

Initial Use Case for Cast Vote Records

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This is a draft, initial use case for a cast vote record (CVR) export CDF specification. This specification is intended for those devices that capture or store or process a voter's cast vote record, including the following:

- Export from an electronic device such as a DRE or other type of vote-capture device/
- Export from scanners used to process voted paper ballots/
- Import to devices used for tabulation/
- Import to and export from devices used for auditing/

The scope is, at this point, limited purely to data typically found in cast vote records. The scope does not include additional reports such as summary reports or tabulation reports.

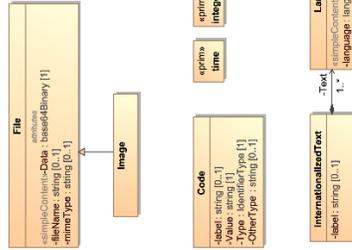
The data involved is as follows:

- **Date and time** of the generated report of cast vote records.
- An optional **digital signature** associated with the report.
- **Identification of the device:**
 - Manufacturer.
 - Model.
 - Serial number.
- **Identification of one or more elections**, each election being specific to a geographical location such as a precinct:
 - One or more optional codes used by the jurisdiction to identify the election.
 - The geopolitical geography corresponding to the election, e.g., precinct.
 - One or more cast vote records belonging to the election.
- The **cast vote records:**
 - **One or more optional codes** used by the jurisdiction for identifying the cast vote records.
 - **Identification of the political party** as applicable.
 - All **contests** that were on the ballot.
 - How each of the **ballot selections** for a given contest were **voted**.
 - An optional **summary of overvotes, undervotes, the total number of cast vote records, and number of write-ins**.
 - An optional identifier that could be used to **link the electronic cast vote record with a paper record** for purposes of auditing.
 - An optional AdditionalInfo element for holding **vendor-specific or other information** not explicitly identified thus far in the UML model.

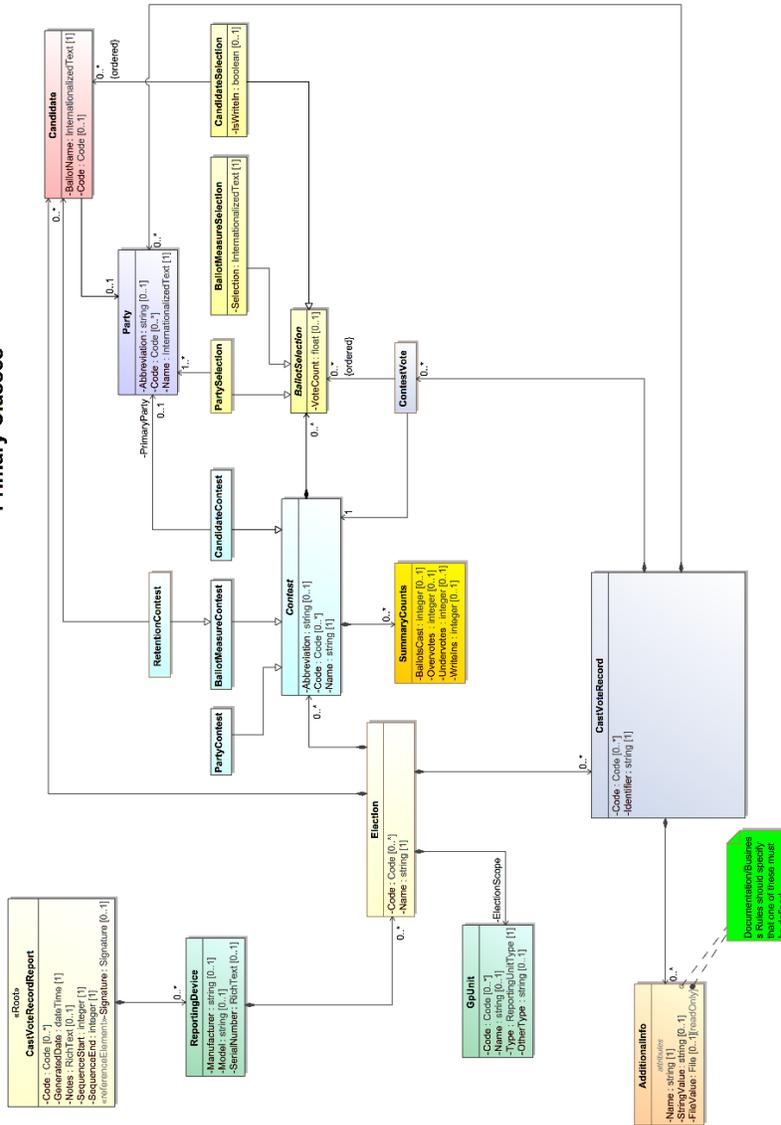
Enumerations



Secondary Classes



Primary Classes



Documentation/Busines
Rules should specify
Rules of these must
be sufficient

Figure 1- Strawman UML model

Initial UML/XML Strawman

The initial strawman UML model, shown in Figure 1, was derived from the NIST SP 1500-100 election results reporting model, thus it handles the same contest types and capabilities for different types of ballot selections. As well, contests, candidates, and parties can also be identified by codes, abbreviations, and names.

A report generated by CVR export would include, for a given device, all the cast vote records grouped by the election; election corresponds to the geographical scope of the ballots, that is, a precinct. For example, a DRE type device used in a vote center for multiple elections would generate a cast vote record report that would consist of multiple elections, each election consisting of however many cast vote records were recorded. Potential privacy violations would, of course, be possible for certain types of devices and very low numbers of cast vote records; this model does not include attributes to handle such privacy violations.

Security is an important consideration, and this model includes an optional digital signature element that would be used when generating a digital signature on the exported cast vote record report. There may be other security-related fields in a cast vote record report, however they have not yet been identified other than with the AdditionalInfo class, which can hold a file or string value. To the extent possible, vendor-specific fields should be generalized and added to the model with specific classes as opposed to using AdditionalInfo.

XML Structure

The strawman UML model was used to generate a sample XML schema, and XML exports of cast vote records would have the following structure:

- CastVoteRecordReport root element
 - Multiple device records, thus format can include CVR records from multiple devices
 - Multiple election records, one election record per precinct (or split-precinct or other political geographies)
 - Some information about the precinct (or split...)
 - Information about each contest on the ballot for that precinct, including the candidates in that precinct
 - Multiple CastVoteRecord elements, however many were recorded by the device for that election
 - Some information about the party associated with the ballot if it is a primary election
 - The ballot selections for each contest on the ballot and how they were voted