

Electronic Voting

Review and Outlook on Transforming Elections
in the Age of the Internet

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Where are we now?



- History of Election Automation
- Status Quo
- Some Numbers
- Short Overview
- Outlook, Projects

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History



Five Stages of Election Administration Development

1. Turn of 20th Century: Development of first election automation machines – Werner von Siemens, Thomas Edison
2. After Second Worldwar: First ideas of nationwide instant electronic voting
3. 1970's: Development of Electronic Direct Recording Machines, legally binding

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4. 1990's: With Internet worldwide (trans)national remote electronic voting becomes possible.
First trials.
5. New Millennium (2006):
 - Debates get serious; Countries with full coverage of electronic voting machines
 - first multi-national recommendations/standards available and discussed in practice
 - first legally binding national remote electronic voting



1st Workshop 2004

40 Participants,

13 Countries (2 Continents),

14 papers (23 submissions), 182 pages Proceedings

2nd Workshop 2006

85 Participants,

25 Countries (4 Continents),

20 papers (45 submissions), 252 pages Proceedings

Aim



Bring together e-voting specialists out of academia, industry and administration to discuss

- Discuss all forms of electronic voting
- Formulate the interdisciplinary issues involved
- Discuss security requirements and testing
- Report on practical experience in implementing and conducting elections with electronic voting parts.

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What is E-Voting?



E-Voting is an election or referendum that involves the use of electronic means in at least the casting of the vote.

Environment \ Medium	Controlled	Uncontrolled	Counting Machines
Paper	Polling Place	Postal Voting	
Electronic	Stand-Alone Electronic Voting Machine	Remote Electronic Voting (PC, Cell Phone)	
	Networked Electronic Voting Machine		
	Networked Kiosk Electronic Voting		

How does E-Voting Work?



In General, E-Voting is based on the separation of

- Unique identification of the voter, and
- The casting of the vote, and keeping it secret

How to keep the voter anonymous?

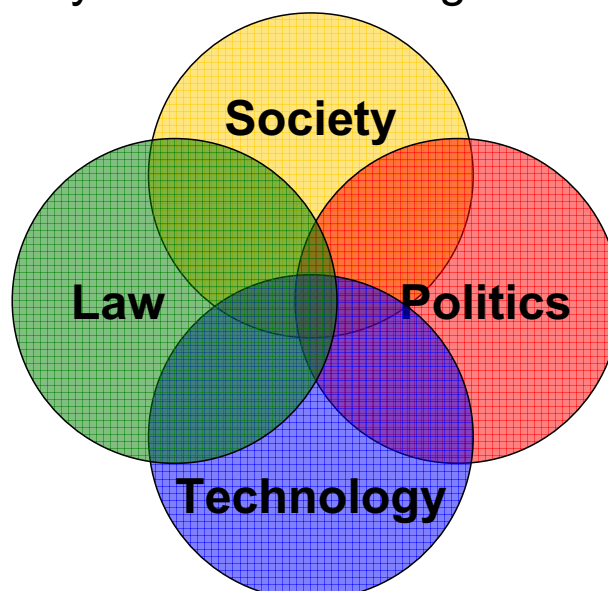
- Electronic Voting Machines: having separate machines for identification/vote casting
- Remote Electronic Voting: Cryptographic Algorithms like Blind Signatures, Homomorphic Encryption

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E-Voting Readiness 2006



- Developments around Europe are not uniform
- Multi-Disciplinary issue influencing development



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First Results



- Public Discussion about E-Voting in all examined Countries
- 80% of the countries research on E-Voting
- 20 countries already have experience with either private or political E-Voting
- 10 countries have had binding electronic voting
- 3 have binding internet voting experience
- Only **one** country has allowed for e-voting without preconditions for all elections (Estonia)

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Summary



- There is a trend towards electronic voting, but several different forms and not uniform
- Not enough evaluation of effects
- Trust in the systems by citizens is the big problem (Voter verifiability is must)
- Certification of systems is necessary but costly
- **More discussion is needed**
➔ **August 6th – 9th 2008**

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