Workshop on UOCAVA Remote Voting Systems

OASIS Election & Voter Services Technical Committee Position Paper

Submitted 27 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 government services are increasingly becoming accessible in remote, unsupervised situations. The question therefore is, "Can remote, unsupervised voting also be made available?" The benefits of such a convenience are clear, but the unique requirements and critical role of elections in democracy make implementation a challenge. We offer a general assessment of concerns, risks, and mitigation strategies in Appendix B of the Election Markup Language (EML) v6.0 Specification document (www.oasis-open.org/committees/document.php?document_id=38333&wg_abbrev=election).

Since democracy was invented, people have sought to influence the outcome of a vote. Should politicians and election officials decide to use e-enabled voting systems, an important goal must be to reduce the risk of cheating, especially in ways that are not available in non-electronic systems. In addition, for UOCAVA voters, the aim should also be to provide better, simpler access to voting, along with the re-assurance of trust and security in the process.

To build trust in a voting system people need to understand how their personal information and votes are handled. Moreover, the ability to independently verify the integrity of the system and accuracy of its results go a long way to building confidence in the system.

We present the following brief comparison of online banking and online voting to illustrate how they differ from each other 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.

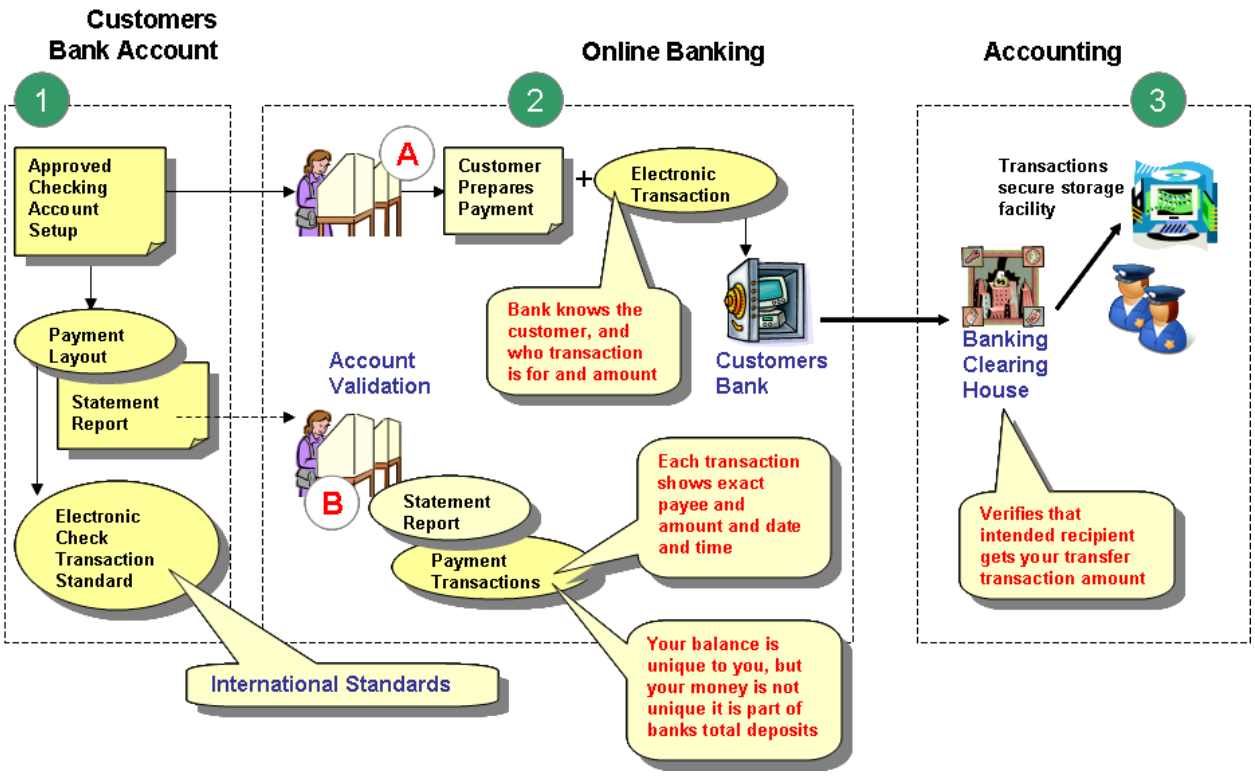

Figure 1 illustrating aspects of online banking

Then for comparison Figure 2 shows online voting.

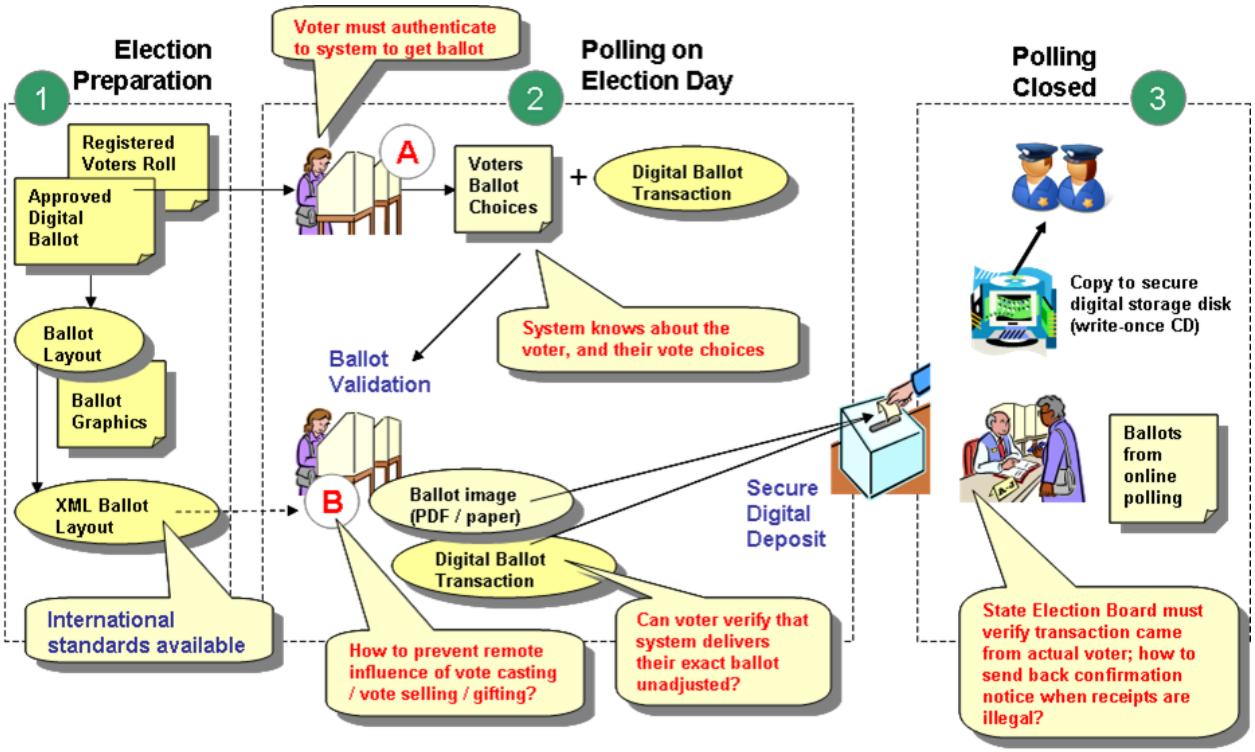

Figure 2 illustrating aspects of online voting

Key Functional Properties

In our experience the following should be the key functional properties of any 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.

For background on the functional properties listed above, we would reference the Council of Europe (CoE) Recommendation on standards for e-voting (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 from all the Member States of the CoE and then agreed to by their Ministers. EML supports all of the standards set down in this Recommendation and we would suggest that UOCAVA systems adhere as closely as possible to this Recommendation.

There are various ways that the above functional properties can be achieved and it is not for us to say whether they are all necessary in an UOCAVA environment. As a standards committee our role is to provide the necessary technical support for whatever methods are to be used. We would be happy to demonstrate to EAC/FVAP/NIST how EML can support each of the functional properties.

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 standardized interface points where vote auditing processes can be independently assessed under the Assurance Framework.

Further details on what constitutes an Electoral Assurance Framework are available in our White Paper "The Case for EML v2" (http://www.oasis-open.org/committees/tc_home.php?wg_abbrev=election).

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. These providers deliver election and voter services to public and 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 trustworthy, open, and creditable e-enabled elections. Using consistent data and exchanging that data 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 EML as it provides a range of proven supporting mechanisms.