

Paper Trails: A Good Idea That Failed

The Good Idea

Why did activists lobby for years to get paper trails added to "Direct Recording Electronic" voting machines (DREs), also known as "touch screen" voting machines?

(Paper trails, also known as Voter-Verified Paper Audit Trails or VVPAT, are printed by a DRE after each voter indicates his or her votes, but before the votes are cast. The voter has a chance to verify the paper printout, and cast the ballot if the VVPAT is correct or cancel the ballot if the VVPAT doesn't repeat the voter's choices correctly.)

VVPATs were supposed to address two DRE problems:

- Computer work in the "information technology" world is 100% verified. Always. And mistakes are almost always found--and corrected before customers see them. Shockingly, DREs were designed without any feature to enable their work to be verified. If DREs had VVPAT, then Election Boards could hand-count the votes on VVPAT in front of observers, compare DRE and VVPAT tallies, and verify that DRE results were accurate.
- Election integrity is directly related to the ability of observers to watch vote handling and counting. When handling and counting are done inside a computer, observers can't do their job. If DREs had VVPAT, then observers could watch the handling and counting of votes on the VVPAT.

Vendors of "paperless DREs" (DREs without VVPAT) argued that DREs verified themselves. Activists and NIST (National Institute of Standards and Technology) said that software-created tallies needed "software-independent" verification via VVPAT.¹

Why the Good Idea Failed

1. Voters can't verify.

The VVPAT idea assumed that voters would be able to compare their voting choices on the DRE display screen to a printout of the same choices on a little slip of paper similar to a cash-register receipt. However, studies show that most people can't do it.

Sarah Everett at Rice University found that two-thirds of test voters didn't notice when 8 races disappeared entirely from their review screen.²

Ted Selker of the CalTech/MIT Voting Project listed 18 problems with VVPAT, including these problems that make it difficult for voters to verify: paper looks different, different format than DRE, separate thing to look at, extra time and step for voting, poor lighting and poor readability.³

¹ <http://vote.nist.gov/DraftWhitePaperOnSlinVVSG2007-20061120.pdf> "Requiring Software Independence in VVSG 2007: STS Recommendations for the TGDC", 11/2006.

² <http://www.wheresthepaper.org/SarahPEverettDissertation.pdf>, Everett, S. P. (2007). Doctoral dissertation, Rice University, Houston, TX. See especially, discussions on page 77 and 103.

³ <http://vote.nist.gov/speeches/3%20-%20Usability%20&%20Accessibility%20Panel/7%20-%20Selker.pdf>

Selker testified to Congress that in a study where test voters cast votes in 108 test elections in which the VVPAT contained errors, test voters found no errors in the VVPAT.⁴

2. Vendors supplied printers that didn't work.

The VVPAT idea assumed that, since printing technology has been perfected for over 100 years, VVPAT printers would work. However, vendors have supplied shoddy printers that produce high rates of unusable VVPATs. Selker listed some of the types of printer failures: connection broken, paper out, paper jam, ink out, and printer broken.

3. Election administrators won't hand-count the VVPAT.

In testimony to Congress on March 20, 2007, R. Doug Lewis, head of The Election Center, explained several reasons why auditing computer tallies by counting votes on VVPAT is not feasible.⁵ The time is too short between the end of an election and legal deadlines when election results have to be certified. Election Boards don't have the funds and staff to verify computer results by hand-counting.

There are other significant reasons. The receipt-like paper trail, which is on a continuous roll, is very difficult to tabulate by hand. Most important, Election Boards don't believe that they should have to do such work. They want voting equipment that they can trust without verification. They believe that computers can serve this purpose despite dozens of computer science studies and papers that provide thousands of pages of detailed explanations and examples that show otherwise.

4. The VVPAT is extraneous.

In DREs with or without VVPAT, the unverified, unverifiable electronic "votes" in computer memory are counted electronically, unobservably, for initial election-night tallies. Normally the VVPAT is not examined on election night or later, making it little more than a placebo.

Conclusion

VVPAT adds cost and complexity to DRE voting systems. VVPAT does not add to the observability of elections, nor ensure that outcomes result from the will of the voters. Even when a small percentage of VVPATs are hand-counted later, there is no assurance that voters verified them; in fact, evidence indicates that they probably didn't.

Technology is beneficial if it is used properly and for appropriate purposes. Computers are the wrong technology for use in elections because computers prevent observers from witnessing the handling and counting of votes. Even if DREs with VVPAT worked perfectly, their use undermines democracy and forces people to "trust but not observe or verify."

The offhand remark "we'll have the paper trail to recount if we need it" is not practically or legally sound. First, such paper needs to be secured by continuous observation by all parties between the close of polls and the recount, and second, assuming continuous observation, getting a hand-count to verify tallies requires a legal basis and financial resources that may be impossible to obtain. Optical scanner systems are better than DREs with VVPAT because voters create a first-hand record of their votes when they mark their paper ballot directly, but scanner systems suffer from the same problem that computer function needs to be verified but is not.

⁴ http://www.vote.caltech.edu/drupal/files/working_paper/vtp_wp31.pdf

⁵ www.wheresthepaper.org/HouseAdminTestimonyDougLewis3_20_2007.pdf