

NIST Common Data Format Project

John P. Wack

National Institute of Standards and Technology

Common Data Format (CDF)

- An Extensible Markup Language (XML)-based format designed around the needs of elections
- Used to communicate between voting devices, e.g.,
 - To export from a voter registration DB to any ePollbook
 - To export voted ballots from voting stations to any EMS
 - To export tabulated results from any EMS
- Goal is interoperability of data

Benefits of a CDF

- Anyone can build or sell a device; no manufacturer gets locked out of the market
- Election officials are empowered to buy whatever devices best suit their need
- Developers can write applications that make use of the CDF
- Elections can be audited and analyzed more easily
- Device certification is possible
- Voting equipment testing is easier
- The transparency of the equipment is greater and more trust of the equipment is possible

IEEE P1622

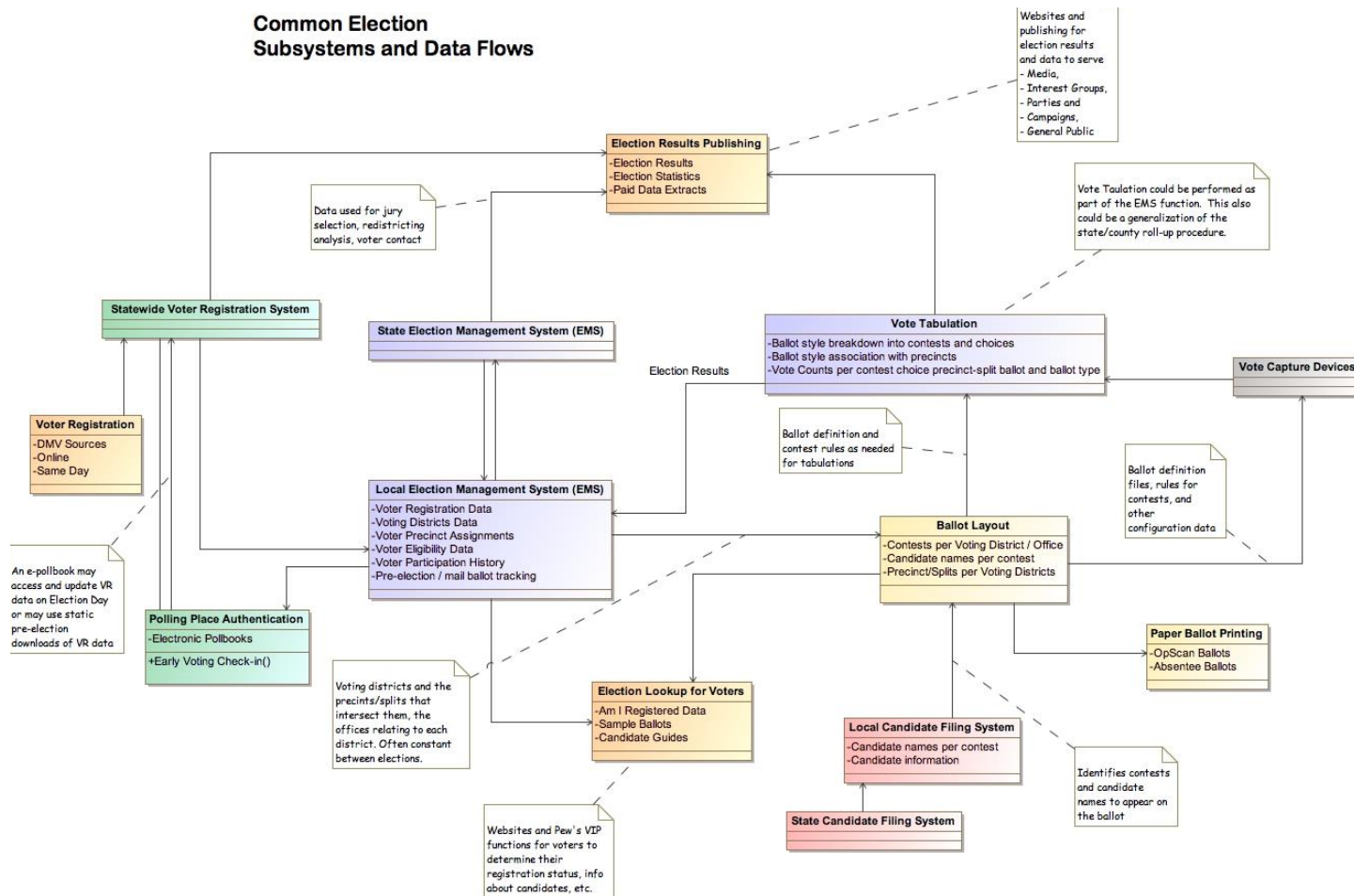
- Main goal: specify a standard or set of standards for a common data format for election systems
- Sponsoring Society: IEEE Computer Society/Standards Activities Board (C/SAB)
- NIST working with IEEE P1622 to develop a suite of CDF standards
- Based on an existing international standard, OASIS EML, but being adapted to specific US-election needs
- Available for free under sponsorship of the IEEE Standards Association
- Some IEEE interest in creating a committee over P1622 and additional working groups at P1622 level that would deal with other voting-related standards
 - Was proposed recently but requires more thought
 - NIST, EAC, others would need to discuss

NIST/IEEE/OASIS Strategy

- Work within P1622 and OASIS to produce 1622.x standards, reference them in VVSG updates
- Develop 'use case' standards that target slices of election data
 - UOCAVA blank ballot distribution for FVAP
 - Election results reporting
 - Audit data
 - Voter registration database export
 - Device logging
- NIST considering reference implementations for 1622.x testing to facilitate adoption and interoperability

Election Data Scope

Common Election Subsystems and Data Flows



Standards Structure

- Comprehensive parent standard
 - Glossary
 - Models
- Use case standards residing within
 - Description of use case (coverage of the standard)
 - Data model (UML) and elements descriptions
 - Annexes describe XML schemas and usage
 - UML could be used in generating additional formats as applicable, e.g.,
 - JSON
 - BSON

Why IEEE?

- A prior incarnation of P1622 was already making progress
 - Therefore, no need to start from scratch with a TGDC effort
- NIST has a strong history of working with and supporting other SDO efforts
- No current TGDC process was possible

Pros and Cons

- A standards committee gives more organizations a seat at the table than with the TGDC
- But, there are competing interests that have to be managed, thus progress can be slower
- Workload for NIST is roughly equivalent

Current Status

- UOCAVA blank ballot distribution standard Jan 2012
 - Assists the US DoD and election officials in making available electronic blank ballots to voters
 - Provides a CDF for describing ballot information and for identifying the correct ballot for a specified election
- Election results reporting draft Spring 2013
- Other use cases under discussion
 - Event logging
 - VRDB
 - Audit

For more information

<http://grouper.ieee.org/groups/1622>

John P. Wack
john.wack@nist.gov