participants)</b>	[X]

**Race:**

African American	[X]
Caucasian	[X]
Hispanic	[X]
<b>TOTAL (participants)</b>	[X]

**Geographic Distribution:**

[Area]	[X]
[Area]	[X]
[Area]	[X]
<b>TOTAL (participants)</b>	[X]

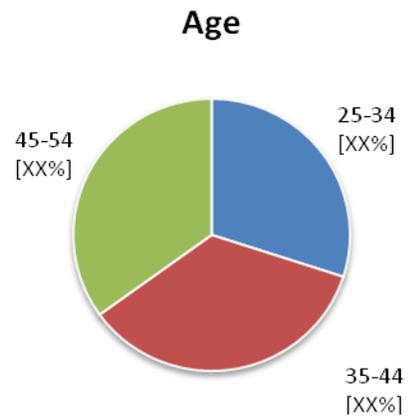
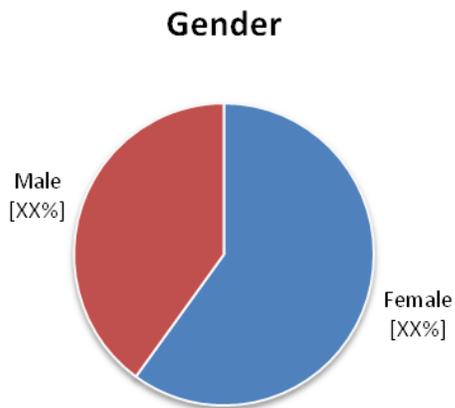
**Years of Voting Experience:**

None	[X]
Less than 2 Years	[X]
2-5 Years	[X]
6-10 Years	[X]
11-20 Years	[X]
More than 20 Years	[X]
<b>TOTAL (participants)</b>	[X]

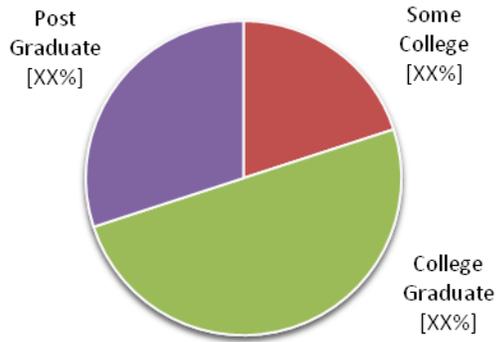
**Number of Local, State or Federal Elections Voted in Last 2 Years:**

0	[X]
1-2	[X]
3-5	[X]
More than 6	[X]
<b>TOTAL (participants)</b>	[X]

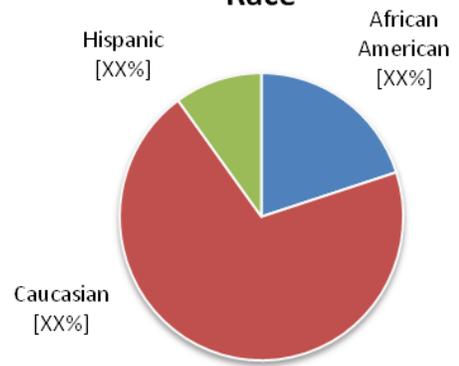
Following is a graphical presentation of participant characteristics:



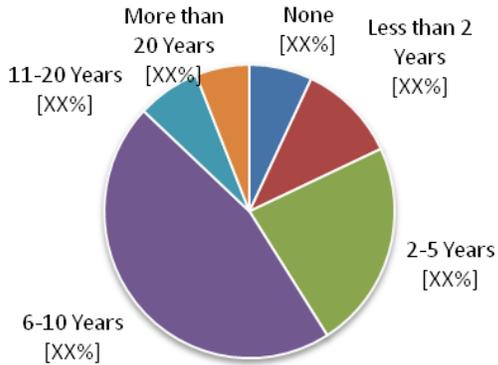
### Education



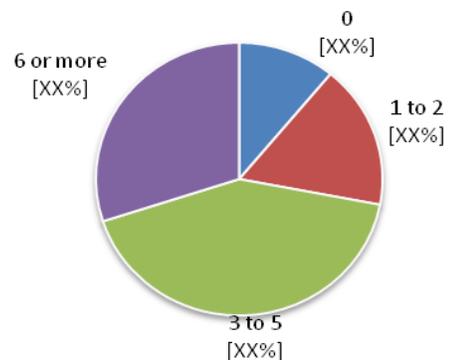
### Race



### Years of Voting Experience



### Number of Elections Voted In During The Last Two Years



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

## 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, same ballot in order to simulate the tasks that users will be asked to perform during the usability tests conducted by the Voting System Test Laboratory].

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, number and type 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 EXPERIMENTAL DESIGN

During the usability test, participants interacted with only one voting system, the [product]. 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 then 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]. Once the user finished the test, he/she was 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

During the usability sessions, the participants were instructed that they should [work alone and that the test facilitator would not be able to assist or answer any questions during the study].

### 3.3.3 PARTICIPANT TASK INSTRUCTIONS

Participants were also provided with written instructions on how to vote in the mock election. These instructions were provided to users on three sheets of paper and are included in Appendix [D].

## 3.4 USABILITY METRICS

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

### 3.4.1 EFFECTIVENESS

To measure the effectiveness of the [product], the testing team measured [voters' completion rate, errors encountered and assists provided].

#### 3.4.1.1 COMPLETION RATE

To measure voters' completion rate, the testing team analyzed the [number of ballots successfully submitted/completed].

Measure	Description
<b>Ballots successfully submitted/completed</b>	<i>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.</i>

#### 3.4.1.2 ERRORS

To measure voters' error rate, the testing team calculated the [percent of tasks completed without any errors].

Measure	Description
<b>Tasks completed without any errors</b>	<i>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.</i>

### 3.4.1.3 ASSISTS

To measure voters' abilities to successfully use the [product] without assistance, the testing team recorded the [type of assistance provided].

Measure	Description
<b>Count of assists provided</b>	<p><i>Count of the number of times assistance was given to participants. Each assist was also categorized into one of three categories:</i></p> <ul style="list-style-type: none"><li>- <i>Technical assistance to help voters recover from a system error or bug</i></li><li>- <i>Instructional assistance to provide clarification on the test or task instructions</i></li><li>- <i>Task assistance to help voters complete a task</i></li></ul> <p><i>Tasks that were completed with the assistance of the test facilitator were recorded as a failure.</i></p>

### 3.4.2 EFFICIENCY

To measure the efficiency of the [product], the testing team measured [voters' average time to complete the testing session].

#### 3.4.2.1 TIME ON TASK

To measure voters' efficiency with the [product], the testing team analyzed the [time it took participants to complete the testing session].

Measure	Description
<b>Average session time</b>	<p><i>Mean time taken per test participant to complete the process of activating, filing out and casting the ballot.</i></p>

### 3.4.3 SATISFACTION

To measure voters' satisfaction with the [product], the testing team measured [voters' confidence that they had used the system correctly and voters' satisfaction with the system].

#### 3.4.3.1 SATISFACTION RATING

To measure voters' satisfaction with the [product], the testing team analyzed [average voter satisfaction and average voter confidence].

Measure	Description
<b>Average voter satisfaction</b>	<p><i>Mean satisfaction level expressed by voters in response to a [10-question post-test satisfaction questionnaire].</i></p>
<b>Average voter confidence</b>	<p><i>Mean confidence level expressed by voters that they believed they voted correctly and the system successfully</i></p>

Measure	Description
	<i>recorded their votes.</i>

## 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 in the slate. Therefore, an incorrect vote in a multimember contest was counted as a single error (as opposed to being counted as two errors – one for failing to vote as intended and one for voting an unintended vote).]

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

### 4.2 PRESENTATION OF THE RESULTS

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

Specifically, this section will include:

- [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]

#### 4.2.1 PERFORMANCE RESULTS

Of the [XX] participants included in the test, [XX] were able to successfully cast their ballot. 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, while [XX] ballots were cast with no errors.

[XX] assists were provided during the usability testing; of these assists, [XX] were technical or system recovery assistance, [XX] were instructional assistance, and [XX] were task assistance.

The average session time was [XX] seconds.

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

#### 4.2.2 SATISFACTION RESULTS

Following the completion of the usability tasks, voters completed a [10-question satisfaction questionnaire (See Appendix [E])]. Based on voters' responses to these questions, a satisfaction rating, ranging from [0 to 100], was calculated. The average satisfaction rating of the [product] was [XX].

[In addition, voters gave the system a confidence rating of [XX].]

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

## 5.0 CONCLUSION

[Based on the results of the testing, various usability issues were uncovered and a series of performance-based findings and recommendations were developed. The product development team is currently in the process of implementing the system improvements in order to resolve the usability issues uncovered and to help improve voters' overall success and satisfaction using [product]. ]

NOTE: Voting Manufacturers are not required to include a copy of their usability findings and recommendations, nor it is required by the CIF. Manufacturers, their test administrator(s) or data logger(s) may choose to include this information, at their discretion.

## APPENDIX A: PARTICIPANT DEMOGRAPHICS

Following is a full list of participant demographics: [NOTE: These demographics are just a sample set of demographics and are not meant to imply any requirements or guidelines.]

Demographics								
Participant	Gender	Race	Education	Age	Years Voting	Number Elections Voted	Types of Voting Machines	Vote in Non-gov't Elections
1	Female	African American	Some College	25-34	None	0	Never	No
2	Female	Caucasian	College Graduate	25-34	2-5 years	1 to 2	Mechanical	No
3	Male	Caucasian	College Graduate	45-54	6-10 years	3 to 5	Touch	Yes
4	Female	Hispanic	Post Graduate	45-54	6-10 years	6 or more	Touch	Yes
5	Female	Caucasian	High School	25-34	2-5 years	1 to 2	Optical Scan	No
6	Male	Hispanic	Some College	45-54	11-20 years	6 or more	Optical Scan	Yes
7	Male	Caucasian	Post Graduate	55+	6-10 years	6 or more	Touch	No
8	Male	African American	College Graduate	45-54	6-10 years	6 or more	Optical Scan	Yes

## APPENDIX B: TEST BALLOT SPECIFICATION

[NOTE: Voting Manufacturers are not required to use this ballot and may use any ballot, at their discretion.]

### INFORMATION APPLICABLE TO WHOLE BALLOT

Date and Time	2004-nov-02, 7:00 AM to 8:00 PM
State	Maryland
County	Madison
Party Line Voting Method	Enabled for partisan contests

### INFORMATION APPLICABLE TO EVERY CONTEST

Full-term or partial-term election	Full-term
Voting Method	Simple vote for N candidate(s) - (i.e. no ranked voting)

### CONTEST #0:

Title of Contest	Straight Party Vote
Partisanship	Partisan
Minimum Votes Allowed	0
Maximum Votes Allowed	1
Maximum Write-in Votes Allowed	0

- **Option #0.1:** Blue
- **Option #0.2:** Yellow
- **Option #0.3:** Purple
- **Option #0.4:** Orange
- **Option #0.5:** Pink
- **Option #0.6:** Gold
- **Option #0.7:** Gray
- **Option #0.8:** Aqua
- **Option #0.9:** Brown

**CONTEST #1:**

Title of Office	President and Vice-President of the United States
District of Office	United States
Partisanship	Partisan
Minimum Votes Allowed	0
Maximum Votes Allowed	1
Maximum Write-in Votes Allowed	0

- **Candidate #1.1:** Joseph Barchi and Joseph Hallaren / Blue
- **Candidate #1.2:** Adam Cramer and Greg Vuocolo / Yellow
- **Candidate #1.3:** Daniel Court and Amy Blumhardt / Purple
- **Candidate #1.4:** Alvin Boone and James Lian / Orange
- **Candidate #1.5:** Austin Hildebrand-MacDougall and James Garritty / Pink
- **Candidate #1.6:** Martin Patterson and Clay Lariviere / Gold
- **Candidate #1.7:** Elizabeth Harp and Antoine Jefferson / Gray
- **Candidate #1.8:** Charles Layne and Andrew Kowalski / Aqua
- **Candidate #1.9:** Marzena Pazgier and Welton Phelps / Brown

**CONTEST #2:**

Title of Office	US Senate
District of Office	Statewide
Partisanship	Partisan
Minimum Votes Allowed	0
Maximum Votes Allowed	1
Maximum Write-in Votes Allowed	1

- **Candidate #2.1:** Dennis Weiford / Blue
- **Candidate #2.2:** Lloyd Garriss / Yellow
- **Candidate #2.3:** Sylvia Wentworth-Farthington / Purple
- **Candidate #2.4:** John Hewetson / Orange
- **Candidate #2.5:** Victor Martinez / Pink
- **Candidate #2.6:** Heather Portier / Gold
- **Candidate #2.7:** David Platt / Gray

**CONTEST #3:**

Title of Office	US Representative
District of Office	6th Congressional District
Partisanship	Partisan
Minimum Votes Allowed	0
Maximum Votes Allowed	1
Maximum Write-in Votes Allowed	1

- **Candidate #3.1:** Brad Plunkard / Blue
- **Candidate #3.2:** Bruce Reeder / Yellow
- **Candidate #3.3:** Brad Schott / Purple
- **Candidate #3.4:** Glen Tawney / Orange
- **Candidate #3.5:** Carroll Forrest / Pink

**CONTEST #4:**

Title of Office	Governor
District of Office	Statewide
Partisanship	Partisan
Minimum Votes Allowed	0
Maximum Votes Allowed	1
Maximum Write-in Votes Allowed	1

- **Candidate #4.1:** Charlene Franz / Blue
- **Candidate #4.2:** Gerard Harris / Yellow
- **Candidate #4.3:** Linda Bargmann / Purple
- **Candidate #4.4:** Barbara Adcock / Orange
- **Candidate #4.5:** Carrie Steel-Loy / Pink
- **Candidate #4.6:** Frederick Sharp / Gold
- **Candidate #4.7:** Alex Wallace / Gray
- **Candidate #4.8:** Barbara Williams / Aqua
- **Candidate #4.9:** Althea Sharp / Brown
- **Candidate #4.10:** Douglas Alpern / Independent
- **Candidate #4.11:** Ann Windbeck / Independent
- **Candidate #4.12:** Mike Greher / Independent
- **Candidate #4.13:** Patricia Alexander / Independent
- **Candidate #4.14:** Kenneth Mitchell / Independent
- **Candidate #4.15:** Stan Lee / Independent
- **Candidate #4.16:** Henry Ash / Independent
- **Candidate #4.17:** Karen Kennedy / Independent
- **Candidate #4.18:** Van Jackson / Independent
- **Candidate #4.19:** Debbie Brown / Independent
- **Candidate #4.20:** Joseph Teller / Independent
- **Candidate #4.21:** Greg Ward / Independent
- **Candidate #4.22:** Lou Murphy / Independent
- **Candidate #4.23:** Jane Newman / Independent
- **Candidate #4.24:** Jack Callanann / Independent
- **Candidate #4.25:** Esther York / Independent
- **Candidate #4.26:** Glen Chandler / Independent
- **Candidate #4.27:** Marcia Colgate / Independent
- **Candidate #4.28:** Leslie Porter / Independent
- **Candidate #4.29:** Molly Dalton / Independent
- **Candidate #4.30:** David Davis / Independent
- **Candidate #4.31:** May Peterson / Independent
- **Candidate #4.32:** Patricia Dawkins / Independent
- **Candidate #4.33:** Suzanne Adams / Independent
- **Candidate #4.34:** Mary Miller / Independent
- **Candidate #4.35:** Rosalind Leigh / Independent
- **Candidate #4.36:** Elaine Henry / Independent
- **Candidate #4.37:** Gail Moses / Independent
- **Candidate #4.38:** Daniel Jones / Independent
- **Candidate #4.39:** Don Maybee / Independent
- **Candidate #4.40:** Lillian Cohen / Independent
- **Candidate #4.41:** Richard Mitchell / Independent
- **Candidate #4.42:** Pat York / Independent
- **Candidate #4.43:** Linda Rappaport / Independent
- **Candidate #4.44:** Mike Porter / Independent
- **Candidate #4.45:** Margaret Sharp / Independent
- **Candidate #4.46:** Cathy Steele / Independent
- **Candidate #4.47:** Lawrence Smith / Independent
- **Candidate #4.48:** Bill Kendrick / Independent
- **Candidate #4.49:** Fred Stein / Independent
- **Candidate #4.50:** Jerry Cole / Independent

**CONTEST #5:**

Title of Office	Lieutenant-Governor
District of Office	Statewide
Partisanship	Partisan
Minimum Votes Allowed	0
Maximum Votes Allowed	1
Maximum Write-in Votes Allowed	1

- **Candidate #5.1:** Chris Norberg / Blue
- **Candidate #5.2:** Anthony Parks / Yellow
- **Candidate #5.3:** Luis Garcia / Purple
- **Candidate #5.4:** Charles Qualey / Orange
- **Candidate #5.5:** George Hovis / Pink
- **Candidate #5.6:** Burt Zirkle / Gold
- **Candidate #5.7:** Brenda Davis / Gray
- **Candidate #5.8:** Edward Freeman / Aqua
- **Candidate #5.9:** Paul Swan / Brown

**CONTEST #6:**

Title of Office	Registrar of Deeds
District of Office	Countywide
Partisanship	Partisan
Minimum Votes Allowed	0
Maximum Votes Allowed	1
Maximum Write-in Votes Allowed	1

- **Candidate #6.1:** Laila Shamsi / Yellow

**CONTEST #7:**

Title of Office	State Senator
District of Office	31st District
Partisanship	Partisan
Minimum Votes Allowed	0
Maximum Votes Allowed	1
Maximum Write-in Votes Allowed	1

- **Candidate #7.1:** Edward Shiplett / Blue
- **Candidate #7.2:** Marty Talarico / Yellow

**CONTEST #8:**

Title of Office	State Assemblyman
District of Office	54th District
Partisanship	Partisan
Minimum Votes Allowed	0
Maximum Votes Allowed	1
Maximum Write-in Votes Allowed	1

- **Candidate #8.1:** Andrea Solis / Blue
- **Candidate #8.2:** Amos Keller / Yellow

**CONTEST #9:**

Title of Office	County Commissioners
District of Office	Countywide
Partisanship	Partisan
Minimum Votes Allowed	0
Maximum Votes Allowed	5
Maximum Write-in Votes Allowed	5

- **Candidate #9.1:** Camille Argent / Blue
- **Candidate #9.2:** Chloe Witherspoon / Blue
- **Candidate #9.3:** Clayton Bainbridge / Blue
- **Candidate #9.4:** Amanda Marracini / Yellow
- **Candidate #9.5:** Charlene Hennessey / Yellow
- **Candidate #9.6:** Eric Savoy / Yellow
- **Candidate #9.7:** Sheila Moskowitz / Purple
- **Candidate #9.8:** Mary Tawa / Purple
- **Candidate #9.9:** Damian Rangel / Purple
- **Candidate #9.10:** Valarie Altman / Orange
- **Candidate #9.11:** Helen Moore / Orange
- **Candidate #9.12:** John White / Orange
- **Candidate #9.13:** Joe Lee / Pink
- **Candidate #9.14:** Joe Barry / Pink
- **Candidate #9.15:** Martin Schreiner / Gray

**CONTEST #10:**

Title of Office	Court of Appeals Judge
District of Office	Statewide, 4th seat
Partisanship	Non-partisan
Minimum Votes Allowed	0
Maximum Votes Allowed	1
Maximum Write-in Votes Allowed	1

- **Candidate #10.1:** Michael Marchesani

**CONTEST #11:**

Title of Office	Water Commissioners
District of Office	City of Springfield
Partisanship	Partisan
Minimum Votes Allowed	0
Maximum Votes Allowed	2
Maximum Write-in Votes Allowed	2

- **Candidate #11.1:** Orville White / Blue
- **Candidate #11.2:** Gregory Seldon / Yellow

**CONTEST #12:**

Title of Office	City Council
District of Office	City of Springfield
Partisanship	Partisan
Minimum Votes Allowed	0
Maximum Votes Allowed	4
Maximum Write-in Votes Allowed	4

- **Candidate #12.1:** Harvey Eagle / Blue
- **Candidate #12.2:** Randall Rupp / Blue
- **Candidate #12.3:** Carroll Shry / Blue
- **Candidate #12.4:** Beverly Barker / Yellow
- **Candidate #12.5:** Donald Davis / Yellow
- **Candidate #12.6:** Hugh Smith / Yellow
- **Candidate #12.7:** Reid Feister / Yellow

**RETENTION QUESTION #1:**

Wording of Question	Retain <b>Robert Demergue</b> as Chief Justice of the Supreme Court?
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**RETENTION QUESTION #2:**

Wording of Question	Retain <b>Elmer Hull</b> as Associate Justice of the Supreme Court?
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**REFERENDUM #1:**

Title of proposition	PROPOSED CONSTITUTIONAL AMENDMENT C
Wording of proposition	<p>Shall there be amendments to the State constitution intended to have the collective effect of ensuring the separation of governmental power among the three branches of state government: the legislative branch, the executive branch and the judicial branch?</p> <p>a. Article III, Section 6 of the Constitution shall be amended to read as follows:</p> <p>Section 6. Holding of offices under other governments. - Senators and representatives not to hold other appointed offices under state government. --No person holding any office under the government of the United States, or of any other state or country, shall act as a general officer or as a member of the general assembly, unless at the time of taking such engagement that person shall have resigned the office under such government; and if any general officer, senator, representative, or judge shall, after election and engagement, accept any appointment under any other government, the office under this shall be immediately vacated; but this restriction shall not apply to any person appointed to take deposition or acknowledgement of deeds, or other legal instruments, by the authority of any other state or country.</p> <p>No senator or representative shall, during the time for which he or she was elected, be appointed to any state office, board, commission or other state or quasi-public entity exercising executive power under the laws of this state, and no person holding any executive office or serving as a member of any board, commission or other state or quasi-public entity exercising executive power under the laws of this state shall be a member of the senate or the house of representatives during his or her continuance in such office.</p> <p>b. Article V of the Constitution shall be amended to read as follows: The powers of the government shall be distributed into three (3) separate and distinct departments: the legislative, the executive and the judicial.</p> <p>c. Article VI, Section 10 of the Constitution shall be deleted in its entirety.</p> <p>d. Article IX, Section 5 of the Constitution shall be amended to read as follows:</p> <p>Section 5. Powers of appointment.- The governor shall, by and with the advice and consent of the senate, appoint all officers of the state whose appointment is not herein otherwise provided for and all members of any board, commission or other state or quasi-public entity which exercises executive power under the laws of this state; but the general assembly may by law vest the appointment of such inferior officers, as they deem proper, in the governor, or within their respective departments in the other general officers, the judiciary or in the heads of departments.</p>

**REFERENDUM #2:**

Title of proposition	PROPOSED CONSTITUTIONAL AMENDMENT D
Wording of proposition	Shall there be an amendment to the State constitution concerning recovery of damages relating to construction of real property improvements, and, in connection therewith, prohibiting laws that limit or impair a property owner's right to recover damages caused by a failure to construct an improvement in a good and workmanlike manner; defining "good and workmanlike manner" to include construction that is suitable for its intended purposes; and permitting exceptions for laws that limit punitive damages, afford governmental immunity, or impose time limits of specified minimum lengths on filing lawsuits?

**REFERENDUM #3:**

Title of proposition	PROPOSED CONSTITUTIONAL AMENDMENT H
Wording of proposition	<p>Shall there be an amendment to the State constitution allowing the State legislature to enact laws limiting the amount of damages for noneconomic loss that could be awarded for injury or death caused by a health care provider? "Noneconomic loss" generally includes, but is not limited to, losses such as pain and suffering, inconvenience, mental anguish, loss of capacity for enjoyment of life, loss of consortium, and other losses the claimant is entitled to recover as damages under general law.</p> <p>This amendment will not in any way affect the recovery of damages for economic loss under State law. "Economic loss" generally includes, but is not limited to, monetary losses such as past and future medical expenses, loss of past and future earnings, loss of use of property, costs of repair or replacement, the economic value of domestic services, loss of employment or business opportunities. This amendment will not in any way affect the recovery of any additional damages known under State law as exemplary or punitive damages, which are damages allowed by law to punish a defendant and to deter persons from engaging in similar conduct in the future.</p>

**REFERENDUM #4:**

Title of proposition	PROPOSED CONSTITUTIONAL AMENDMENT K
Wording of proposition	<p>Shall there be an amendment to the State constitution authorizing Madison and Fromwit Counties to hold referenda on whether to authorize slot machines in existing, licensed parimutuel facilities (thoroughbred and harness racing, greyhound racing, and jai alai) that have conducted live racing or games in that county during each of the last two calendar years before effective date of this amendment? The Legislature may tax slot machine revenues, and any such taxes shall supplement public education funding statewide. Requires implementing legislation.</p> <p>This amendment alone has no fiscal impact on government. If slot machines are authorized in Madison or Fromwit counties, governmental costs associated with additional gambling will increase by an unknown amount and local sales tax-related revenues will be reduced by \$5 million to \$8 million annually. If the Legislature also chooses to tax slot machine revenues, state tax revenues from Madison and Fromwit counties combined would range from \$200 million to \$500 million annually.</p>

**REFERENDUM #5**

Title of proposition	BALLOT MEASURE 101: Open Primaries
Wording of proposition	Requires primary elections where voters may vote for any state or federal candidate regardless of party registration of voter or candidate. The two primary-election candidates receiving most votes for an office, whether they are candidates with no party or members of same or different party, would be listed on general election ballot. Exempts presidential nominations. Fiscal Impact: No significant net fiscal effect on state and local governments.

**REFERENDUM #6:**

Title of proposition	BALLOT MEASURE 106: Limits on Private Enforcement of Unfair Business Competition Laws
Wording of proposition	Allows individual or class action "unfair business" lawsuits only if actual loss suffered; only government officials may enforce these laws on public's behalf. Fiscal Impact: Unknown state fiscal impact depending on whether the measure increases or decreases court workload and the extent to which diverted funds are replaced. Unknown potential costs to local governments, depending on the extent to which diverted funds are replaced.

End of logical specification for Test Ballot Specification.

## APPENDIX C: INFORMED CONSENT

[NOTE: Voting Manufacturers are not required to use the following Informed Consent form and may use a combination of forms, including informed consent and non-disclosure forms, etc.]

RESEARCH DESCRIPTION: The [name of company] is conducting a study to determine how easy it is for voters to use voting systems. Usability will be measured by determining the time it takes a voter to vote, the number of errors when the vote is cast, and voter satisfaction.

You will receive written instructions on how you as a voter “want to vote”. You will be asked to vote as the paper instructs on a specific voting system. In addition to collecting your votes, there may be a camera focused on the system and your hands, but your face will not be photographed. After you cast your ballot, you will be asked for your opinion about the voting system and your voting experience. You will also be asked for demographic data to include age, gender, education level, and other experiences related to voting. This process should take you no more than 30 minutes.

CONFIDENTIALITY: All the data collected will be anonymous. The data will be used by [name of company] to evaluate the usability of the [product]. The data will not be associated with any particular individual. All of the time and error data, demographic data, and voter experience and satisfaction data will be anonymous. All of the data will only be identified and linked together by a number, and will not be linked back to an individual in any way.

You are free to withdraw from the study at any time during the experiment. In total, we expect to have approximately [XX] subjects complete the experiment.

There are no risks involved in participating in this study, nor are there any immediate benefits. The long term benefits of this study should be improved voting systems.

CONTACT INFORMATION: For questions regarding this study, please contact [Contact name, phone number and email address].

"I have read the above description of this research project. I have also spoken to the usability test facilitator who answered any questions I had about this project. I acknowledge that I have received a personal copy of this form. I agree to participate in this research and I understand that I may withdraw at any time."

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Usability Researcher: \_\_\_\_\_

Signature of Usability Researcher: \_\_\_\_\_

Date: \_\_\_\_\_

Witness: \_\_\_\_\_

Witness Signature: \_\_\_\_\_ Date: \_\_\_\_\_

## APPENDIX D: INSTRUCTIONS FOR PARTICIPANTS

[NOTE: Voting Manufacturers are not required to use these instructions and may use any instructions, at their discretion.]

### INSTRUCTIONS FOR PARTICIPANTS

In our mock election, we will be using fake names for candidates and colors for political party names. For example, you might see this:

Joe Jones/Yellow Party

Any similarity between names of candidates and real people or colors and real parties is purely coincidental.

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, inform the administrator.

Thank you.

For President and Vice President of the United States, vote for  
Adam Cramer and Greg Vuocolo

For Senator, vote for  
David Platt

For Congress, vote for  
Brad Schott

For Governor, vote for  
Cathy Steele

Do not cast a vote for  
Lieutenant Governor

For Registrar of Deeds, write in a vote for  
Christopher Christopher

For State Senator, vote for  
Edward Shiplett

For State Assemblyman, vote for  
Amos Keller

For County Commissioners, vote for the following candidates:

Camille Argent

Mary Tawa

Joe Barry

and enter write in votes for:

Dorothy Johns

Charles Blank

For Court of Appeals Judge, vote for  
Michael Marchesani

For Water Commissioner, vote for  
Orville White  
Gregory Seldon

For City Council, vote for the following candidates:  
Randall Rupp  
Carroll Shry  
Donald Davis

For Chief Justice of the Supreme Court  
Vote to keep Robert Demergue in office

For the question of retaining Justice of the Supreme Court Elmer Hull  
Do not vote

For Proposed Constitutional Amendment C  
Vote for this amendment

For Proposed Constitutional Amendment D  
Vote for this amendment

For Proposed Constitutional Amendment H  
Vote against this amendment

For Proposed Constitutional Amendment K  
Vote against this amendment

For Ballot Measure 101: Open Primaries  
Do not vote

For Ballot Measure 106: Limits on Private Enforcement of Unfair Business Competition  
Laws  
Vote for the measure

Cast your ballot

## APPENDIX E: POST TEST SATISFACTION QUESTIONNAIRE

[NOTE: Voting Manufacturers are not required to use this post-test satisfaction questionnaire and may use set of questions, at their discretion.]

Please complete the following questionnaire

1. To the best of my ability, I followed the instructions telling me how to vote

- Yes  
 No

2. I am confident I was able to vote this ballot exactly as instructed

- Agree  
 Disagree  
 Don't Know

3.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	1	2	3	4	5
I found that voting on this machine was unnecessarily difficult					
I felt confident that I used this voting machine correctly					
I think that I would need support to be able to use this voting machine					
I think that most people would learn to use this voting machine very quickly					
I thought this voting machine was easy to use					
I found using this voting machine very awkward					

4. How many years of voting experience do you have?

- None
- Less than 2 years
- 2-5 years
- 5-10 years
- 10-20 years
- More than 20 years

5. What number of elections did you vote in the past 2 years?

- 0
- 1-2
- 3-5
- 6 or more

6. Different areas in the US have used various types of voting systems over the years. Which, if any, of the following types of machines have you used?

- I have never used any voting system
- Mechanical lever –where the voter sets switches and pulls big lever
- Punch card–where the voter uses a device that punches holes in a voting card
- Touch screen/DRE–an electronic voting system where the voter touches a screen to record a vote
- Optical scan –a paper where the voter fills in a circle or oval to indicate a vote and which is checked by machine
- Paper and pencil –a paper where marks are made that are then checked by a human
- Other, please describe

7. Besides governmental elections, have you ever used any of these voting machines in other types of elections?

- Yes
- No

If yes, describe the types of elections in which you voted using a voting machine.

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8. Which of the following items do you regularly use?

- ATM machine
- Computer
- Device to record from your TV (DVD recorder, VHS recorder, other)
- Digital Camera
- Cell phone
- Self checkout at grocery or other stores



## **APPENDIX F: RESULTS**

[Insert detailed results from spreadsheet]