VOTING SYSTEMS ASSESSMENT PROJECT

Open Design Search

May 3, 2012

LA County Registrar Recorder County Clerk

LOS ANGELES COUNTY'S OPEN DESIGN SEARCH

Los Angeles County is charting a new course in voting system development and implementation with its Voting Systems Assessment Project (VSAP). This innovative project envisions implementing a voting system through a transparent and participatory process that takes into account the needs and expectations of current and future Los Angeles County voters. This project breaks the mold of the traditional acquisition model in which jurisdictions select a voting system based on what is available on the market, not on the specific needs and expectations of their community.

To ensure an accurate representation of stakeholder preferences and needs, the VSAP has engaged the public since its launch in September of 2009. Through public engagement research activities, VSAP established a strong foundation of baseline data regarding voter and pollworker preferences and requirements. The VSAP also engaged with partners to gather data on the current funding, regulatory, and voting systems market. This process not only established a strong foundation of public opinion data, but also firmly reinforced the importance of transparency and citizen participation. In addition, this process brought the RR/CC to the conclusion that existing voting models do not meet the diverse and broad needs of current and future Los Angeles County voters.

The VSAP is now in a stage of envisioning and designing what a new voting system for its voters will look like. In an effort to remain aligned with the VSAP values of transparency, citizen participation, and utilizing sound data during this stage, the VSAP launched an "Open Design Search" on January 2012. The Open Design Search seeks to engage a broad range of experts, designers, and the general public to design an innovative voting system that will meet the unique needs of Los Angeles County's large and diverse electorate. There are two primary components to Open Design Search: 1) Open Innovation Challenge and 2) Voter Experience Brainstorming Workshops.

Existing Voting Systems Market

The RR/CC evaluated the current voting systems market. In this analysis, four voting system models emerged: 1) hand-marked hand-counted paper ballots, 2) hand marked optical scan ballots, 2) direct recording electronic ballots, 4) ballot marking devices.

Hand-Marked Hand-Counted Paper Ballots are paper ballots that are marked using a pen, pencil, stylus, or other type of similar device and tallied by individuals interpreting the marks on the ballot and adding them up. These can include central or in-precinct tabulation scenarios.

Hand-Marked Optical Scan Ballots are paper ballots that are marked using a pen, pencil, stylus or other similar device and tallied by an optical scan reader that reads the markings. This model can include central or in-precinct tabulation scenarios.

Direct Recording Electronic Ballots are ballots that are marked using an electronic device such as a touchscreen or a keyboard. Votes are stored on the device or a memory card in the device and counted and tallied electronically.

Ballot-Marking Devices are such that votes are marked using a touchscreen. Once votes are selected a paper ballot is printed. The printed paper ballot is the official record of the vote and what is used to tabulate votes for the election. Ballots are likely counted and tabulated same as

optical scan ballots. This model may consider votes stored in the device for purposes of additional auditing and back up to the paper ballots.

In reviewing the four voting system types the RR/CC concluded that none of the models satisfactorily meets the diverse range of needs of Los Angeles County voters. Furthermore, none of the four models fully satisfy the Voting System Guiding Principles, as established by the Voting Systems Assessment Project Advisory Committee.[1] As a result of this finding, the RR/CC determined it was necessary for a new voting system design for Los Angeles County voters to be envisioned.

Open Innovation Challenge

The VSAP launched the first portion of its Open Design Search, an Open Innovation Challenge in January 2012. The public at large was invited to participate in this challenge which aimed to provide new approaches to the County's aging voting system. Asking the question, "How might we design an accessible election experience for everyone?" the voting challenge ran from January 24th – March 28th. The challenge was conducted in partnership with the Information Technology and Innovation Foundation (ITIF) Accessible Voting Technology Initiative and funded by a competitive grant from the U.S. Elections Assistance Commission.

The challenge ran on OpenIDEO, the open innovation platform run by design and innovation firm IDEO. Individuals from around the world submitted innovative solutions and concepts around making the voting experience more accessible to everyone. Engaging anyone with an interest and idea in the process, not just election technology experts, provided a process that cultivated design ideas for an innovative voter experience that may not have been envisioned when working with a more traditional model of exclusively working with voting system vendors.

This process resulted in the submission of 154 concepts. The OpenIDEO, ITIF and Los Angeles County team, with the community feedback and comments as a guide, identified eleven concepts that have the most potential to redefine what voting looks like for people with disabilities, language or literacy concerns, or other limitations that might exclude them from the voting process today. The eleven winning concepts were:

- An Election Integration into the College Campus
- Community Voter Advocates
- Complete Online Polling Stations Performance Tracking Platform
- Design for Onboarding (Tutorial), Habit-Building (Grind) and Mastery (Elder Game)
- EZ Ballot
- iPad Absentee Voting
- Let Vapp Suggest
- MyVote Smartphone App
- Priority Queue
- Voter Help Hub
- Voting Vans

[1] http://lavote.net/Voter/VSAP/PDFS/VotingSystemPrinciples.pdf

Voter Experience Brainstorming Workshops

The RR/CC launched the second portion of the Open Design Search with a series of workshops. The workshops continued the open process by engaging stakeholders in the process and gathering additional ideas and concepts that the RR/CC can utilize as it continues envisioning an ideal voting system design. The workshops targeted different stakeholders and focused on different elements of a voting system. The first workshop was held at the Election Verification Network Annual Conference and focused on discussing important elements for an effective tally system. The RR/CC then held two workshops that gathered RR/CC staff to brainstorm and share their thoughts for the design of an ideal voting system. In addition, RR/CC participated in brainstorming workshops hosted by the ITIF Accessible Voting Technology Initiative.

Disclaimer: The data and information collected during the voter experience brainstorming workshops employs a data collection method known as convenience sampling [i] and is not meant to be representative of the entire voting population and we make no claims to that effect. For more information on convenience sampling, refer to endnote (i).

EVN Conference Session

The Election Verification Network (EVN) hosted its annual conference on March 30, 2012 in Santa Fe, New Mexico. At the conference, the RR/CC hosted a session entitled "*In Votes We Trust: Principles for a Better Tally System*". This session was a part of Los Angeles County's VSAP.

An integral part of the VSAP is to engage experts, voters, and the general public throughout the process. In this session, 24 participants, representing various universities, think tanks, voting integrity groups and election jurisdictions, gathered to provide their input. Organizations represented included:

- Maricopa County
- University of Michigan
- Verified Voting
- Fairfax County, VA
- Ohio Secretary of State
- Lawyer's Committee
- Brennan Center
- New York State Board of Elections
- Usability in Civic Life
- University of New Mexico
- California Voter Foundation
- New York University
- Colorado for Voting Integrity
- Common Cause
- Hennepin City, MN
- Yolo County
- University of California, Berkeley

Participants were led in a moderated discussion to design a more effective tally system. The goal of this session was to develop a list of suggested guiding principles or key elements for the

County's new voting system as well as strategies to achieve those principles in practice. During this session, participants had the opportunity to meet directly Los Angeles County Registrar-Recorder/County Clerk and management staff to discuss the key elements to the success of its current tally system and key principles that may even further improve the tally component of a new system

While no clear consensus tally solution from the three groups emerged, some of the key suggested tally system elements identified by participants include:

- Utilizing Open Source Software
- Using Election Markup Language (EML)
- Producing a Voting Record/Receipt
- Including Human-Readable and Self-Contained Ballots
- Utilizing Precinct-Based Tally Method

Group 1: Auditing Processes and Procedures

This group focused on the auditing and reporting of the tally results and felt that linking the paper record of votes cast with its electronic counterpart was needed, along with the ability to audit both records. They proposed that the tally system be developed using **open source software**, which is not subject to non-disclosure agreements so that reviewing source, an important feature, is possible.

With respect to reporting tally results, the group recommended the use of **Election Markup Language** (**EML**). EML is an XML-based standard for the structured interchange of data among hardware, software, and service providers who engage in any aspect of providing election or voter services to public or private organizations. Using EML ensures that election results are reported using technical standards that are transparent and have been widely adopted. It also ensures that documentation is standardized so that as support staff retire there are others who can maintain the code.

Group 2: Electronic Link between Paper and Electronic Ballot

Group members proposed that a **voting record (or receipt)** be produced at the end of the voting process so that voters would have evidence of votes cast. They also proposed that the receipt be linked to the electronic record of the vote cast. The **ballot itself should be human-readable, and self-contained** on one piece of paper. The electronic record of the ballot contains an identifier, as well as on the original ballot to facilitate matching of the electronic record with its paper counterpart. Finally, this group felt that ballot reading should be performed by separate software from the tally process, and after a ballot is read, it should be marked with an identifier as read.

Group 3: Decentralized Tally at Precinct/Polling Place

Group members proposed that **ballots be counted and tallied at the precinct/polling place**, rather than a centralized tally location. Once tallied at the precinct level, ballots and precinct totals would be taken to a tally center to aggregate the precinct totals. This group suggested that with this method, there would be fewer chain of custody issues and greater transparency, allowing voters to see how the ballots are counted and confirmation of how their individual ballot was counted. A precinct/polling place count also allows voters to check for over votes or under

votes on each contest, along with a printed record of votes cast. Finally, Vote By Mail ballots would be delivered to the central tally center for counting.

RR/CC Staff Brainstorming Workshops

The Registrar-Recorder/County Clerk (RR/CC) conducted a series of Voter Experience Brainstorming Workshops on April 5-6, 20102. The Voter Experience Brainstorming Workshops were held at the RR/CC Headquarters in Norwalk, CA. 25 RR/CC staff members participated in these workshops representing the following units:

- Voter Records
- Election Planning
- Election Tally Systems
- Community and Voter Outreach
- Poll worker Training and Outreach
- Information System Support
- Network and Voter Systems
- Ballot Management
- Polls
- Media and Communication

The workshops were designed for internal stakeholders to generate ideas on new solutions to voting systems, given the breadth and depth of their experience with election operations. Staff designed solutions keeping in mind areas for performance improvement. Of the six discussion groups assembled, five of the six proposed a tablet-based or touch screen voting interface. Some key suggested voting system elements that recurred throughout the discussions include:

- Tablet-Based or Touch-Screen Voter Interface
- Ability to Integrate Accessibility Features and Attach Assistive Technology Tools
- Paper Ballots for Audit
- Centralized Electronic Tally
- Developing Mobile Applications

Consensus Solution: Tablet-Based or Electronic Touch-Screen Voter Interface

Leveraging current trends in information technology, the discussions centered on developing a voting interface which used either tablet-based interface or a touch-screen interface on a device specifically developed for voting. RR/CC staff envisioned that there would have to be multiple tablet or touch-screen devices each with a dedicated printer to produce a printed, bar-coded record of votes cast. As further described below, the printed ballot receipt would be used for audit and for recount purposes.

From the perspective of election workers responsible for providing a streamlined and efficient voting experience for voters, the discussion groups felt that tablet or electronic devices would be an effective solution for various reasons. First, tablets can have software pre-loaded to minimize pollworker setup and therefore, pollworker errors. Tablets are also preferred by staff because they are small and portable, making storing, transporting, and setting up the device easy for all election workers.

According to staff, the accessibility features that can be incorporated in a tablet make the tablet not only ideal for election workers but an ideal solution for voters as well. Tablets allow voters to adjust font size, screen contrast, and audio volume. Tablets also offer the capability of attaching accessibility and assistive technology tools.

Ability to Integrate Accessibility Features and Assistive Technology Tools

Participants emphasized ensuring the system is one that is accessible for voters with various range of disabilities or specific needs. Proposed solutions to accommodate voters with disabilities included providing a device with assistive technologies attached (headphones, sip and puff devices, Braille displays, etc), creating a height and angle-adjustable stand for the tablet voting device, providing an audio feature, and allowing voters with assistive technologies to bring and use their own technologies (Braille display, headphones, etc) to attach to the device and facilitate marking the ballot. As previously mentioned, tablet or electronic touch screen interfaces also allow voters to adjust font size and type, contrast, and volume to meet specific voter needs. Also, staff agreed that a keyboard should be available for voters who have difficulties using touch screens.

Centralized Electronic Tally

To ensure that election results are reported in a timely manner, most groups included an electronic tally as part of their proposed solution. The electronic tally would be audited using the bar-coded paper ballots printed at the end of each voting transaction. Also the tally system has to be flexible to count both Vote By Mail ballots and ballots cast at polling place.

Backup System: Continue to use Paper Ballots

While most groups suggested an electronic tally of ballots, they also stressed the need to maintain paper ballots as a backup should there be any technical problems at the polling places on Election Day. Paper ballots would also be used for audits and recounts. To ensure that voters have the greatest flexibility, voters would be given the option to print their paper ballots at home and cast them at a polling place. Groups suggested this feature would also assist Vote By Mail and military voters who will need to continue to use paper ballots. A bar code that can be read by the tally system, reflecting voter choices would be printed at the ballot, just as the ballots printed in the polling place.

Various Options for Marking and Casting a Ballot

Finally, some of the groups suggested the development of a mobile application (app) to help voters locate polling places and view, mark, and save a sample ballot which then can be used as a tool to cast an official ballot at a polling place. As technology improves and security concerns are addressed, staff assembled envisioned a role for voting by telephone and voting online. In general, staff believes it's important to become more mobile, just as voters are becoming, and give voters options for how and where they mark and cast a ballot.

Accessible Voting Technology Initiative Brainstorming Workshops

The RR/CC participated in voting technology brainstorming workshops hosted by ITIF's Accessible Voting Technology Initiative. The brainstorming workshops, held on January 25-26 and February 22-23, gathered input, insights and ideas to brainstorm voting technology accessibility problems and solutions.

The 32 participants for each workshop included a mix of stakeholders, ensuring a broad set of perspectives:

- People with disabilities and accessibility advocates
- Election officials, election workers, and other experts
- Voting technology experts and voting system designers
- Designers from technology, interaction, information, usability, graphics, mobile devices, architecture

The accessible voting workshops focused on the design of voting equipment, pre-election and on-site information, polling space, and absentee ballots to make the voting experience more accessible to people with disabilities. The workshops aimed to create new concepts for accessible elections that can be developed further in the second phase projects of the Accessible Voting Technology Initiative.

The workshops were structured as a series of group brainstorming activities that allowed participants to:

- Gather input for a broad view of accessibility needs and desires
- Look for opportunities for voting technology redesign and enhancements
- Collaborate with people from other stakeholder groups to find a common understanding
- Identify and explore new ways to make elections accessible

A total of eleven concepts emerged from two workshops. While these themes all approached increasing accessibility differently, there were some recurring themes. The themes focused on three general areas of the voter experience. Those three areas are the voter interface, voter access to information, and providing options to where and how a voter marks and casts a ballot.

Voter Interface

- Accessibility- large buttons, typefaces, and adjustable arms on ballot marking devices
- Simplicity- ballot marking devise should be easy to use even for infrequent computer users

Voter Access to Information

- Voters should have access to all information in the voting process
- Store election information in voting cloud

Options for Marking and Casting a Ballot

- Voters should have the option to vote at various times, from various locations, and in various methods
- Voters should have the ability to download and mark their sample ballot using assistive technologies

Conclusion

The Open Design Search has engaged a varied group of stakeholders. The Open Innovation Search and Brainstorming Workshops have engaged staff that has a unique expertise gained

from years of running elections. It has also engaged stakeholders, such as voters, academics, designers and advocates that interact with elections in a very different manner. These stakeholders have provided the RR/CC with a perspective that would not typically be found within the walls of the department. This open and collaborative process has provided innovative concepts and ideas for the RR/CC to consider as it envisions the design of its new voting system.

While participants in this process provided a wide range of perspectives, there are recurring themes that emerged from the overall process. These themes can be categorized into five different focus areas: 1) voter interface, 2) ballot design, 3) technology, 4) tally method, 5) providing options.

Voter Interface

- Tablet-based or touchscreen interface
- Capacity to integrate accessibility features and attach assistive technology tools
- Ability to adjust height and angle of ballot marking device
- Simple for all voters to use

Ballot Design

- Paper ballots for audit purposes
- Small paper ballots for easy handling and storing
- Easy for voters to read and follow

Technology

- Open source software
- Election Markup Language (EML)
- Store election information in voting cloud

Tally Method (no consensus)

- Centralized tally v Precinct-based tally
- Tally of paper ballots v Electronic tally

Providing Options

- Provide voters with may options for accessing, marking, and casting their ballot
- Develop mobile applications
- Allow voters to download and mark ballot using home computers

Additional Information
We strongly encourage public input throughout the process. More information regarding the VSAP Open Design Search is available at: www.lavote.net or the Project's Facebook page. If you have any questions please contact Monica Flores at mflores@rrcc.lacounty.gov or (562) 462-3014

About the Information Technology and Innovation Foundation

The Information Technology and Innovation Foundation (ITIF) is a non-profit think tank at the cutting edge of designing policies that will boost economic growth and improve quality of life in the United States and around the world. The ITIF Accessible Voting Technology Initiative is a project funded by the U.S. Election Assistance Commission (EAC) to make voting processes and technology more accessible. On this project, ITIF is partnering with researchers from universities across the United States and the National Federation of the Blind. For more about ITIF's Accessible Voting Technology Initiative go to: http://elections.itif.org/

About the Election Verification Network

EVN is a national network of experts, election officials, and advocates improving U.S. elections by making sure each ballot is counted accurately for fair results the public can verify. Members work together to make sure every vote, in every election, counts the way the voter intended.

"One person, one vote" sounds simple enough, but the systems used to implement U.S. elections are incredibly complex. EVN provides a framework for nonpartisan, unbiased experts to collaborate and share information, safeguarding our civil rights at every step in the process:

- Helping election officials design ballots and choose equipment that is secure, reliable, accessible and voter-friendly
- Opening election processes to public, nonpartisan observation while ensuring that voters can cast their ballots privately and independently
- Making sure every vote is documented with a permanent paper record that can be checked for accuracy by the voter and recounted by officials with public oversight
- Requiring election results to be audited for accuracy in consistent, meaningful ways
- Preventing, detecting and solving election problems including voting system malfunctions, human error and intentional fraud

EVN's ultimate goal is to build a stronger democracy where citizens are motivated to vote because they know their voices matter, and trust our elections are fair. For more about the EVN go to: http://www.electionverification.org/

END NOTES:

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[i] Accidental sampling (sometimes known as **grab**, **convenience** or **opportunity sampling**) is a type of nonprobability sampling which involves the sample being drawn from that part of the population which ***is close to hand***. That is, a population is selected because it is readily available and convenient. It may be through meeting the person or including a person in the sample when one meets them or chosen by finding them through technological means such as the internet or through phone. The researcher using such a sample cannot scientifically make generalizations about the total population from this sample because it would not be representative enough. For example, if the interviewer were to conduct such a survey at a shopping center early in the morning on a given day, the people that he/she could interview would be limited to those given there at that given time, which would not represent the views of other members of society in such an area, if the survey were to be conducted at different times of day and several times per week. This type of sampling is most useful for pilot testing. Several important considerations for researchers using convenience samples include:

1. Are there controls within the research design or experiment which can serve to lessen the impact of a non-random convenience sample, thereby ensuring the results will be more representative of the population?
2. Is there good reason to believe that a particular convenience sample would or should respond or behave differently than a random sample from the same population?
3. Is the question being asked by the research one that can adequately be answered using a convenience sample?

In social science research, snowball sampling is a similar technique, where existing study subjects are used to recruit more subjects into the sample. Some variants of snowball sampling, such as respondent driven sampling, allow calculation of selection probabilities and are probability sampling methods under certain conditions.

CONCEPTS

EXISTING VOTING SYSTEM MODELS

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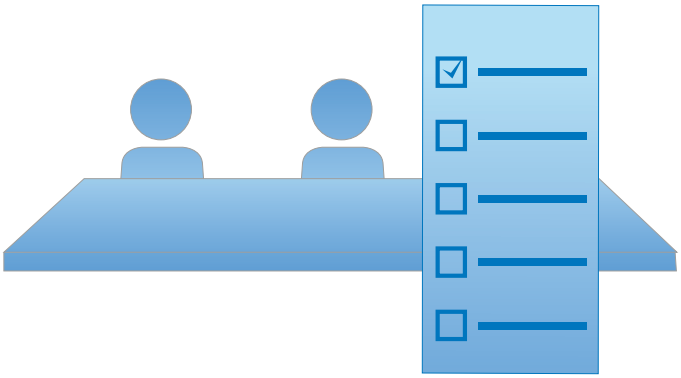
Hand-Marked Paper Ballots



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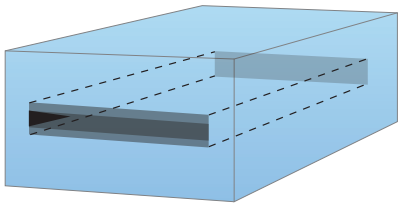

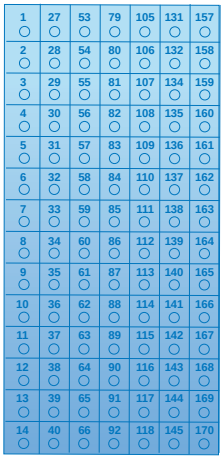

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Direct Recording Electronic Ballots

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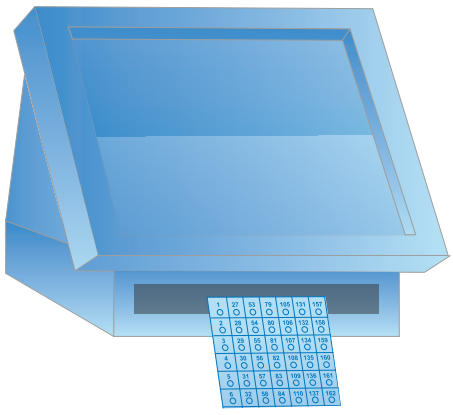
Ballot-Marking Device



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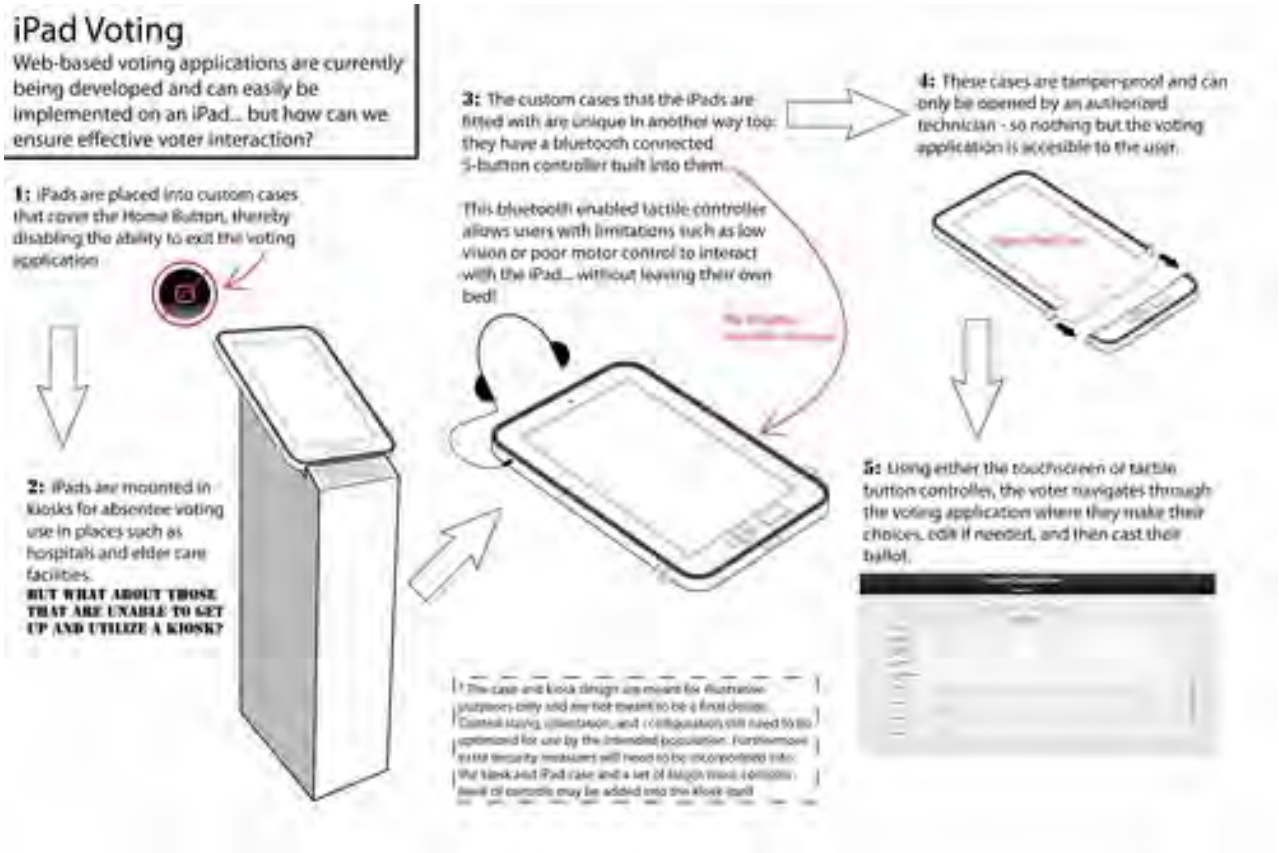
OPEN INNOVATION CHALLENGE CONCEPTS

iPad Absentee Voting

This idea would allow individuals who are already aware of the shifting needs of communities that they serve to also adapt election access. Because the heart of this concept is the personal relationships that people already have, as long as those relationships exist, then shifts in the needs of the voter community that the Community Voter Advocates serve would be addressed organically.

This idea will build on the existing social fabric of every community. It will utilize that unique experience of people who are already working with these underserved communities. These relationships that are already built on trust and individual sensitivity will be used to also increase awareness and participation in an election.

The biggest resource need would be to train the Community Voter Advocates, and develop resources specifically for them. These costs should be minimal. Additionally, these costs could be offset through grants from get-out-the-vote groups, whose aims dovetail with this concept.



For many individuals, even getting to a polling place is out of the question. This post outlines a concept of an iPad running custom voting software that will allow flexible absentee voting in places such as hospitals.

Community Voter Advocates (Refined): Build on existing social ties to increase election access

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(Update of Community Clerks) Underserved communities already have people who know and work with them, and have developed personal relationships. We should train these people to do voter registration, outreach, and education.

MyVote Smartphone App (Refined)

The momentum mobile technology has been accruing over the last several years is going to continue to rapidly advance. The need for a mobile system in which people may vote should be made safe and easy to access from anywhere at any time.

The iPhone provides a solid framework for accessibility enabled by the device as well as the human interaction guidelines. Mobile & Hearing Impairment – The nature of the iPhone itself solves for these issues. The device is portable and consists of a visual screens. Vision Impairment – The iPhone offers several options available for different degrees of sight including: a screen reader, magnification, high contrast, and speak selection. Physical Impairment – The iPhone offers several options available for different degrees of motor capabilities including: speak selection, and assistive touch. Language Translation – The iPhone allows users to select their preferred language. MyVote will provide translations for relevant languages and users will be enabled to vote in their own language.

After exploring the key features of the app, there are still major topics to consider. Security – This app must be safe and secure, not only for individuals, but for the system. We must ensure every vote is counted once and is submitted by an individual citizen. A mobile security expert will need to be consulted. Integration – This app should integrate into the existing voting system without having to make significant alterations to the system itself. This topic is a policy as well as a technology issue. Experts in these areas should be consulted. Ownership – Who should be responsible for the development of this app, government or private interests? There is an argument made for either. Perception – How will the public respond to the release of this app? What measure can we take to ensure a positive reaction and utilization of this tool? Design – There remains several gaps in the design that need attention after consulting with the appropriate experts. Interaction and visual design needs to address accessibility and usability with thorough testing.

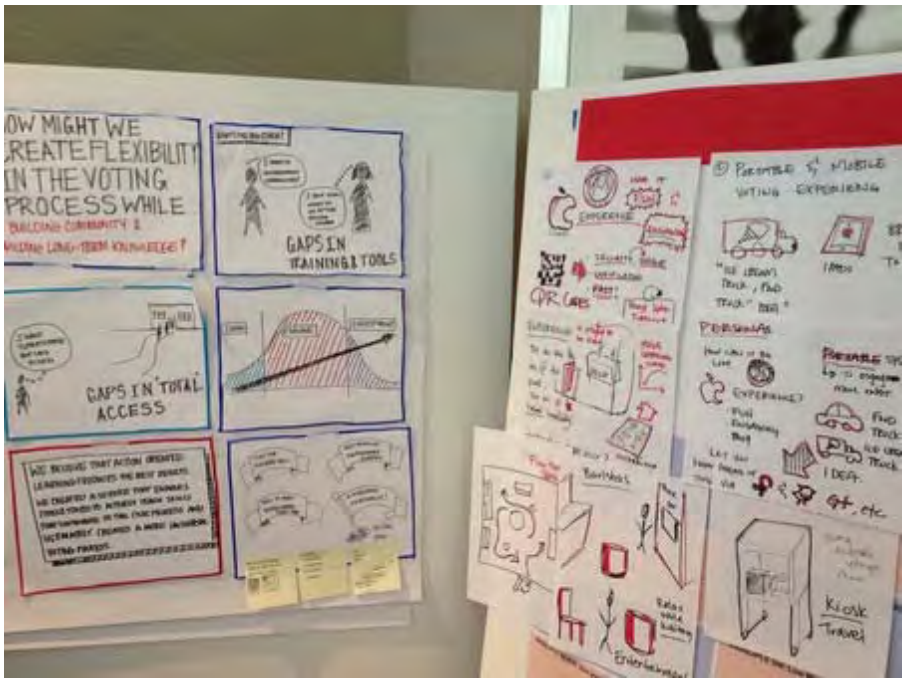
MyVote is a smartphone application concept designed to enable mobile voting from anywhere in the world.

Design for Onboarding (Tutorial), Habit-Building (Grind), and Mastery (Elder Game)

The process of creating the training exercises will be designed for flexibility from the start. The core idea is to create adaptive trainings that are relevant to a wide range of settings and demographic groups. As a result, as the needs and technologies change to accommodate different voter communities, the exercise design will have built in mechanisms to respond to those changes.

Working vision statement from the group: We believe that the best way to teach about equality and access for all is through action oriented learning. We want to create a service that enables cities and states to actively teach civic skills and an understanding of how to deal with disabilities. This will ultimately create a more universal voting process.

The concept will require fairly extensive community collaboration. First, a school based partner will be needed to pilot a program to add both elections and disability information to any general civics training (or creating something to fill the gap, if there is none). An experienced accessibility partner can help develop lesson plans along the lines of this concept. It may include several lessons for one age group such as middle school or more likely, lessons that span a few years. Next, a University research center partner would be helpful to design a methodology for measuring and evaluating any pilot that is launched.



Starting with young people, design training and activities to build on previous knowledge using civic building exercises combined with awareness and empathy exercises to illuminate barriers to the process that exist for many.

EZ Ballot -- updated!

What if the ballot is designed for whatever pace the voter prefers? EZ ballot is a system that will guide voters so that they just follow the steps. Quick ballot helps voters walk through the system if they want to complete the voting process quickly. This concept is for the design of the EZ ballot.

Current user interfaces on touch screens rely significantly on visual feedback. Using audio voting, voters who are blind or visually impaired are able to vote. However, the translation from a complex visual interface to a linear audio interface results in an complex and time consuming audio voting process. Moreover, current DRE systems allow only for visual or audio voting even though studies show that people with low vision would prefer to be able to use both visual and audio voting simultaneously.

EZ ballot is very simple with linear layout of the visual and auditory interfaces. Thus, this ballot structure works same way for all outputs regardless of modality. For example, instead of providing all the candidates' names in one screen, 'yes or no' questions such as "Do you want to vote ……?" will be displayed. In this way, voters need to choose either "yes" or "no."

As a voting device, the touch screen tablet is combined with just two buttons 'yes' and 'no' on the left and right sides like controlling a game boy. This integrated device design will match with the users' interaction for using the EZ ballot.

Choices of EZ or Quick ballot will allow whatever pace the voters who have different abilities prefer. Older adults, individuals who are visually impaired, and people who have memory issues can benefit from this EZ ballot design. Instead of connecting additional dual switches to the voting device, a single integrated device can also benefit poll workers as well as the voters.

Which ballot would you choose if you had EZ or Quick ballot? This ballot structure of the EZ ballot works same way for all outputs regardless of modality.

Priority Queue

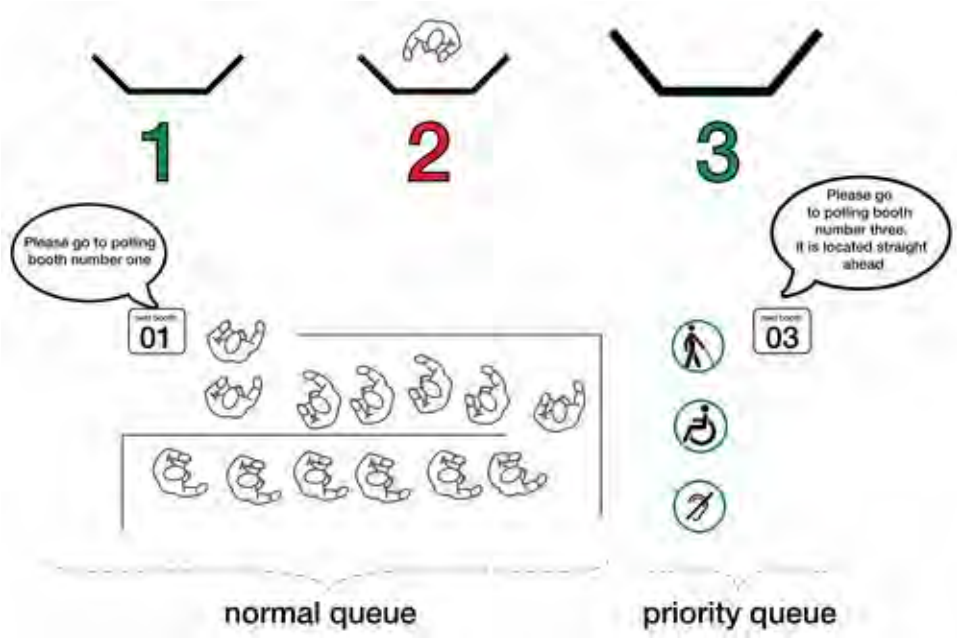
Similar to the priority seats in public transport or the priority boarding at airports for elderly and families - there should be a priority queue for voting. It should be for people with disabilities and other limitations. I once witnessed a young mother with two children turn away from the voting booth, because the line was too long - so the priority queue should also be open to young parents and people with young children.

Building on the "A Genius Bar for Voting" concept as mentioned by Meena Kadri in the comments the priority queue should also give polling stations a space for different voting methods - paper ballot, audio booth, Braille ballot, computer based voting, ...

Building on Paul Reader's concept on interactive signage, the two queue system should have a smart signage that speaks and shows the next free polling booth. This helps to optimize the two queues. It ensures that all polling booths are in use, but that polling booth number 3 can be used exclusively for the priority queue if necessary.

It will reduce the barriers for people with limitations and will give a sense of community and respect at the voting stations.

Not allot - it could be implemented as a standard procedure with extra queuing lines and additional signage to help creates awareness.



Similar to the priority seats in public transport or the priority boarding at airports for elderly and families - there should be a priority queue for voting. It should be for people with disabilities and other limitations.

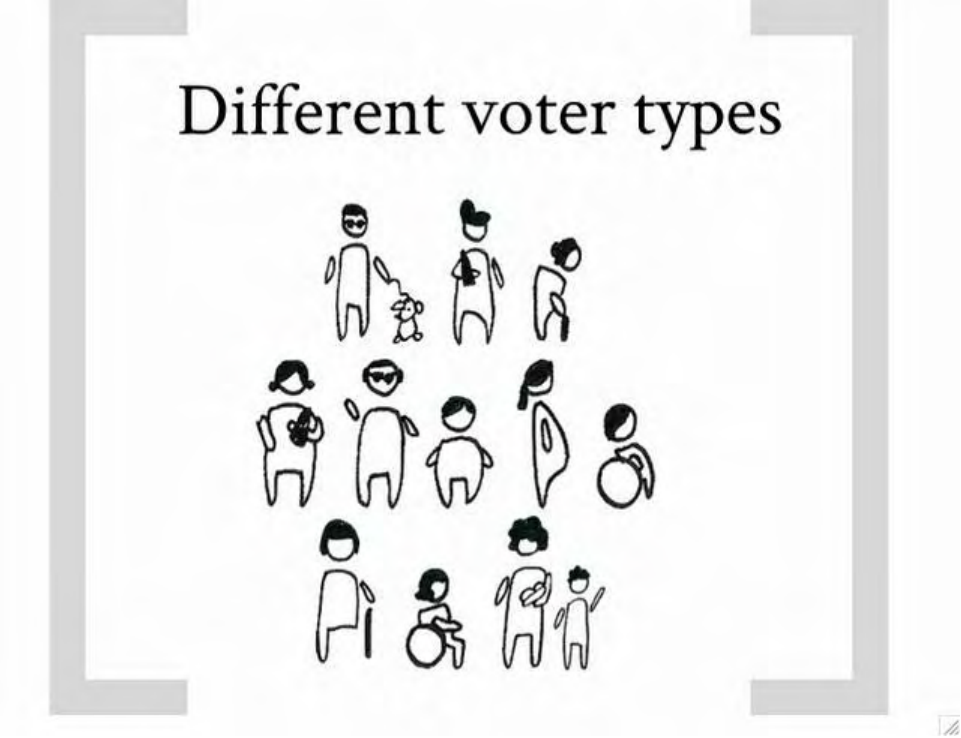
Let Vapp suggest

Every citizen already has a National ID Card. The poll clerk can check a voter's national ID card and mark the person as 'VOTED' on the digital system when letting him use Vapp. Using a smart device enables new fast ID verification methods:

Creating a hardware device to scan and verify National ID Cards has two negative requirements: 1. Every citizen's National ID Card has to be electronic, 2. These devices have to be manufactured. By **developing a scanning software**, any National ID Card can be verified with a snapshot. Instead of using to the option of typing a voters National ID name/number manually, a poll clerk might prefer take a photo of the card. The technology is already used by several apps on smart phones for reading business cards and saving contact information. **By integrating an effective and fast ID verification, Vapp becomes useful for non-disabled citizens as well.**

Using light-weight mobile devices and flexible voting processes enable poll clerks to be mobile as well. Voters who are not able to move out of the house, such as people in hospitals, people who have physical disabilities or people who need to stay home with their sick kid can benefit from a service where the poll clerks visit these places carrying a tablet/ipad. In that case, the biggest challenge is to maintain the privacy at all times. A portable voting booth is design in progress to be embedded into the system ensuring privacy in mobile scenarios.

The concept is based on a personalized voting process, suggested automatically or set manually according to the needs of different voters. The challenge is to make this process not confusing or time consuming. Vapp solves this problem with an easy interface.

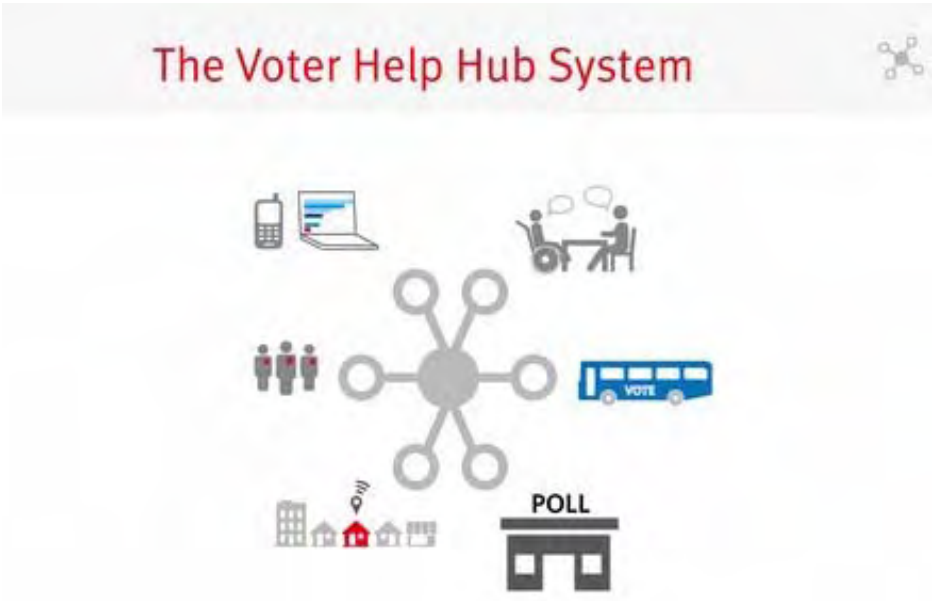


Mobile devices and apps enable different processes of voting using their multiple ways of input and output. But how can a poll clerk decide which method fits who?

Voter Help Hub: A Cental System Connecting Voters, Volunteers and Information

Voting polls usually report how many people have voted after the polls are closed. But if there was a way for us to leverage real-time information on the polling centers and communities who vote as well as those who don't to find ways to bridge this gap. One way is to do so is to create an alert for those who need extra assistance with the voting process that day and be matched with a local community member who can volunteer their time. Volunteers help by guiding the person to the polling center as well as the voting process. There are opportunities for partnerships with city government, public transportation and local private businesses to get involved by providing transportation to local polling centers. Voting is important not only on a national level, but local level.

The Voter Help Hub System lets the community know of the specific area of need whether in a small town or large city. People with disabilities can call into the automatic system or enter via online to the Voter Help Hub hotline and a volunteer will be alerted that best matches the time for both volunteer and voter. Some areas are in greater need and may need more volunteers. Ultimately the system will show people how they can help their fellow community members go through the voting process. Volunteers from different backgrounds will leverage their own knowledge and involvement in various communities. The majority of people surveyed about volunteering said what would motivate them most to donate time is to make the opportunity convenient for them. Another reason was if the opportunity made a direct impact to their neighborhood. Voter Help Hub System makes it easy to volunteer in people's community and by providing their available times, they are scheduled to help. Unlike most volunteer opportunities, people may end up sitting around and not using people's times effectively.



Voter Help Hub System is a secured network that connects, alerts and coordinates volunteers of areas needing assistance. Information is aggregated from voting survey data indicating disability assistance needs in specific communities to vote.

Voting Vans --- REFINEMENT

Vans equipped with electronic voting machines could make scheduled stops at hospitals and rehab centers allowing people with disabilities to conveniently participate in the voting process.

The van makes it very convenient for communities and people outside of nursing homes and special schools. This concept is very scalable, and depending on the number of vans and demand, the van could make stops around residential communities. Communities could organize #votepools http://www.openideo.com/open/voting/concepting/votepools/ to transport the elderly and those with special needs to the van.

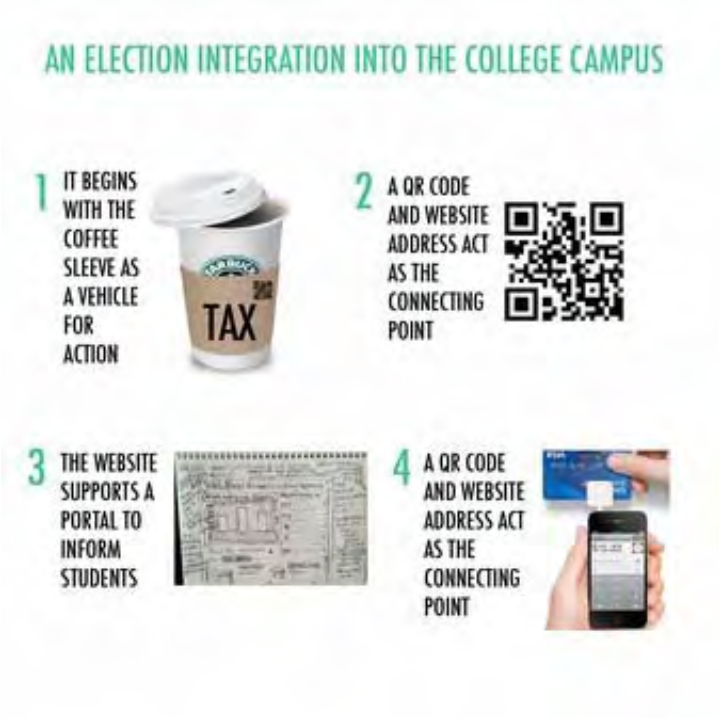
This process need not be limited to people with disabilities. Just as mobile blood banks, the van could also be setup as a temporary full day polling station to include caregivers, doctors, and visitors, enabling these individuals to cast their votes without having to get away from the facility for long. This could work well for larger hospitals and could be used in combination with voting centers during an early voting period. This concept is fairly scalable and is not restricted to hospitals. It offers convenient way for anyone who wants to vote. It eliminates the use of paper ballots by installing electronic machines thereby improving security. For example, the van could make stops at schools allowing teachers and staff to vote on campus. The van location could be tracked using a simple website so people could vote at a van near them. Although the van enhances convenience, it is much about employing empathetic people who make the experience positive and memorable.

An Election Integration into the College Campus (Cornell University)

THE BUBBLE PROBLEM: We address the problem on college campuses of how students exist within a bubble, disconnected from current events. Our process integrates the election seamlessly into student's lives and could feasibly be applied elsewhere.

Though this concept was designed for college campuses, it has the potential to work in many different environments. Take New York City for example, there is a Starbucks on every block. Thousands of people filter through these cafes and could have exposure to our coffee sleeves. Our website would be open to the public for information, and it will be focused on connecting to the voter's interests--rather than simply displaying information. The coffee sleeve is not the only vehicle for action that could be used, but it is one that is found in public, social areas and could generate conversation.

This concept aims at integrating the election process into already existing behaviors. In this way, our process has the potential to affect everyone. Every step in the process would take into consideration those who are impaired, from auditory components for those who are blind and aesthetics that are color-blind sensitive.



Complete Online Polling Station Performance Tracking Platform – UPDATED

Voter's Voice is a free online platform to allow voters to rate polling stations, suggest improvements, and connect with election officials to advocate for improvements to polling station accessibility, equipment and the general voting experience

The data on the site is sourced from concerned or interested citizens. Voters will be able to use the site how they wish. With only minimal moderation necessary, citizens can contribute their comments at their own pace, at their own time, and securely (submissions would be made anonymous).

The platform will become a resource for voters to advocate for improvements to the voting experience and hold election officials accountable for creating an experience that is accessibile and inclusive. Access to the website could be made through a home computer, a smart phone, or special booths at each participating polling station, which could be designed to be accessible for disabled voters.

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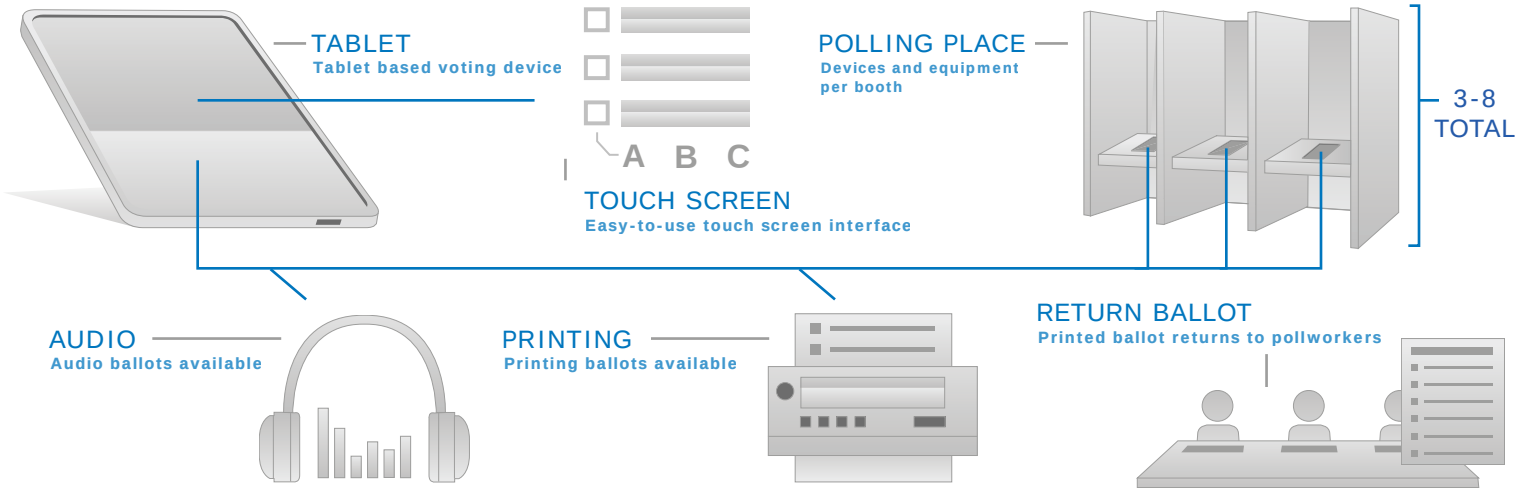
RR/CC STAFF BRAINSTORMING WORKSHOPS CONCEPTS

VOTING CONCEPTS

1

Concepts For Future Voting Procedures

Tablet Solution



TABLET

Tablet based voting device that includes software embedded into the device which enables simple start-up by poll workers.

SECURITY

Tablets are secured to the booth, monitored by poll workers and include backup drives in case of errors or malfunctions.

ACCESSIBILITY

The interface should be as simple as A, B and C. Just touch the option and follow the on-screen instructions. Each tablet has multilingual capabilities as well as the option to use headphones for audio ballots.

BALLOTS

A digital tally will be stored on the device. This digital tally will be the official tally. Each tablet will be equipped with a printer to print paper ballots that will be used for audit and recounts. Printed ballot can be returned to the poll workers.

CONFIRMATION

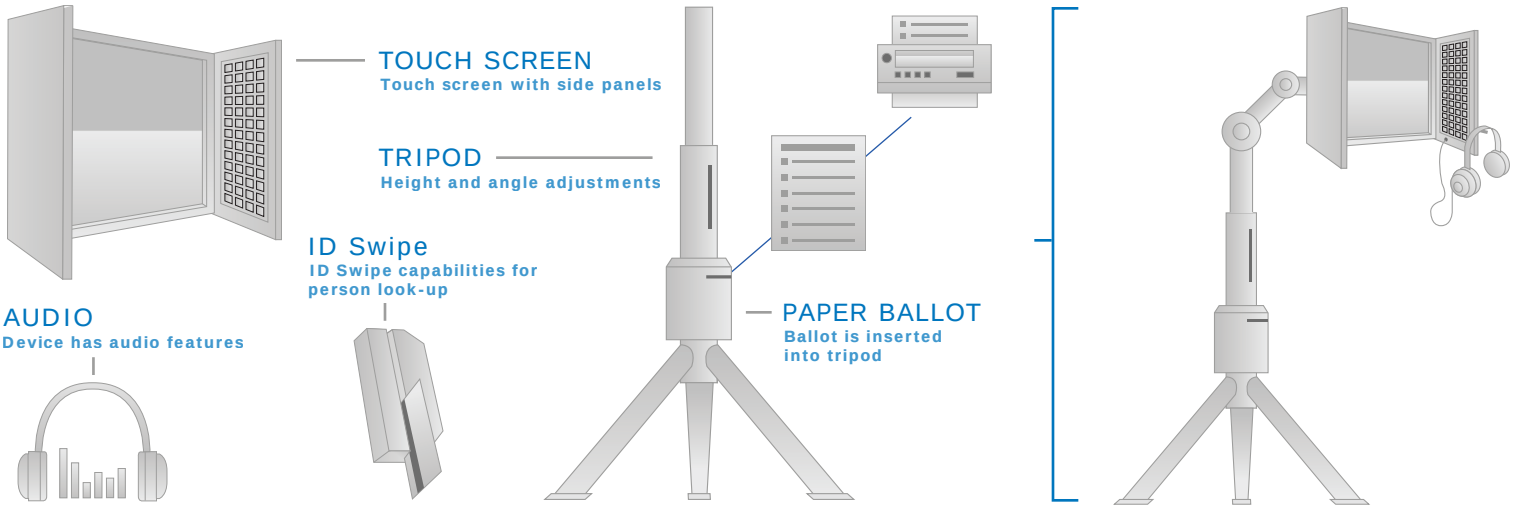
Each voter will receive an activation code for the tablet when they check-in at the polling place.

VOTING CONCEPTS

2

Concepts For Future Voting Procedures

Touch Screen Electronic Voting Device



TOUCH SCREEN DEVICE

A touch screen device that stands on a tripod. The device includes a keyboard on side panels for voters who prefer keyboards over touch screen. The panels also double as a privacy curtain.

ACCESSIBILITY

The device has features that allow voters to adjust screen contrast, text size and the option to select a language. Other accessibility features include an audio ballot with headphones and a Braille keyboard.

IDENTITY

This device comes with an ID swiping mechanism which, when an ID is swiped, identifies the voter and loads voter personal preferences (example: Language and ballot group).

STATISTICS

This system stores usage statistics. It keeps a record of how many people have voted, how many have used language assistance, how many have use the audio ballot and so on.

BALLOTS

Each device will have a small printer attached to it. The printer produces a paper receipt for voters which lists their selections and has a barcode. It also prints a paper ballot for the election jurisdiction with only the barcode printed. The paper ballot produced will only be used for audit or recount purposes.

TALLY

Ballots are tallied electronically with the paper ballots available for audit purposes.

Table Touch Screen

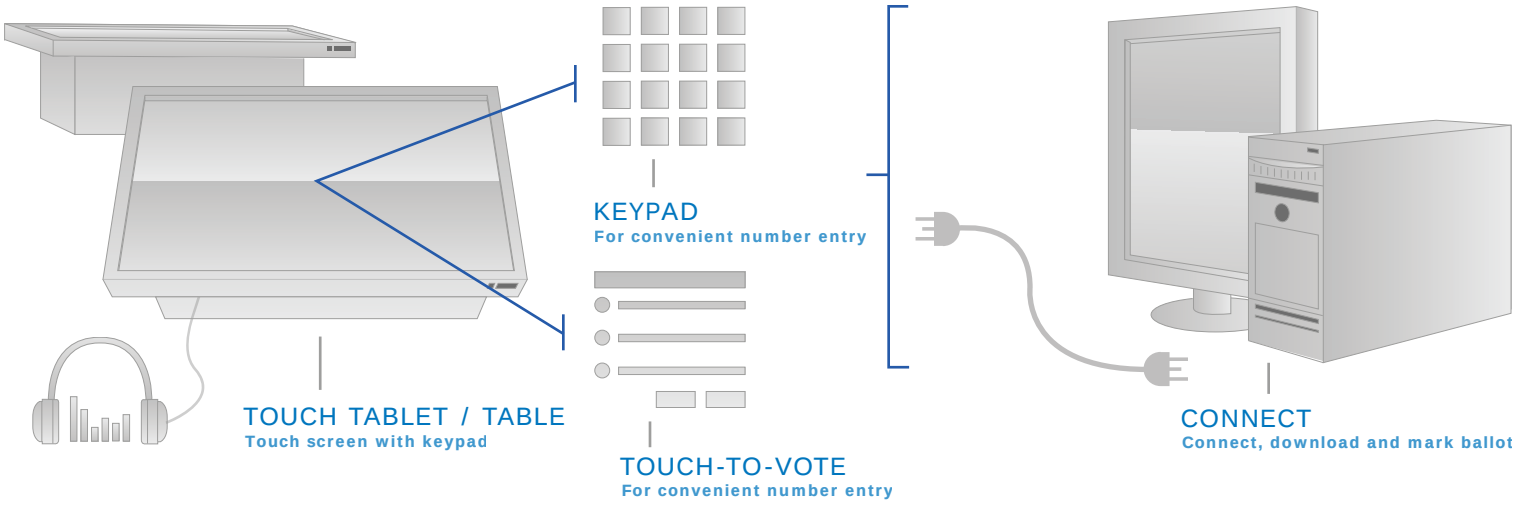


TABLE TOUCH SCREEN

This device is a large table or tablet touch screen that is interactive and has built-in keypads and interfaces. The software provides real-time voting statistics.

INTERFACE

Touch screen interface is easy to use. The device also offers a keypad for easy number entry. The interface is a touch-and-go screen which allows for an easy to use interactive step-by-step process.

ACCESSIBILITY

The device provides the capacity to attach accessories that can increase accessibility. Some accessories include headphones and sip and puff devices for people with disabilities and more.

PRIVACY

Each device is set up in an individual booth to allow for privacy when navigating the interface and casting your vote.

CONNECT

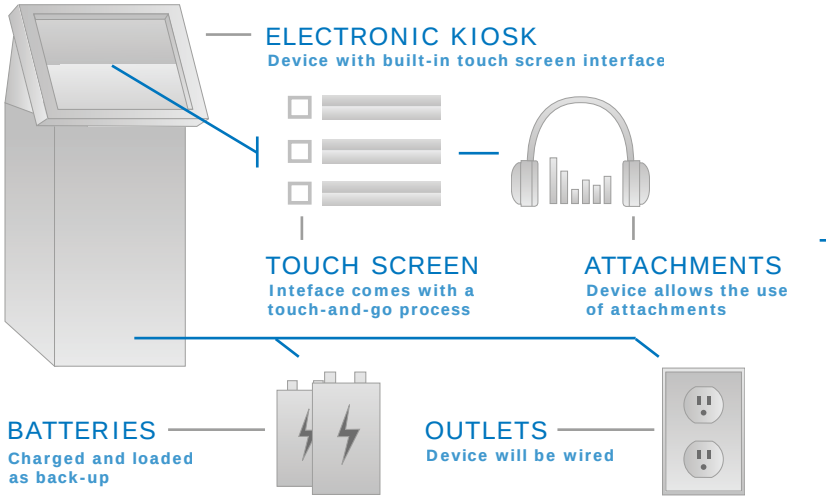
Voters have the ability to connect to a computer, download, mark, and print your ballot at home and cast it at a polling site.

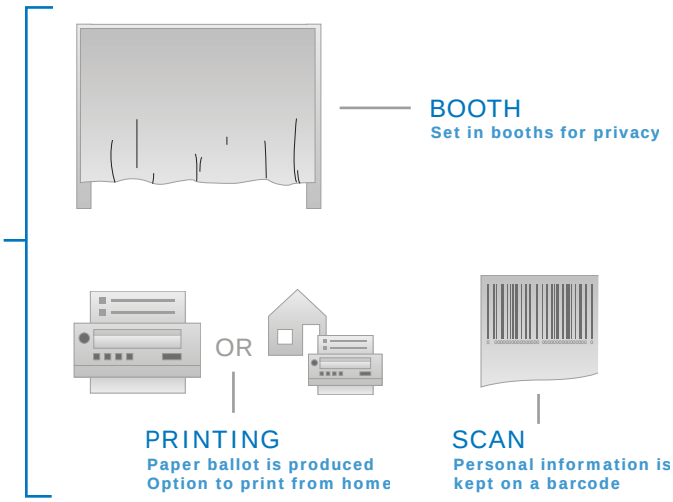
VOTING CONCEPTS

4

Concepts For Future Voting Procedures

Electronic Ballot Marking Kiosk





ELECTRONIC KIOSK

This device is used at polls and comes with a touch screen interface with an optional keyboard. A master device will communicate with other devices to ensure they all have the correct ballot group loaded. It's a highly automated system that helps minimize poll-worker steps. The system is modular and can be assembled differently for varying needs in different communities.

ACCESSIBILITY

It allows for the use of assistive technologies including headphones, Braille, and sip and puff devices. Voice recognition capability included.

PRIVACY

Devices are set up in voting booths for privacy. The ballots are printed from the device and will contain a barcode which has UPC number that can be scanned and referred back to. Voters also have the option to print from home. The user can cast their vote at the polling place.

POWER SOURCE

This device requires electrical outlets and comes equipped with re-chargeable batteries as backups.

TALLY

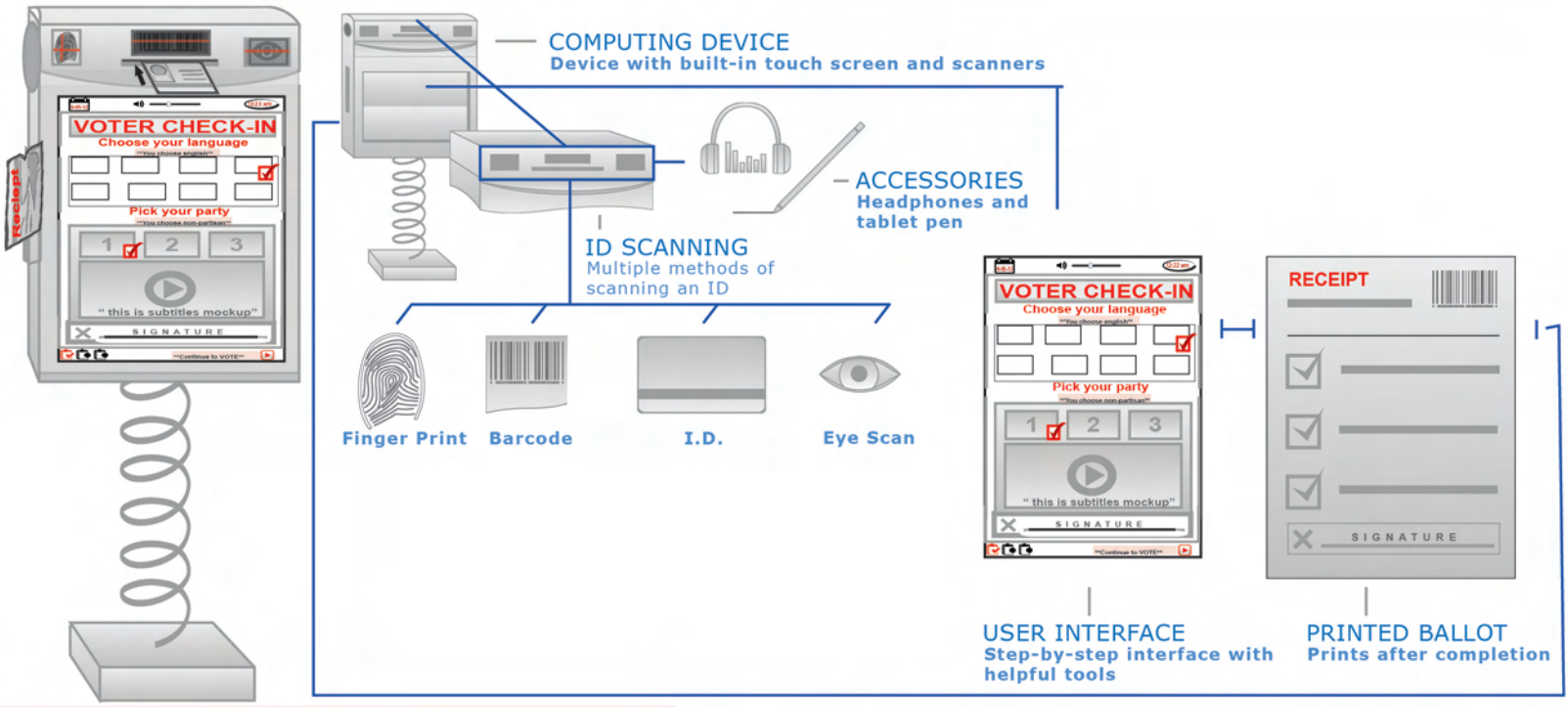
The central tally system has to be flexible and be able to count different ballot styles (VBM ballots will be different from VAP ballots). Voter rosters will be tablet based.

VOTING CONCEPTS

5

Concepts For Future Voting Procedures

Touch Screen Scanner



USER INTERFACE

The interface includes a step-by-step process which includes buttons to select for easy opting. The layout is broken down into categories and sub-categories that are easy to understand. It features helpful options to help you along the way.

IDENTITY

This device offers multiple options for identifying an individual. Features include a finger-print scanner, barcode scanner, an I.D. card slot for swiping and a retina scanner.

ACCESSIBILITY

Accessories such as headphones, an electronic pen and multiple methods to scan your I.D. are made available for increased accessibility.

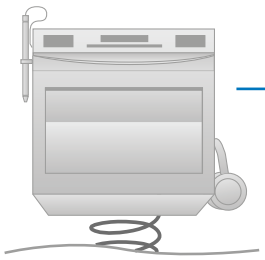
BALLOT

The device prints a ballot from the side of the screen. The ballot includes a barcode, a list of what the user has completed and the user's signature.

VOTING CONCEPTS

Concepts For Future Voting Procedures

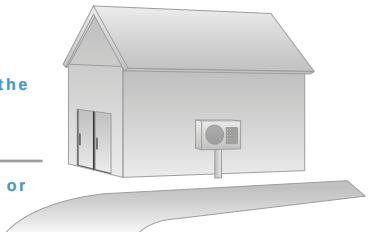
At Polling Place



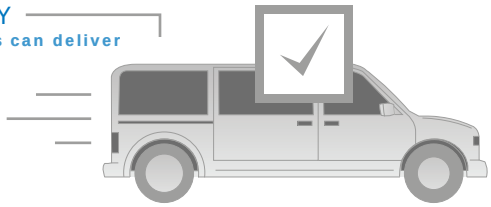
VOTER EDUCATION
Information made available for convenience

CHECK-IN
Personal assistance at the check-in counter

VOTE LOCATION
Voters may enter and / or use the drive-through



DELIVERY
Pollworkers can deliver the tablet



ENVIRONMENT

This voting environment is equipped with the voting touch screen scanner and is located in a room with information to help voters learn more about their voting experience as well as personal assistance at the desk.

ON-THE-GO

Voters have the option to use the drive-through service or go inside and use the voting device. Using the drive-through, a voter will be able to use the provided screen and speaker to complete their session.

SPECIAL DELIVERY

The device can be removed from the stand and therefore provides pollworkers the ability to deliver it to voters who cannot go to a polling site.

AVTI BRAINSTORMING WORKSHOPS CONCEPTS

Pre-election Information

1

Voter registration, locations of polling places, sample ballots and information

National Standardized Framework

GOALS

- Have an automatic, first-time use feedback mechanism for future improvement
- Leverage data to find the ideal voting environment, best practices, and a general universal design for voting
- Increase predictability
- Lower effort for both voters and officials
- High and low tech solutions
- Have a united core content source

SCOPE

- Sample ballot
- Polling locations and more available remote alternatives
- Information for disability / language identification
- Easy access to answers for: where am I registered, where do I register, and how do I register?
- Aimed at voters, officials, vendors, interest groups, and campaigns
- Multi-modal: web, phone, app, mail, and physical print locations

EXECUTION

- Information as a product (portal)
- Increase remote options for all
- Be wary of multi-modal fragmentation
- Use plain language
- Implentation starts with a national foundation, is implemented at the state and county levels, and is promoted at the voter and campaign level

WHAT'S WRONG IN THE STATUS QUO?

Complexity

Fragmentation

Timing of Information

Displaying Info Without Being Partisan

Physical Accessibility

Voting Location Information

INITIAL IDEAS AND THOUGHTS

Vote by phone

Proactive or auto voter registration

Simplified location scouting

Pre-info digital templates

national standards

more voting customizeability

more or less copyright legislation

community driven info database

central website portal

better feedback and data, usability

campaign ads audio captioning

more remote options

other days in the week to vote

display information in polling lines

audio receivers similar to museum

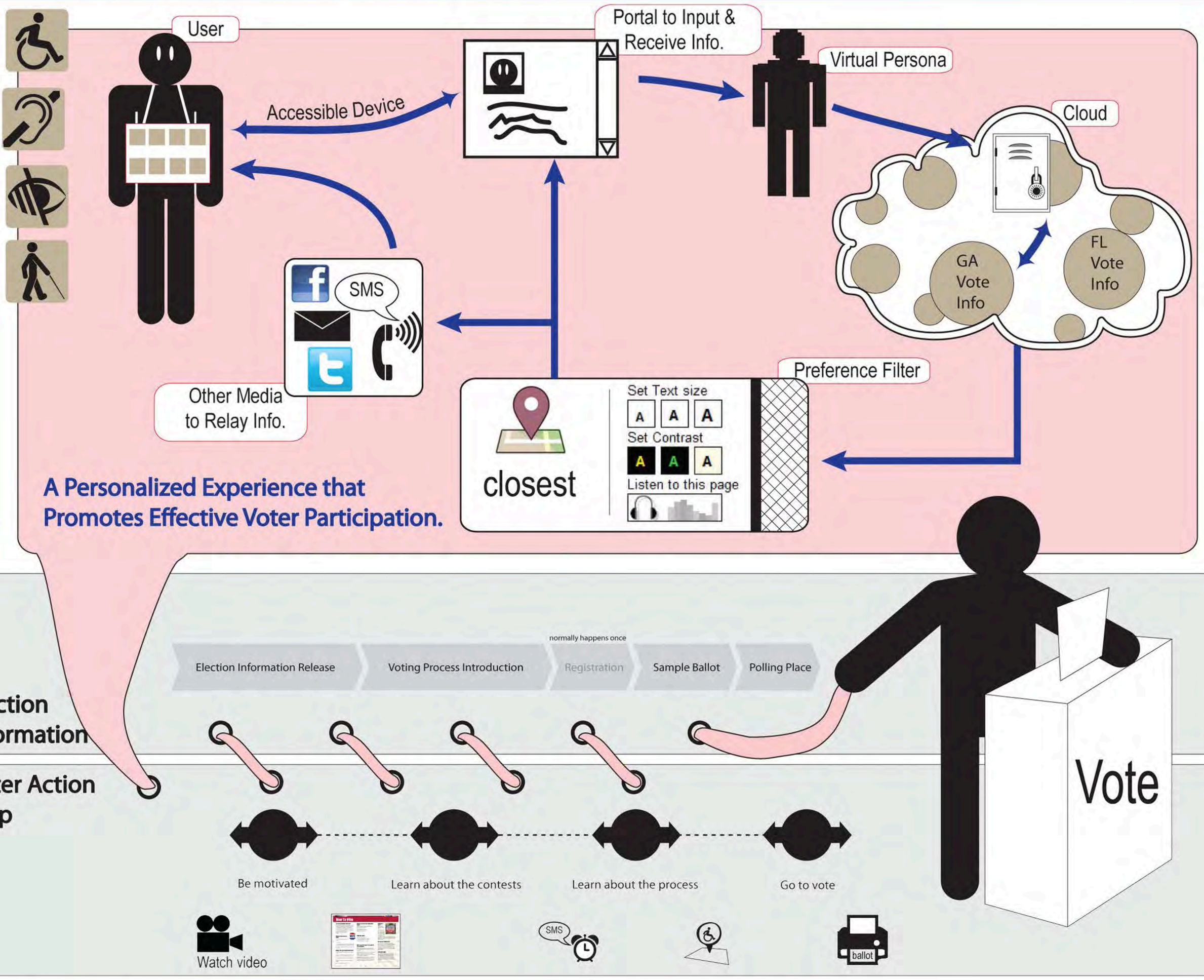
dual, low and high tech is must

must consider multiple outputs

ACCESSIBLE VOTING TECHNOLOGY INITIATIVE

Design Goals

Project Title PERSONAL VOTING GUIDANCE SYSTEM



PRINCIPLE ONE: Equitable Use

The Accessible Guide System is easy to access and helps the voters to get engaged into voting. It offers these **opportunities equally** to every voter. If voters don't have the access to the internet, the system offers other ways to convey information(such as by **mail**, **telephone**, **SMS**).

PRINCIPLE TWO: Flexibility in Use

Voters have the flexibility to choose **when** and **where** to access the information.

PRINCIPLE THREE: Simple and Intuitive Use

Voters can choose the **media** that they are **familiar with** to access the information. Because the voters have the familarity about the device(media) they choose, it will be very simple and intuitive for them to use the system and access the information.

PRINCIPLE FOUR: Perceptible Information

The system offers **audio** and **visual** versions of information. And also allows the voters access the information via different devices (that also means the voters are able to use their **own assistive technology** to access the information). So all the information will be perceptible for all the voters.

PRINCIPLE FIVE: Tolerance for Error

The system offers opportunities for voters to access the election information **in advance**. It reduce the possibilities for the voters to make mistakes when they are voting. And voters can **review** and **revise** their ballots before they actually cast them.

PRINCIPLE SIX: Low Physical Effort

The system pushes(**updates**) the information about the voting process **automatically**. The voters can keep track on the updates about the election if they want. Voters can access the information from their **own location** via their prefered devices. It's low physical effort for them to access the information.

PRINCIPLE SEVEN: Size and Space for Approach and Use

Voters have their own **accessibility preference** set-ups in the system. They can choose the font size, contrast and also the place to access the information.

Other

The system allows the voters to keep their own voting records and accessible preference in a private way **confidencially**. It offers more convinience and assurance to the voters when they try to vote.

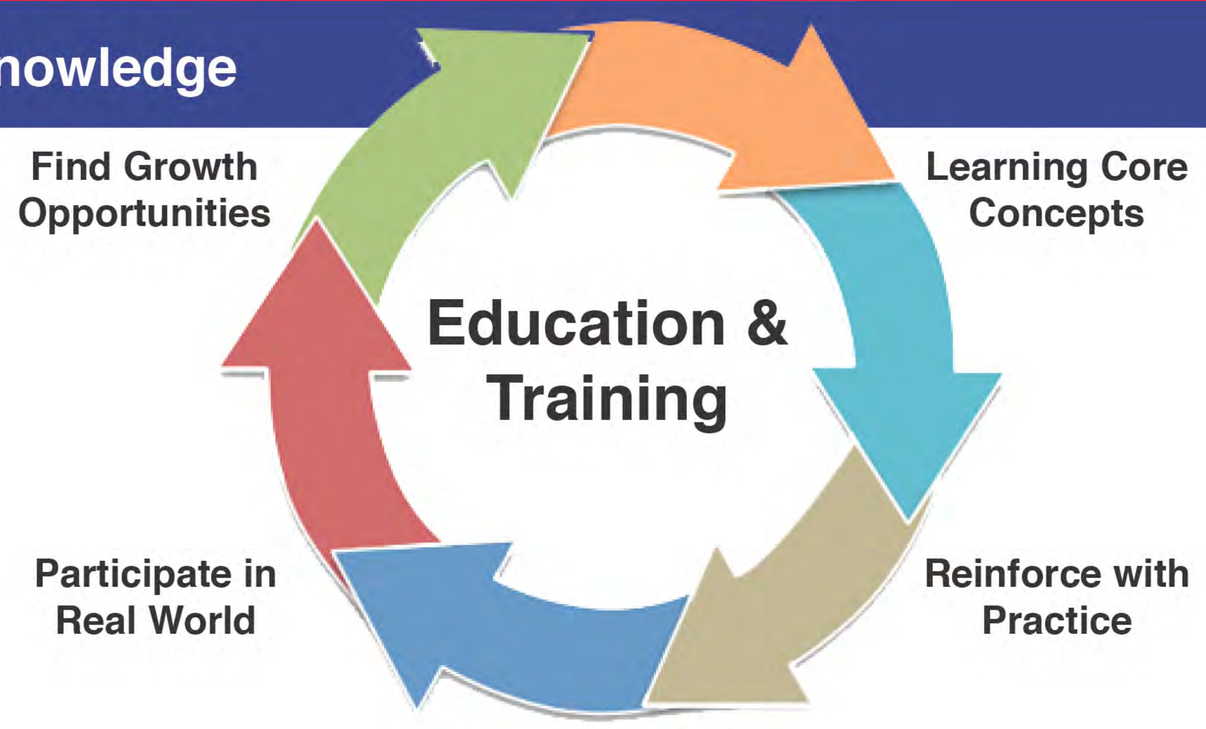
Adaptive Voting Toolkit

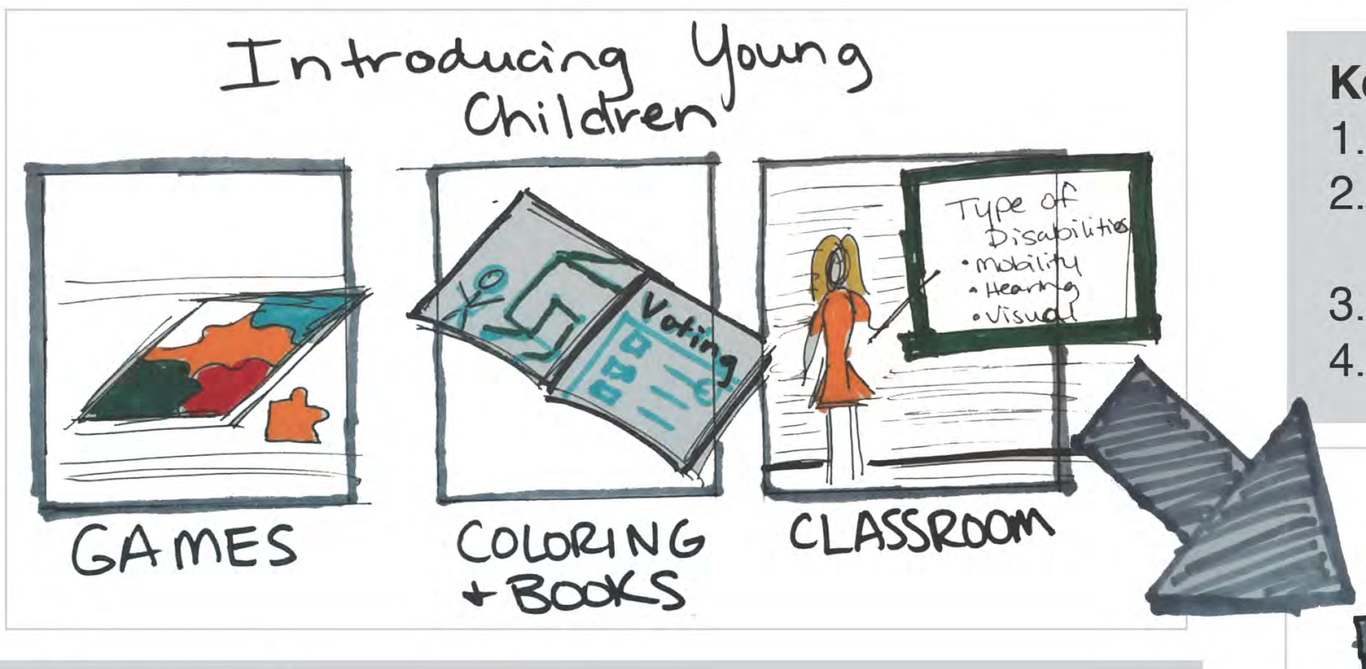
2

Enhancing Community Voting Participation and Knowledge

Goals:

1. Create FLEXIBILITY in the voting process
2. Build COMMUNITY
3. Increase long-term KNOWLEDGE
4. ADAPTABLE to all ages, locations, ability levels and culture
5. ENJOYABLE





Key Factors:

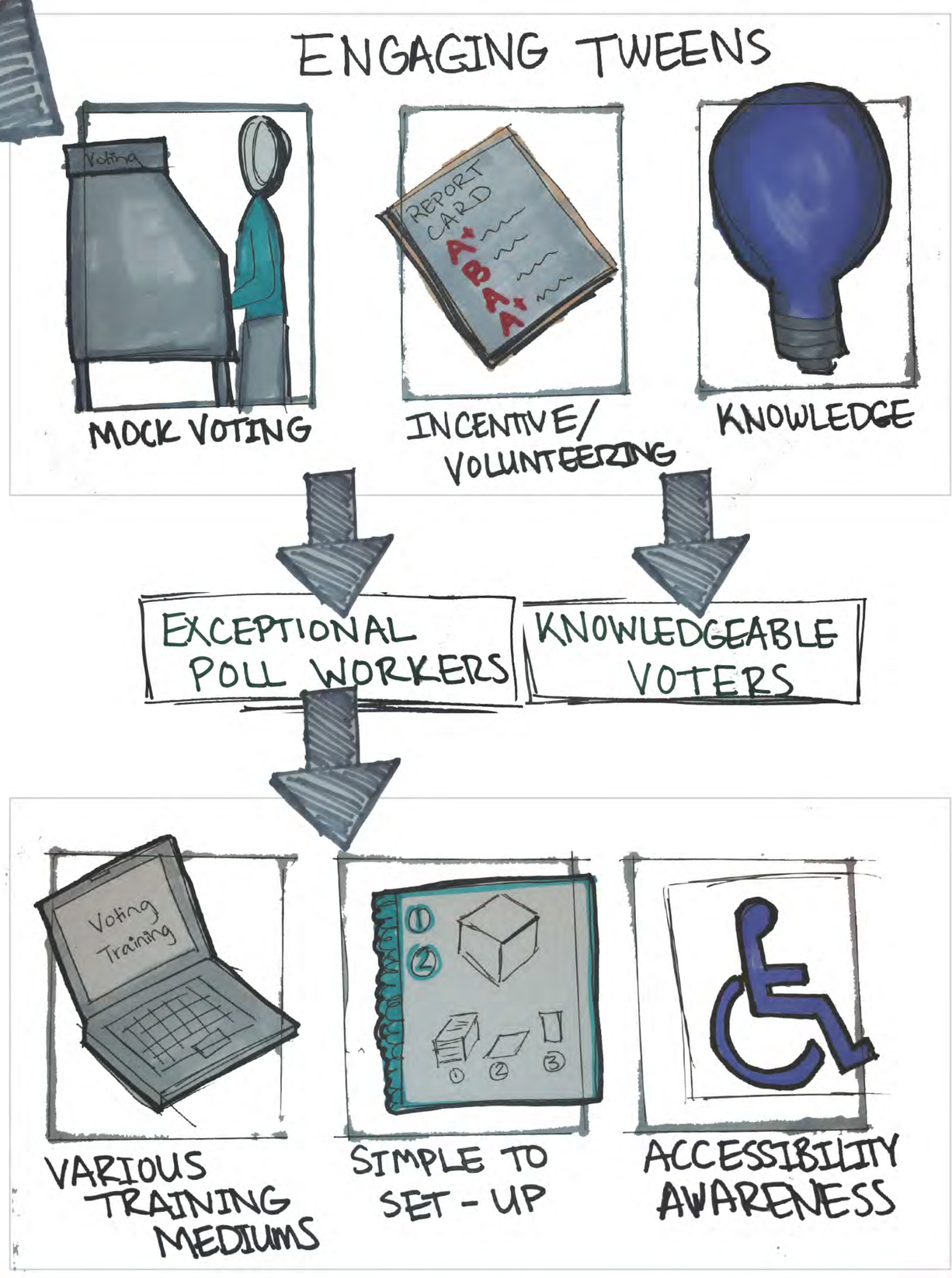
1. Training poll workers and educating voters
2. Helping current and future voters through voting process
3. Consideration of diversity in poll workers and voters
4. One size does not fit all

Proposal:

The Adaptive Voting Toolkit is used to increase knowledge about the voting process by the use of different mediums. This Toolkit will enable students to become more knowledgeable as well as introduce disability education. For the young student level, this toolkit may contain things such as games and books and be implemented into class work.

Adapting for higher education, this toolkit may include mock voting materials to increase knowledge. Students at this age may need incentive or rewards associated with their participation.

The final phase of this toolkit is to be a guide and set-up process for poll workers. These workers have varying abilities and needs that are considered during training and set-up. This toolkit will also include material on accessibility education and awareness.



UD Principles:

1. Equitable Use: These toolkits are designed to have equivalent knowledge materials and resources to all people of varying abilities.

2. Flexibility in Use: Flexibility is available by having adaptable stages of this toolkit (ie. young students, high school and beyond).

3. Simple and Intuitive: Each kit within itself will be simple and intuitive in all mediums available and targeted for specific user.

4. Perceptible information: These kits are designed present the same information in multiple methods (Tactile materials, verbal, digital, etc.)

5. Tolerance for Error: Clear directions with using the materials and resources of this kit will hopefully reduce the potential for error.

6. Low Physical Effort: Physical Effort depends on the type of toolkit being used. If a person has a problem with physical activities this toolkit allows alternatives.

7. Size & Space for Approach and Use: Will be determined with further revisions.

ACCESSIBLE VOTING TECHNOLOGY INITIATIVE

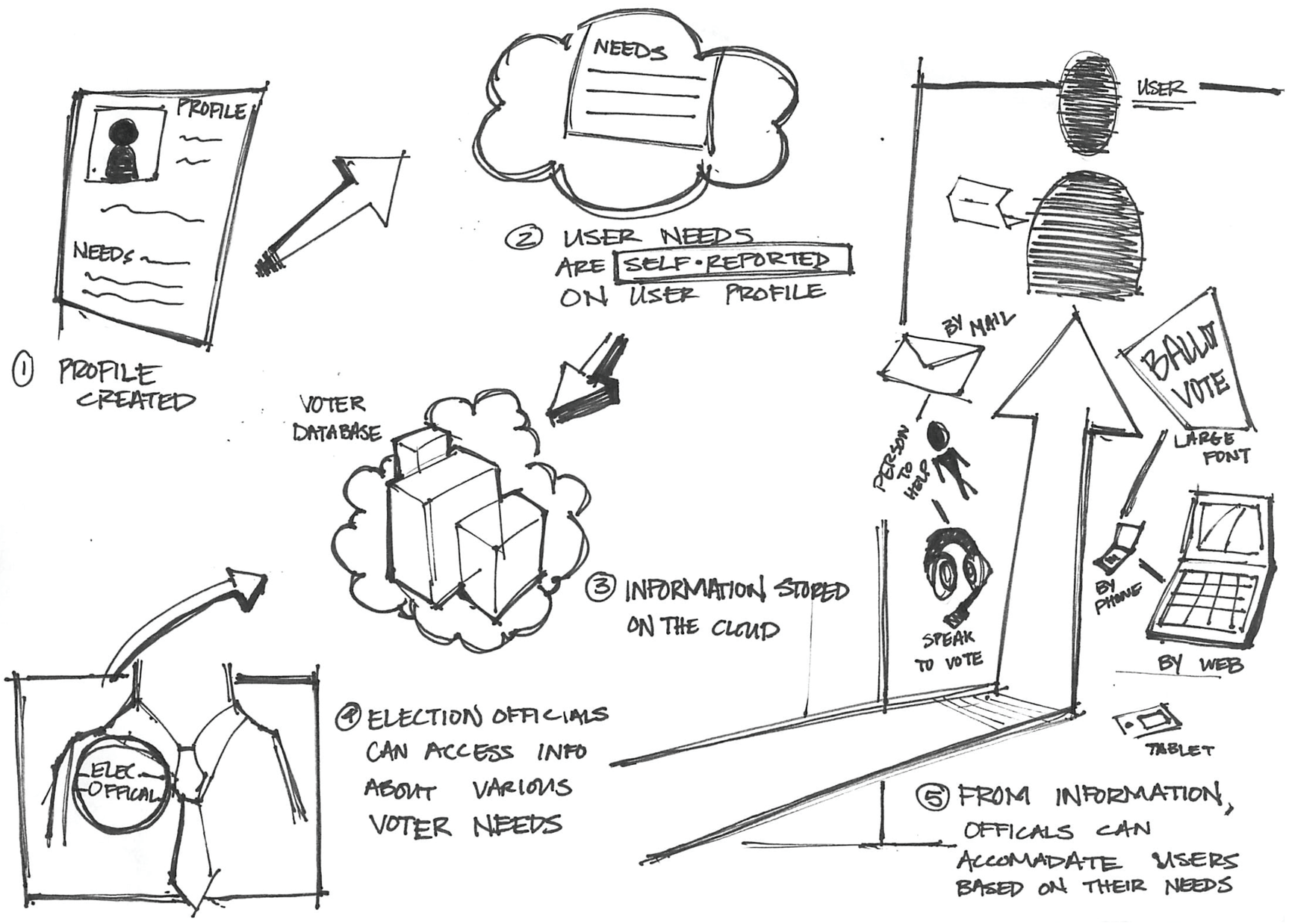
Design Goals

3

Project Title Remote Voting : Voter Profile Development

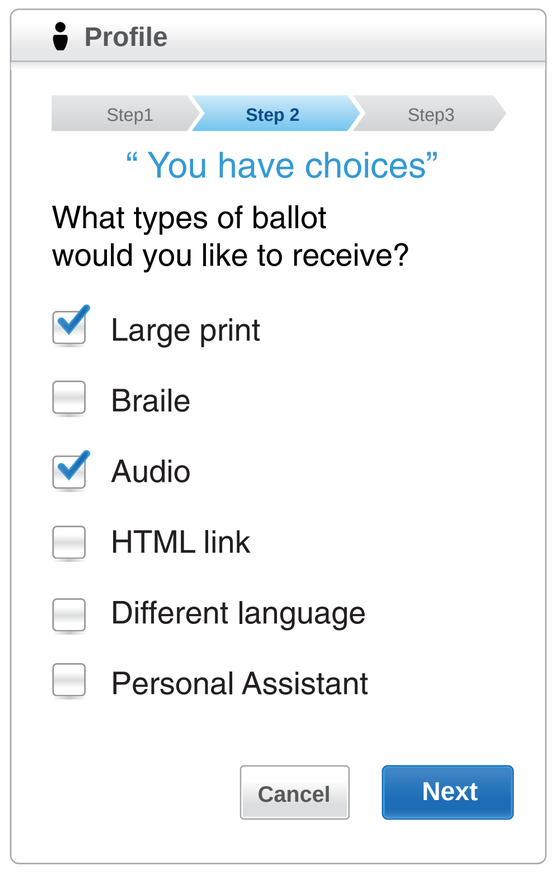
Description

REMOTE VOTING PROCESS

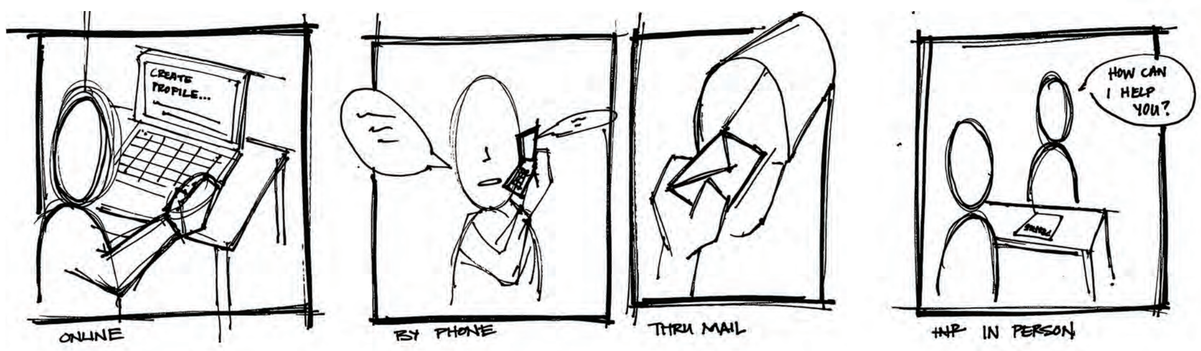


EXPRESS VOTING

- Can encourage voting registration



CREATING PROFILE



- Each voter creates an individual profile
- Can list voting preferences an keep updated special needs for voting
- From the profile, voting officials can deliever type of ballot the user needs based on whaty they self-identified

ACCESSIBLE VOTING TECHNOLOGY INITIATIVE

PRINCIPLE ONE: Equitable Use

The central purpose of the database is to ensure equitable access to election process for all

PRINCIPLE TWO: Flexibility in Use

Product allows potential users widest possible flexibility in accessing election process

PRINCIPLE THREE: Simple and Intuitive Use

There is real rist of making process too complex. Design stream streamlining and incremental ability to input levels of data will be required (e.g., provide progress bar)

PRINCIPLE FOUR: Perceptible Information

Multimodal interaction is implemented by information input in person by phone and web

PRINCIPLE FIVE: Tolerance for Error

Mechanism for profile update in fully accessible and verifiable

PRINCIPLE SIX: Low Physical Effort

PRINCIPLE SEVEN: Size and Space for Approach and Use

Other

Facilitate large number of voter participation

Design Goals ANYWAY, ANYWHERE, ANYTIME

3

Project Title VOTER ASSISTANTS

Description

Rich Support System through extending current use of social networking

PRINCIPLE ONE: Equitable Use

This design (Service) is useful and marketable to people with diverse physical capabilities and provide the same means of use to all potential voters and avoid segregating any users.

PRINCIPLE TWO: Flexibility in Use

The concept accommodates a wide range of users preferences and capabilities. Offers choice in methods of use to all potential voters and provides adaptability to the users pace.

PRINCIPLE THREE: Simple and Intuitive Use

The sequence of use in this design (Service) is very meaningful. Volunteers are capable to speak with at least two different languages or accent and are selectable based on preferred language.

PRINCIPLE FOUR: Perceptible Information

The design (Service) provides a unique communication through interaction with human being and creates an optimum mutual understanding on the requested services by voters. Although, each potential users can use their own communicative device to access the service.

PRINCIPLE FIVE: Tolerance for Error

While each voters can choose their desirable interface to access and since they interact with human being, most of the potential problems have already been solved, unless connectivity issues such as blind spot or telecommunication operator cut off.

PRINCIPLE SIX: Low Physical Effort

-The design can be used efficiently and comfortably and with a minimum of fatigue.
-Minimize sustained physical effort.
-Minimize repetitive actions.

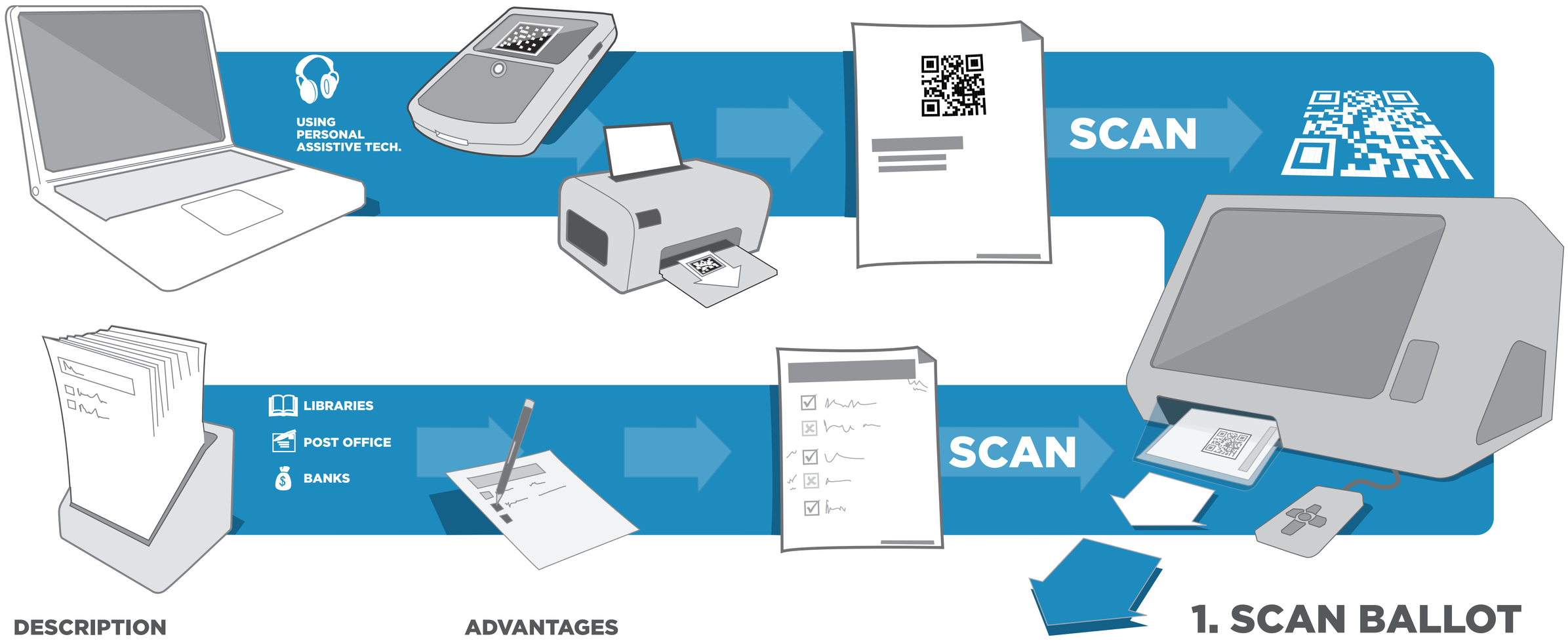
PRINCIPLE SEVEN: Size and Space for Approach and Use

Other

In-Person Voting

VOTING AT POLLING PLACES & VOTE CENTERS

Sample Ballot & Information Transfer System



DESCRIPTION

Our design solution is a system to better prepare voters for going to a polling center, and create a more enjoyable voting experience. Ballots are available on paper or in digital form, they're filled out by the voter, then brought to the polling center. Eliminating polling times, discomfort, and anxiety—the polling machine scans the sample ballot and preselects your choices on-screen. You can confirm the selections and cast your vote. The machine itself is an accessibly designed polling machine equiped with a camera.

ADVANTAGES

+ Increased voting participation
+ Increased voter accuracy: more informed choices with less in-person anxiety
+ Increased device flexibility(iPad, phone, etc.)
+ Reduces paper cost with more targeted ballot printing
+ Modular interpretation of machines (adding printer & scanner to electronic voting machine)

7 Principles of Universal Design

1 EQUITABLE USE

+ Sample technology is publically accessable
+ Voting machines are accessable

2 FLEXIBILITY IN USE

+ Facilitate more accurate choices
+ Access in comfort of home (while using assistive technologies)
+ Ability to confirm choices
+ Make ballot verification into reasonable partitions

3 SIMPLE & INTUITIVE USE

+ Need human verifiable code
+ Relies on using current best practices towards usability design.

4 PERCEPTIBLE INFORMATION

+ Internet access enables higher technology
+ Allows use of personal assistive technologies
+ Safe space

5 TOLERANCE FOR ERROR

+ Error handling in process
+ Multiple chances to examine answers

6 LOW PHYSICAL EFFORT

+ Major actions and thoughts can be made in comfort of home (with existing AT)
+ Minimize time spent in voting location

7 SIZE & SPACE FOR APPROACH AND USE

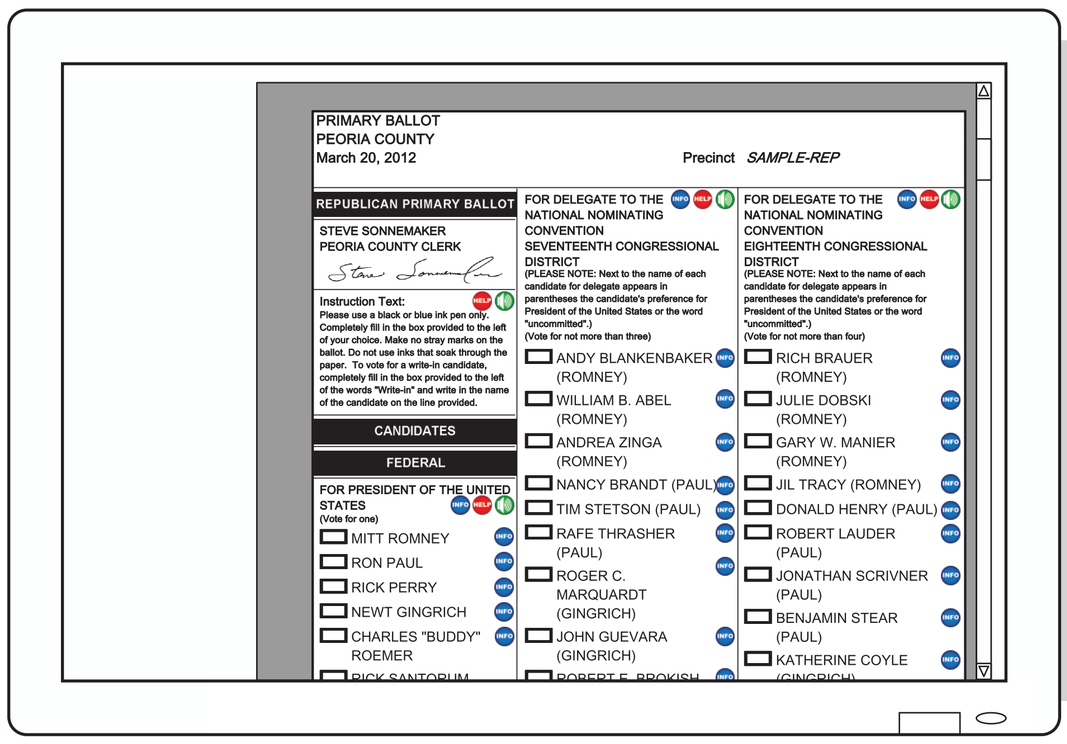
+ Majority of time and use can be spent in comfortable environments

Voting Remotely

Anytime, Anywhere, Anyway By Anyone

Refined Rich Ballot Experience

A system that utilizes an interactive sample ballot which prepares users for voting by educating them on the voting process and candidates.



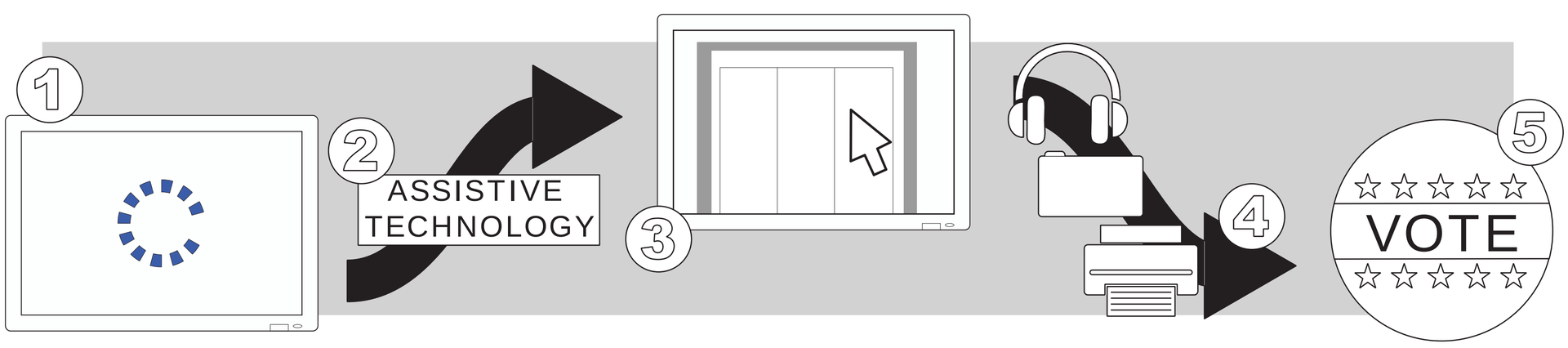
Provides user with variable volume audio instructions

HELP

Provides user with more detailed instructions and further relevant information

INFO

Links user to office requirements or candidate information page



1. User downloads sample ballot
2. Data sent through user's personal A.T.
3. User reviews, marks and verifies ballot
4. Ballot saved in portable format (.mp3/PDF/QR code)
5. User submits ballot remotely or in person

Description

The Rich Ballot Experience affords vital information and convenience to users in a process similar to that of online shopping. The user downloads the file/application that then guides them through the voting process. It presents information on the office of which they are voting and the candidates who are running. This file/application can communicate with all forms of A.T. which allows for its use to be universal.

PRINCIPLE ONE: Equitable Use

Strengths:

- -Beneficial to all users regardless of disability. It enables users to be prepared when at the polls
- -Provides various methods for receiving directions and allows users to implement technology they are comfortable with

Weaknesses:

- -Use of technology is required
- -Geared toward online users

PRINCIPLE TWO: Flexibility in Use

Strengths:

- -Can be used with personal assistive devices
- -This process could be used outside of the poll system to educate students on voting

Weaknesses:

- -Relies on other websites to link information
- -Internet connection is required

PRINCIPLE THREE: Simple and Intuitive Use

Strengths:

- -Draws upon the online shopping process which users are familiar with
- -All voting information is provided in one location with no need to do independent searching online

Weaknesses:

- -Familiarity with technology is required

PRINCIPLE FOUR: Perceptible Information

Strengths:

- -High contrast interface communicates function to user
- -Compatible with user's assistive technology
- -Can interact with language translation programs

Weaknesses:

- -Familiarity with technology is required

PRINCIPLE FIVE: Tolerance for Error

Strengths:

- -Verification process empowers user to review choices prior to voting
- -Process clarifies to user how too vote in each section of ballot to reduce improper voting

Weaknesses:

- -Possibility of confusing sample ballot with official ballot

PRINCIPLE SIX: Low Physical Effort

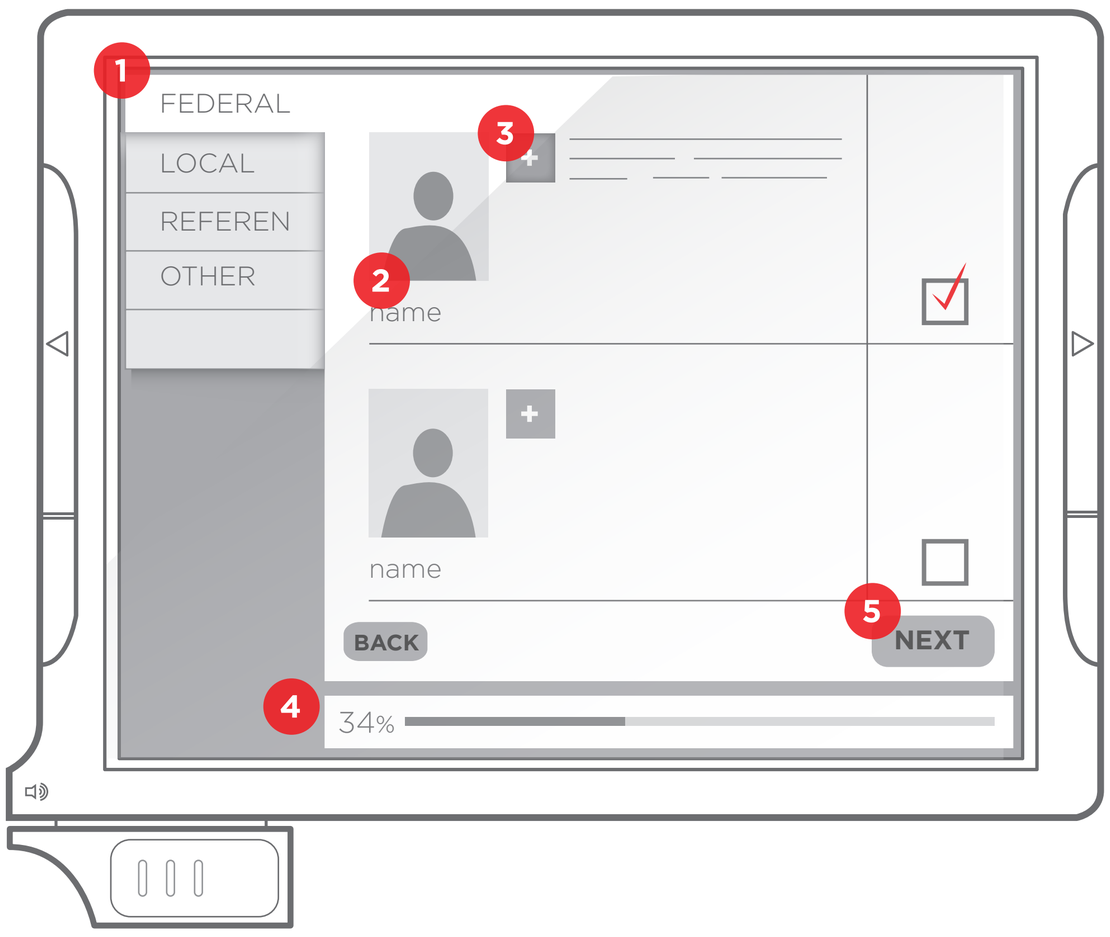
Strengths:

- -Allows voters to work at their own pace
- -Voters can come and go as they please

Weaknesses:

- -If voters wait to engage in the process at the last minute they may feel rushed

Ballot Design

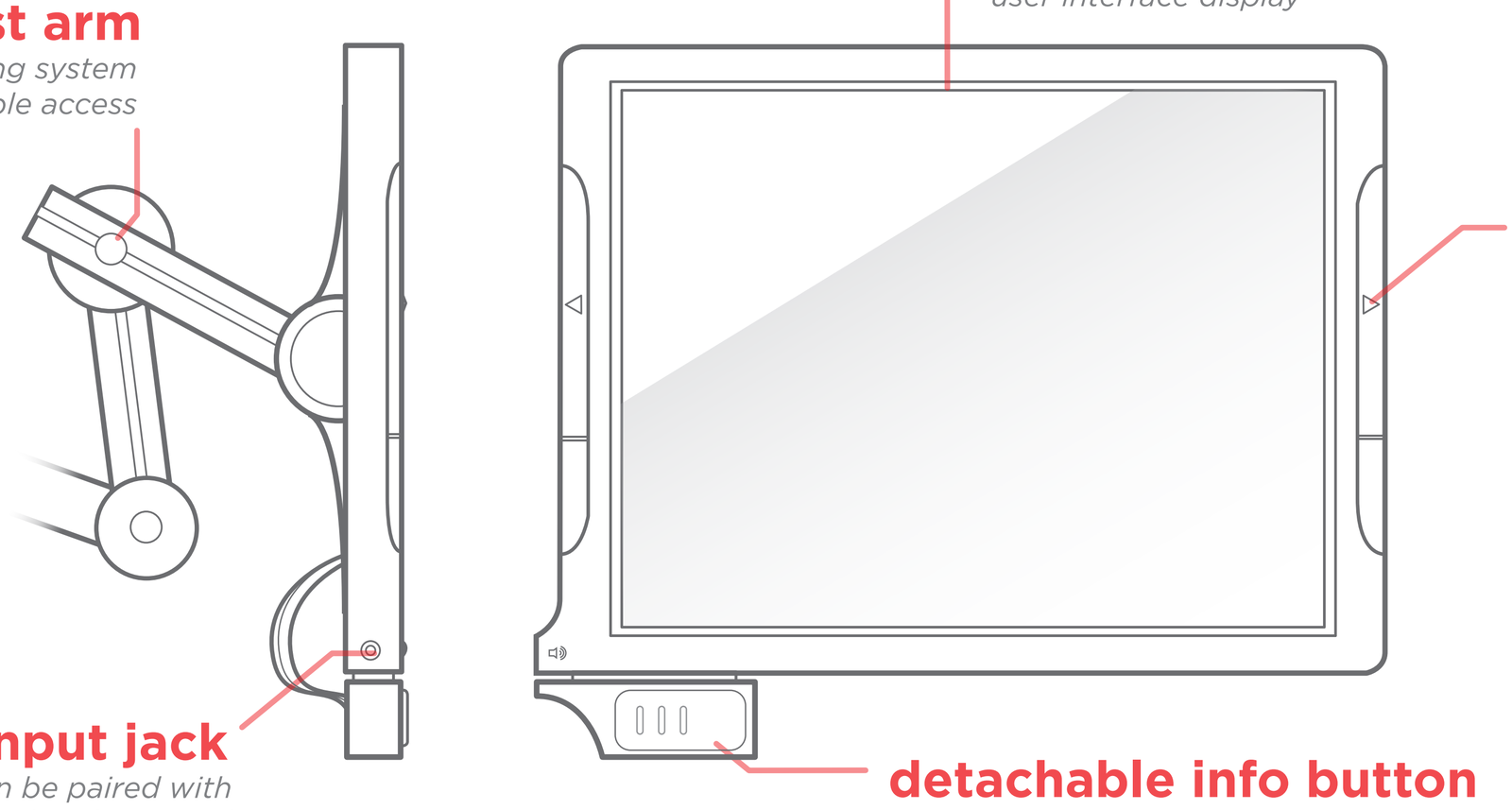


Concept Analysis

1. *Federal, local, referendums, etc, are divided into manageable, controllable sections*
2. *Candidate photos are displayed, to ensure correct recognition*
3. *Additional information blurbs can be displayed within the screen, thus flow can't be interupted or confused*
4. *Completion bar is displayed so that voters understand WHERE they are in the vote casting process*
5. *Linear operation is ensured through simplistic, limited options/buttons, reducing chance for error and prompting completion of the form*

easy adjust arm
low-resistance, articulating system can enable voters equitable access

touch screen display
Enables soft-touch, adjustable user interface display



textured navigation buttons
Allow for simple navigation for the visually-impaired

audio input jack
Headphone jack can be paired with both provided and personal assistive technology

detachable info button
Enables those with and without visual impairment and dexterity disabilities secondary information and auxiliary access

Universal Design Principles

EQUITABLE USE

Voters can change and customize the interface as they want to in the intro screen, has an audio guide to aide visually-impaired voters. Information button is provided to ensure all voters have access to candidate, security, and voting process information.

FLEXIBILITY IN USE

Information buttons are located close to users for access regardless of physical state, the audio guide is adjustable in speed, and large-sized buttons are included. Side buttons on machine provide easy to use, non-precision requiring use.

SIMPLE, INTUITIVE USE

Touch screen is straightforward to use even with people not familiar with computers, as it doesnt require any gestures/swipes to operate. Language options are provided, and feedback about errors voters make and completion percentage.

PERCEPTIBLE INFO

Provides an audio and tactile feedback guide into the process, as well as options for provided, or personal assistive technology.

TOLERANCE FOR ERROR

Reviews at each section to show possible errors along the process, pages at the end are displayed for under-votes, giving voters a chance to revise. This enables a one directional flow. It is easy to navigate back to the main page at any time.

LOW PHYSICAL EFFORT

Physical information button enables those with impaired motor control and those who experience fatigue from current machines benefit from the move-able screen, moving it closer to voters.

SIZE & SPACE

Adjustable display allows for wheel-chair access, touch screen and large buttons allow for easier access, and adjustable font size, and contrast meet different needs.

ACCESSIBLE VOTING TECHNOLOGY INITIATIVE

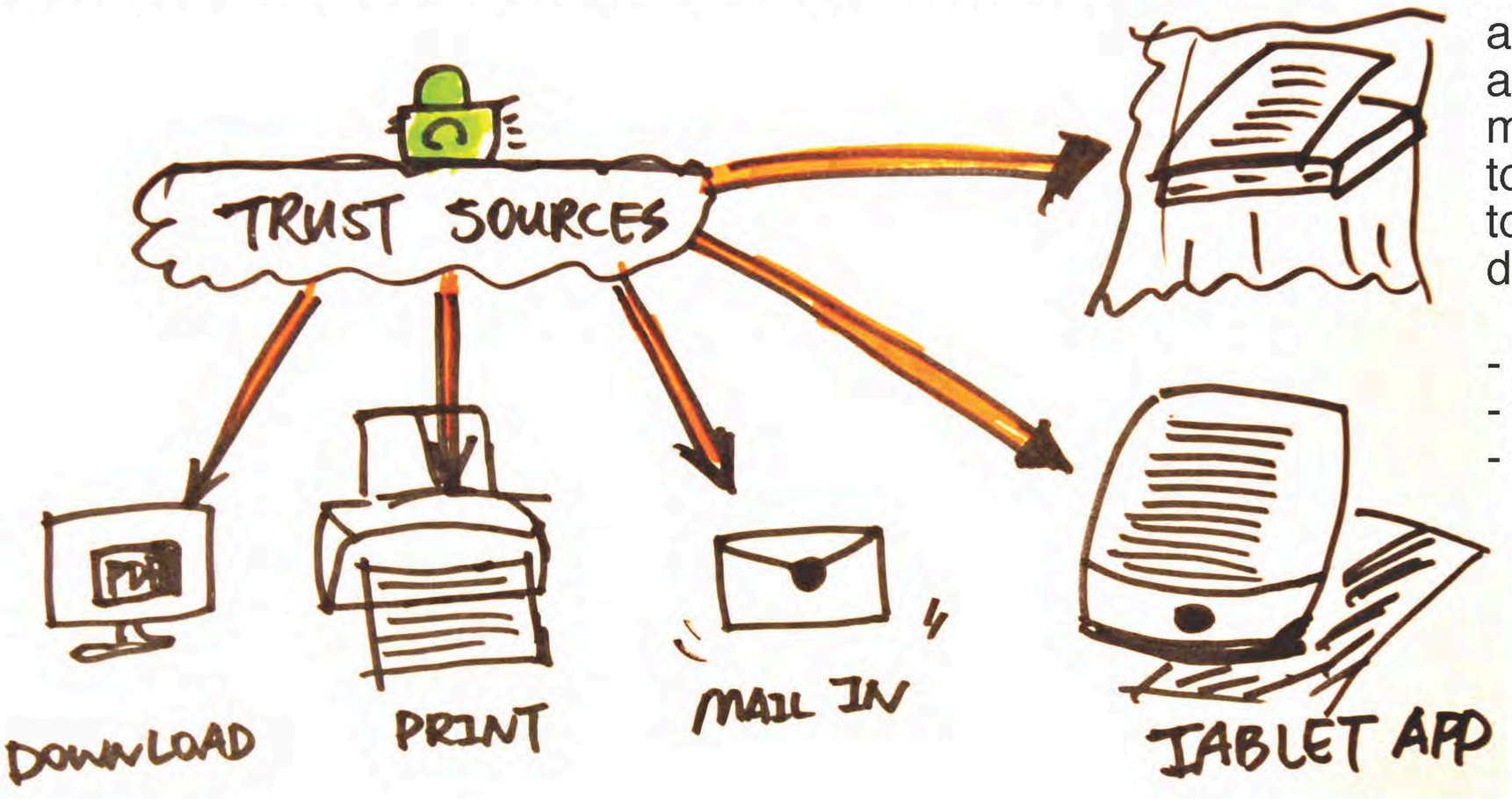
Team 4

Design Goals

Marking the Ballot : separate front end display with backend system

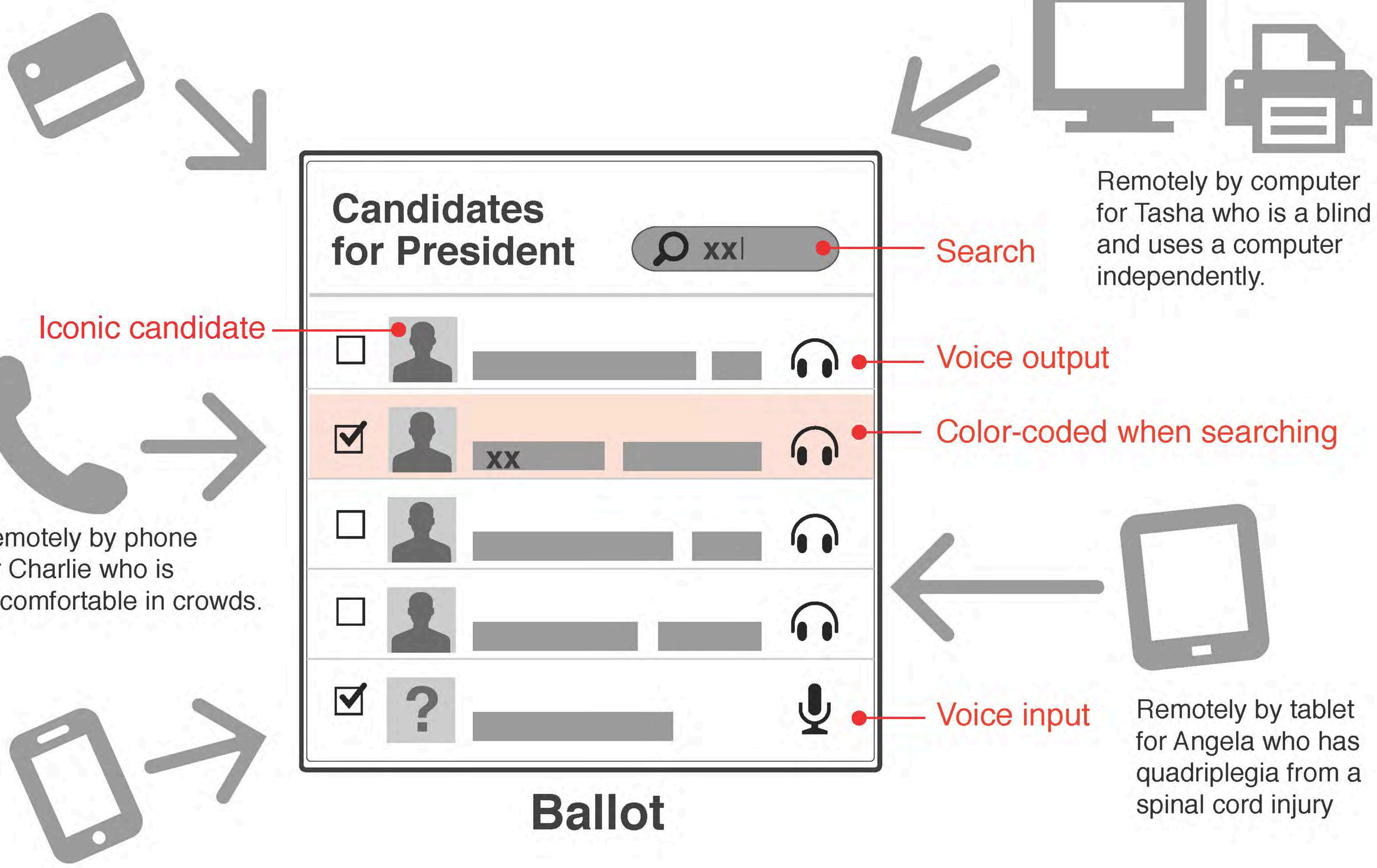
Description

Separate frontend display with backend system



a system where the ballot is accessible should provide many of modes (keyboard, touch screen, voice) to accomodate for people with different sets of abilities

- throughout various platforms
- from anywhere
- from trustable sources



Weaknesses

Strengths

- Many modes to accomodate for people with different abilities
- The ballot offers preferences for language option selection
- The instructions are provided both in visual and audio form

For selections:

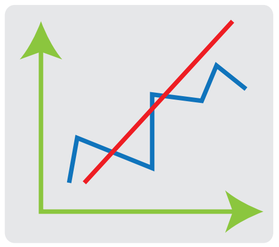
- able to filter through first letter
- able to fast forward/slow down for audio interface

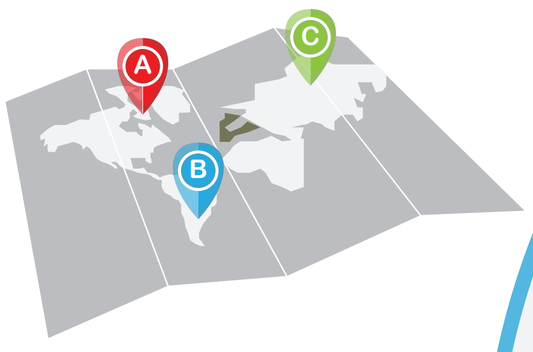
DESIGN GOALS

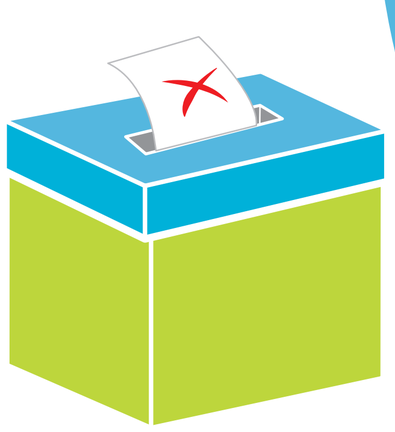
2 TEAM

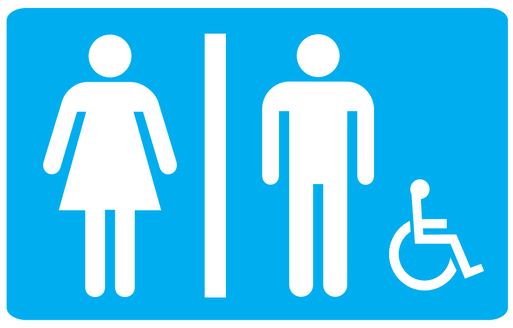
VOTING IN PERSON

THE UNIVERSAL POLLING PLACE









EVALUATION, DATA, & RESEARCH

ACCOMMODATION FOR DIVERSITY OF NEEDS

CONVENIENCE OF LOCATION

This concept provides the universal polling place. Certain voting centers would be enhanced to feature increased flexibility. These voting centers would most importantly be accommodating for the diversity and variety of disabilities and needs. The goal and intent is to provide a universal voting experience while keeping it convenient and cost effective. Aspects such as worker and voter training, location, accessible utilities, ballot types, language (including sign language) accommodations, early voting, and longer hours. This concept also emphasizes the need to measure evaluation and collect qualitative as well as quantitative data to implement improvements across centers. The idea here is to learn as well as to serve, and remember that one size indeed does not fit all.

WORKER TRAINING AND LONGER HOURS

BALLOT TYPES

ACCESSIBLE UTILITIES

LANGUAGES & SIGN LANGUAGE

EARLY VOTING

1 *Equitable Use:* *The design is useful and marketable to people with diverse abilities.*

+ Provide the same means of use for all users: identical whenever possible; equivalent when not.
+ Avoid segregating or stigmatizing any users.
+ Provisions for privacy, security, and safety should be equally available to all users.
+ Make the design appealing to all users.

2 *Flexibility:* *The design accommodates a wide range of individual preferences and abilities.*

+ Provide choice in methods of use.
+ Accommodate right- or left-handed access and use.
+ Facilitate the user's accuracy and precision.
+ Provide adaptability to the user's pace.

3 *Simple and Intuitive:* *Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.*

+ Eliminate unnecessary complexity.
+ Be consistent with user expectations and intuition.
+ Accommodate a wide range of literacy and language skills.
+ Arrange information consistent with its importance.
+ Provide effective prompting and feedback during and after task completion.

4 *Perceptible Information:* *The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.*

+ Use different modes (pictorial, verbal, tactile) for redundant presentation of essential information.
+ Provide adequate contrast between essential information and its surroundings.
+ Maximize "legibility" of essential information.
+ Differentiate elements in ways that can be described (i.e., make it easy to give instructions or directions).
+ Provide compatibility with a variety of techniques or devices used by people with sensory limitations.

5 *Tolerance for Error:* *The design minimizes hazards and the adverse consequences of accidental or unintended actions.*

+ Arrange elements to minimize hazards and errors: most used elements, most accessible; hazardous elements eliminated, isolated, or shielded.
+ Provide warnings of hazards and errors.
+ Provide fail safe features.
+ Discourage unconscious action in tasks that require vigilance.

6 *Low Physical Effort:* *The design can be used efficiently and comfortably, and with a minimum of fatigue.*

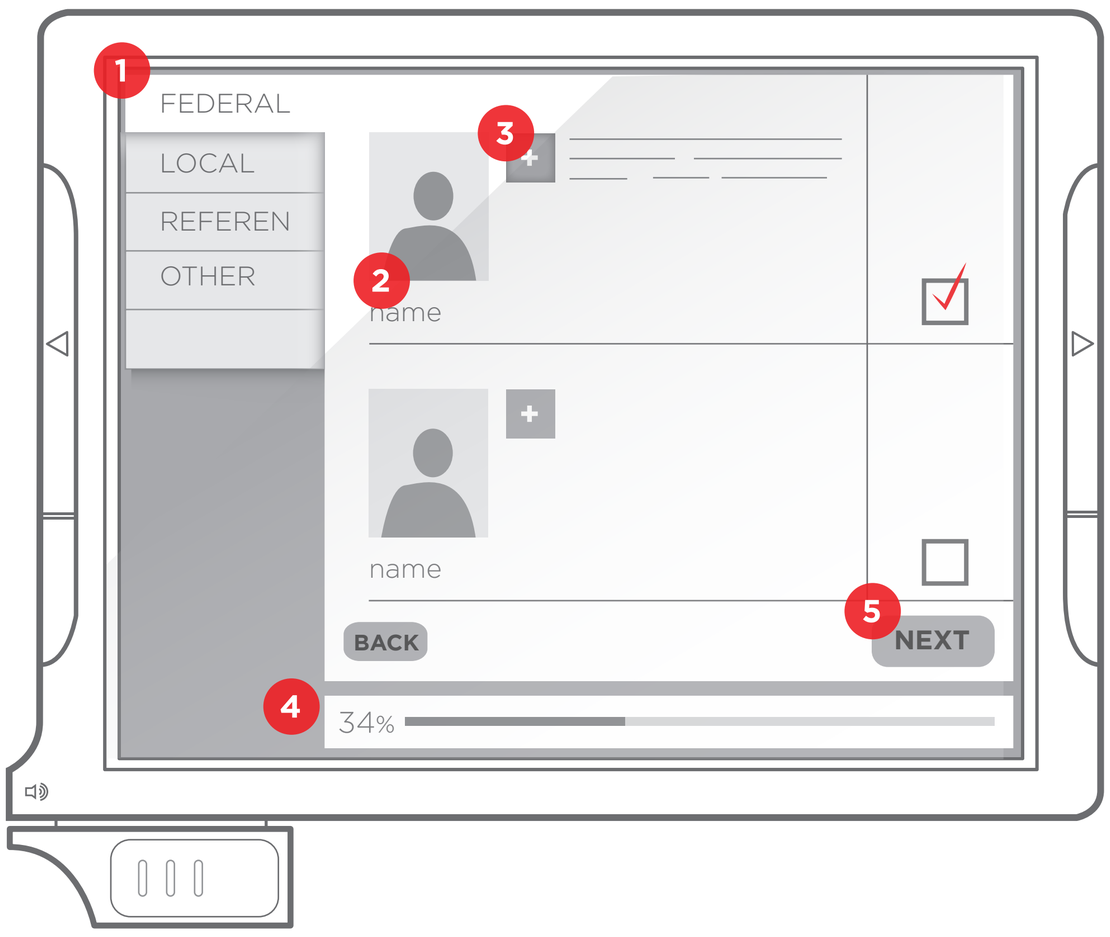
+ Allow user to maintain a neutral body position.
+ Use reasonable operating forces.
+ Minimize repetitive actions.
+ Minimize sustained physical effort.

7 *Size and Space for Approach and Use:* *Appropriate size and space is provided for approach, reach, manipulations and use regardless of user's body size, posture or mobility.*

+ Provide a clear line of sight to important elements for any seated or standing user.
+ Make reach to all components comfortable for any seated or standing user.
+ Accommodate variations in hand and grip size.
+ Provide adequate space for the use of assistive devices or personal assistance.

ACCESSIBLE VOTING TECHNOLOGY INITIATIVE

Ballot Design



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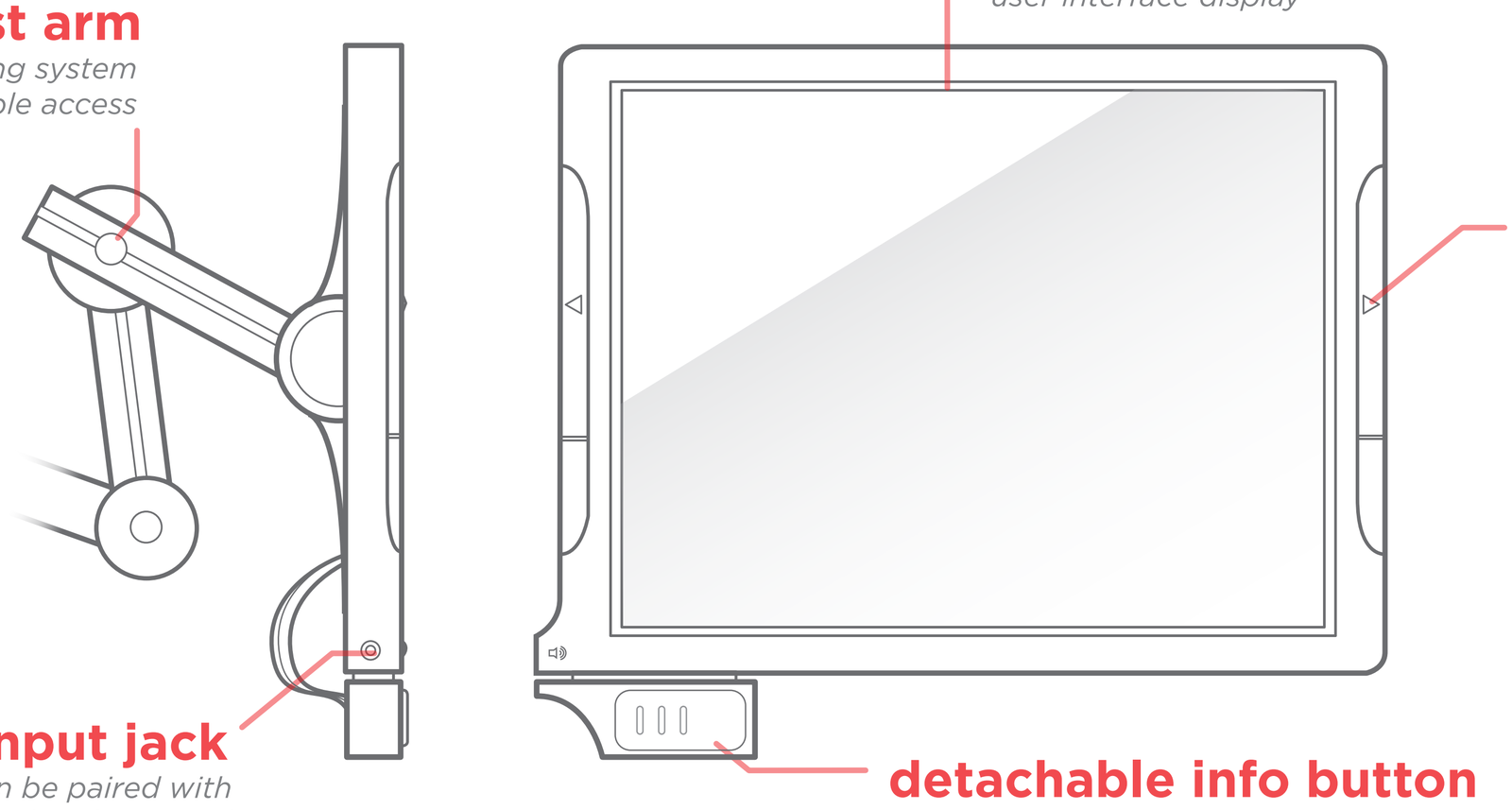

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