E-pollbooks usability:
A pilot of a usability test for e-pollbooks

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This work grew out of a project at the National Institute for Standards and Technology (NIST) to understand the usability landscape for electronic pollbooks[1] and to create a protocol for a usability test of these new election systems[2]. Before publishing the protocol, we wanted to try it out—to run sessions to test the test and make sure it would produce useful results. With funding from the MacArthur Foundation, we filled this gap and provided the results to the NIST project to improve the protocol.

The pilot test was conducted at the University of Baltimore's usability lab. We worked with two systems, running on different hardware—a tablet and a laptop. Following the protocol, participants checked in 20-25 voters, following scenarios designed to include both simple and more complex situations that poll workers face on Election Day.

This report includes both what we learned about conducting usability tests for electronic pollbooks and some thoughts about the issues we observed that contribute to the usability of these systems.

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[1] **Electronic pollbooks: usability in the polling place (draft report)**
http://civicdesign.org/wp-content/uploads/2015/06/CCD-ElectronicPollbooks-Part1-Report-15-1114.pdf

[2] **Usability test plan for electronic poll books (updated draft)** -
http://civicdesign.org/wp-content/uploads/2015/06/CCD-ElectronicPollbooks-Part2-TestPlan-15-1114.pdf

How we ran the pilot test

Summary test details

About the test	Details
Dates	Sept. 9 (pilot), Sept. 10 (system 1) and Sept. 11 (system 2), 2015
Location	University of Baltimore usability lab
Systems	Commercial systems, in use in more than one state: One tablet, one laptop

Participants	8 total – 4 using each system
	  2 potential poll workers
	  6 current poll workers (4 with 12+ elections experience)
	From Montgomery County & Baltimore, MD and Allegheny, PA

Session activities	Sessions lasted approximately 2 hours
	  Initial orientation
	  Completed check-in for 20-25 scenarios
	  Debrief interview

Scenarios	Checking in voters, including
	  Regular voters, with and without scannable ID
	  Confusing or ambiguous names
	  Voters with name or address changes
	  Voters in wrong polling place or who have already voted
	  Unregistered voters

Set up of the rooms used for the test

The usability lab at the University of Baltimore has three rooms:

- A reception area, which we used to complete routine paperwork such as the consent forms and for the initial orientation to the project.
- The session room, which we set up with a table similar to a voter check-in table at a polling place and with two cameras to capture the view from behind the participant and their face.
- An observation room, where one researcher and the system vendor representatives could watch the sessions.

The two cameras were used to both record the sessions and to enable remote observations.

E-pollbook systems used in the pilot test

We worked with two systems, running on different hardware—a tablet and a laptop—so we covered both on-screen and physical keyboards and different devices for scanning ID cards and collecting signatures.

Two companies each provided their systems and a sample database, and sent a representative to observe the tests. We covered shipping and travel costs.

Our goal was not to compare the systems, but we wanted to be sure that we saw both of the two primary platforms for these e-pollbooks and the different interaction requirements they bring.

The systems are anonymous, because the goal of this project was to test the test—not a report on the usability of the systems. However, we hoped that by observing the sessions, the companies would learn about the usability of their systems and would be able to use what they saw to improve them.

E-pollbooks systems

System characteristic	System 1	System 2
Hardware format	Laptop	Tablet
Operating system	Windows 8	iOS
Keyboard	Physical	Onscreen
Pointer	Integrated trackpad	Finger/stylus
Scanner	Trigger-style wand	Integrated camera
Signatures	Android tablet	On-screen
Printer	Bluetooth	Bluetooth
Accessories	None	Swivel stand
Voter ID required	Yes	No

The systems had slightly different capabilities and features. We allowed this because we were not aiming at a specific jurisdiction. However, given the wide variation in election laws and local procedures, it points out the challenge of comparing generic systems. Both vendors said they were able to support all of the scenarios we envisioned.

Variety of participants: current and potential poll workers

The location for the test in downtown Baltimore gave us access to current and potential poll workers in both urban and suburban areas.

We recruited both current and potential poll workers, with a range of experience and from different jurisdictions. Although poll workers tend to have regular voting habits, we also wanted participants with a good range of demographics including civic, digital, and reading literacy.

To recruit, we used social media, people identified from previous election-related projects at University of Baltimore, and personal networking. The Montgomery County, MD election office also sent out emails to their poll workers and several responded despite the distance to Baltimore.

Although we did not ask questions about personal demographics such as family income, education, or reading literacy, our informal notes confirm that we had participants from a wide range of socio-economic backgrounds.

We also observed a wide range of familiarity and competency with computer technology, from professional technology users to some with no regular personal use. Importantly for the use of e-pollbooks, participants also had a wide variety of approaches to searching a database, including procedures taught as part of their poll worker training.

All but one (the participant from Pennsylvania) had all used an electronic poll book, but not one with the capability for scanning an ID or digital signature capture.

Participant summary

Demographic	Participant mix
Poll working experience	3 potential poll workers (all regular voters)
	3 lead poll workers (experience in 12+ elections)
	2 poll workers (experience in 6+ elections)
Jurisdictions[3]	Montgomery County, MD
	Baltimore County, MD
	Baltimore City, MD
	Allegheny, PA
Digital literacy	2 with high ability or experience
	3 with good ability or experience
	3 with low ability or experience

[3] Neither state requires ID to vote, though Pennsylvania enacted strict ID requirements that were struck down by the State Supreme Court. Source: **NSCL.org**

Scenarios for voter check-in

We started with the preliminary list of scenarios in the draft test protocol. To prepare for testing with each system we identified voters in the database who met the requirements of the scenario. For example, one task calls for a poll worker to correctly find one of two voters with the same name – a Jr. and a Sr. Other scenarios needed voters in the wrong precinct, or who had been sent an absentee ballot.

To prepare the scenarios for use we:

- Organized them in an order that started with easier scenarios and progressed to more difficult ones.
- Created any materials needed, including a facsimile of a scannable voter ID, materials for proof of address, etc.
- Created a small card for the person playing the voter with a script for them to use, and instructions about how to reply to any questions the poll worker might ask them.

The complete set of scenarios, as revised following the pilot test, is in the test plan created for NIST:

Usability test plan for electronic poll books (updated draft) - http://civicdesign.org/wp-content/uploads/2015/06/CCD-ElectronicPollbooks-Part2-TestPlan-15-1114.pdf

Running the session

The sessions lasted approximately two hours. Participants were paid $100 for their time. This is slightly higher than the typical rate of pay for a poll worker on Election Day, but we felt it represented a fair incentive for work that amounted to a half day of their time, when transportation time was considered.

The session was organized in several activities:

- When the participants arrived, the lab receptionist checked them in, reviewed their demographic information and poll working experience, and had them sign the consent-to-participate forms.
- Still in the reception room, a researcher (one who would *not* be with them during the main part of the session) gave them an initial briefing about the test and what to expect. (The script is in an appendix.)
- The participant was brought to the main room, and introduced to both the researchers there and the assistant who would play the voters. They were given a brief introduction to the e-pollbook system.

- In the second day, we began with 3-4 training scenarios that made sure they knew how to use all of the equipment and had seen the basic interface. These scenarios were all for regular voters, with no complications.
- The assistant then presented a series of 20-25 scenarios of voters checking in. The participant was asked to function as a poll worker, checking each voter in.
- Once the scenarios were completed, we conducted a final interview, asking for their general impressions, and for any comments they might have. We ended by asking a small set of satisfaction questions, based on the industry standard System Usability Scale (SUS).

Presenting the scenarios

In the pilot sessions, a single assistant acted as the voter for all of the scenarios. For each scenario she:

- Quickly reviewed the scenario script and materials
- Announced the scenario number to help the note-takers stay in sync.
- Presented herself to the poll worker, answering questions according to the script, and supplying any materials included in the scenario if asked for them. (One of the researchers was positioned to be able to easily prompt the assistant if the poll worker asked a question not covered in the scenario, providing appropriate answers.)

Issues in running the sessions

As we planned both the initial protocol and this pilot test, we had a number of questions that we hoped to answer.

Setting up the system (and rules)

One of the more difficult challenges in the pilot test was the wide variety of jurisdiction election rules, features, and poll worker expectations based on past experience. The situation with two different systems, with different databases, and poll workers from different places was the most complex possible situation. However, it was instructive to see that the test generally worked.

Do the election rules and features have to match the jurisdiction?

Ideally, the system will match the election rules in the jurisdiction—or all systems being tested will use the same rules.

- Know the rules and go over them in the initial orientation, just as you would in poll worker training, but be careful of "over-preparing" the poll workers and missing potential usability issues or places where the interface is not clear.
- When in doubt, fall back on asking the poll workers how they would solve a problem now (or by asking non-poll workers how they think it would work). Ask them to follow those procedures with the e-pollbook.

Setting up the voter database

Whether you are running a test of systems for a specific jurisdiction or setting up a general sample database, you won't get a good sense of the usability without an appropriate list of voters.

The systems came with training databases installed. These were smaller than the voter list that would be typically installed, but were generally sufficient for this pilot. However they had some gaps as a realistic test of a system, especially for a vote-center, where there would be many more names, and finding a specific voter manually might be more difficult.

How realistic does the database have to be?

We worked with two different training databases. Both had gaps that made them less realistic than was ideal. Based on our experience:

- The database, scenarios, and materials must match. The name and location of the election, the name of the polling place, and the addresses of the voters must all be consistent.

- All of the elements of the database must fit together: the county, voting districts, address databases, and so on must fit together, drawing from the same geographical region.

We do understand the challenge of creating a fictional county. The alternative is to use real data – perhaps jumbling names.

How large does the database have to be?

A relatively small database is not as much of a problem as we feared it might be as long as it includes:

- Typical clusters of similar names (for example common names or families)
- Voters at the same address, some with the same name
- Names with a mix of common and unusual spellings, as well as names from a variety of languages (for example, Asian, Eastern European languages) and some long and short names.

Presenting the scenarios effectively

Voters don't "read a task scenario" – they arrive as individuals. We wanted to simulate this experience as easily as possible.

Does the order of the scenarios matter?

In the course of a relatively short usability test, most of the scenarios were designed to trigger a problem. But, this is not completely typical of an election, in which many voters have easy-to-find names and are in the right polling place, ready to vote. We started with relatively simple scenarios, building up to more complicated ones. However that meant that in the last part of the session, poll workers encountered primarily difficult scenarios.

In the revised test protocol, we divided the scenarios into several groups, and suggest making sure that they are randomly placed in the order. We also suggest that very difficult scenarios be surrounded by more simple ones so the difficult ones are cushioned by less challenging ones. The groups are:

- Scannable ID
- Manual lookup or search
- Voter differentiation (similar names)
- Status flags
- Changes to voter record, Election Day Registration
- Voters in the wrong place
- Voters not in the database

How many different people are needed to act as the voters?

For the pilot test, we opted to use a single individual, representing the most extreme condition. One sign of the success of this strategy was that one remote observer (who could not see the voter) was not sure how many different people we used.

We had two scenarios that required more than one person. In both cases, we used one of the researchers to play the second person, with no problems:

- A voter with a caregiver who might help them vote
- Two family members arriving to vote together

The other difficulty of using just a single "voter" was that there was no sense of a line with the stress that adds to the job of checking in a voter. In the pilot, we found that there were some natural gaps in the flow simply because the "voter" needed more time for some scenarios than others. And, the poll workers seemed to be under enough pressure to perform well without adding the stress of a line.

What does the person playing the voters need to know to be effective?

On the first day, we provided the assistant playing the voter[4] with very little information beyond the bare scenario. As the day went on, she commented that it was easier to present the scenario effectively if she knew what it was designed to test. Based on this input, we added a section to the scenarios with information about what the challenge in the scenario is and how to answer questions without "giving away" the solution.

How much "acting" is helpful in presenting the scenarios?

The assistant playing the voter acted out some aspects of the scenario – speaking quickly or indistinctly, leaning on the table, being easy or difficult to work with – to help the poll worker distinguish and understand the scenarios. For example, in one scenario, the voter was someone perhaps on the autism spectrum. Several of the poll workers immediately picked up on the simple cues and interacted with the voter appropriately.

Some small props, such as a cane, a large bag, or other details might help make each voter distinct. However, they could also become clichés or simply be distracting, so they should only be used for scenarios where they are clear and helpful in providing cues about how poll workers should interact with the voter.

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[4] Alden Brigham, a student in the University of Baltimore Information Design program, was enormously helpful in thinking through how to act out the voter roles.

Preparing the poll workers

The test protocol attempts to balance the ability of a poll worker to learn on the fly, guided through the tasks by the systems, and the fact that poll workers are generally trained on the systems and procedures they use.

What materials should be available for the poll workers?

Based on the experience of running the pilot test, we suggest that the setup include the following material for the poll workers – all typical items in the polling place:

- **Signage.** Some sort of sign that lets them know what polling place they are in and what districts are in the polling place. Although this information is often part of the interface, we noticed that poll workers (naturally) expected to know where they are, and looked for physical signs to confirm this.
- **A map of the area.** This is especially important if the database does not reflect the geographical area where the poll workers live. They need to know what town they are in, what other towns are nearby, especially for scenarios in which the voter is in the wrong polling place.
- **A cheat sheet or poll worker newsletter.** These could contain a few reminders of training information, such as an announcement about election day registration, a list of problems related to flagged voters or a list of status flags. These should be simple reminders and not explain how to use the systems. Even if this information is in the interface, if poll workers rely on the paper rather than the systems, that is also a usability finding.

Providing help

Poll workers in a real polling place have several ways of getting help: other poll workers, team leads, manuals, and a call to the election office.

How much help should be available to poll workers?

We tended to err on the side of less help, by asking participants what they would do and then asking them to try that.

For a test aimed at a single jurisdiction, we suggest that a pre-written script with answers to anticipated questions be written out in advance, so every participant who asks a question gets the same answer. Even these answers should lean towards asking the participants to solve the problem on their own—as they might if the election office phone number was busy, for example.

We were also prepared to improvise. For example, when a poll worker told us that they had to fill out a printed form for one scenarios, we gave them a blank paper and mimed filling in the form, so they could complete what they saw as the procedural requirements. This solution was helpful in not allowing poll workers to feel that they

could skip over steps, reinforcing the emphasis of the test on handling each voter correctly.

How much should the space be set up to make all aspects of the polling place visible?

We did not do much to make the space look like a real polling place. As issues came up, such as where a voter should go to mark their ballot or which table was for provisional ballots, we answered the questions as they arose, sometimes simply pointing in a direction.

One poll worker said she always brought a bowl of candy, and we gave her an empty bowl to use to mime offering it to the voters.

Limitations of the pilot test

Any pilot test has limitations. In addition to the issues described above, we also note the following issues:

Neither of the two systems we tested included a way for the jurisdiction to customize the prompts, a feature found in several existing systems.

In the plan, poll workers are not given hands-on training in the initial orientation. Real-world poll worker training is typically weeks or months before the election, not immediately before Election Day. However, we changed our approach to provide some minimal training in response to seeing how many small and large problems our participants had. This change leads to two issues to keep in mind:

- Participants received different amounts of training in this pilot study. In a real test, all would have the same training.
- We do not know whether it is better to use the first tasks as individual training, or to bring in a small group of participants and train them all together, simulating the real poll worker experience more closely.

Usability problems to watch for

This pilot of a usability test for e-pollbooks was not aimed at evaluating the specific systems that we were able to use in the pilot. However, part of piloting a test protocol is to look for types of usability problems that might occur, and how they show up in the testing activities.

The goal of this list of problems to watch for is to help people running a usability test of an e-pollbook identify things that might occur during a session that are signs of potential problems – aspects of a system that might be hard for poll workers, requiring either changes to the design or more intensive training. It is neither a comprehensive list of all possible problems, nor a prescription for design improvements.

We were interested to see that many of the issues we saw occurred in using design elements for which there is considerable variation in current products, but that there were also some problems that surprised us.

We expected that:

- Some people would have little or no problem using the systems, while others would need some training.
- The systems were simple enough that with a few training hints, even those with less experience using technology would master the interface.
- The biggest challenge in more complex scenarios would be deciding *what to do* under election rules, not using the interface do complete the task.
- Some tasks would be hard, but there would be few outright failures such as checking in the wrong person or not completing a task.
- Using the voter search feature would not be a challenge.

There were some problems that we attributed to the test context or to issues in piloting the test. For example, one of the more experience poll workers had many problems, in part because they struggled with nuances of the test, attempting to think through each scenario against the election procedures in their jurisdiction.

This section lists the surprising problems, as areas of the screen design or action to watch for in testing other systems.

Problems searching for a voter

Using search was much more difficult than we expected. In fact, using the search feature was a persistent problem for many of the participants, on both systems (though each system had different problems). This was one of the most surprising findings, as we did not expect the basic search actions to be an issue for the simpler scenarios. We saw participants on both systems:

- Repeatedly enter a name incorrectly (either because they typed the name wrong or did not understand the correct spelling)
- Try to broaden a search by adding more information – effectively narrowing it, instead.
- Make mistakes trying to use additional fields, such as date of birth, street address, or other information to narrow the search.

This may have been partly a conflict of mental models. Both systems worked best if poll workers approached them with a "best match" model – starting with short, incomplete entries to produce a short list of possible voters from which to select. The poll workers tended toward an "exact match" model, entering as much information as possible to find one specific voter.

Several of the participants said that they had been trained on the best match "4-3" method of searching: 4 letters of the last name and 3 of the first name as likely to find a match or small number of voters. This is an effective search strategy, but despite identifying it themselves, and being reminded of it, they persisted in trying to enter a full name, usually without finding a match. Many of the ratings of "Hard" or even "Fail" were the result of repeated, ineffective, searching in which participants cycled through several attempts that produced no results.

We do not know whether these problems would occur in all systems, of course. But the two systems had very different interfaces – one had a single open field, the other several fields presented in a traditional form – and participants had similar problems on both of them making it a problem worth watching carefully.

These problems also suggest that poll worker training that includes a set of taught strategies is critical to successful use in any jurisdiction where significant numbers of voters might not present a scan-able ID.

Behavior to watch for:
- Repeated attempts to search for a voter, especially searches with no matches despite the voter being in the database.
- Signs that the interface either suggests sub-optimal search strategies or prevents optimal ones.

Missing or confusing calls to action

There were several different kinds of problems we observed where poll workers had trouble taking a step in the process, even though they seemed to have a clear (and appropriate) idea of what they wanted to do

Some action buttons were difficult to find or understand

Some were on the "wrong" place on the screen, by which we mean that they were not in the place where participants were most likely to look. . Typically, participants were

most likely to look for action buttons below or to the right of the last piece of information on the screen..

Other designs that can make buttons and links difficult to see are:

- Buttons clustered in ways that made it difficult to understand the different options they represent.
- Inconsistent designs for active elements – different shapes, sizes, color, or placement on different screens, or used in ways that participants do not understand clearly.

All of these can cause hesitations or make a scenario take longer than necessary.

Behavior to watch for:

- Hunting on the screen for screen elements to complete common actions
- Repeated gestures towards a location other than the one where a common button or link (for example, "check voter in") is located
- Excessive hunting (for example, trying more than one solution or methodically trying all possibilities) for less common actions
- Confusion about the meaning of a button or link – for example, picking one, then seeing the result, and backtracking to select another

Dead ends in the interaction created failures

A special case of confusion over the controls that we observed affected how participants used the lists of voters found by search or scanning. Both systems had the same basic steps to check in a voter: find the voter though search or scanning an ID, select the voter from the list, and then complete the steps to collect a signature and issue a ballot or "authority slip." In some cases, when the system found a single potential voter match, the name was presented in a list format with a single item. The systems expected the poll worker to tap or click on the voter name (or, anywhere in the row) to proceed.

We were surprised at how many voters had problems at this point in the process. They simply did not see any "call to action" that suggested how to proceed. Several stopped the scenario at this point and said they had completed checking the voter in.

This was partly an effect of the test, because the poll workers were given little information about how voters received their ballot or other materials to enable them to vote. But it was also a genuine problem, especially for participants who were more timid about learning new technology. Since we could not make changes to the interface, we used the initial training scenarios (added during the first day) to make sure poll workers learned this critical interaction.

Behavior to watch for:

- Failing to complete a scenario accurately, especially stopping prematurely.

Error messages and instructions

Neither system had error messages that were informative enough to help participants understand and correct problems. They were not *bad* messages (for example, loaded with code-jargon), but they were not very helpful, either.

The messages were particularly important in helping (or not helping) participants search. When the message included the name (or partial name) searched for in a format that made it easy to see, participants were more likely to notice spelling mistakes and successfully correcting it.

Behavior to watch for:

- Reading an error message but not acting appropriately to correct a problem
- Any indication that they do not understand terminology in messages or other instructions

Problems reading the screen

Although many poll workers (and our participants) are used to reading digital interfaces, many may not be comfortable doing so. Although we saw no strong patterns of problems, there were some general issues that are worth mentioning.

Text size and clarity

The default size of all text on the screen must be easy for poll workers to read, even in rooms with poor lighting. This means both that it is large enough and that there is sufficient contrast.

Behavior to watch for:

- Leaning in, squinting, or repositioning the screen to read the text
- Getting out glasses, when they did not expect to do so.
- Attempting to change the text size (either with gestures, or looking for a control to do so)
- Interfaces in which different screens have different size text, or in which all text—particularly button labels or navigation items—does not change size or contrast consistently.

Problems with basic technology interaction

We saw a number of problems with basic digital interactions that caused us to add the training scenarios. These may issues that election officials want to take careful note of to include in poll worker training. Because these issues tend to be resolved with a

single instruction or hint, it is important to observe the very first interaction with the system carefully.

Behavior to watch for:

- Difficulty using the scanner – either activating it, or positioning an ID card to be scanned.
- Difficulty using the pointer (mouse, track pad, or finger, stylus) to activate controls
- Difficulty typing, with either an on-screen or physical keyboard
- Inappropriate use of gestures on a tablet, or trying to use gestures on a laptop screen
- Difficulty repositioning the cursor within a list, especially if the list extends beyond the screen boundaries. This includes both voter lists and other selection controls such as drop-down lists.

Appendix: Scenario Success

To get an overall picture of how easily participants completed the tasks, we rated their success at critical steps in the task and then for the overall task.

As a reminder: **The goal of this pilot was not to evaluate the systems, but to refine the test protocol**. We did not attempt to calculate any sort of overall success score for the systems for three reasons:

- Differences in both systems and the scenarios make **direct comparisons problematic**. These differences included the databases, and the election features included in the systems.
- We adjusted the scenarios both during the day, and between systems, to try to learn how to **present the scenarios effectively.** This included adjusting the materials and how the "voter" presented them. After seeing the need for hands-on training with System 1, we added three tasks not included in our formal list for System 2.
- We were more interested in **patterns of problems and success for each participant.** Understanding what sort of problems people had completing the scenarios, was useful as a way of learning about the types of usability issues that poll workers might have with e-pollbooks—and therefore, what situations should be included in the scenarios for the test protocol.
- We also noticed that participants who worked as lead poll workers often struggled more with scenarios that did not match their jurisdiction's procedures.

Ratings for task success

We rated the scenario success on a 3-point scale (from easy to failed), but also identified when we offered a hint or other help with the interface so the participant could complete the task, even though this might be acceptable (or even ideal) behavior in a polling place. We allowed poll workers to ask for clarification on election rules, and did not count this against task success.

Coding	Description
OK	Success. Completed the scenario with no problems.
Hard	Difficulties. Succeeded but only after solving problems
Help	Needed Help. Needed help with the interface or task
Fail	Failed. Did not complete scenario or was inaccurate
NA	NA. Did not attempt this scenario
Training	Training. This scenario was used for training at the beginning of the session

System 1: success with each scenario by participant

Scenario	P1 Non-PW	P2 Lead PW	P3 PW	P4 Non-PW
A – Voter with ID scan	Hard	Hard	(training)	(training)
B – Voter with ID scan	Easy	Hard	(training)	(training)
C – Voter with ID scan	Easy	Fail	(training)	(training)
D – Voter with ID scan	Easy	Easy	(training)	(training)
E – Voter, manual search	Help	Hard	(training)	(training)
F – Confusing name	Easy	Hard	Hard	Easy
G – Voter with ID scan	Hard	Easy	Help	Easy
H – Confusing name	Fail	Fail	Help	Help
I – Voter, manual search	Easy	Easy	Easy	Help
J – Name update	Help	Hard	Easy	Help
K – Voter with ID scan	Easy	Easy	Easy	Easy
L – Multiple last names	Hard	Fail	Help	Easy
M – Same family	Hard	Fail	Easy	Help
N – Already voted	Hard	Help	Hard	Hard
O – Voter needs assistance	Hard	Easy	Help	Hard
P – Address check	Easy	Easy	Easy	Easy
Q – Wrong polling place	Hard	Fail	Help	Hard
R – Same name at same address	Hard	Hard	Fail	Easy
S – Address change	Easy	Fail	Easy	Easy
U – ID required	Easy	Easy	Easy	Hard
U – Two similar names	Easy	Easy	Hard	Easy
V- Wrong polling place	Fail	Easy	Easy	(NA)
W – Hard to spell name	Easy	Help	Hard	Easy

System 2: success with each scenario (after training scenarios)

Scenario	P5 Non-PW	P6 Lead PW	P7 Lead PW	P8 PW
A – Voter	Help	Hard	Hard	(training)
B – Voter	Fail	Hard	Hard	(training)
C – Voter	Easy	Easy	Easy	Easy
D – Voter with ID	Easy	Hard	Easy	Help
E – Confusing name	Easy	Hard	Hard	Hard
F- Wants to register	Help	Hard	Fail	Hard
G – Confusing name	Easy	Easy	Hard	Easy
H – Already voted	Easy	Easy	Easy	Fail
I - Voter	Easy	Easy	Easy	Easy
J – Update Name	Fail	Hard	Help	Help
K – Damaged ID card	Easy	Easy	Easy	Hard
L – Multiple last names	Easy	Easy	Easy	Easy
M – Not in database	Fail	Hard	Help	Hard
N – Voted early/absentee	Easy	Easy	Help	Easy
O – Voter needs assistance	Easy	Easy	Hard	Easy
P – Address required	Easy	Hard	Easy	Easy
Q- Wrong polling place	Easy	Hard	Easy	Hard
R – Jr/Sr	Easy	Hard	Fail	Easy
S Address update	Easy	Hard	Easy	Hard
T – Regular Voter	Easy	Easy	Hard	Hard
U – ID required	Easy	Easy	Easy	Easy
V – Wrong polling place	Easy	Easy	Hard	Easy
W – Voter with absentee ballot	(skipped)	Easy	Hard	Easy

Appendix: Participant orientation script

We have asked you here today to help us test a new electronic poll book. If you remember them, it replaces the big paper lists of voters. Or, it could be a replacement for an existing voter check-in system. Our goal is to put it through its paces and see how well it works.

This is a research project, not something that your election department is considering, but it is a real system in use in jurisdictions around the county.

We don't have time for a full hands-on training, like you might get if this were a real election because we'd like to see how easily you can figure out what to do with it. So, let me tell you a little bit about the election and the system.

About the election

The system is set up for a local election in [location] on [date], in a polling place with [number of precincts] It's not connected – just like a paper list, you can only check in the voters who are at the right table. Voters sign their name to check in.

[If needed: The other thing you have to know is that [location] has a voter ID law, so voters must show a valid ID: drivers' license or some other state ID card.]

About the poll book system

The system is called [name]. It runs on [description of the system hardware]

What we will do today

Here's how this will work. One of my colleagues will pretend to be the voters, giving you a name and any other information. Just like at a real election, your job is to check them in, make sure that you have gotten all the information, and printed their voter authority slip so they can get their ballot.

Some voters will have an ID that you can scan, but for others, you'll have to find them in the list by searching for their name or address.

In a real election, you would have someone to work with, but we'd like you to manage as well as you can on your own. But, just like in a real election, if you are really stuck you can ask for help from another poll worker and we'll help you out.

Any questions?

Let's go in now. Your first step is to make sure that you are set up and ready for voters, then announce that the polls are open. We've got the setup partly started, so you just have to sign in. My colleague will help you do that.