Election Manager

Frequently-Asked Questions

What Is Election Manager?

Election Manager is a publicly available, integrated software system that can be utilized to automate all phases of any election in a transparent, secure and auditable manner. It may be used free of charge for any non-commercial application. It is a "Swiss Army knife" for elections that can be used to:

- Flexibly define the various jurisdictions for elections anywhere on Earth
- Flexibly define elections with their political parties, races, candidates and aliases
- Supervise and control voting in the polling places and voting booths; print voter-verifiable paper ballots
- Electronically tally the results of an entire election so that accurate results can be available within minutes after the polls close

Why Is Election Manager Important and Needed?

Electing the classmate most likely to succeed probably won't affect the course of world events, but electing those who will wield government power over citizens is of critical importance. The laborious marking and counting of paper ballots begs for automation utilizing modern technologies. However, it makes absolutely no sense to put the fundamental democratic process of voting at risk just for the sake of some time-saving automation. There have been many attempts at using various technologies to make the voting process more efficient, but substantially all of them have sacrificed transparency, security and/or auditability. Election Manager attempts to comprehend the entire voting process and achieve the desired high efficiency while actually *improving* transparency, security and auditability over hand-marked paper ballots.

In a Nut Shell, How Does Election Manager Work?

After setting up whatever jurisdictions may be required, an election (or multiple elections) may be flexibly defined. An entire election setup can be exported as an XML file (with security fingerprint) that can be loaded from a CD to automatically set up each precinct. On election day, voters check in as usual. For each authorized voter, a voting booth is enabled and the voter is directed to it. The voter presses a "Begin Vote" button and the races for which s/he is entitled to vote appear on the display. The voter may quickly select candidates for each race from a pop-up list or write in any name. When the voter has made choices in any or all races and reviewed them, s/he presses the "Cast Ballot" button which electronically casts the ballot as well as printing a voter-verifiable paper ballot. After checking the printed ballot, the voter drops it into a traditional ballot box on the way out. When the polls close, a text file of the randomly ordered ballots is produced (using standard XML). The judge of elections and poll observers certify the results file as well as its security fingerprint. The results file can be printed and posted at the polling place, and should be posted publicly on the Internet. Election Manager will tally the votes cast at the polling place, and of course, the ballot files from all polling places are tallied by a central copy of Election Manager which then reports results for the entire election.

What Approach Was Used for the Software?

All of Election Manager's source code is written in Java so that it is highly portable. Either the EM server or the EM client software will run identically on substantially any combination of hardware and operating system. Inexpensive standard PC hardware can be used to keep everything non-proprietary, open and low-cost. A simple and user-friendly GUI (graphical user interface) with touch-screen voting is employed.

Does Election Manager Support "Internet Voting"?

Absolutely not! No system that uses the Internet for voting can guarantee acceptable security and the door is opened to other problems as well. Voting booth clients within each polling place should always be connected to the server via hard-wired Ethernet cables (no RF). However, clients <u>can</u> connect over the Internet to a central server while setting up jurisdictions and elections. During voting, there must be no connection to <u>any</u> other network, and certainly not to the Internet.

What Election Options Are Supported?

For each election, the following can be independently selected:
- Election date and times that the polling places open and close
- Primary election (requires parties) or general election
- Races can be a referendum or elect 1, 2, 3, etc. candidate(s)
- Voting method for each race can be either standard Plurality, AADV (Approve/Approve/Disapprove Voting) or BAWV (Best/Alternate/Worst Voting)
- Pop-up candidate list can be either specific to each race or consolidated
- Voter-verifiable ballot printing off or on (either 8.5" x 11" or 8.5" x 14" ballots)
- Either a reference number (recommended) or the actual ballot number can be printed.
- Any number of approved aliases can be set up for each candidate (aliases are automatically comprehended, properly handled and reported in the tally process)

How Does Election Manager Achieve Greater Transparency and Security?

Everything about voting should be completely transparent and public, except, of course, that the secrecy of each voter's ballot must be fiercely guarded.

Election Manager is written entirely in Java, perhaps the most widely used and most portable programming language to-date. Both the source code and executable jar files are made publicly available. Election Manager can run on a wide selection of readily available, well understood, standard, inexpensive hardware and operating systems. Anyone can independently run and test the system. Ballots are instantaneously and always maintained and reported in a random order. The text file of results from each polling place is standard, well-understood XML in a format matching published schema. XML editors and readers (including most browsers) are widely available. The files are also human readable. The secure and redundant output file contains all ballot choices in three different sort orders.

No one can guarantee that any machine at least as complicated as a paper stapler is working correctly all the time. For that reason, every output must be verifiable and actually be verified. Voters verify their printed ballots. The XML output can be easily verified using the printed ballots, so any "glitches" whether intentional or accidental **will** be caught and can be corrected. Anyone anywhere can independently verify election totals and results using the publicly-available output files and Election Manager (or any other method) to tally the ballots. Complete integrity is assured.