Sally W, Ryan F, Graham M, Billy W

CSE 440 | Winter 2018

CONTRIBUTION	
Sally Wei	25%, contributions to everything.
Graham McCoy	25%, contributions to everything.
Ryan Fok	25%, contributions to everything.
Billy Wu	25%, contributions to everything.

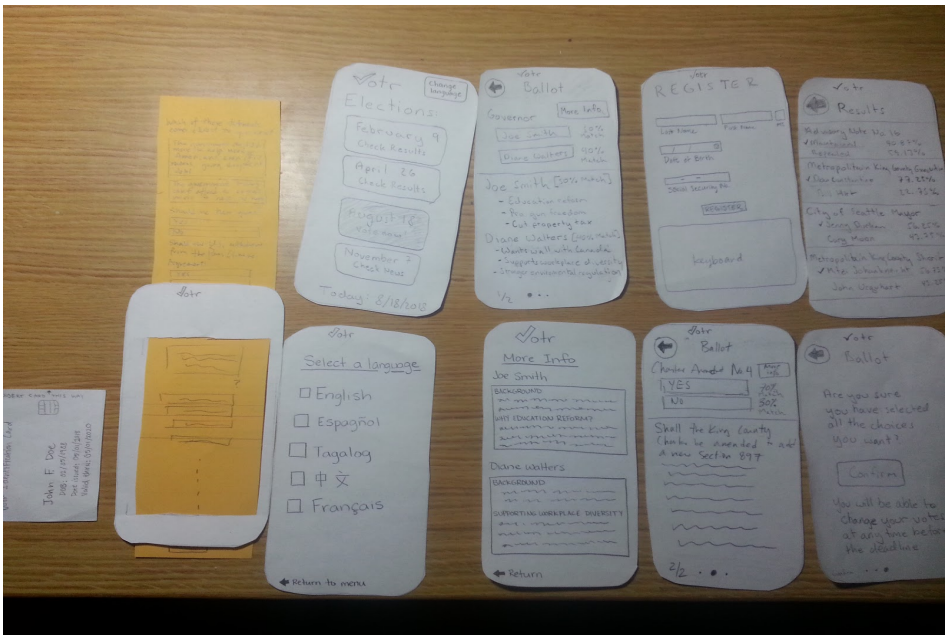
Team

Sally Wei	*Storyboarder, writer, researcher, usability testing*
Graham McCoy	*Researcher, designer, usability testing*
Billy Wu	*Ideation, design, usability testing*
Ryan Fok	*Writer, ideation, usability testing*

Problem and Solution Overview

Did you know that during the 2012 elections, only 46.9% of those earning less than $10,000 voted while more than 80% of those earning more than $150,000 voted? That's quite a discrepancy! This is why we designed VOTR, a device that will tackle this inconsistency and bridge the voting gap. VOTR aims to increase voter turnout for citizens of low-income communities by offering a government-provided voting device to enable simple, convenient voting that is easily accessible to even those with little political background. It will allow users to access crucial information regarding upcoming or current elections written in a way understandable by everyone yet leaving no important information behind. By making the voting process more convenient and providing the necessary information needed to make an informed vote, we will increase the number of votes and political involvement from low income citizens.

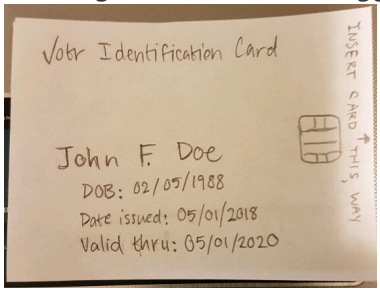
Initial Paper Prototype



Our initial paper prototype consisted of two aspects: (1) allowing the user to vote and (2) allowing the user to look up information about the current or upcoming election. It also featured an alignment test in which the user would take to determine which end of the political spectrum he or she fit on. This would help them decide which candidates or initiatives mattered more to them.

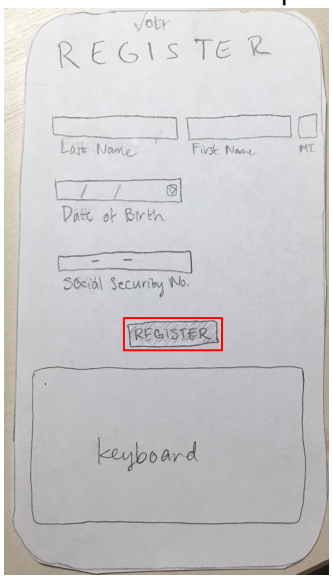
Task 1
Voting from the device in a location that is not a polling booth and is before the voting deadline.

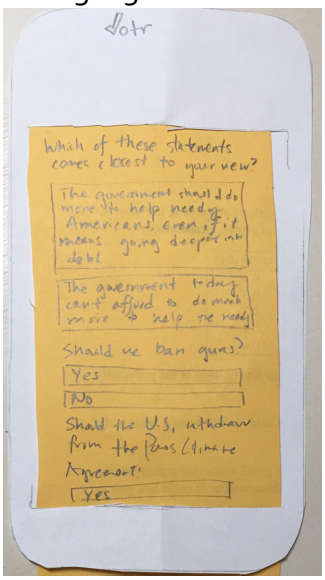
Screen 1.1
To connect to the device, the user will need to insert a unique card sent to them by the government, included with the device. The card will contain the user's information, so he/she will not need to fill out any additional (digital) forms when logging in for the first time.



Screen 1.2

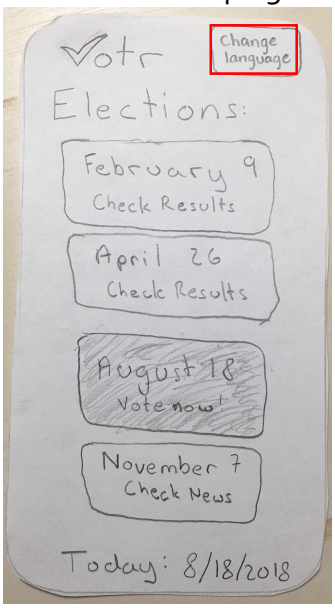
Once the card is inserted, at the top of the device there will be a card slot, first-time users will be asked to indicate whether or not they are registered voters. If not, they can register from the device. They will need to confirm their DOB and SSN for security purposes. Once that is done, an alignment test will need to be completed to gauge out the user's political interests.



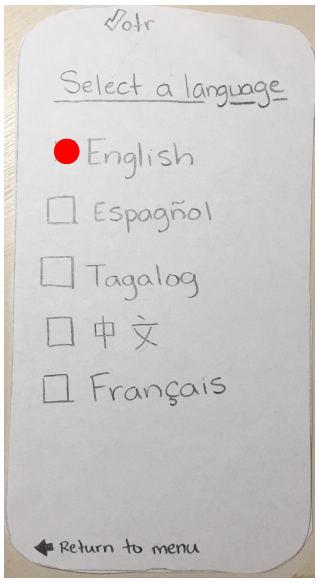


Screen 1.3

Once that is completed, they will be taken to the main menu. The menu will display upcoming elections, which may vary depending on which state you are in. If the user would like to change the language, he/she can select the button on the top right.

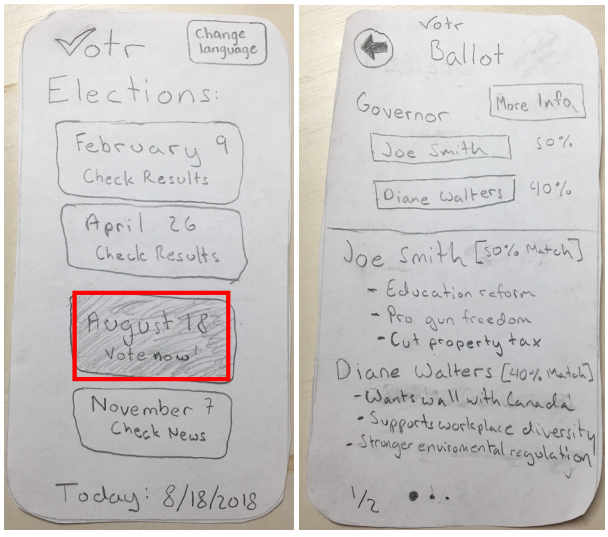


Screen 1.4
When the user selects "Change Language", he/she will be brought to a new screen. The most commonly spoken languages in the United States will be displayed. Make a selection by selecting the appropriate check box.



Task 2
Succinct information concerning the current election.

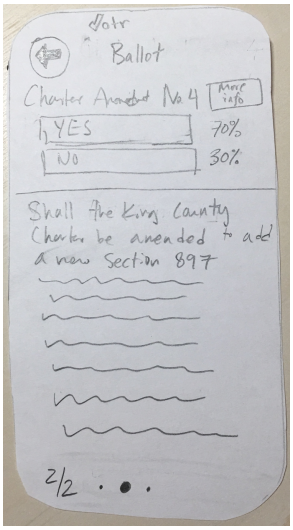
Screen 2.1
From the main menu, the user may also select an election. Depending on which one he/she chooses, if it's already happened he/she can check its results. If it's a future election, he/she can read news about it. If it's an election that is currently taking place, he/she can vote while also accessing any other relevant information.



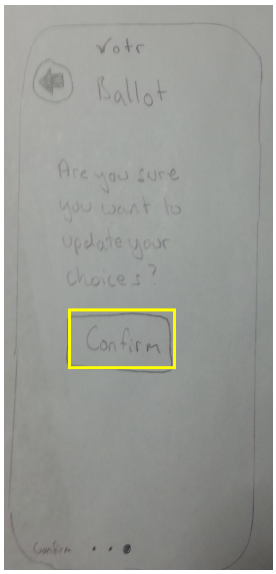
The ballot will display any potential candidates. To the right of each candidate will be an alignment score indicating the candidate's match with the user. For example, Joe Smith

matches the user's political views by 50%. Below the ballot, each candidate's main points will be listed in a succinct matter.

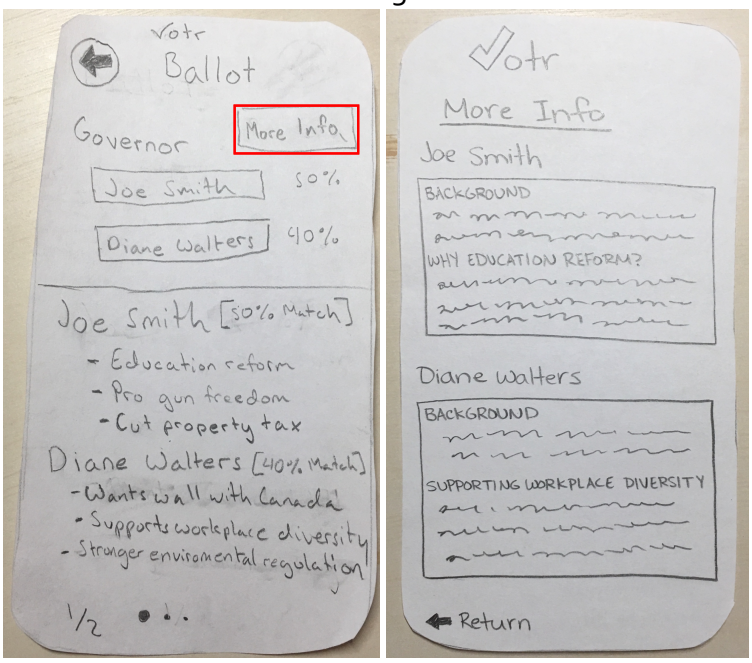
Swiping right, the user can view any potential initiatives or other candidates that are participating in the current election.



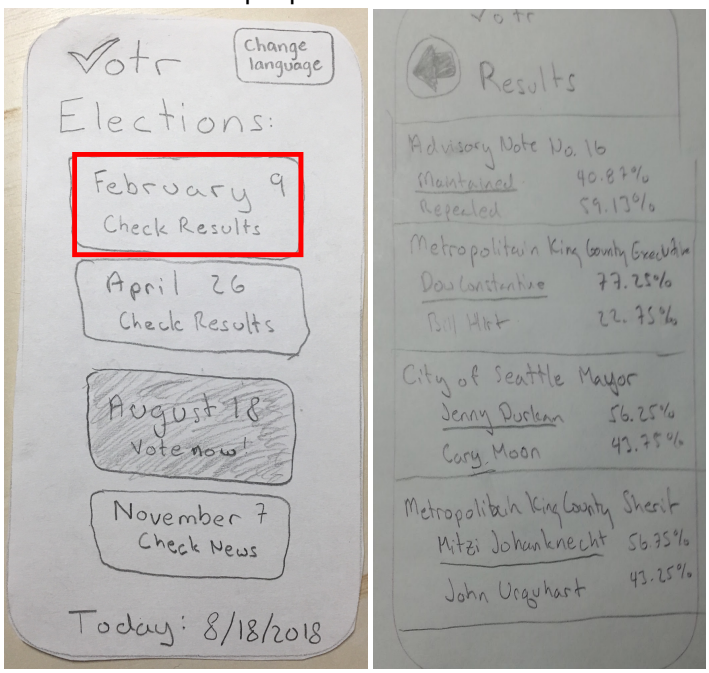
When the user has made their selection, a confirmation page will pop up asking the user to confirm their choice(s).



Screen 2.2
Selecting "More Info" will open a new window that displays more information about each candidate, for those who are interested in reading more.



Screen 2.3
When you want to check the results of a previous election, a new window will pop up showing the percentage of votes a candidate or proposal received.



Testing Process

Roles of Team Members

- One team member presented the prototype and acted as the "computer."
- One team member explained how the device was to be used, but didn't give away enough information; allowed user to figure out for himself/herself (instructions that were given out is found in the Appendix at the end of the report).
- Two team members took notes.

Test Protocol

- Inserting the card correctly into the device.
- Main menu navigation.
- Voting process/making a vote.
- Obtain information about an interested candidate/initiative.
- Navigating the device in general.

Participants

We conducted our first usability test with a UW student. She is 20 years old, low-income, and the test was conducted in the CSE building. We sat at a table and one team member showed her the card key and device. For our test, we just needed to make sure we found a table large enough so we could place our prototype. We asked our participant to insert the key to unlock it, and she did so without incident. She inserted the narrow tip at the bottom of the device and filled out the registration page. She was able to navigate the menu with ease until she hit the voting screen for candidates. She was confused about the arrows that were supposed to symbolize a drop-down box for more information regarding a particular candidate. The arrows were inverted, and she said that when you want to see more information, the arrow would usually face **<** way and not **V**. She also didn't notice the circles beside each candidate's name that you'd click on to make a vote. However, once she figured those out, she was able to make her choice right away. She suggested we implement a notification system so that a few days before an election, the device would alert the user to raise awareness.

We conducted our second usability test with another UW student. She is 23 years old, low-income, and the test was conducted in Mary Gates Hall. For our test, we just needed to make sure we found a table large enough so we could place our prototype. One team member spread the card and REGISTRATION screen on the table and asked her to insert the card in. She was confused about what the card was for; was it meant to be an actual voter ID card or just something used to unlock the device? On the menu page, she commented that having the UPCOMING ELECTIONS button on the very bottom of the screen was counterintuitive; since it's upcoming, it'd probably be better placed in the middle, or move that towards the top and have CURRENT ELECTION be in the middle of the screen with bolded letters and a colorful button to capture attention that this is where you'll do the actual voting. In the RESULTS page, she was able to appropriately deduce that the checkmarks beside each candidate/initiative meant that this person/bill had won. She also mentioned that the RETURN button should be in consistent locations, so at the top left of each screen. On each screen, it wasn't clear whether or not she could click on a candidate's or initiative's name. Perhaps bolding the words or

something would help. Our participant likes the voting screen; she thinks it's very clean and easy to navigate. On the last thing you are voting for, she suggests having a SUBMIT button rather than the page immediately taking you to a new page that acts like a "shopping cart" of what you have voted for so far, and then clicking SUBMIT from there. Otherwise, she found the interface well done.

We conducted our final usability test with a woman close to 50 years old. She comes from a low-income background and works for the majority of the week. She was a perfect candidate, because we could gauge from her whether or not the device really was a convenient way for her to vote. The test was conducted at the library, on a table so we could lay out the prototype. Our participant was given a modified prototype, implementing changes that the two participants before her had suggested. She was able to get a hang of the technology pretty fast. The interface worked well with her, but she thought it would be nice to have a notification pop up telling her to pull out the ID card when the device no longer needed it. Otherwise, she would've kept it in the entire time she was using it. She was able to vote easily, however, we noticed that she seemed a bit disconnected from the political aspects of the device, even though the information was displayed succinctly in front of her. She said that using the device did not make her feel more engaged with politics.

Summary
Overall, our usability testing went well. We made sure to give the user good context so that they could experiment with the product themselves. We tried not to give them a lot of feedback so that they could figure things out on their own and allow us to understand what worked or didn't work in our device. Through testing, we were able to pinpoint design flaws or modifications that needed to be made. When selecting participants, we wanted to make sure we had people from different age groups. That way, we could see whether the information we were providing on elections were easy to understand for everyone. Not to mention, we wanted to make sure our interface worked with all ages and that it could be picked up easily.

Testing Results

Throughout our tests, whenever we received feedback from people, we noted them and made some changes in our paper prototype to be used on the next person if the changes were deemed appropriate.

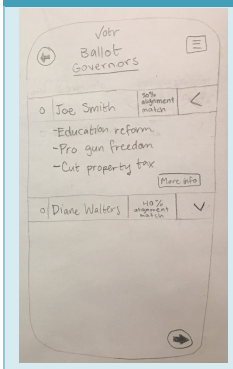
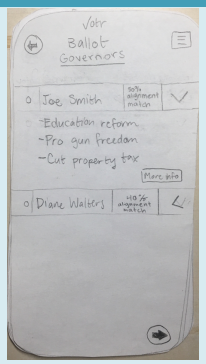
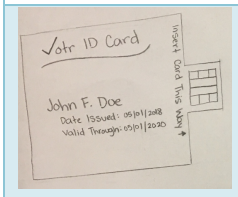
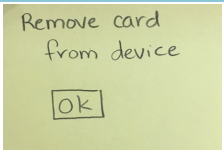
ISSUES IDENTIFIED THROUGH HEURISTIC EVALUATION

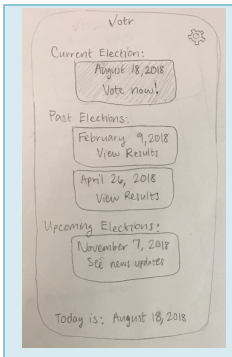
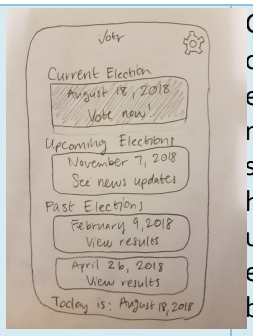
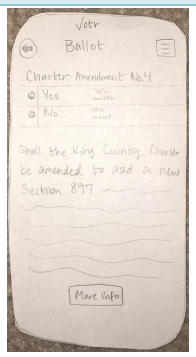
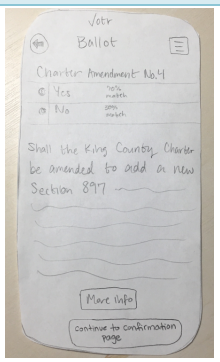
1. [H1: Visibility of system status]
   Confusing if confirmation is the same as voting or if I can undo the vote later. Fix: inform user when the vote will be submitted.
2. [H1: Visibility of system status]
   The interface did not display any confirmation that the voter identification card had been inserted. Users may be confused as to whether the card worked. Fix: add pop-up or screen confirming and has been scanned.
3. [H4: Consistency and standards]
   Unclear about results page – significance of underlined names, links?
4. [H2: Match system to the real world]
   Social security is really sensitive, seems like there should be some reassurance that the system is secure. Fix: tell user that it won't be displayed again/system for card loss.

5. [H1: Visibility of system status]
   Percentage should include information to indicate that it is the political alignment amount that they match. Fix: add "match" word in front of percentage.
6. [H4: Consistency and standards]
   Calendar issue where user cannot select year on the pop-down menu, because calendars are only for month and day. Fix: add separate place to enter year.
7. [H10: Help and documentation]
   Information about the position, as well as candidates for the election, should be available. Fix: give more information.

We incorporated some of these feedbacks, as well as feedbacks obtained from our usability tests, into our modified prototype.

ISSUES IDENTIFIED FROM USABILITY TESTING

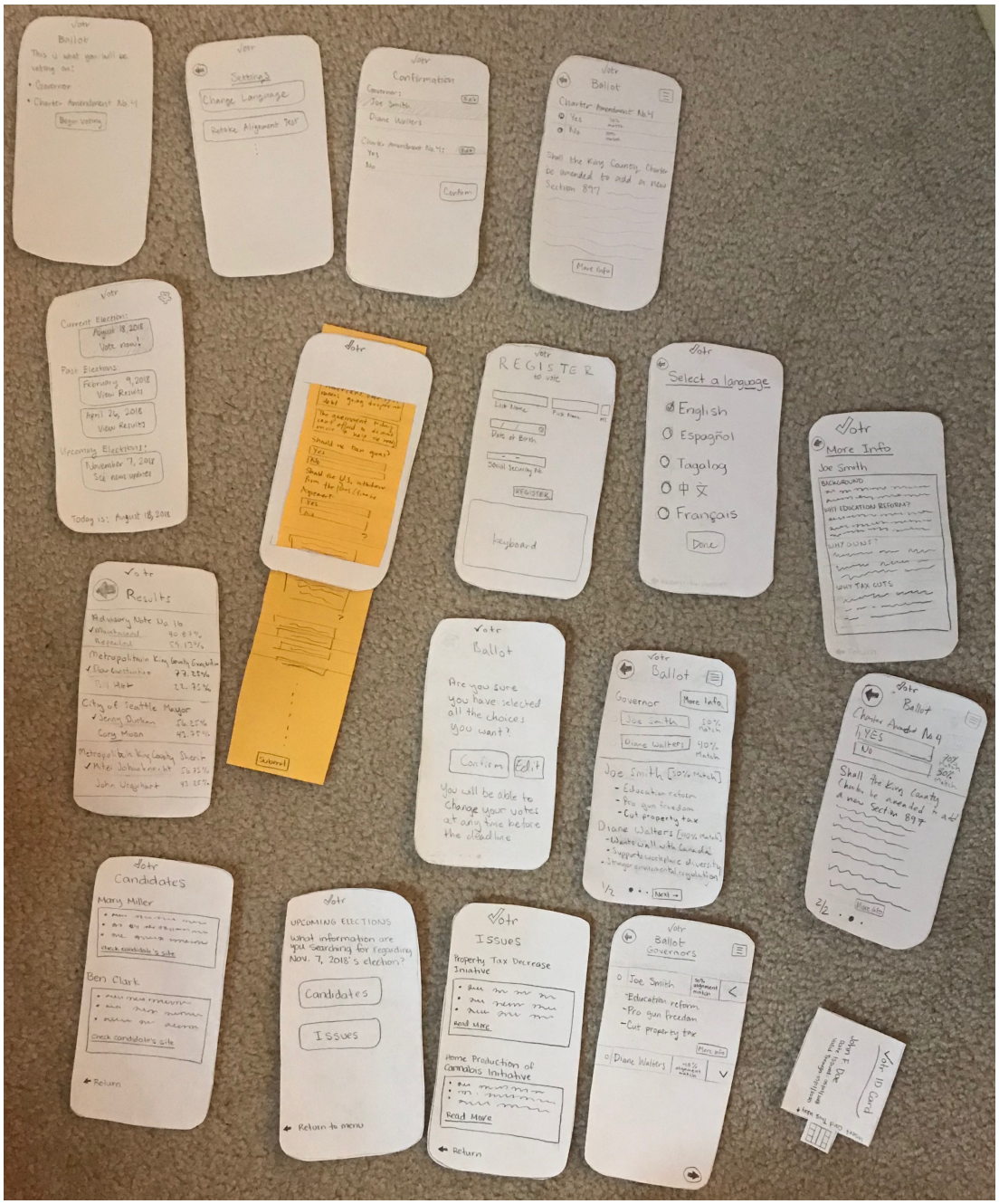
Before	Severity	Type	Incident	After	Fix
	1	Candidate Screen	User found arrows inverted; when you don't want to show more information, the arrow would face **<** way, and not **V**. Only **V** used if you want to get more information.		Changed the direction of the arrows.
N/A	3	Notification System	A few days/weeks before an election, have the device alert the user of it so he/she can prepare.	N/A	N/A
	2	Voter ID Card	User was confused of the card's purpose.	N/A	N/A
N/A	2	Notification System	User should know when it is appropriate to remove key from device.		Added a message to let user know they can eject card.

	3	Main Menu Screen	The UPCOMING ELECTIONS button on the very bottom of the screen was counterintuitive; since it's upcoming, it'd probably be better placed in the middle, or move that towards the top and have CURRENT ELECTION be in the middle of the screen with bolded letters and a colorful button to capture attention that this is where you'll do the actual voting.		Changed the order of elections on main menu screen to have upcoming elections before past elections.
	1	Ballot Screen	SUBMIT button after voting for the last thing on the ballot, rather than the screen automatically taking you to the confirmation page.		Added a confirmation button at the bottom of the page so the user would know this is the last page of voting.

DESIGN CRITIQUE

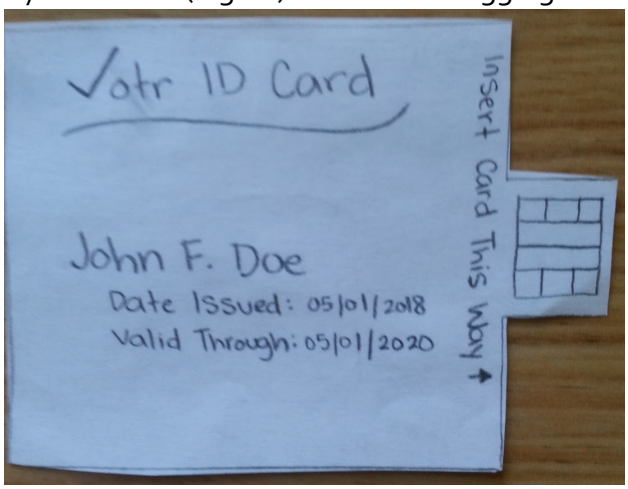
From our design critique, we learned that the way we had had our alignment test set up was confusing. For people unfamiliar with the term, when they first set up the device and are asked to take the test, they might be confused so we decided to notify users prior to taking it so they know what they are getting into. Our "back" buttons weren't consistent, so we also made sure to redesign those, so the users would know that "back" would always be located at the top left of the screen. Overall, the critiques enabled us to better the interface of our design so that it would be more user-friendly.

Final Paper Prototype



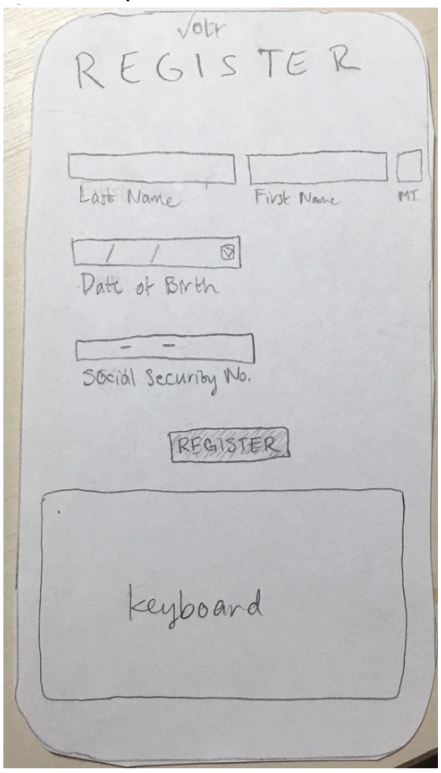
Task 1
Voting from the device in a location that is not a polling booth and is before the voting deadline.

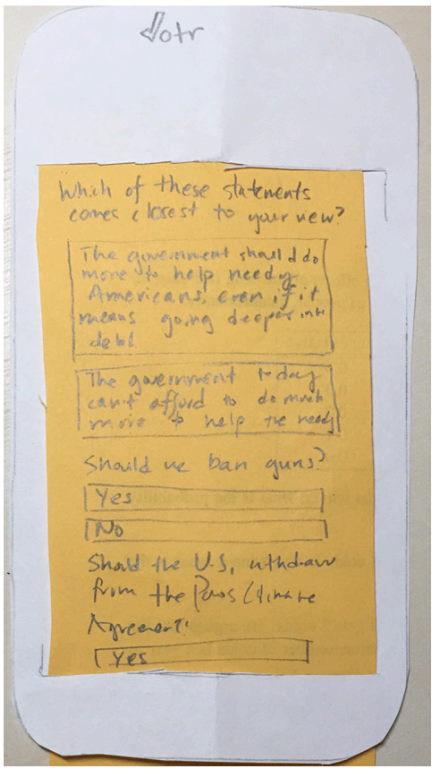
Screen 1.1
To connect to the device, the user will need to insert a unique card sent to them by the government, included with the device. The card will contain the user's information, so he/she will not need to fill out any additional (digital) forms when logging in for the first time.



Screen 1.2

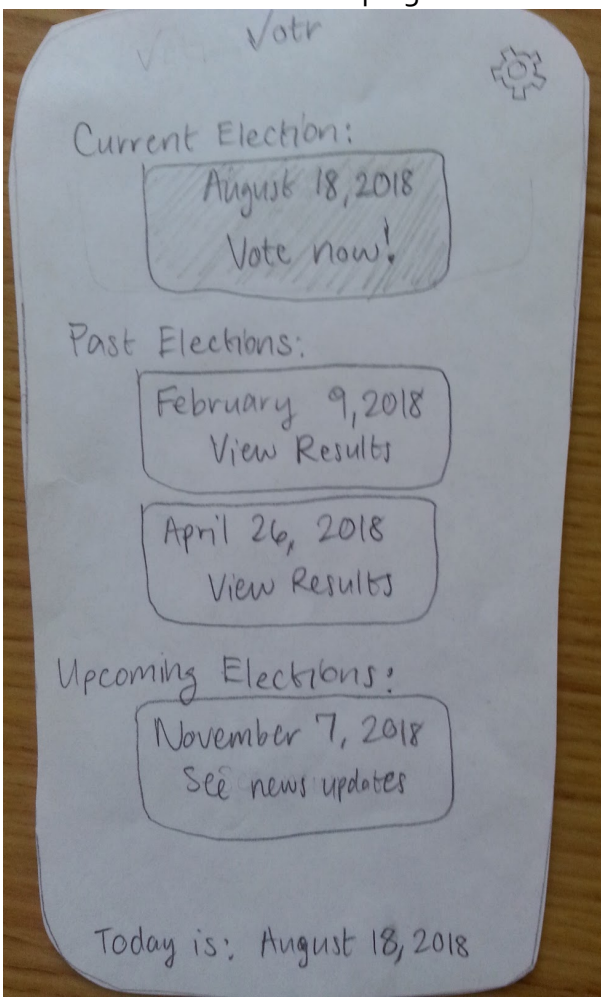
Once the card is inserted, first-time users will be asked to indicate whether or not they are registered voters. If not, they can register from the device. They will need to confirm their DOB and SSN for security purposes. Once that is done, an alignment test will need to be completed to gauge out the user's political interests.



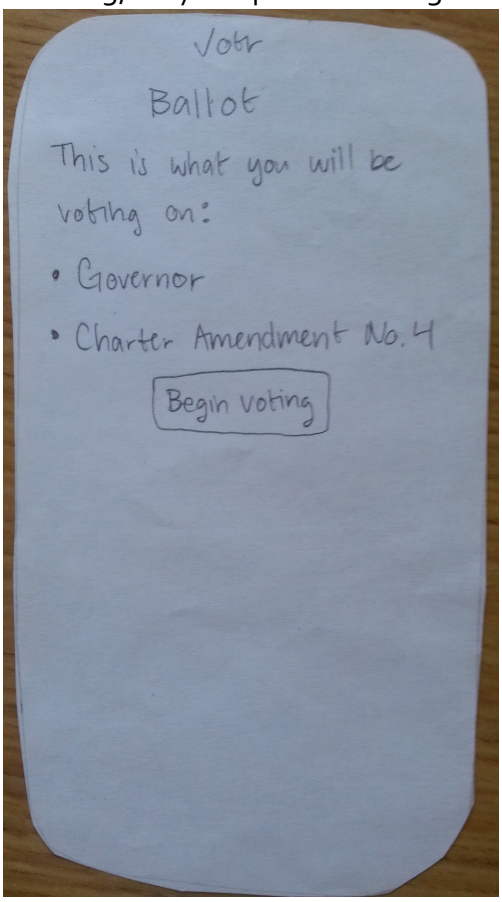


Screen 1.3

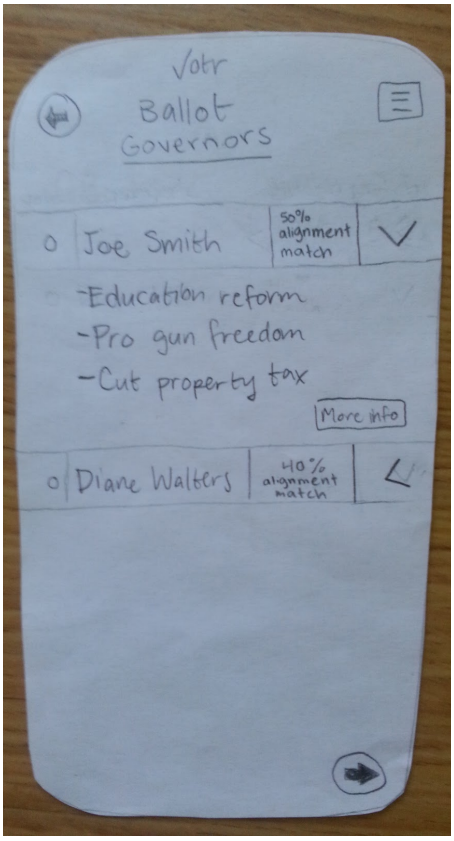
Once that is completed, they will be taken to the main menu. The menu will display upcoming elections, which may vary depending on which state you are in. If the user would like to change the language, he/she can select the button on the top right.



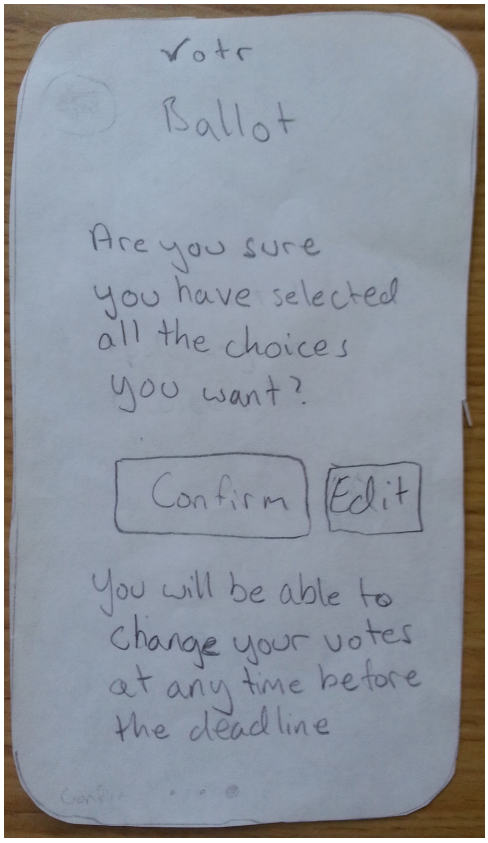
Screen 1.4
When the user selects "Vote Now", they will be taken to a list of topics on the current ballot. When the user is ready to start voting, they can press the "Begin Voting" button.



Screen 1.4
When the user begins voting, they are taken to the first option on the ballot. There is limited information available about candidates/issues, and more if the user presses "More info". The user can choose the option they want to vote for, then press the right arrow at the bottom of the screen.

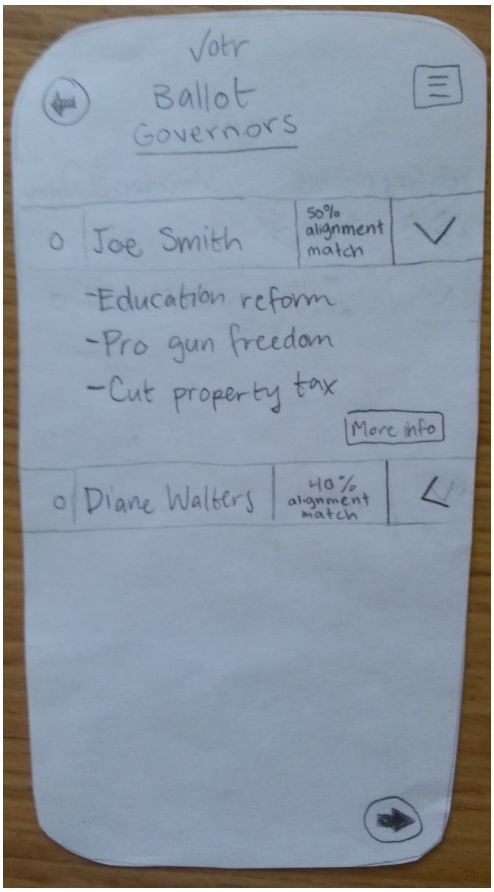


Screen 1.5
When the user is done with all issues, they are asked to confirm their vote. If they are not happy with their decisions, they can press "Edit" to go back and change their vote. Otherwise, pressing "Confirm" ends the voting process.



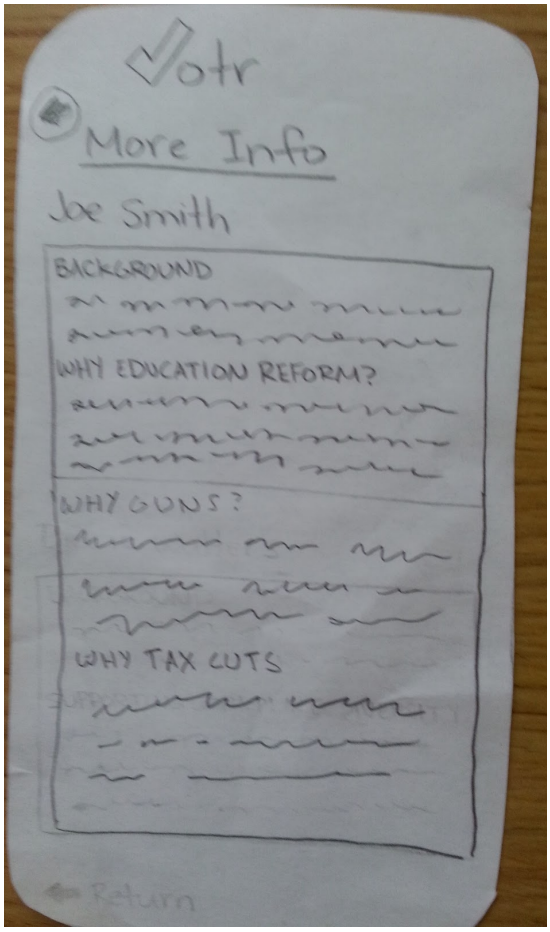
Task 2
Succinct information concerning the current election.

Screen 2.1
From the voting page, users can press the arrow to the right of the candidate to see a small overview of their positions. Pressing the "More info" button will lead to more detailed information.

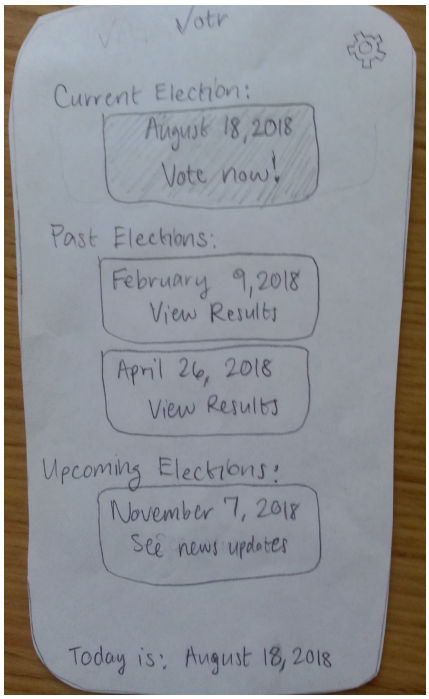


Screen 2.2

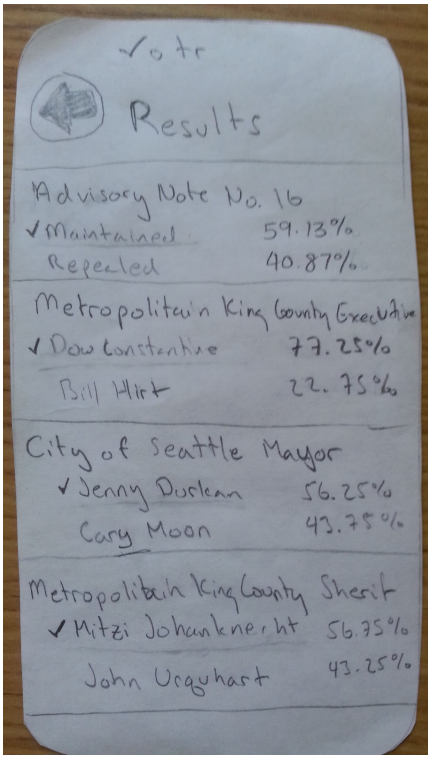
Selecting "More Info" will open a new window that displays more information about the selected issue. For candidates, each candidate has their own more info screen with information about that specific candidates views. When the user is done, they can press the back button to return to voting.



Screen 2.3
When you want to check the results of a previous election, you can click on "View Results" for the desired election from the main screen.

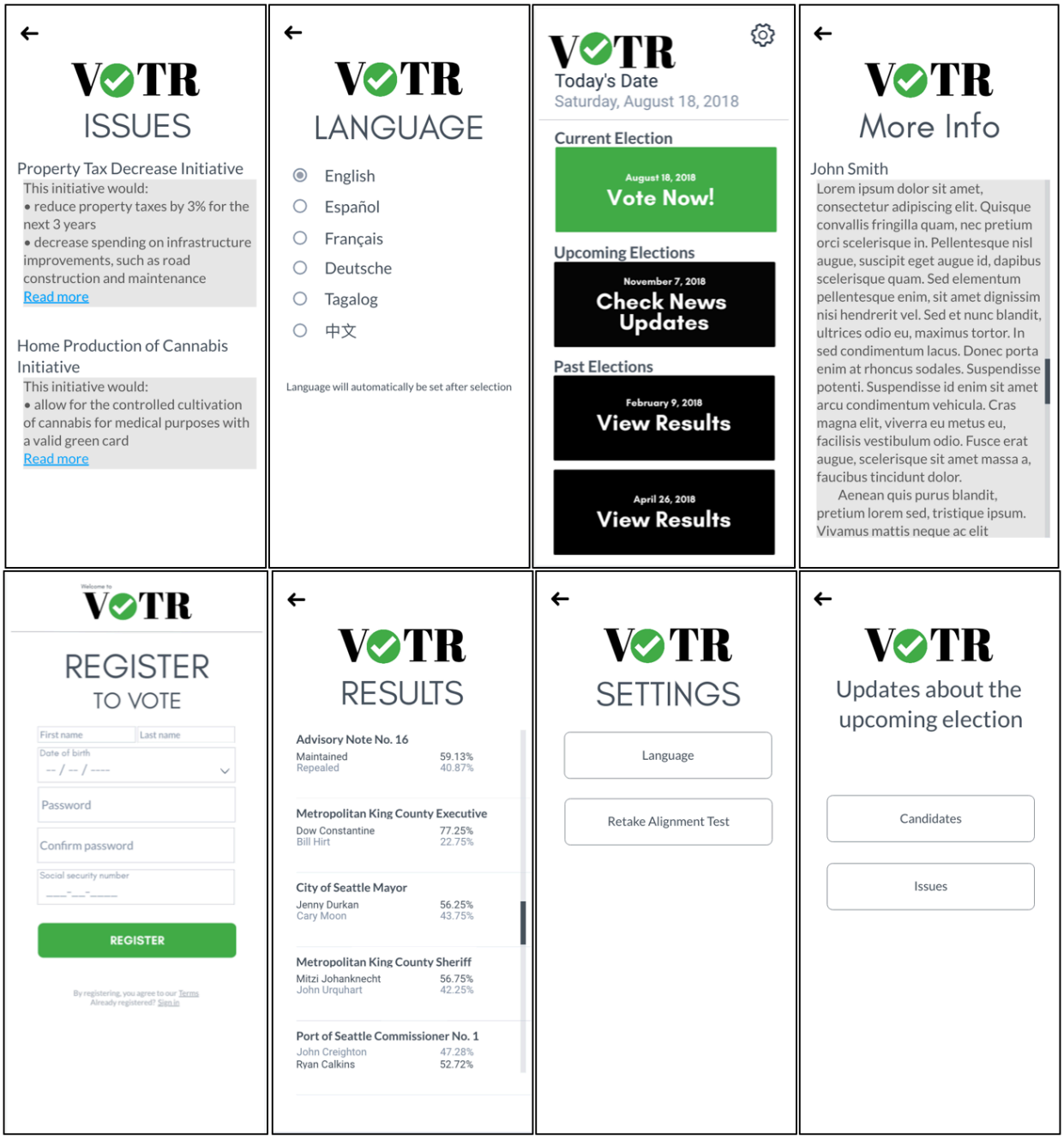


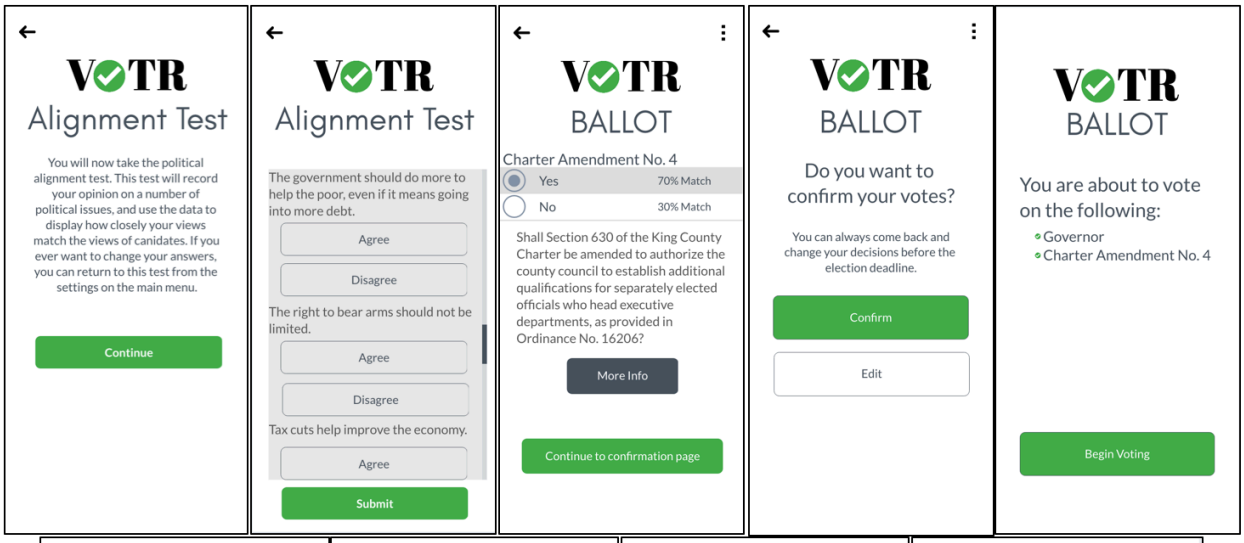
Screen 2.4
On the results page, users can see the issues from the election, as well as who won and by how much. Users scroll to see all results and can return to the main menu with the back button in the top left.

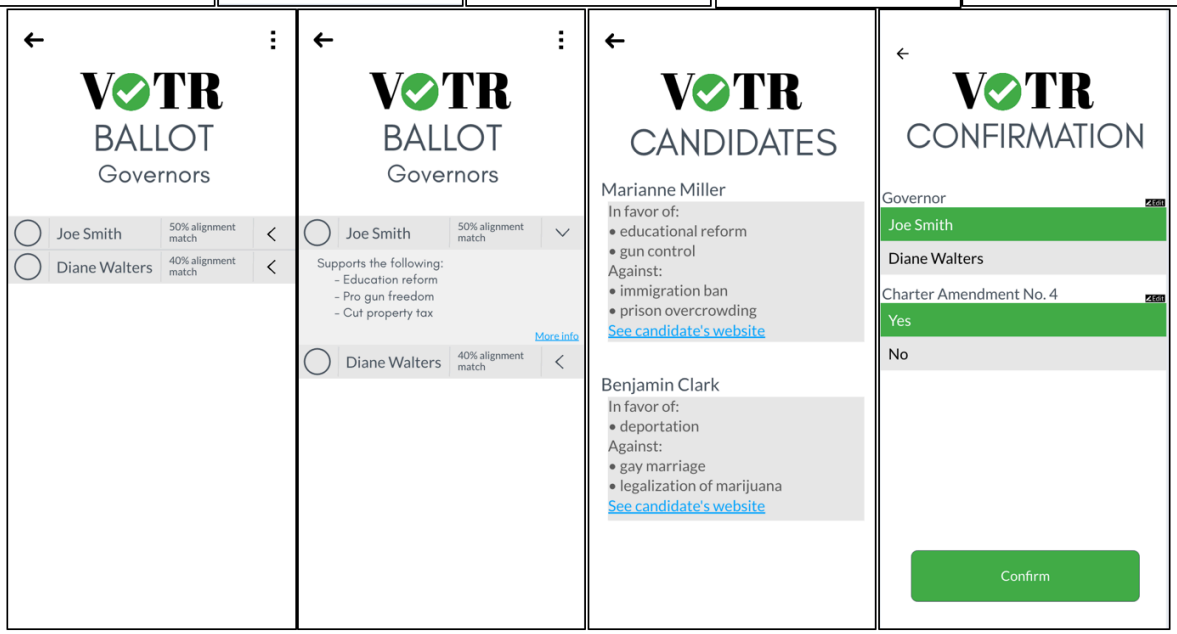


Digital Mockup

OVERVIEW



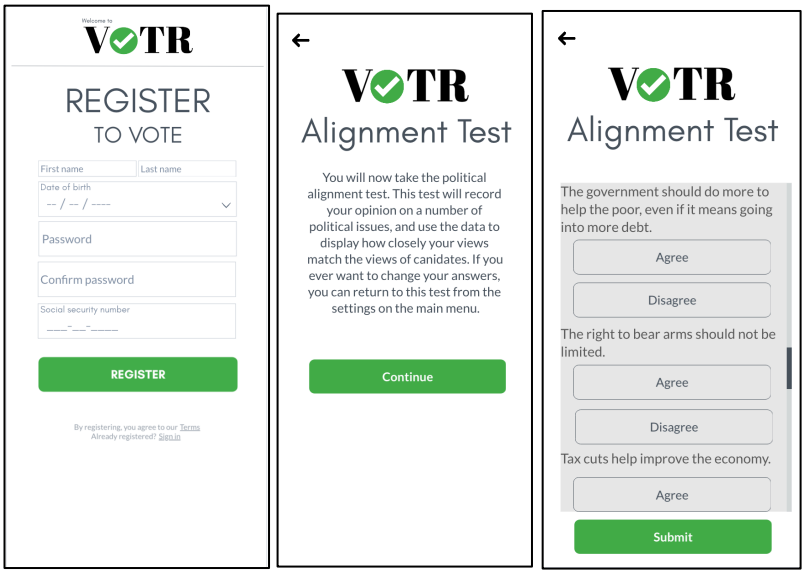

VOTR
Alignment Test
You will now take the political alignment test. This test will record your opinion on a number of political issues, and use the data to display how closely your views match the views of canidates. If you ever want to change your answers, you can return to this test from the settings on the main menu.
Continue
VOTR
Alignment Test
The government should do more to help the poor, even if it means going into more debt.
Agree
Disagree
The right to bear arms should not be limited.
Agree
Disagree
Tax cuts help improve the economy.
Agree
Submit
VOTR
BALLOT
Charter Amendment No. 4
Yes 70% Match
No 30% Match
Shall Section 630 of the King County Charter be amended to authorize the county council to establish additional qualifications for separately elected officials who head executive departments, as provided in Ordinance No. 16206?
More Info
Continue to confirmation page
VOTR
BALLOT
Do you want to confirm your votes?
You can always come back and change your decisions before the election deadline.
Confirm
Edit
VOTR
BALLOT
You are about to vote on the following:
Governor
Charter Amendment No. 4
Begin Voting


VOTR
BALLOT
Governors
Joe Smith 50% alignment match
Diane Walters 40% alignment match
VOTR
BALLOT
Governors
Joe Smith 50% alignment match
Supports the following:
- Education reform
- Pro gun freedom
- Cut property tax
More info
Diane Walters 40% alignment match
VOTR
CANDIDATES
Marianne Miller
In favor of:
• educational reform
• gun control
Against:
• immigration ban
• prison overcrowding
See candidate's website
Benjamin Clark
In favor of:
• deportation
Against:
• gay marriage
• legalization of marijuana
See candidate's website
VOTR
CONFIRMATION
Governor
Joe Smith
Diane Walters
Charter Amendment No. 4
Yes
No
Confirm

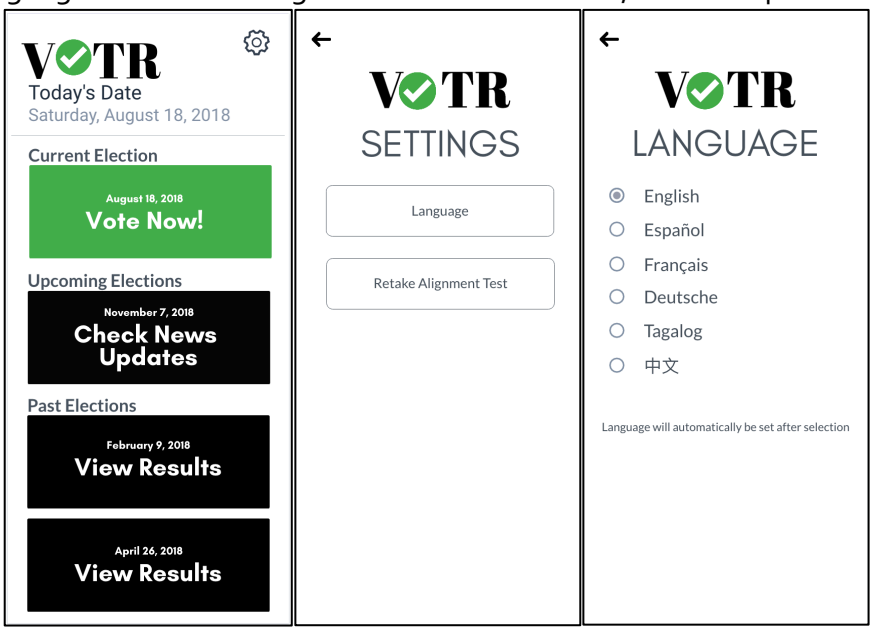
Task 1

Voting from the device in a location that is not a polling booth and is before the voting deadline.

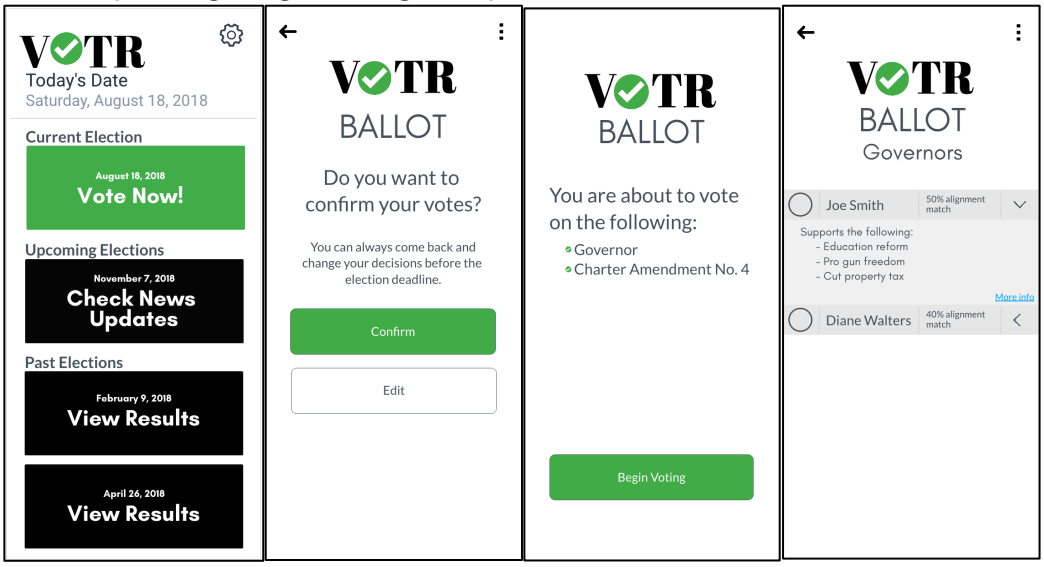
After inserting the card, users register to vote. After successfully registering, users take an alignment test that will provide suggestions during the voting process.



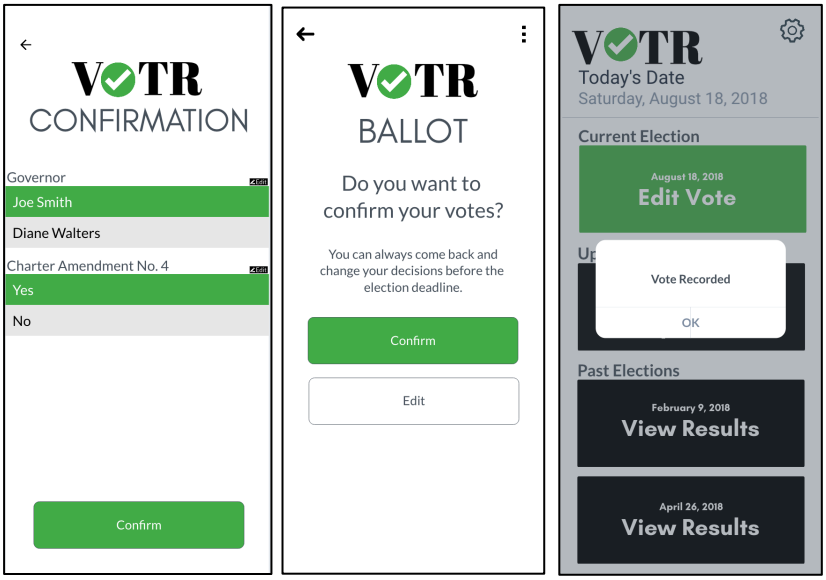
After submitting the test, users are taken to the main page. From the main page, users can change the language from the settings menu. In order to vote, users can press "Vote Now".



After pressing "vote now," users are taken to a page that shows them what issues will be on the ballot. After pressing "Begin Voting", they are taken to the first issue on the ballot.



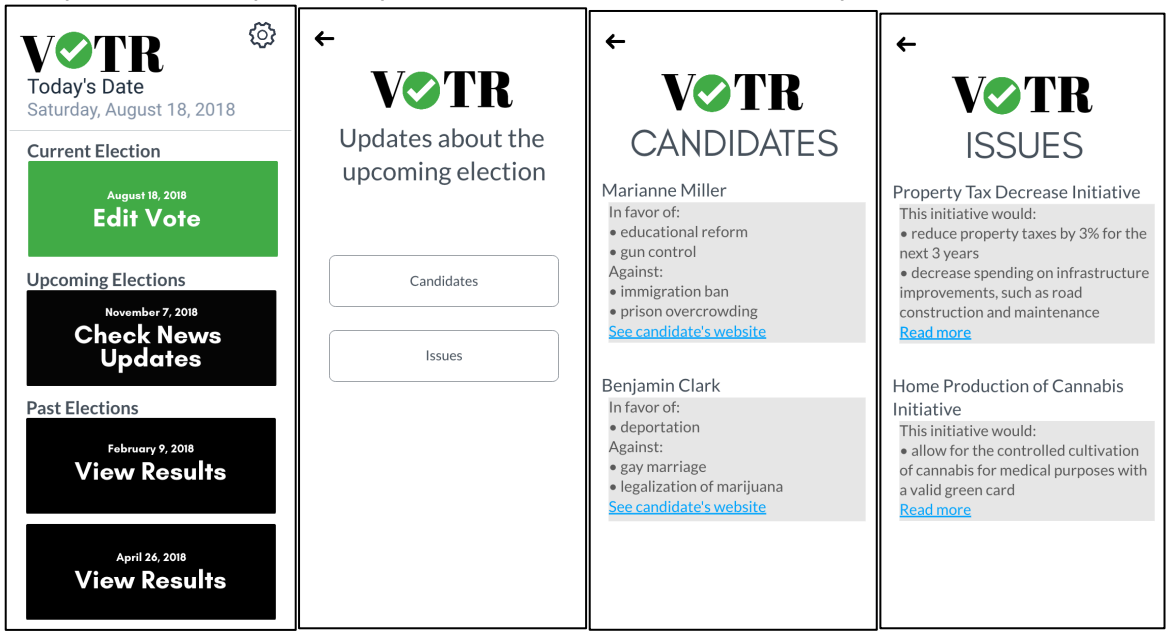
After continuing to confirmation (center), users can choose to either "Edit" their choices (left) which lets them see what they chose, and go back if they want to, or "Confirm", in which case the user is brought back to the main menu. On the main menu, the user receives a message saying that their vote has been recorded, and the "Vote Now" button is changed to say, "Edit Vote".



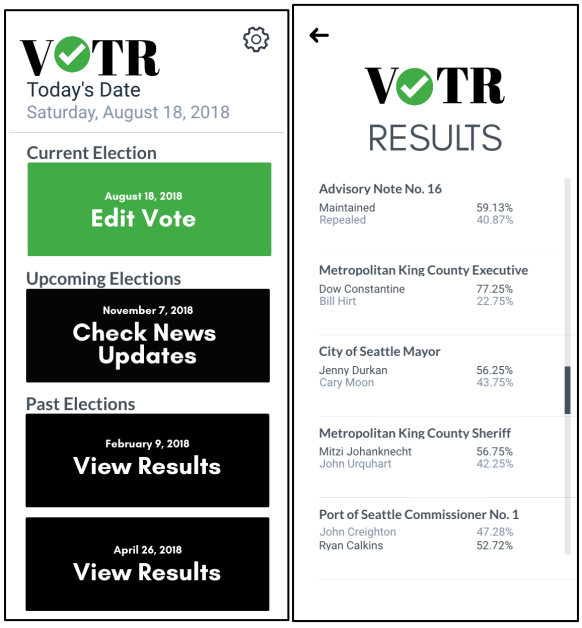
Task 2

Succinct information concerning the current election.

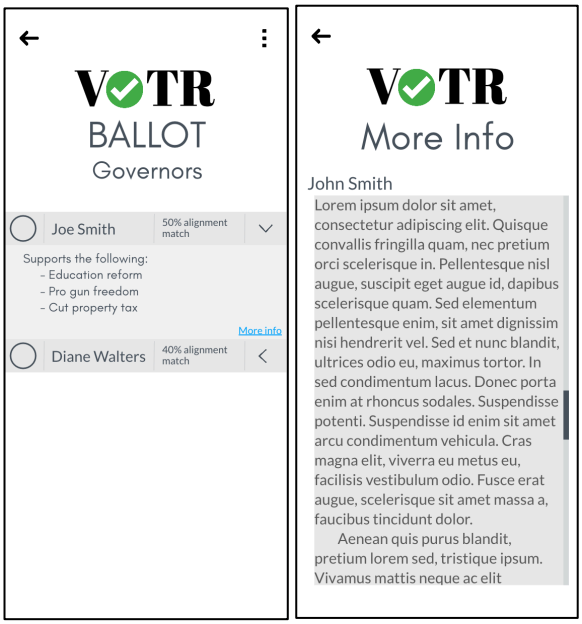
In order to see information about upcoming elections, users can click "Check News Updates" on the main menu. Then they have a choice between "Candidates" and "Issues". Depending on which option the user picks, they will see information about that topic.



In order to see information about past elections, users can click "View Results". This will show the results of the election. After the user is done, they can press the back button in the top left corner to return to the main menu.



From an issue on the ballot, users can press the more info button to see detailed information. For candidates, there is a separate page for each candidate. For issues there is only one more info page.



Discussion

The process of iterative design was very helpful in creating our device. Our initial design had major flaws that would have made using it very difficult and frustrating. Iterative design allowed us to find those flaws and fix them. The opportunity to get feedback so often, and from so many different sources made our design much better than it could have been otherwise.

The design process led to large changes at the beginning and helped solve smaller issues once we got a better idea of what we wanted. In the beginning, our paper prototype was different from all of our individual sketches. During the paper prototype phase we kept the same basic design, but added new pages to the design to improve the flow. For digital prototyping, the changes were focused more on smaller issues such as visual consistence, with few changes to the overall flow of the design.

Our tasks remained pretty similar through usability testing. The testing helped us improve the clarity of the tasks in how they were represented in our device. The changes we did as a result of usability testing did not change the tasks, they helped get rid of the gulf of execution and evaluation.

We think we could have benefited from more iteration on the design. The iteration we did do helped improve our design a lot and more iteration would probably result in more improvements. A second round of usability testing on our revised paper prototype or digital prototype might have found things that we did not.

Appendix

Instruction given during usability tests

Thank you for participating in our research study. Any information gathered today will be kept anonymous, so you will not be identified in any way. The purpose of the test is to help us understand our product, such as whether or not we have met our desired goal. We will not be judging you, but rather the product. We will not be providing any guidance on using the tool; we want to see for ourselves how you would use it. We want you to pretend that it is election season. How will you be utilizing this device?