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
- Electronically tally the results of an election

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 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 checksum) that can be loaded from a CD to 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. The voter drops the printed ballot into a traditional ballot box on the way out. When the polls close, a text file of the randomly ordered results is produced in one of three formats (all standard XML). The judge of elections and poll observers certify the XML results file as well as its checksum. The results file can be printed and posted at the polling place, and should even be posted publicly on the Internet. Election Manager will tally the votes cast at the polling place, and of course, each polling place forwards its file to a central copy of Election Manager which tallies all ballots and 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) 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 can connect over the Internet to a central server while setting up jurisdictions and elections.

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)
- Methodology can be either standard plurality or Minet ranking/successive elimination
- Pop-up candidate list can be either specific to each race or consolidated
- Voter-verifiable ballot printing off, on or on with (truly) random ballot number
- Results file format by ballot with detail, by race with detail or by race with totals only
- Allowed languages centrally controlled or controlled at the precinct level
- 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?

No system involving humans can be made completely invulnerable to all forms of fraud, but careful, comprehensive, thoughtful design can greatly minimize the opportunity for fraud *and* make any problems very easy to definitively detect and diagnose. 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 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 variety of readily available, well understood, standard, inexpensive hardware. Anyone can independently run and test the system. The text file of results from each polling place is in standard, well understood XML format matching published schema. XML editors and readers (including most browsers) are widely available. These files are even human readable. Anyone can independently verify election results using Election Manager or any other method.

Ballots are instantaneously and always maintained and reported in a random order. Voters verify that their printed ballots are correct. The printed ballots are used to verify the results file, so any computer "glitches" (accidental or intentional) can be detected and corrected. The three results file formats support different methods of verification. All systems involve some tradeoffs. Those chosen for Election Manager are believed to be close to optimum and an improvement over human-marked paper ballots. Options support fine tuning of important tradeoffs.