

April 1, 2013

NIST Accessible Voting Technology Research Workshop

# Accessible Voting Technology Initiative

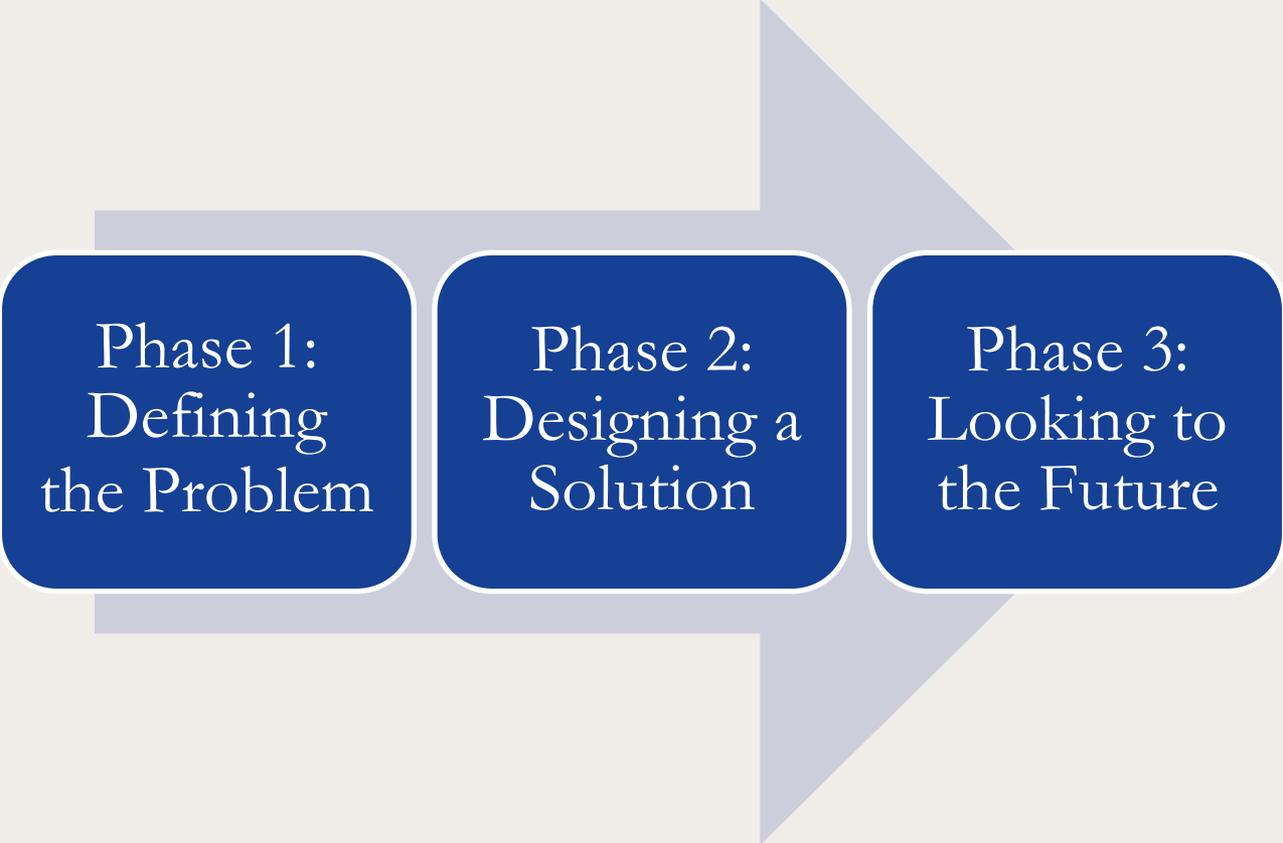
<http://elections.itif.org>

Whitney Quesenbery

Project Coordinator

We focus on the  
user experience,  
not just the  
technology.

# Project Details



Phase 1:  
Defining  
the Problem

Phase 2:  
Designing a  
Solution

Phase 3:  
Looking to  
the Future

# Criteria for Success

- **Usable**
  - Supporting all voters in marking their ballot accurately & efficiently
- **Accessible**
  - Enabling people with disabilities to participate independently and privately
- **Flexible**
  - Fits within election management practices from traditional polling places to vote centers and vote-by-mail
- **Secure and auditable**
  - Making it possible to recount and audit elections
- **Affordable and robust**
  - Within the means of even a small election district

# Phase 1: Defining the problem

## **Accessible Voting Technology: Analysis and Recommendations**

Mark Harniss and Deb Cook, University of Washington Center for Technology and Disability Studies

## **AVT Workshops and Ethnographic Research**

Jon Sanford, Frances Harris, Karen Milchus, Claudia Rebola, Georgia Tech CATEA) and GTRI

**Assistive Technology in the Voting Process** – Greg McGrew, University of Colorado Assistive Technology Partners

**Defining the Barriers to Political Participation for People with Disabilities** – Thad Hall and Mike Alvarez, University of Utah

**Open Innovation Challenge: How might we design an accessible election experience for everyone** - OpenIDEO and 825 participants from around the world

# Phase 2: Designing a Solution

## Voters Guides and Training Materials

**Accessible Voter Information Guide and poll worker manuals** – Steven Jacobs, Apps for Android

**Voting Voice - Voter's guide for people with aphasia** – Shaun Kane  
University of Maryland, Baltimore County

**Vote Your Mind - Interactive voter guide for people with cognitive impairments** – Camille Crittendon, Gregg Niemeyer, Faraz Farzin, Dan Gillette, CITRIS

## Election Administration

**Pilot programs for supervised voting by people in group living facilities** – Bonnie Glaser and Karin MacDonald, Election Administration Research Center

**Training material for poll workers based on ethnographic interviews** – Frances Harris, CATEA

# Phase 2: Designing a Solution

## Voting Technology

**Usability testing tablet voting system in long-term care facilities** – Greg McGrew, Assistive Technology Partners

**EZBallot design research** – Jon Sanford, CATEA and three intertwined graduate studies

**Anywhere Ballot design research** – Kathryn Summers, University of Baltimore, with Dana Chisnell, and Drew Davies

**Accessible hardware interface for an iPad-based voting system, development of a voting system testbed, and additional research** – Brad Fain, Carrie Bell, Andrew Baranak, Linda Harley, GTRI

**Engineering capstone projects to develop a joystick control and mounting bracket** – Sarah Swierenga, Graham Pierce, Stephen Blosser, Michigan State University and students in two engineering courses

“Design thinking is a human centered approach to innovation: [it] includes understanding people as inspiration, prototype building to think, using stories, having an inspired and inspiring culture.”

- Tim Brown, CEO, IDEO

# Collaborative approaches to problem solving

Brainstorm many ideas

Build from inspiration to concept to refinement

Encourage inclusive, open collaboration



# Focusing on people with personas

Summarize research

Connect human and technology needs

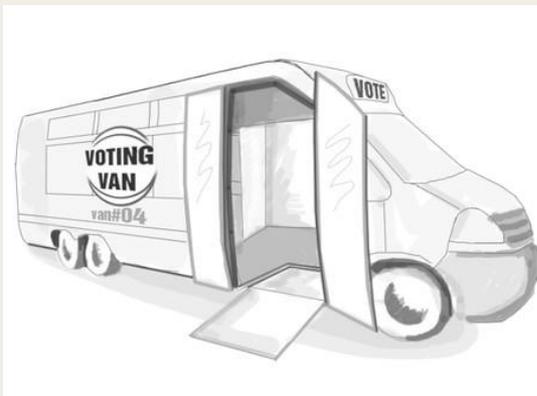
Show the journey through an election for people with disabilities

	Tasha	George	Ang	Min	Charles
Updated (self) Profile (ID)	✓	✓	✓	✓	✓
Awareness of option	✓	✓	✓	✓	✓
Time (electronic)		✓	✓	✓	✓
Language				✓	?
Security (Trust) (Privacy)	✓	✓	✓		
Ballot Design	✓		✓	✓	✓
Privacy to submit	✓		✓	✓	
Culture of accommodation (training)	✓	✓	✓	✓	✓
Registering to vote	✓	✓	?	✓	✓

Personas: <http://elections.itif.org/projects/design-workshops/>

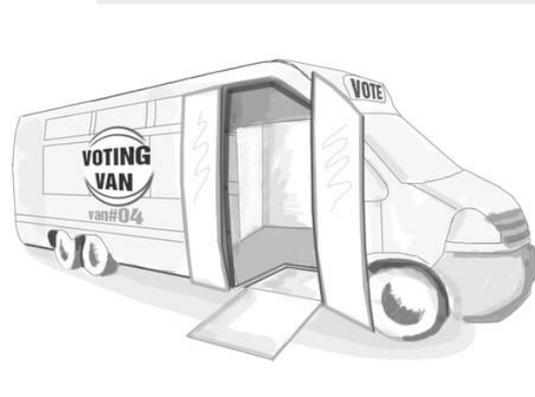
# Invite new perspectives

How might we design an accessible election experience for everyone? [Read the brief](#)



3 of the winning concepts from the Open IDEO Innovation Challenge  
<http://www.openideo.com/open/voting/winning-concepts/>

# Invite new perspectives



## Vote While You Shop: 'Pop-Up' Poll Sites Sweep Iowa

by SANDHYA DIRKS

October 24, 2012 5:44 PM

from WOI



Listen to the Story

All Things Considered



3 min 26 sec

- + Playlist
- ↓ Download
- = Transcript



NPR News Story: <http://www.npr.org/2012/10/24/163560324/vote-while-you-shop-pop-up-poll-sites-sweep-iowa>

# Reframe the question

What questions can we ask to suggest new directions?

How can the idea be used by more people with varied abilities?

What changes would new ideas require?

**TEAM 2**

## 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. Emerging polling times, discomfort, and anxiety—the polling machine scans the sample ballot and presents your choices on-screen. You can update the selections and cast your vote. The machine itself is an accessibility designed polling machine equipped 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)

- 1. SCAN BALLOT**
  - + Camera digitizes and loads the voting machine with your choices
- 2. CONFIRM ENTRIES**
  - + Browse your vote, and double-check your choices.
- 3. CAST VOTE**
  - + Vote is cast electronically, with a paper copy printed for paper-still purposes.

### 7 Principles of Universal Design

- 1 EQUITABLE USE**
  - + Sample technology is publically accessible
  - + Voting machines are accessible
- 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

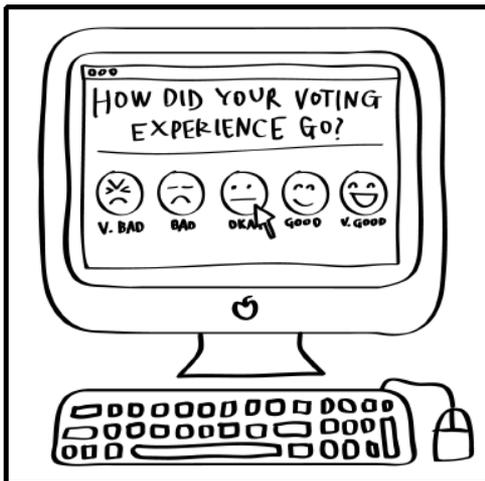
**ACCESSIBLE VOTING**

# 50 Ideas for Accessible Elections

## 5. A “Yelp” for polling places

**Problem:** Election officials do not always receive a lot of feedback on how well a polling place is run, especially in big districts with many polling places.

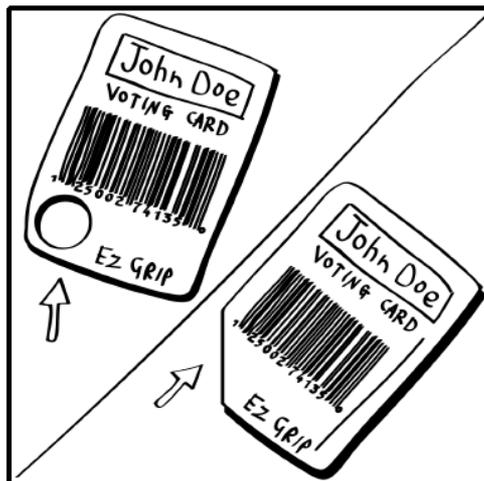
**Idea:** An online rating system could allow voters to give feedback to election officials on what is, or is not, working and how to improve the voting experience. Ratings for polling places could help voters identify the most accessible early voting centers and well-run polling places. This would also let the community recognize the expertise of election officials who operate the best polling places, who can then help improve neighboring locations.



## 8. An easier-to-grip smartcard

**Problem:** Some voting systems are activated with smooth, flat, plastic smartcards, but they can be hard for voters with arthritis or low dexterity to hold, and inserting them in the right direction is a challenge for blind voters.

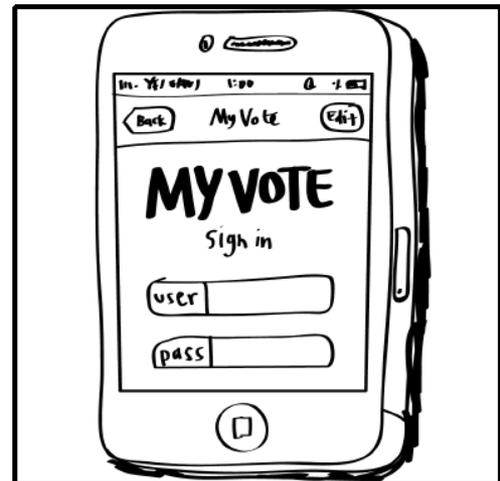
**Idea:** Election officials could add a hole for a finger grip and cut an angle off of one corner or add a notch in the bottom for orientation to make these plastic cards more accessible.



## 15. Mobile-friendly election web sites

**Problem:** For people with disabilities, smartphones can be a lifeline, but election web sites do not always work well on a small mobile device screen. This can keep voters who rely on their phone as their main computer from finding election information.

**Idea:** Election officials should make sure that election web sites and applications, like online voter registration, work on mobile devices, either with a mobile app or a website designed so that it automatically adapts to the size of the screen. One way to help ensure that forms and web sites work on smartphones is to keep the layout simple.



“Design is not just  
what it looks like  
and feels like.

Design is how it  
works.”

- Steve Jobs

# Thank you!

Email: [accessiblevoting@gmail.com](mailto:accessiblevoting@gmail.com)

Web: <http://elections.itif.org>

Election design workshops:

<http://elections.itif.org/projects/design-workshops/>

Working papers:

<http://elections.itif.org/resources/working-papers/>

50 Ideas for More Accessible Elections

<http://www.openideo.com/open/voting/realisation/50-ideas-for-accessible-elections/>

