

Paper versus Paperless

Paper is *not* a requirement.

Availability/Survivability is a requirement.

Integrity is a requirement.

Privacy is a requirement.

Accessibility is a requirement.

Manageability is a requirement.

Paper is a medium ... a detail.

Requirements

Requiring paper makes no sense.

Paper is a very poor proxy for integrity.

- There a paper-based systems with low integrity.
- There are paperless systems with high integrity.
- Requiring no paper makes no sense.

There are many possible uses for paper.

- Lack of paper can add complexity.
- Use of paper can improve manageability.

Two Sample Systems

- Enhanced DRE
- Enhanced OpScan

Enhanced DRE

- Use a DRE exactly as before.
- After selections are complete, give voter a (printed) receipt, ask one additional question ...
 "Do you want to cast this ballot?"
- If YES ... ballot is recorded and confirmation receipt is provided.
- If NO ... cancellation receipt is provided and new vote allowed.



Enhanced DRE (details)

- The initial receipt includes an encrypted ballot.
- All initial receipts are posted and used to compute and validate tally.



Enhanced OpScan

- Complete a ballot exactly as before.
- Insert ballot in scanner.
- Receive initial printed receipt.
- Scanner asks question ..."Cast, Modify, or Cancel?"
- CAST ... ballot is retained and confirmation receipt is provided.
- MODIFY ... return ballot to voter.
- CANCEL ... return ballot to voter with cancellation receipt.



Enhanced OpScan (details)

- The initial receipt includes an encrypted ballot.
- All initial receipts are posted and used to compute and validate tally.
- Scanner may display to voter its interpretation of ballot contents.
- Scanner prints its interpretation of ballot contents directly onto each cast ballot.



Tradeoffs

- Enhanced DREs provide good accessibility and E2E capabilities without requiring printing, collecting, storing, and other management of printed ballots.
- Enhanced OpScan has better survivability and compatibility with current systems.