

# EZ BALLOT

## with Multimodal Inputs and Outputs



Current accessible voting machines require many voters with visual, cognitive and dexterity limitations to vote with assistance, if they can vote at all. To provide equal access for voters with cognitive, visual and dexterity limitations, the EZ Ballot was designed with a simple, consistent linear structure. EZ Ballot breaks down the voting process (e.g., contests, candidates, review of the ballot and casting the ballot) into simple questions that are easy to understand and answer using either a “yes” or “no” response.

Each screen contains only one question that is presented both visually and verbally (see Figures 1). For example, “Do you want to vote for democratic Barack Obama & Joe Biden for president and vice president?” will be displayed visually and through audio (see Figure 2). The question itself serves as a prompt that can remind and orient voters.

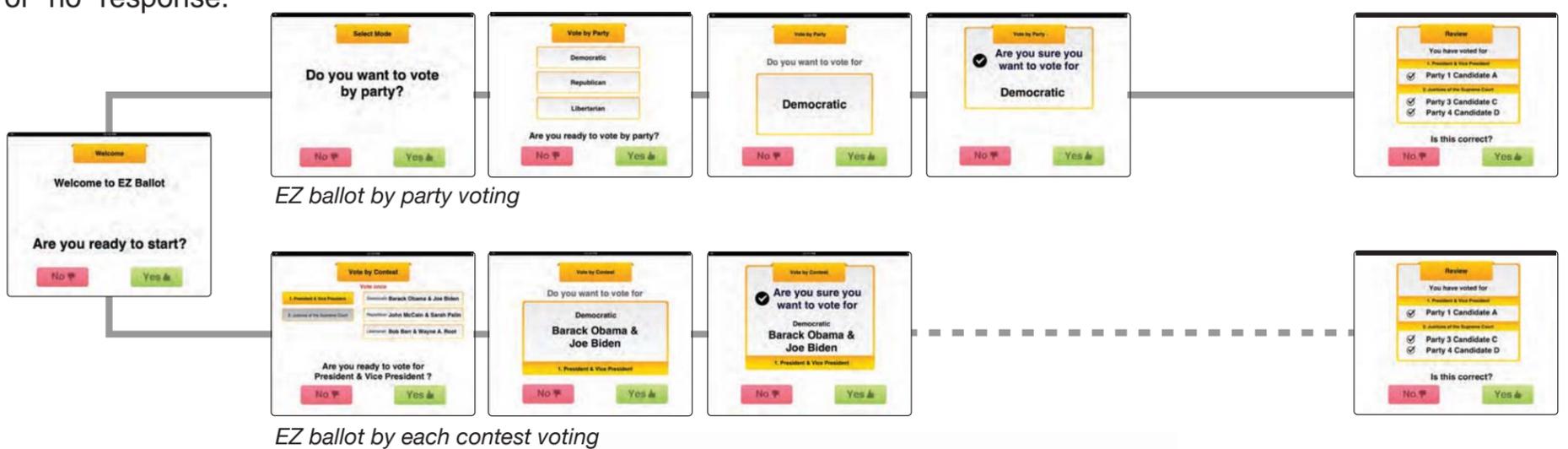


Figure1. EZ ballot structure

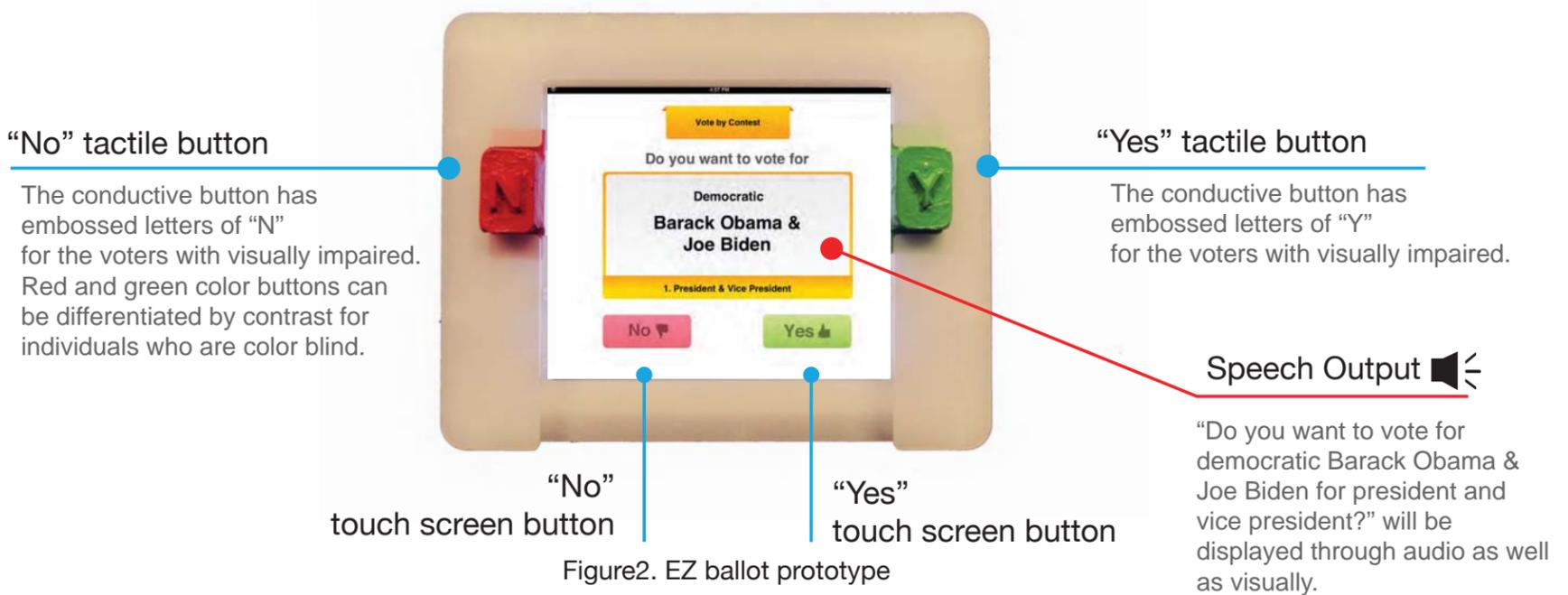


Figure2. EZ ballot prototype

### Multimodal Inputs and Outputs

EZ ballot is designed with integrated multimodal inputs and outputs to provide flexibility for users with different levels of vision and dexterity. Multimodal inputs include physical tactile button, touch screen button, and gestural inputs. Multimodal outputs include visual and speech feedback. To provide multi-modal outputs orientation and feedback cues, a progress bar and non-speech sounds will be incorporated in the EZ Ballot.

### Initial User Studies and Future Work

In a pilot study, users reported that EZ ballot prototype was easy to use and understand. A blind user particularly liked the simplicity of the “yes” and “no” tactile buttons and the ability to use both hands compared to a typical one-handed keypad. A dexterity-impaired user responded that the touch screen buttons were easy to use. We will refine the design and implement gestural input and write-in feature to evaluate the EZ ballot for people with visual, dexterity, and cognitive impairments and without disabilities.

