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We, the undersigned, participated in a working meeting on vote tabulation audits hosted by the American Statistical Association (ASA) on October 23 and 24, 2009. We write to emphasize that future iterations of the Voluntary Voting System Guidelines (VVSG) should facilitate effective vote tabulation audits. We applaud the VVSG II's requirement for independent voter-verifiable records (IVVRs). This requirement is necessary to enable verification of election outcomes independently of the tabulation systems; it should be adopted as soon as possible. However, if election outcomes are to be verified efficiently, vote tabulation systems must meet requirements that go well beyond the draft VVSG 1.1.

Overview

Two key goals of vote tabulation audits are

i) To verify that the election outcomes implied by the reported vote totals are correct, and
ii) To provide data for process improvement: specifically, to identify and quantify various causes of discrepancies between voter intentions and the originally reported vote totals.

Difficulty in obtaining subtotals of the machine tallies to compare with manually-derived totals from small batches of ballots is a major problem. Efficient vote tabulation audits require – in addition to software-independent audit trails – timely, comprehensive, detailed, standardized, machine-readable subtotals of the votes as recorded by the vote tabulation systems. For greatest efficiency, individual ballot interpretations should be available to support emerging methods that audit at the ballot level (that is, batches of size 1) without breaching confidentiality.

Future VVSGs should contain audit-related requirements for all voting systems, designed in consultation with experts in election auditing, to ensure that the next generation of voting systems facilitate election audits.

Key areas for standards include:

- Usability of the paper record
- Comprehensive reporting of all important data elements
- Small-batch or individual ballot reporting capability
- Machine-readable, standard election result reporting formats, with support for standardized identification of contests and candidates, that facilitate aggregation for electoral contests spanning multiple jurisdictions
- Machine-readable, standard audit result reporting formats, including audit units selected and discrepancies found

Detail

A "batch" is a physically identifiable collection of paper records (or ballots) that is separately tallied in the electronic vote totals. Every vote record must be assigned to one and only one batch. Batches may be organized by geographic boundaries (e.g., one or more batches from the same precinct or polling place) or by other forms of proximity (e.g., batches formed from among ballots received at the same central location, or cast on the same early voting machine). Most currently used batches, such as whole precincts, are too large to support efficient audits. We strongly urge that voting equipment support collecting and reporting votes for arbitrarily many, arbitrarily small batches, down to individual ballots, in a standard, machine-readable format. Ballot confidentiality, however, must always be ensured.

Voter-verifiable records should meet usability standards. For instance, DRE voter-verifiable paper audit trails (VVPATs) produced on spools of thin, narrow paper can be difficult to handle and audit. Further research may be needed to determine appropriate standards. There should also be standards for digitizing and storing ballot-image data.

Voting system reports should facilitate accounting for each ballot accepted and the outcomes of every contest choice on each ballot. Reporting should capture rich information about accepted ballots, including:

- Batch identifier
- Precinct identifier
- Equipment used (e.g., make, model and machine serial number)
- Ballot style identifier
- Voting mode (e.g., early-vote, mail-in absentee, election day, provisional)
- Place of voting (e.g., physical location where the vote was cast or the mailed in ballot received)
- Whether the ballot is invalid or spoiled; and, for valid ballots, all votes recorded, undervotes and overvotes, for each listed contest.

Voting systems should make it easy to create detailed reports with subtotals by contest, by ballot batch, by precinct, or by scanner or tabulation machine.

One common, standardized data format is needed for reporting audit results, as well as initial election results. Implementation details are outside the scope of this letter; election auditing experts should participate in specifying these requirements.

In summary, we strongly recommend that the next version of the VVSG support auditing election outcomes by facilitating small-batch reporting in standardized electronic reporting formats, and usable voter-verifiable cast vote records.

The following individuals have endorsed this statement.*

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