

Auditing Elections

Douglas W. Jones*
University of Iowa

Post Election Audit Summit
October 26, 2007
Minneapolis, Minnesota

* Partial support from NSF Grant CNS-052431 (ACCURATE)

Summary

- Design for auditability is old
- Election auditing is an old idea

The Problem

- We just don't do it
- When we do it, we hobble the auditors
- Audits can do much more!

Design for Auditability is Old

- First Auditable Voting Machine
 - “... as the votes are counted as they are cast the total number can be ascertained rapidly and accurately at the close of the polls without the necessity of counting by hand the separate ballots, though this may be done as a check or verification should it be necessary or desirable.”
- First Direct-Recording system with VVPT
 - “... In this manner, we have a mechanical check on the tickets, while the ticket is also a check on the [mechanical] register.”

Design for Auditability is Old

- First Auditable Voting Machine
Jacob Myers, US Patent 415,548, Nov. 19, 1889
- First Precinct-Count Paper Ballot System
Urban Iles, US Patent 500,001, June 20, 1893
- First Direct-Recording system with VVPT
Joseph Gray, US Patent 620,767, Mar. 7, 1899

Election Auditing is an Old Idea

- Iowa
 - County Auditors run elections
- Miami-Dade County
 - Audit and Management Dept election audits
 - Discovered first problems with iVotronic
- California
 - 1% rule dates back to birth of Votomatic
 - No surprise, inventor was a major reformer

We Just Don't Do It

- What if the audit shows a problem?
 - Wouldn't that cause a crisis?
 - Wouldn't that destroy voter confidence?

We Just Don't Do It

- What if the audit shows a problem?
 - Wouldn't that cause a crisis?
 - Wouldn't that destroy voter confidence?
- Wouldn't it be better not to know?

We Just Don't Do It

- What if the audit shows a problem?
 - Wouldn't that cause a crisis?
 - Wouldn't that destroy voter confidence?
- Wouldn't it be better not to know?

NO

- These objections threaten democracy
- They result from short-term thinking

When we do it, we hobble the auditors

- Florida District 13, 2006
 - Early voting revealed “vote flipping”
 - Numerous reports of this on election day
- Audit focused on tabulation
 - “flipping” not subject of post election tests
 - human factors issues avoided

When we do it, we hobble the auditors

- “Audit Definition” for this conference

The audit of election results, conducted after the polls have closed and before certification, by performing manual counts of paper ballots and voter verified paper records in randomly selected units (e.g. precincts) and comparing them to the corresponding electronic or manual tallies, for the purpose of verifying the election result with a high level of confidence.

Audits Could Do Much More

- Post Certification Audits (cold audits)
 - Purpose: to evaluate election administration
 - Method: check all event logs for
 - **time of first vote cast**
 - **time of last vote cast**
 - **minimum inter-vote interval**
 - **frequency of pollworker intervention**
 - **number of ballots cast on each machine**
 - Automated log analysis tools would help!

Audits Could Do Much More

- Scanners save ballot images
- Some “endorse” (mark) ballots scanned
- Audit could
 - spot check random *ballots* against *images*
 - machine recount *all* scanned images
- Independence of recount matters
 - Harri Hursti's Votoscope is an example

Audits Could Do Much More

- In Florida District 13 in 2006
- If the event logs had recorded
 - voter goes back to change vote in *race*
 - time summary screen displayed
- Audit could have asked
 - was race for congress special?
 - did “vote flipping” occur uniformly?
 - how many voters check summary screens?
- In sum: Audit could gauge voter difficulty