



Workshop on UOCAVA Remote
Voting Systems

OASIS Election & Voter Services
Technical Committee
Position Paper

Submitted 26 July 2010

Introduction

This paper is submitted in response to the call for papers for the workshop on UOCAVA Remote Voting Systems. It seeks to address the following topics from the full list of topics published for the workshop:

- Desired/required functional properties of UOCAVA remote voting systems;
- Risks associated with using the Cyber Infrastructures such as the Internet;
- Risks associated with remote electronic voting;
- Experiences with remote electronic absentee voting systems.

Challenges

On-line services are becoming an everyday occurrence and increasingly Government services are now available for remote, unsupervised situations. So the question is why cannot remote, unsupervised voting be similarly made available? All the conveniences that online services provide should surely be made available for voting. But there are many concerns raised purely because of the sensitivity of voting. We offer at Appendix B of our EML (Election Markup Language) v6.0 Specification document (see www.oasis-open.org/committees/document.php?document_id=38333&wg_abbrev=election) an assessment of these general concerns and risks and possible mitigations for them.

Since democracy was invented people have sought to “influence” the result of a vote. The goal has to be, should politicians and election officials decide to use e-enabled voting systems,

to reduce the risk that people will use the computer technology introduced into the process to “cheat” in new and interesting ways that were previously not available. In addition for UOCAVA voters the aim has to be to provide better simpler access to voting, along with the re-assurance of trust and security in the process.

People should be able to understand how the technology is handling their information and vote and have the means to independently verify that and hence be confident in and embrace the process.

To facilitate the understanding here we present the following brief comparison of online banking and online voting to illustrate why these are profoundly different conceptually and in practice and hence why there is not a one-size-fits-all solution for all types of on-line services. The key points to note are:

- It is all about verification and what a human is able to physically and tangibly know and prove compared to what a computer can make a human think they just saw happen;
- Anonymous voting and vote tallying is 180° opposite of banking where every transaction is tied to a specific customer/receipt/recipient;
- Anonymous voting requires that the voter cannot be identified and their specific vote known;
- Voter intimidation and vote selling are illegal.

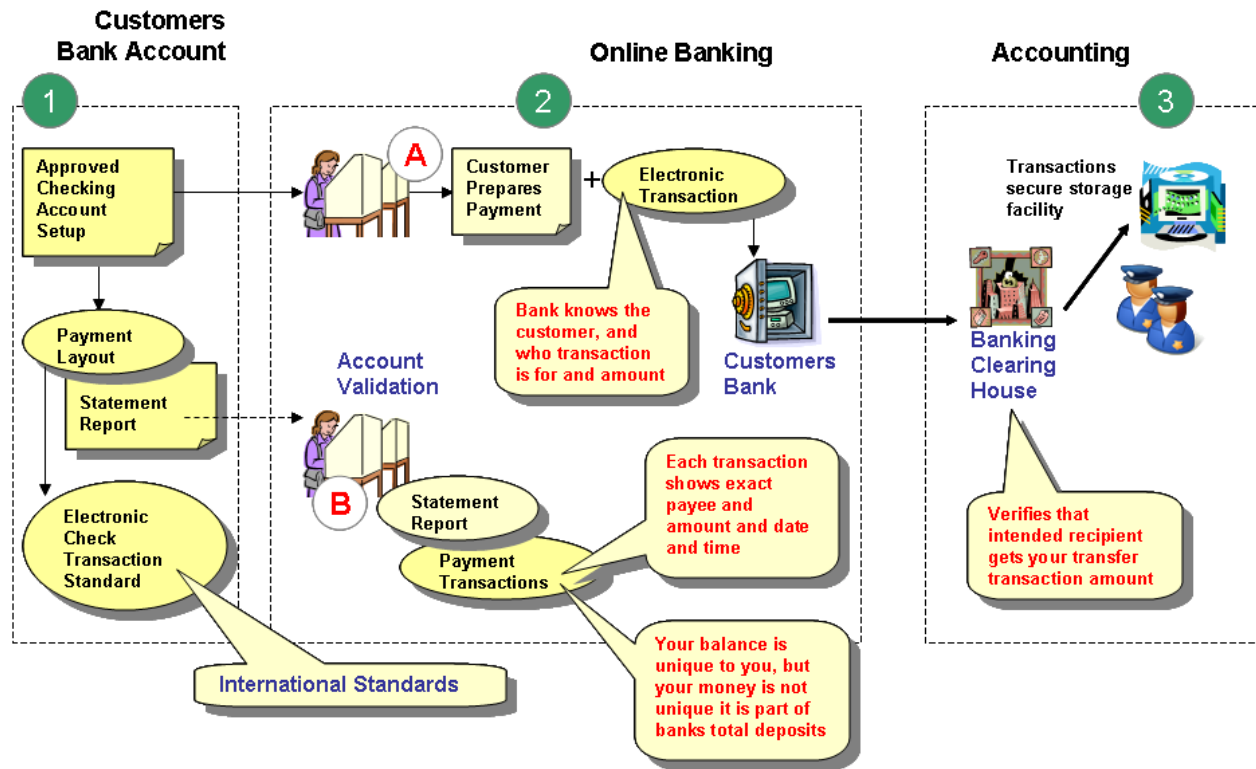


Figure 1 illustrating aspects of online banking

Then for comparison Figure 2 shows online voting.

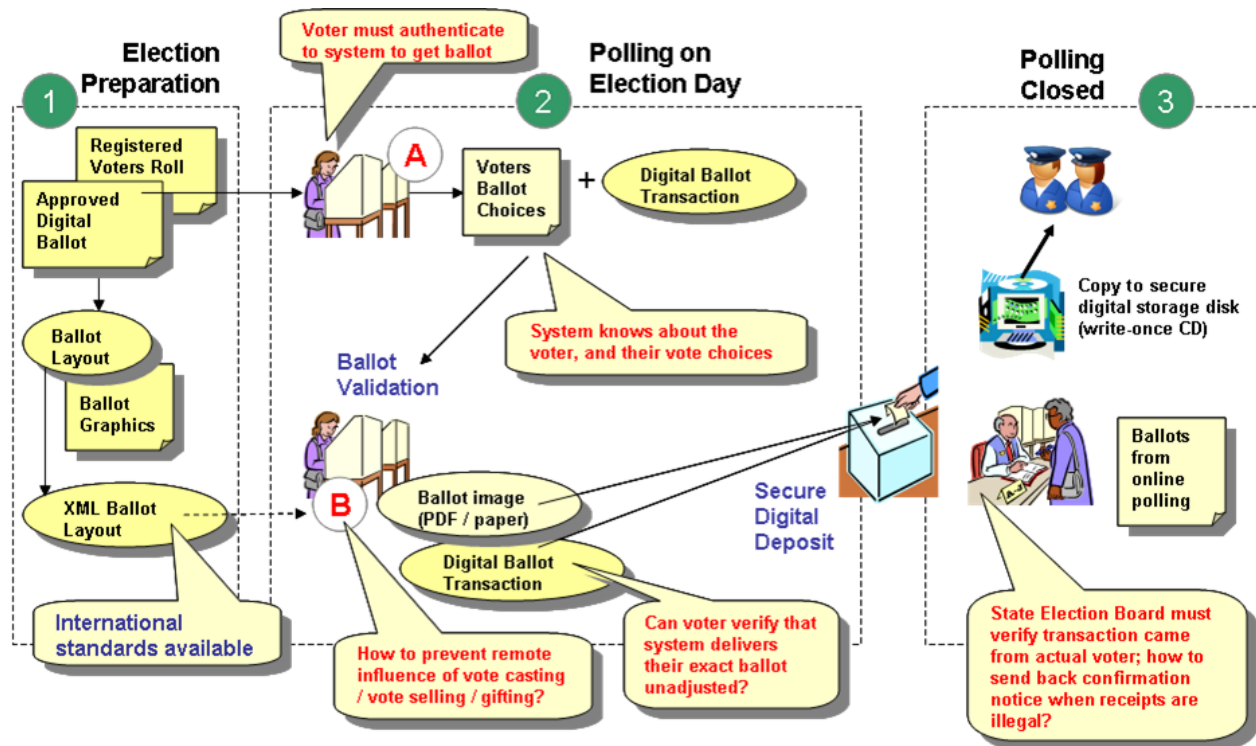


Figure 2 illustrating aspects of online voting

Key Functional Properties

In our experience the following are the key functional properties of a remote, unsupervised voting system. They are not necessarily in any order of priority.

- Election officials can determine that a submitted vote is associated with a unique right to vote (vToken), which has been issued in a way that it is disassociated from the individual voter;
- The voter can independently verify their ballot vote details;
- The election process has safeguards against a vote being sold, gifted or influenced; e.g. a voter can recast their ballot after the influence has been eliminated;
- A voter can verify that their actual ballot choices have been cast;
- Election officials can confirm ballots came from real voters physically submitting ballots and not computer emulation of voters;
- It is possible to conduct a full audit of the process.

The way that these functional properties are met, and indeed whether they are all appropriate or necessary for the UOCAVA environment, is not for us to attempt to dictate. Our role is to be able to provide the technical means to support whatever methods are used and we would be happy to demonstrate to EAC/FVAP/NIST how EML can support each of the functional properties listed above.

In support of this list of functional properties we would reference the Council of Europe Recommendation on standards for e-voting – see www.coe.int/t/dgap/democracy/Activities/GGIS/E-voting/Default_en.asp. These standards were drawn up by legal and operational experts and election officials and agreed by Ministers from all Member States of the CoE. EML supports all the standards set down in this Recommendation and we would suggest the

UOCAVA system adheres as closely as possible to this Recommendation.

Other Key Aspects of eVoting Systems

Transparency and Auditability are key electoral requirements. Using open interfaces can provide transparency of the whole voting process from the time the votes are cast to the final count. Full scale deployment of systems within an Electoral Assurance Framework incorporating standards provides:

- Secrecy of the voter and their vote;
- Transparency, verifiability and auditability of the whole election;
- “Comfort” to the voter.

An Electoral Assurance Framework:

- Provides for Accreditation, Assessment and Certification of electoral systems and services;
- Builds trust by enabling public verifiability of the whole voting process;
- Needs to be based on open standards;
- Provides standardised interface points where vote auditing processes can be independently assessed under the Assurance Framework.

The OASIS EML Standard

EML has been developed over a number of years as a standard for the structured interchange of data among hardware, software, and service providers who engage in any aspect of providing election or voter services to public or private organizations. The objective has been to introduce a uniform and reliable way to allow systems involved in the election process to interoperate. It incorporates the global experiences and knowledge of a wide range of election system practitioners and suppliers.

EML provides specifications that:

- Are an open, public, international standard;

- Provides a complete multi-lingual suite of election and voting management transactions;
- Ensures consistent representation of voter records, election, districts, ballots & votes;
- Supports verifiable transactions, including digital signatures and vTokens (voting entitlement/device) ;
- Have been used for all aspects of e-Voting

Experiences

We offer the following list as examples of current and recent remote voting pilots/systems:

France - remote voting for non-resident French citizens became available last year. A report is available at www.edemocracy-forum.com/2009/07/frencevoting2009.html#more

Holland – remote voting for non-resident Dutch citizens has been available over the last couple of years. See Section 7 of the report of the Second meeting to Review developments in the field of e-voting since the adoption of Recommendation Rec(2004)11 (Madrid, 16 October 2008) available at www.coe.int/t/dgap/democracy/Activities/GGIS/E-voting/Default_en.asp

Switzerland – various Cantons in Switzerland are in the process of conducting e-voting pilots, particularly for non-residents. A report on their activities is available at “National reports on developments in the field of e-voting” at www.coe.int/t/dgap/democracy/Activities/GGIS/E-voting/Default_en.asp

UK – the UK has conducted two series of e-voting pilots over the last few years and reports on both are available at www.justice.gov.uk/guidance/may2007electoralmodernisation.htm

Summary

Open standards are the base on which to build future e-enabled elections that will be trustworthy, open and creditable. Using consistent data and exchanging that at recognised interface points is essential for trusted elections. EML supports all election requirements known to us and is the only available international open standard that can meet the needs of elections officials and provide comfort to the voter.

In addition the following should be noted:

- EML provides a consistent verifiable way to represent an election digitally;
- EML enables public result reporting and auditing records;
- Remote, unsupervised voting services can be enhanced by using OASIS EML as it provides a range of proven supporting mechanisms.