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Author: Chris Jerdonek

Subject: Voting System Components

During the last TAC meeting, there was a question about what is included in a voting system and what are possible components.

The attached table is something I prepared previously. It describes one possible division. This is not meant to be a rigorous or exhaustive list but is meant to provide a starting point for thinking about this issue.

Possible Voting System Components

Type	Name	Description / Notes
Hardware	Accessible Ballot-Marking Device	Device used in polling places to allow people with disabilities to vote independently. Needs accessible interfaces like audio, sip-and-puff, etc. May need custom casing / shell around COTS computer?
Hardware	Central Ballot Scanner	Ballot scanner used centrally to scan and tabulate vote-by-mail ballots.
Hardware	Precinct Ballot Scanner	Ballot scanner used in polling places to scan and tabulate ballots cast in person. May need custom casing / shell around COTS scanner?
Software	Ballot image interpretation	Responsible for interpreting and converting an image of a voted ballot into vote totals, given a ballot layout. The open source software OpenCount developed at Berkeley could be a foundation for this.
Software	Ballot Layout	Lets staff generate paper-ballot layouts from the election definition for each ballot type in automated or semi-automated fashion, including support for multiple languages.
Software	Election Definition EMS Integration	Interfaces with the Department's Election Management System (EMS) to import and convert election definition information from the EMS into the voting system database. Includes things like what offices, candidates, measures, etc. are on ballot and in what precincts, etc.
Software	Election tabulation	Aggregates and counts all vote totals and generates the results in an open data format. Includes the RCV tabulation algorithm.
Software	High-level scanner software	High-level software controlling the precinct and central ballot scanners. Interacts with the scanner device driver and ballot image interpretation component and is responsible for things like scanning and storing ballot images, detecting the ballot layout, interpreting and tabulating ballot markings, and export. The open source software OpenCount developed at Berkeley could be a foundation for this.
Software	Results reporting	Generates human-readable results reports for the public from the open results data from the tabulator (e.g. printable results and results posted on the Department website).
Software	Scanner device drivers	Low-level software providing an API to the basic hardware functionality of a ballot scanner (e.g. out-stacking a ballot, returning a ballot, advancing a ballot, etc). Needed for both precinct and central ballot scanners.
Software	Voting System Database / Management	Central database storing all information needed for voting system. Includes things like contest and ballot definitions, ballot images, cast vote records, and election results. Management interface lets staff perform tasks like import and export data in open data formats, digitally evaluate "out-stacked" ballots and ballots with write-in candidates, and perform other functions needed during the canvass. Should support plug-ins like EMS integration, tabulation, and results reporting.