Core Requirements and Testing
(Part 1)
Status Report

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Contents

• Casting
• Closing polls (focus on early voting)
• Counting
• Reporting
• Conformance clause (focus on classes)
• Wrap-up
Casting

Volume III Section 4.6
Overview

- Ballot activation
- General voting functionality
- Voting variations
- Recording votes
- Redundant records
- Respecting limits
EBMs

- EBM = Electronically-assisted Ballot Marker
- EBP = Electronic Ballot Printer, a subclass of EBM
- All EBMs support DRE-like interaction with voter
- Only EBPs support ballot activation
Other changes

• Retain no half-finished ballots (IEEE)
• Redundant records are for recoverability
  – Distinguished from independent records for auditability; see VVSG’05 I.C
  – Made compatible with VVSG’05 I.C
• Prohibition on counter overflow clarified and generalized
Options not standardized

- Merged ballot approach to open primaries
- Recall candidacy linked to recall question
Closing polls

Volume III Section 4.7
Early voting

- State model in Volume III Section 5.2
- Suspension of voting is not the same as close of polls
- Reopening the polls and early reporting are prohibited
- Ballot accounting, other procedures
Counting

Volume III Section 4.8
Overview

- Voting variations
- Ballot separation and rejection
- Paper jams
- Accuracy
- Consolidation
Ballot separation and rejection

- EBMs may encode write-ins in machine-readable form
- Harmonized rejection behaviors
- Enhancements to rejection behaviors
  - Shall be capable of rejecting overvotes and blank ballots without rejecting undervotes
  - Blank on one side (should be capable)
  - Marginal marks (should be capable)
- Rejection rate on conforming ballots
- “Voter’s choice” issue
Optical scanners, MMPB (1/2)

- MMPB = Manually-marked paper ballot
- Reliably detectable marks and non-marks
  - Vendor’s mark (shall detect as vote)
  - Standard mark (shall detect as vote)
  - No mark (shall detect as non-vote) – missing in draft, shall be added
- Marginal marks
  - Detection shall have no bias based on ballot position
  - Should be repeatable
Optical scanners, MMPB (2/2)

• “Ignore extraneous” made attainable (almost *)
  – Outside voting target (shall ignore)
  – Inside voting target, e.g. hesitation marks (should ignore)

• * To do: deal with obscured timing marks
Options not standardized

- Merged ballot approach to open primaries
- Recall candidacy linked to recall question
- Algorithms for counting scratch votes
- Algorithms for ranked order voting
Reporting

Volume III Section 4.9
Overview

• General reporting functionality
• Audit, status, and readiness reports
• Vote data reports
  – General functionality
  – Ballot counts
  – Vote totals
Major clarifications (Sept. 2005)

• Refactored requirements on vote data reporting
• Filled in missing details
  – Cast, read and counted
  – Reporting levels
• Logic model supplies precise definitions for overvotes and undervotes
• Every vote must be accounted for
What else is new

- Timestamp requirement
- Content of readiness reports
- Flag discrepancies (shall)
- Report blank ballots (should)
- Combined precincts (should)
Conformance clause

Volume III Chapter 2
Classes

Volume III Section 2.6
Origins

- 2002 VSS talks about “categories” of voting systems: paper-based, DRE, precinct count, central count
- Clarified in VVSG’05 conformance clause
- “Profiles” discussed at September 2005 TGDC meeting
The problem

- There are DRE devices, there are paper-based devices, and there are voting systems that may or may not contain either or both
- VSS requirements language “paper-based systems shall” is unclear about scope
  - EBM devices shall?
  - Systems that include EBM devices shall?
  - Optical scan tabulators shall?
  - What do you mean, exactly?
The solution

- Define the terms (DRE, EBM, etc.)
- Define the relationships between specific classes and more general ones
- Define the relationships between the parts (devices) and the whole (system)
- Scope requirements precisely
A class identifies

- a set of requirements in the VVSG, and
- the voting systems or devices to which those requirements apply.
Typical use

4.7-1  DRE, no CVRs before close of polls

DREs shall prevent access to cast vote records until after the close of polls.

Applies to: DRE

DISCUSSION

This does not apply to paper-based devices because the ballot is subject to handling beyond their control; however, a locked ballot box (per Requirement III.4.6-13.2 and Requirement III.3.1-10) serves the same purpose.
Precision is provided by

- the *Applies to:* field of requirements, which specifies the classes of systems or devices to which those requirements apply;
- the conformance clause, which specifies the relationships among classes; and
- the terminology standard, which defines terms such as “DRE.”
Uses of classes

- VVSG
- Implementation statement
- Conformity assessment
- Certification
- Declaration of conformity
- Request for proposals
Wrap-up
Unfinished business

- Requirements linking system and device levels
- Topics to be harmonized with STS and HFP
- Classification of optical scanners with respect to EBM-marked paper ballots vs. manually-marked paper ballots
- Shoulds that should be shalls
- Disposal of punchcard requirements
Future work

• Pre-voting requirements
• Standards on data to be provided
• Testing standard
• Terminology standard