




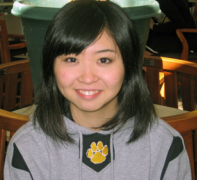



	Voters				Election Official	Public	Adversary
							
Demographics	Olivia Brown Age: 57 Tech: Desktop Location: Nice, France Military status: Civilian	Sam Adleman Age: 22 Tech: Smartphone, Laptop, Tablet Location: Kabul, Afghanistan Military status: Active Combat	Denise MacDonald Age: 28 Tech: Smartphone, Laptop Location: San Diego, CA Military status: Active Non-Combat	Jacob Billson* Age: 32 Tech: Smartphone, Laptop, Desktop Location: Missoula, MT Military status: Civilian	Larry Elkhart Age: 56 Tech: Smartphone, Laptop, Desktop Location: Gainesville, FL Military status: Civilian	Hitomi Sasaki Age: 17 Tech: Smartphone, laptop Location: Brooklyn, NY Military status: Civilian	Harrison MacArthur Age: 24 Tech: Smartphone, laptop Location: Fargo, North Dakota Military status: Civilian
User Type	Overseas Businesswoman	Soldier Abroad	Domestic Military	Blind Voter	Local Election Official	High School Senior	Hacker
System Information Priorities	<ul style="list-style-type: none">Basic voter introduction and registrationIn-line tool tipsImportant datesRequired authentication materialsError recovery help	<ul style="list-style-type: none">Basic voter introduction and registrationCombat zone requirementsCombat duty voting protocolImportant datesRequired authentication materials	<ul style="list-style-type: none">Basic voter introduction and registrationImportant datesActive duty voting protocolRequired authentication materials	<ul style="list-style-type: none">Important datesTechnology assistance compatibilitySecurity/Verification informationSight-impaired support	<ul style="list-style-type: none">Important datesImplementation protocolVerification protocolGuide to assisting votersFraud identification	<ul style="list-style-type: none">Important datesTechnical security guaranteesVerification protocolFraud consequences	<ul style="list-style-type: none">Important datesTechnical security guaranteesTechnical system implementationSecurity assumptionsFraud consequences
Description	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.	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.	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.	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.	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.	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.	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	Convenient, Easy, Friendly	Compliant with Military Expectations, Easy, Tolerates interruptions	Clear, Easy, Simple	Interacts with assistance technology, Supports independent use, Tolerates interruptions	Easy for voters, Safe, Intuitive	Easy vote verification, Clear and accessible system specs	Incorrect security implementation, weak encryption, accessible credentials
Comfort with Technology	Low. Struggles with mobile technology and avoids digital interfaces.	Low. Has limited experience with technology and needs basic interactions explained.	Medium. Regularly uses a smartphone for web browsing and family communication.	High. Relies extensively on technology for work as well as spacial navigation.	Medium. Some familiarity with computer networks and security protocols but limited.	High. Raised with a lot of access to technology by parents in the tech industry.	High. Adept at exploiting weaknesses introduced by implementation errors.
User Paths	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.	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. 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.	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.	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.	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.	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 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.	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 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 where Harrison decides to try another method.

* This persona was copied from <source>