

Department of Social Science – Political Science
Illinois Institute of Technology

Written Report
Electronic Voting
Professor DeForest

Michael J. Sepcot
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With one of the most controversial elections just behind us, the democratic practice in which we cast our vote needs to be updated. Dangling chads and manual recounts could be a thing of the past. This country needs to wake up to the twenty-first century and embrace the technology in which we have pioneered for the past half-century; the computer. Electronic voting booths could solve the problems of the day by eliminating the human error involved in casting a vote. Touch screens with graphical displays could serve as our next butterfly-ballot. The dangers involved with security over the Internet can be circumvented with the use of electronic voting machines in place of the manual punch machines of the day. IBM abandoned their punch card machines back in the 1960s and it is about time the US Government does the same today.

“Every vote in the world’s largest democracy is being recorded at the press of a button.”¹ On the 10th of May, India, the world’s largest democratic country with 675 million eligible voters, had completed the final stage of the country’s first all-electronic election. It took over one million electronic voting machines, supplied in part by the government-run Bharat Electronics Limited, to accomplish the magnificent feat of recording the votes of the nation. Many people fear that the electronic voting machines are too impractical when it comes to tallying the votes cast by millions of people. They fear that special interest groups or political parties might try to tamper with the results, swaying the election in their favor. There was even a suit filed against the just closed election on the issue of rigging the election, but Karnataka's High Court with Judge K Shridhar Rao presiding, has full faith in the machine stating that “without the least doubt, I say the machine is fully tamper-proof,” ruling that rigging was not possible with the electronic voting machines.² The company producing the other half of the machines,

Electronics Corporation of India, has told BBC News Online that they are “working on a model for European countries.”³ With such an interest from overseas nations, I feel the United States should be showing a more than a passive interest in the acquisition of such electronic voting machines.

The Arizona Democratic primary was the United States’ latest effort in the attempt to validate electronic and internet voting. According to News.com, the Arizona Democratic primary gave people four viable methods of voting: the Internet, during the four-day period preceding the election; Mail, until election day; Computer, at the polling places on election day; and the Traditional paper ballot, cast on election day.⁴ The internet method of voting is a great opportunity for residents who are out of the state to cast their vote in the primary, but it had its difficulties. The software that was made available was not recognized by Macintosh computers, nor was it fully Section 508 compliant; meaning that the screen software used by the blind was unable to recognize the data being transmitted and that Internet voting is still off in the not-so-distant future. Electronic voting, on the other hand, when used in polling places as replacements for traditional paper ballots, do not suffer from some of the technical problems as internet voting, such as machine dependence. The votes that are cast can, like traditional paper ballots, have a backup that could be used as a ‘hard copy’ for manual recounts. Write-once, read-many drives exist that allow users to only be able to write data to a specific memory location once, preventing any changing of the data, but allows one to read that information as many times as necessary to verify the results. News.com also points out that voter participation could also be recorded, separately from the actual votes cast, to

provide a secondary layer of protection by “providing verification that a voter did not vote more than one, while protecting the secret ballot.”⁵

A paper written by the CEO and Chief Scientist at VoteHere, Inc. entitled *Verifiable e-Voting: Indisputable Electronic Elections at Polling Places*, identifies the four steps that are required for a voter to be confident in the electronic voting process and how to implement those steps in polling places. The first of the four steps starts with the check-in. When the voter enters the polling place, the poll-worker checks the voter in, through current methods, and gives the voter an identification card which determines the appropriate ballot for the voters’ precinct. The second step is selecting your vote. All of the candidates for a race are listed on the computer screen, the user interface of the electronic voting machine. Next to each of the candidates is a verification code that can be checked against a predetermined booklet to ensure that the correct candidate is identified on the back-end of the machine. The third step is verification. The verification screen would show a summary of the selections the voter had made, along with the verification code that corresponds to the individual candidates. A ballot receipt is given to the voter before the ballot is cast. If the codes on both the screen and ballot receipt do not match, the machine is not acting correctly and might be tampered with. At this point, the voter would be asked to try again or contact a poll-worker to figure out the problem before the ballot is cast. The final step involves casting the ballot and further verification that the correct votes had been cast. Once the voter submits, or casts, their ballot, it is recorded and digitally signed with the identification card received at check-in. The ballot receipt can be checked against a publicly available verification statement posted either on the Internet or available over the phone. Since the information will be shown via

identification codes, the secrecy of who cast the vote will be retained. With the electronic voting system described above, it would allow “any observer to verify the election results and gives you, the individual voter, power to verify the integrity of your voted ballot.”⁶ With such results verifiable by any person and data integrity verifiable by the voter, such events as the 2000 Florida recount would not have caused such an uprising among the voting population.

According to an article on CNN.com, federal law mandates that by the year 2006, every precinct must have at least one machine to serve disabled voters. This is much easier to accomplish with electronic voting systems because of the technologies available to serve disabled citizens. Jeordan Legon, author of the *Electronic elections: What About Security?* article, identifies that “the touch-screen machines are easier to adapt for blind voters because they can be outfitted with audio units.”⁷ Such a simple process is not available to the traditional paper method, but is available to the electronic versions because of software fitted to computers to read typed data to a disabled user. If the paper process was to incorporate such a change, brail ballots or voice recordings would have to be developed to be used in the polling places. Creating such ballots or voice recordings would consume more taxpayer money than using voice software because a surplus of ballots would need to be created to compensate for the number of voters who wish to use the handicap ballots. Voice recordings are a nice alternative to the brail ballots, but there would still need to be an alternative ballot created for the disabled person to cast their vote. Electronic machines would make the process more efficient because the program could be loaded on all machines, and offered to everyone without wasting materials.

The creation of electronic voting machines based on the standards set forth in the VoteHere paper, would reduce the waste and increase the reliability of voting tallies. Verifiable electronic voting is possible under the VoteHere method because it creates publicly available information that satisfies both voter verification and result verification. Voter and Result verification is a necessity when it comes to the issues about security. Without such verification, we could not be guaranteed that the results produced accurately reflect the ballots cast. As more and more precincts begin to test the internet capabilities of electronic voting and using electronic voting machines in polling places, the more likely it is that bugs in the systems will come forth and be corrected in time for national elections like the one in India. The results of the election in India will set a standard for with which to compare the voting machines under development in the United States with the government sponsored programs abroad. The sooner the voters become comfortable with casting their votes electronically, the quicker we will re-enter the phase of politics when the vote cast can be accurately accounted for like the days of the “show of hands” elections. The United States should follow the role of India by promoting such electronic voting machines for use by the disabled and able alike, and bring this country into the electronic age it inspired.

Notes

1. “First Stage of India Polling Ends.” Available from http://news.bbc.co.uk/1/hi/world/south_asia/3641419.stm (accessed April 20, 2004).
- 2, 3. Beary, Habib. “Gearing Up For India’s Electronic Election.” Available from http://news.bbc.co.uk/1/hi/world/south_asia/3493474.stm (accessed May 10, 2004).
- 4, 5. Baum, Christopher. “Commentary: Electronic Voting Likely To Emerge a Winner.” Available from http://news.com.com/2102-1023_3-249029.html (accessed May 10, 2004).
6. Neff, C. Andrew and Jim Adler. “Verifiable e-Voting: Indisputable Electronic Elections at Polling Places.” Available from http://www.votehere.com/vhti/documentation/verifiable_evoting.pdf (accessed April 20, 2004).
7. Legon, Jeordan. “Electronic Elections: What about Security?” Available from <http://www.cnn.com/2002/TECH/ptech/11/05/touch.screen/> (accessed May 10, 2004).