UOCAVA and Common Data Format Activities Update

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TGDC Activities

- The TGDC approved the following documents for delivery to the EAC at their January 2011 meeting
  - Whitepaper on *Possible UOCAVA Pilot Projects for the 2012 and 2014 Federal Election*
  - The *Draft Accessibility and Usability Considerations for Remote Electronic UOCAVA Voting*
- The TGDC passed the following resolutions tasking its UOCAVA working group to
  - Develop high-level guidelines for remote electronic absentee voting systems
  - Develop guidelines for a demonstration project for military voters only
  - Prepare a narrative risk assessment comparing the current UOCAVA voting process to electronic absentee voting systems

TGDC Activities

- Draft High-Level Guidelines for UOCAVA Voting Systems
  - The high-level guidelines are aspirational and are intended to provide a broad and expansive starting platform from which lower-level guidelines can be developed for the remote electronic absentee voting demonstration project for military voters.
  - 30 high level guidelines covering the areas of voting functions, auditability, quality assurance, configuration management, reliability, availability, usability, accessibility, security, and interoperability
  - Completed draft will be presented at the July 2011 TGDC meeting for approval

TGDC Activities

- Draft Guidelines for Pilot Demonstration Project for Military Voters
  - Low-level guidelines for the remote electronic absentee voting demonstration project for military voters
  - Assumes voters have a Common Access Card and professionally-administered systems with appropriate accommodations
  - Assumes voters will be choosing between this method and other methods currently available to UOCAVA voters
  - Consideration should be given to the ability to extend the guidelines to a broader segment of the UOCAVA voting population
  - Initial draft completed December 2011

NIST Activities

- NISTIR 7770: Security Considerations for Remote Electronic UOCAVA Voting Systems
  - Final version released February 23, 2011
- Security best practices documents
  - *NISTIR 7682: Information System Security Best Practices for UOCAVA-Supporting Systems*
  - *NISTIR 7711: Security Best Practices for the Electronic Transmission of Election Materials*
  - Second round of public comments closed May 15, 2011
  - Documents finalized by July 2011

NIST Activities

- Secure ballot delivery workshop
  - Held in Chicago on March 23-24, 2011
  - NIST participate in the FVAP organized workshop
  - Discussed requirements for secure ballot delivery systems
- Common data format for blank ballot delivery systems
  - EAC, FVAP, and NIST worked with IEEE P1622 to modify OASIS election markup language (EML) to support blank ballot delivery
  - Draft finalized by Summer 2011

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 VRDB to an ePollbook
  - To export ballot configurations from an EMS to voting devices
  - To export voted ballots from voting stations to the EMS
  - To export tabulated results from an EMS
- Obviously, all must use the exact same CDF

Electronic Election Data

- Includes
  - Voter registration data base (VRDB) information
  - Ballot definition and presentation
  - Voted ballot information
  - Tabulated election results
  - Election management system (EMS) information
  - System logs, audit data
- Much of it in proprietary, disparate formats
- States must deal with non-interoperable systems by writing their own "glue" software
- Result is, difficult for states to use newer devices from different manufacturers because states are locked into current solutions

Potential Benefits of a CDF

- Voting devices from different manufacturers could interoperate
- An interoperable CDF could help automate testing, better constrain testing costs
- Could expand certification model to devices as opposed to entire system

Potential Benefits of a CDF

- Could provide more transparency and audit capability to device operations
- Election jurisdictions could share data more easily with other DB's, applications
- Could help bring potential manufacturers of specialty devices into the market
- Could open market to more manufacturers in general and empower election officials

Example from draft IEEE CDF standard for UOCAVA

- To assist FVAP and states in distribution of electronic blank ballots to overseas voters
- Provides a CDF for
  - VRDB exports of registration info for import into ballot distribution systems (BDS)
  - VRDB/EMS exports of ballot data for import into BDS
  - Facilitates constructing ballots prior to election or dynamically by a BDS
  - BDS exports for ballot tracking

What the VVSGs Say…

- VVSG 1.0, 1.1 have no CDF requirements
- VVSG 2.0 requires non-proprietary formats but not a common format for
  - Data exported/exchanged between systems
  - Election programming, export of cast vote records
  - Reports, audit data
- Has a SHOULD requirement: Manufacturers SHOULD use a common format across their product line and in general

Request from EAC

- EAC interested in interoperability
  - An interoperable CDF could help automate testing, better constrain testing costs
  - Could open market to more manufacturers
  - Could expand certification model to components
- Requests TGDC/NIST to develop CDF to assist Federal Voting Assistance Program (FVAP) for electronic blank ballot delivery
- Requests TGDC to reference a comprehensive CDF standard in VVSG 2.0, e.g., a private sector standard

IEEE P.1622

- Main goal: specify a standard or set of standards for a common data format for election systems
- Revitalized in 2010 with NIST involvement, NIST now vice-chair, editor of standard, secretary
- Sponsoring Society: IEEE Computer Society/Standards Activities Board (C/SAB)
- OASIS EML is now basis for the new standard
- Work underway on UOCAVA Blank Ballot Distribution standard
- More standards to follow to target other aspects of elections

OASIS EML

- OASIS (Organization for the Advancement of Structured Information Standards) EML (Election Markup Language)
- XML-based, comprehensive, global framework
- Has seen increasing use since previous P.1622, manufacturer support from Hart, ESS, Scytl, Dominion, others
- International framework, scoped also to address U.S. election environment
- OASIS working with P.1622 to produce an aligned IEEE/OASIS standard

NIST/IEEE/OASIS Strategy

- Work within P.1622 and OASIS to produce 1622.x standards, reference them in VVSGs
- Develop 'use case' standards that target slices of election data
  - UOCAVA blank ballot distribution for FVAP
  - Epollbooks
  - Event logging
  - Election reporting
- Could develop reference implementations for 1622.x standards to facilitate adoption, testing
- NIST/IEEE/OASIS to develop comprehensive CDF standard in 2012

Current Status

- UOCAVA blank ballot distribution standard in final stages of review
- Committee vote scheduled mid-June
- Final vote for adoption scheduled late July
- Work beginning on next use cases
  - VRDB export
  - Auditing and tabulation

Conclusions

- CDF needed to expand market, automate testing, run elections more efficiently
- NIST working with IEEE and OASIS currently using use case strategy
- Initial IEEE draft standard for UOCAVA in final review process
- Work proceeding on next use cases

Discussion