Interoperability WG Update

John P. Wack, NIST
TGDC Meeting
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WG Details

- Main group:
  - Biweekly meetings
  - 160 members, overall good participation
  - Would welcome more input from EOs
- Subgroups:
  1. Cast Vote Records (CVR)
  2. Election Event Logging
  3. Election Process Models – **Kenneth Bennett**
  4. Election Results Reporting
  5. Voting Methods/Models – **Lauren Massa-Lochridge**
  6. Voter Records Interchange (i.e., Voter Registration)

High Level Principles/Guidelines - 1

- The voting system must provide for transparency.
  - The processes and transactions associated with the voting system must be easy for the public to understand and verify.
  - Voting system data must be easily accessed via imports/exports and reports.
  - Data reported by the voting system must be in a publicly documented format.
  - Data used in critical device operations such as for cast vote records, tabulations, and event logs must include elements necessary for verification of the data and analysis and auditability of the operations.

High Level Principles/Guidelines - 2

- The voting system must be scalable.
    - The system must provide sufficient technical and physical capacity to accommodate large and complex ballot styles, growing language needs, and large numbers of voters and precincts and consolidation of elections with local districts and municipalities.
    - The system must provide the ability to adapt to different election types, environments, and changing regulatory requirements.

High Level Principles/Guidelines - 3

- Components of the voting system must be interoperable.

  - Voting system data must be in an interoperable format that is common across manufacturers and documented for each device by the manufacturer.

  - Formats for other types of data must use industry standard formats, where applicable, but must use formats that are publicly available.

  - Components of voting systems must interoperate without the need to replace the entire system or undertake costly system modifications or impact security.

  - Widely used hardware interfaces and communications protocols must be used where possible.

Relevant Sections of the VVSGs

- Functional requirements for pre-election, election, post-election, especially
  - Data required for election programming
  - Reports generated pre- and post-election
- Election reports that overlap with security
- Event logging data
- Some hardware requirements
- Interoperability

Initial Gap Analysis

- Event logging updates for security, for common lexicon for more common event IDs
- CVR updates for adjudication and audit-related elements
- EMS updates for pre-election reports to include entire election programming, industry std. format for ballot styles, updates to election reporting
- New requirements for use of common data formats
- New requirements for interoperability and integrability

How Much Interoperability to Require?

- The goal is to make interoperability easier to achieve, but at the same time not prevent manufacturers from innovating or offering unified systems

- The CDF work largely makes this possible and gives manufacturers more freedom to design interoperable interfaces between functional areas of the voting system

- Mandating strict interoperability goes too far into design requirements, which we want to avoid

CDF Specifications Update

All specs are mature and nearing finalization

- **Cast Vote Records**
  - Very active, overlap with Cybersecurity to support ballot-level audits
  - Complicated due to edge cases and ranked choice voting support
- **Election Event Logging**
  - Updated with additional elements for Cybersecurity requirements
  - Creating common lexicon for the most commonly analyzed events
- **Election Results Reporting**
  - Potential meeting to update spec from 2016 experiences
  - NIST working on a JSON version
- **Voter Registration Interchange** (Voter Registration)
  - Under development for use in OH
  - Need to work with Census on updates to their postal addressing spec for odd sorts of addresses
 - Need to vet the updated FPCA form support and ERIC interchanges

Targeted Voting Devices/Functions
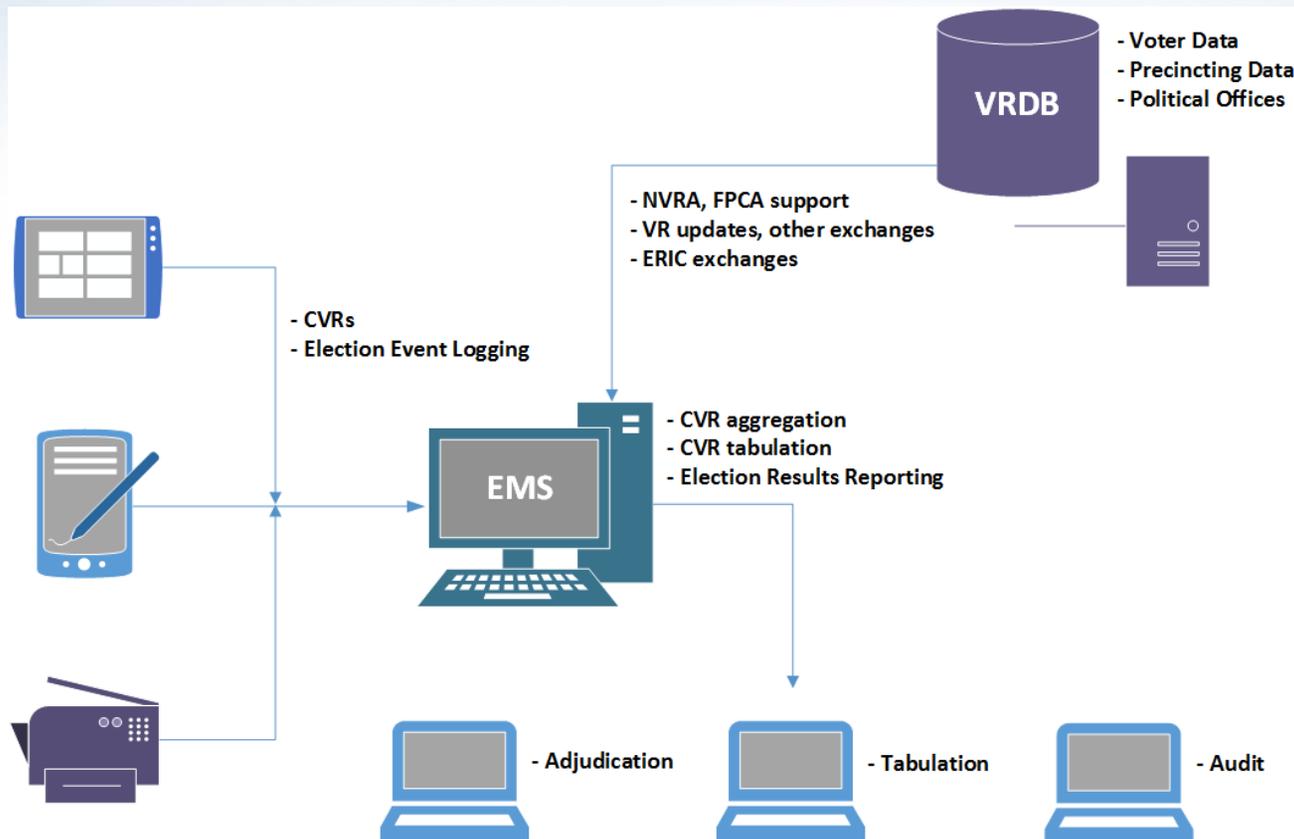
Voting Process Modeling Update

- A visual description of election business processes showing how they are nested and inter-related

- Meeting weekly, making very good progress

- Very close examination of tabulation and auditing processes, very useful for CVR definition and Cybersecurity

- Breakdown of processes shows boundaries between functional areas, creating opportunity for interoperability

Cast to Tabulate Functional Breakdown Showing Interoperable Boundaries
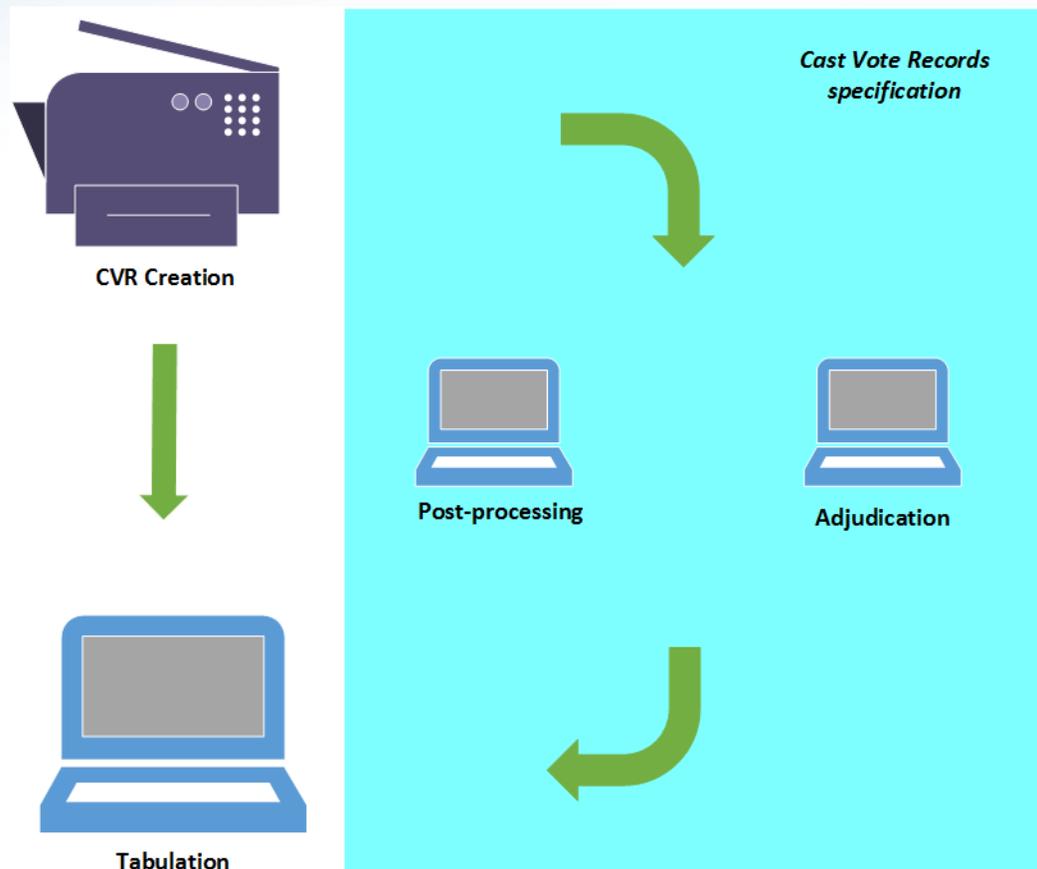
Voting Methods/Models Update

- Set of mathematical definitions of voting methods and tabulation in a human readable executable logic language and corresponding formulaic notation, plain language description

- Enables utility for L&A, validation, and auditing for common election processes

- Models and tabulation components can be referenced in RFPs as precise definitions of methods and tabulation

- Can be used to validate that systems conform to statute/legislation/local rules contractually

Voting Methods/Models Update

- Aim is to have initial set of voting methods and models by completion of next VVSG 1st draft

- Progress continues, much discussion recently on ranked choice voting, how it is implemented in various jurisdictions, how to break ties and other edge cases

- Group has worked with Cast Vote Records spec to ensure the format can be used as input to executable modules

What's Next

- Meeting to discuss and update election results reporting spec with lessons learned from 2016
  - Minor element updates
  - Restructure to reduce size, use JSON
- Finalize CVR, election event logging, VRI specs
- New specs:
  1. Candidate Registration DB
  2. Generic Ballot Style report for pre-election
- Glossary updates
- Requirements gap analysis

Decisions for the TGDC

- Is interoperability approach as it has been laid out here sufficient?

- Scoping issues, in particular
  - E-pollbooks
  - COTS devices
  - Voter registration

Thank you...

- Participation has been outstanding!
- Manufacturer participation very helpful
  - Major manufacturers especially involved
- Auditing community very involved
- Ranked choice voting (RCV) community very involved

- Would welcome more input from EO community

Discussion?