

# **All Threats**

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## **Taxonomy**

Any and all threats, both intentional and accidental, to the accuracy of the vote tabulation.

## **Applicability**

All voting systems that can export a ballot image file incorporating a 19 digit random character password in XML format and include a voter verified paper ballot such as DRE's with a ballot printer and Optical Scan.

## **Method**

An individual or group may accidentally or intentionally alter the accuracy of the vote tabulation.

## **Likelihood of Detection**

The likelihood of detection is very high because every voter would be able to confirm the accuracy of the vote tabulation.

## **Countermeasures**

### **Preventative Measures**

Separate the voting process from an open source, peer reviewed, unaltered copy of a generic vote tabulation software that allows each voter to confirm that their secret vote was accurately tabulated without allowing the voter to prove how they voted to an unauthorized third party. Election jurisdictions would obtain an unaltered copy of the vote tabulation software from the NIST software library.

### **Detection Measures**

Detection is the primary responsibility of the voter. Because each voter could detect that their vote was missing or altered, the chances that a perpetrator could alter an election undetected would be greatly diminished.

## Citations

WHITE PAPER: THE EROSION OF CONFIDENCE IN THE NATION'S VOTING  
PROCESSES AND A NEW SOLUTION TO ADDRESS THE PROBLEM

PREPARED BY DAVID BIDDULPH, DEVELOPER OF THE *PERFECT VOTING  
SYSTEM*, FOR THE U.S. ELECTION ASSISTANCE COMMISSION (EAC)  
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The Perfect Voting System (PVS) can be implemented on any electronic voting device that includes an accessible voter verified paper ballot and "stub." The printed ballot and stub could include a bar code, such as PDF 417, so that its contents could be viewed and "heard" via a bar code scanner and audio device.

### DESCRIPTION OF "THE PERFECT VOTING SYSTEM"

The heart of the PVS is a voter-verified paper ballot and "stub" or receipt, which includes a 19 digit random alpha-numeric character string. The size of the random alpha-numeric character string has been mathematically designed to reduce the odds of two independent computers producing the same character string in a ten million vote election to less than one in a hundred billion.

The first step is for the voter to make his or her selections on an electronic voting device or on a preprinted ballot, such as an optical scan or mail-in ballot. If the voter finds a mistake or changes his mind, the 19 digit random character string could be used to amend the ballot. Once the voter is satisfied that his ballot is accurate, he would be required to deposit it in a locked container (the same as with paper ballots and punch card ballots in past elections), then sign and retain the "stub" as his proof of having voted and his connection to a specific voter verified paper ballot.

The ballot and "stub" include the 19 digit random alpha-numeric character string, precinct number and -- in any jurisdiction using a direct recording electronic voting device (DRE) such as the now familiar touch-screen machine -- a machine number, date and time stamp. To maintain the secrecy of the ballot, the stub does not indicate the voter's ballot selections.

At the conclusion of voting, each precinct would download from each voting or tabulation device all the ballot summaries in an electronic database or spreadsheet format. The files would be forwarded to the jurisdiction's vote tabulation headquarters. In addition, the summary data from the "poll book," which lists the registered voters and contains the signatures of those who voted, along with a detailed list of voters casting ballots, would be forwarded to headquarters. The ballot and "poll book" data would be imported into the PVS vote tabulation database. The PVS vote tabulation database should

be hosted on a computer that is only accessible through the election jurisdiction's official secure intranet.

To ensure accuracy and voter confidence, the PVS would produce several critical error reports including:

- The number of votes cast in a precinct compared with the number of voters signed in on the "poll book."
- The number of votes cast in a precinct ranked from highest to lowest.
- The number of votes cast on a machine ranked from highest to lowest.

Once all the votes were entered into the PVS tabulation database, any voter would have the right to audit their vote. Simply by accessing a PVS enabled election system using 19-digit random character string printed on their ballot stub, they could view their ballot data and confirm it was entered as they voted and that it was counted exactly as intended. To eliminate the possibility of the PVS being used to verify a vote in "vote selling" scheme, the voter would be required to have their identity and ballot stub signature verified by an election official before privately viewing the secure PVS tabulation database.

The first screen a voter would see upon accessing the PVS vote tabulation database would be their own ballot summary. The voter can then select any contest and see how their vote was counted. They could also view all the other ballots cast but without the identify 19-digit random character string. A spread sheet of the entire jurisdiction, or any portion of it, could be viewed, but not printed. The names of all the voters who cast a ballot would also be accessible, but not their votes. Voters, for example, could see how their votes were counted by machine, precinct or for the entire election jurisdiction. Sub totals and totals could be checked. The names of neighbors who voted could be checked for accuracy. Media representatives, candidates, party official, campaign workers, and political scientists would be able to audit the PVS vote tabulation database.

If a voter believed their vote was missing or altered, they would have the right to view the paper ballot retrieved from the lock box of the precinct indicated on the stub and matching the 19-digit random character string. In the highly unlikely event that the PVS tabulation database is found to be in error, the voter-verified paper ballot would be used as the official record for any recount.

If the voter disputes that the ballot summary with the matching 19 digit random character string was actually theirs, forensic research could be used to prove or disprove that the ballot summary was only handled by the protesting voter.

## Retrospective

Despite numerous congressional hearings, enactment of new laws, and the expenditure of billions of dollars of federal, state and local government money for new voting systems and equipment, confidence in the America's voting systems is declining, instead of increasing as hoped for by the reforms that followed the 2000 election. In a recent survey of Georgia voters, for example, fewer than half the voters (48 percent) were "very confident" that their vote was counted accurately. That is down from 56 percent of voters who were "very confident" their vote was accurately counted in 2001, and after the state abandoned the discredited punch card system for touch-screen electronic voting machines. Even more alarming is that the level of confidence was only 33 percent among minority voters in the most recent Peach State Poll.

This represents only one example of the erosion of voter confidence in the election systems in place across the United States. In the 2004 election, for example, 32 states used some type of computerized voting. But according to the Verified Voting Foundation, a nonprofit, nonpartisan group in San Francisco, 1,700 complaints were filed.

A lack of confidence in the bedrock of our democratic system, and a failure to resolve voting system problems despite mandates and money from congress does not bode well for democracy in this country. In the view of David Biddulph, political activist and inventor, what has been missing from all the electoral reforms is the element of transparency. "There's more transparency in the country's lottery systems than in its voting system," he observed. For this reason he has developed a vote tabulation system that will make elections, in any jurisdiction in the country, as transparent and trustworthy as the state lotteries that collect and distribute billions of dollars with nary a dispute or question as to the legitimacy of the winners and losers.

Granted that more is at stake in our elections than in any lottery, the fact that people are more willing to accept a decision that they did not win a multimillion prize than they are the outcome of a gubernatorial election says a great deal about how people view the relative trustworthiness of the two processes.

To address this lack, and continuing decline, of confidence in the nation's electoral process, Mr. Biddulph has developed a vote tabulation system designed to make elections completely transparent to the citizens, media, political parties and candidates. In fact, it would result in a voting system as transparent as the lottery. Dubbed the "Perfect Voting System" (PVS), a patent pending business process, it would enable voters to confirm that their individual votes were counted exactly as they intended them to be.