

VOTER

Olivia Brown

Age: 57

Tech: Desktop

Location: Nice, France

Military Status: Civilian



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| User Type | Overseas Businesswoman |
| System Information Priorities | <ul style="list-style-type: none">• Basic voter introduction and registration• In-line tool tips• Important dates• Required authentication materials• Error recovery help |
| Description | <p>Olivia moved to Nice, France with just a month's notice to land her dream job. She's been having a great time but overwhelmed with all the cultural differences not to mention negotiating a lease in a forgone language. Now it's been a few months and she's settled in a bit. While Skyping with her sister back in Iowa, she is reminded to register to vote. Honestly, Olivia had forgotten. She knows she got something in the mail but she's lost it by now. She jumped on Google to see how she could even get started.</p> |
| Key Needs | Convenient. Easy. Friendly. |
| Comfort with Technology | Low. Struggles with mobile technology and avoids digital interfaces. |
| User Paths | <p>After registering, Olivia receives an email inviting her to create an account to vote online > She clicks the link the email which opens in her default browser > The page asks her to authenticate > Olivia completes the authentication and chooses an image to associate to her account > She begins the voting process > She enters text and after moving to the next field sees a red outline around the box and an error message next the field explaining why her input was invalid > She corrects the input and the read line and error text are removed and replaced with a small green checkmark > Olivia finishes her vote and submits > Olivia sees a confirmation message that her vote was submitted > Olivia receives a confirmation message that her vote was submitted and information on how to verify.</p> |

VOTER

Sam Adleman

Age: 22

Tech: Smartphone, Laptop, Tablet

Location: Kabul, Afghanistan

Military Status: Active Combat



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| User Type | Soldier Abroad |
| System Information Priorities | <ul style="list-style-type: none">• Basic voter introduction and registration• Combat zone requirements• Combat duty voting protocol• Important dates• Required authentication materials |
| Description | <p>Sam struggled when he was young with what to do with himself. He never did well in school and his family wasn't a place of comfort. After high school he joined the marines and was deployed later that year to Afghanistan. Now, three years later, he's on his second tour. He feels it's his patriotic duty to vote but feels uneasy about trying to do it on a computer. His commanding officer informed him that overseas voting will be done online this year. Sam hopes it's not too much of a pain and can handle the location's spotty internet.</p> |
| Key Needs | Compliant with Military Expectations, Easy, Tolerates Interruptions |
| Comfort with Technology | Low. Has limited experience with technology and needs basic interactions explained. |
| User Paths | <p>Sam sits down at a military computer and enters his login information > Sam begins the voting process by entering in the first few fields > One field turns red and red text next to the field explains how to correct his answer > Sam corrects his answer and the red text turns to green checkmarks, as all other correctly completed fields > Sam's internet goes down and he has to stop.</p> <p>Sam returns online the next day > Sam begins by logging into his military account > Sam sees a message explaining that his session was interrupted and the screen will reflect where he left off > Sam continues to fill out the forms until he is finished > Sam submits his vote and sees a confirmation message > Sam receives a confirmation email stating his vote was submitted and information on how to verify his vote.</p> |

VOTER

Denise MacDonald

Age: 28

Tech: Smartphone, Laptop

Location: San Diego, CA

Military Status: Active Non-Combat



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| User Type | Domestic Military |
| System Information Priorities | <ul style="list-style-type: none">• Basic voter introduction and registration• Important dates• Active duty voting protocol• Required authentication materials |
| Description | Living in California isn't too much of a stretch for Texas-native Denise MacDonald. She likes the warm weather and access to the ocean. Still, she's proud to be a Texan and looks forward to participating in local politics. She registered to vote in her home district and is interested to try out the new internet voting system. |
| Key Needs | Clear, Easy, Simple |
| Comfort with Technology | Medium. Regularly uses a smartphone for web browsing and family communication. |
| User Paths | Uses a bookmark created when she registered with the web address for voting > Enters in her authentication information > Receives back a message that her information is not valid > Denise then clicks the "forgot my password link" > Denise enters her email address and several other authenticating pieces of information > Denise then receives an email explaining the password reset protocol > Denise completes the protocol and logs in to vote > Denise finds the form easy to use and intuitive > Denise completes her vote and submits it > Denise sees a confirmation message and receives a confirmation email with information on how to verify her vote. |

VOTER

Jacob Billson

Age: 32

Tech: Smartphone,
Laptop, Desktop

Location: Missoula, MT

Military Status: Civilian



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| User Type | Blind Voter |
| System Information Priorities | <ul style="list-style-type: none">• Important dates• Technology assistance compatibility• Security/Verification information• Sight-impaired support |
| Description | <p>As far as Jacob is concerned, it's the technology that's handicapped, not him. When everything is in place, he can work just as fast and just as effectively as anyone in his office. He's a bit of a gadget geek, he's always trying out new tools, looking for a little edge and something new. The last few years have been a lot of fun with all the new apps, and VoiceOver on his Mac and phone lets him use most of them pretty well. He likes the challenge of learning new tools.</p> |
| Key Needs | Interacts with assistance technology, Supports independent use, Tolerates interruptions |
| Comfort with Technology | High. Relies extensively on technology for work as well as spatial navigation. |
| User Paths | <p>Jacob hears a notification from his email that he has a new email from the US government > Jacob learns that he can now go vote online > After giving the voice command to load the internet voting portal website, Jacob provides the authentication information required of him > Jacob navigates through the instructions using VoiceOver > Jacob proceeds through the voting process giving voice commands > After one input, Jacob hears the system giving an error message > Jacob ignores the error message and finishes his ballot > He attempts to submit but hears another error message with an option to navigate to the field containing the error > Jacob navigates to the field and updates his response > The system give a correct confirmation > Jacob attempts to submit again and is successful > Jacob hears a confirmation message and receives a confirmation email with information on how to verify his vote.</p> |

ELECTION OFFICIAL

Larry Elkhart

Age: 56

Tech: Smartphone, Laptop,
Desktop

Location: Gainesville, FL

Military Status: Civilian



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| User Type | Local Election Official |
| System Information Priorities | <ul style="list-style-type: none">• Important dates• Implementation protocol• Verification protocol• Guide to assisting voters• Fraud identification |
| Description | Larry has been a civil servant for over a decade and has seen many changes in voting protocols. Internet voting, however, is definitely one of the bigger ones. He wants to understand precisely how to correctly run an election as well as help his voters navigate the election. Not only has he been fielding technical questions on how to vote, but he has also been in the position of advocating for the government's decision to deploy internet voting with many of his constituents who feel very concerned about fraud. |
| Key Needs | Easy for voters, Safe, Intuitive |
| Comfort with Technology | Medium. Some familiarity with computer networks and security protocols but limited. |
| User Paths | Before preparations begin, Larry receives an email from the government explaining some high level information on what to expect from the first round of internet voting > When it comes time to set up the election, Larry receives a PDF from the state of Florida with step-by-step instructions on how to set up the election in addition to general election information > Larry follows the instructions and creates a localized version > Larry is able to run several mock-elections to test everything has been implemented correctly > Larry finds a typo and is able to go into the back end and edit the ballot and then launch a new mock-election > Larry is pleased to see a link for users to recover their own forgotten passwords and user names > Larry launches the election on time and receives regular system updates in his email > Larry closes the election on time and sets the system to notify late voters that the election is now closed. |

PUBLIC

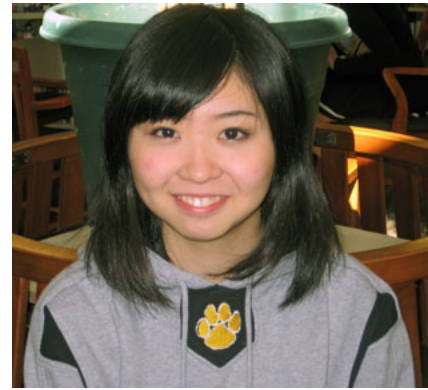
Hitomi Sasaki

Age: 17

Tech: Smartphone, Laptop

Location: Brooklyn, NY

Military Status: Civilian



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| User Type | High School Senior |
| System Information Priorities | <ul style="list-style-type: none">• Important dates• Technical security guarantees• Verification protocol• Fraud consequences |
| Description | Hitomi has absolutely excelled in all of her courses. For her senior project, she's decided to get involved with government and verify the recent election. She plans to just use online documentation and calculate the results herself. After she has the numbers, then she can incorporate her findings with interviews with local voters on their experiences. Hitomi hopes the number crunching will go pretty quickly and won't require much outside help. |
| Key Needs | Easy vote verification, Clear and accessible system specs |
| Comfort with Technology | High. Raised with a lot of access to technology by parents in the tech industry. |
| User Paths | <p>Google search "Online Voting Verification" > Scrolls through and looks for a government website > Find the closed election site with links to materials on vote verification > downloads a PDF</p> <p>Returns to the closed election website > Follows the directions in the PDF > Downloads the anonymous vote verification data > Computes key values and compares with outcome > After the vote verifies, Hitomi validates several specific votes > Hitomi is happy with how easy the verification process is and includes the directions in her report to encourage her classmates and teachers to try it for themselves.</p> |

ADVERSARY

Harrison MacArthur

Age: 24

Tech: Smartphone, Laptop

Location: Fargo, ND

Military Status: Civilian



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| User Type | Hacker |
| System Information Priorities | <ul style="list-style-type: none">• Important dates• Technical security guarantees• Technical system implementation• Security assumptions• Fraud consequences |
| Description | Always curious about how far he can go, Harrison has taken to testing out the security of local government and banking websites. Interested in putting to use all his hours of reading and hacking, Harrison decides to see if he can alter the outcome of a recent local election that was run online. He reads through the election official materials, internet voting protocol, and system specifications and then sets to work pressure testing. |
| Key Needs | Incorrect security implementation, weak encryption, accessible credentials |
| Comfort with Technology | High. Adept at exploiting weaknesses introduced by implementation errors. |
| User Paths | <p>Anonymously Google searches for "Fargo election handbook" and see several PDF results > Downloads two PDFs > Continues searching online for further e-voting protocol information as well as Fargo government infrastructure</p> <p>Opens an anonymous browsing session through Tor > Searches for "Fargo election website" > Clicks through to the homepage and launches a script to attempt to fraudulently log in > After 10 attempts, the system begins to slow increasingly with each failed attempt > Soon the computer slows enough that Harrison decides to try another method.</p> |