E-vote 2011

2.1 E-voting



Case no: Version: Date: 10/9/09

E-vote 2011

Use case specification: 2.1 E-voting

Project: E-vote 2011



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1. Executive Summary

The system must facilitate a secure and user friendly environment for the submission of e-votes. The system shall guide the user through a set of steps where:

- 1. The voter is authenticated (See use case 9.1. authentication)
- 2. The system checks voter against the Electoral Roll
- 3. The system presents valid elections/referendums based on voter rights
- 4. The voter selects election/referendum options, makes adjustments and cast their vote
- 5. The system makes a mark off against the voter in the Electoral Roll and flags whether the vote has been cast in a controlled or uncontrolled environment
- 6. The vote is stored securely in the system

The voter shall be able to cast a vote any number of times within the voting period/phase. The voter must also be able to cast votes for any number of elections within a session.

The system shall notify voters that do not exist in electoral roll. The notification message shall describe the process for applying for membership in electoral roll. See use case 0.4 'Exception process for Electoral Roll' for the exception handling process.

2. Purpose

The purpose of this use case is to provide a secure, accessible and easy-to-use system for e-voting.

3. Actors

Actor	Comments
Voter	The voter who casts his/her vote.
ES	The Election System

4. Pre-Conditions

ID	Description	Comments
2.1.1	The voter must be connected to the Internet via a browser	





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2.1.2	The voter is authenticated in the system	See use case 9.1 'Authentication'
2.1.3	The Election/Referendum is configured	See use case 0.2 'Configuration of Election System'

5. Post-Conditions

ID	Description	Comments
2.1.4	The e-vote is securely stored in the system	The use case forms the basis for use case 3.4 'Counting of e-votes'.

6. Trigger

The need for casting an e-vote within the official voting period.



7. Main Flow - Functional Requirements





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7.1. General functional requirements

ID	Actor	Function (Requirement)	Requirement description	Ref
F 2.1.1	ES	Voter listed in Electoral	The system shall present valid elections/referendums to the voter based on their	E1
		Roll?	rights in the Electoral Roll.	
F 2.1.2	Voter	Select election	The voter must be able to select one of the elections/referendums presented by the	
			system. The voter must be able to vote any number of times and on any number of	
			elections/referendums without having to re-authenticate each time they cast a	
			vote.	
F 2.1.3	Voter	Select voting	The voter must be able to select vote options and make necessary adjustments	
		options/adjustments	before casting their vote. The voter shall be presented with a set of steps and	
			options depending on the configuration of the election/referendum (See use case	
			0.2 'Configuration of Election System' and 'Representation of the People Act').	
			Display of party lists must be random if parties are displayed to the user. The	
			system shall facilitate candidate search if the election is pre-configured to allow	
			for adjustments.	
F 2.1.4	Voter	Cast vote	The voter casts their vote	
F 2.1.5	ES	Store vote and make	The system makes a preliminary mark off against the voter in the Electoral Roll.	
		preliminary mark off	The system shall flag whether the vote has been cast in a controlled or	
		Electoral Roll	uncontrolled environment. Votes cast in a control environment overrides any	
			subsequent e-votes cast in an uncontrolled environment.	
			The system must store the vote securely in the system.	
F 2.1.6	ES	Notify voter	The system shall notify the voter that their vote has been cast	

7.2. Exception flow 1 – Voter does not exis (E1)

ID	Actor	Function (Requirement)	Requirement description
F 2.1.7	Election	Store exception	The system shall store the exception if the voter does not exist in the Electoral Roll and
	System		terminate the use case. The exception is handled in use case 0.3 'Electoral Roll'.
F 2.1.8	Election	Notify voter	The system shall notify voter that they do not exist in electoral roll. The notification message
	System	-	shall describe the process for applying for membership in electoral roll.



8. Non-Functional Requirements

8.1. Accessibility and usability

ID	Requirement description	Ref
2.1.5	See 'Accessibility and usability requirements'.	8.1

8.2. Security

ID	Requirement description
OS0.6	It shall not be possible to insert without proper authorization, delete or modify any votes in the Election System.
OS0.10	It shall be ensured that the election system presents an authentic ballot to the voter. If the vote is cast in an uncontrolled environment, the voter shall be informed about the means to verify that a connection to the official election system has been established and that the authentic ballot has been presented.
OS0.12	The solution for voting in an uncontrolled environment shall issue a message to inform the voter whether the vote has been successfully cast, i.e. is recorded properly in the election system, or not.
OS0.12b	The Election System shall provide the e-voter with 'end-to-end' proof that the cast vote is received, recorded and counted as the voter intended. NOTE: To conteract vote selling, this option may require a judicial process, where the confirmation that the vote is correctly counted is obtained in a controlled environment.
OS0.13	The election system shall ensure that the voter's choice is accurately represented in the vote and that the sealed vote is successfully stored.
OS0.16	To allow for delay in messages when passing over the election channel, the acceptance of electronic votes into the election system shall remain open for a configurable period of time after the end of the polling phase.
OS0.18	The voter can, at any time up to the point of vote casting, abort his polling process without losing his right to vote. The right to vote shall be retained, even in the event of a technically necessitated abort, for instance due to a timeout or errors during communication .
OS1.3	A voter shall only be able to vote in contests that he/she is entitled to vote in.
OS2.1	The e-voting components of he election system shall be configurable to require (re-)authentication for every contest, every vote or every session.

2.1 E-voting



During remote electronic voting, the voter authentication shall expire after an idle period (idle time-out). The length of the idle time-out period shall be configurable.
At no time shall votes be in clear text while a link exists between vote and voter in the ESD.
The message to the voter, when voting in an uncontrolled environment, confirming that the e-vote has been properly recorded in the election system, shall not reveal the content of the ballot in clear text and shall not reveal whether the e-vote will actually be counted or not.
Residual information holding the e-voter's decision or the display of the e-voter's choice shall be destroyed after the vote has been cast. When voting in an uncontrolled environment, the e-voter shall be provided with information on how to delete, where that is possible, traces of the vote from the device used to cast the vote (e.g. cookies).
If the vote is cast in an uncontrolled environment, the voter shall be informed about the means to verify that a connection to the official election system has been established and that the authentic ballot has been presented.
It shall not be possible during transfer in the network, or between system modules, to alter, delete or add vote records undetected
Even though the e-voting client domain may be under outsider control, the e-voting solution shall be such that it is not feasible for an outsider to systematically manipulate the votes without detection.
The election system shall supply the e-voter with a message whereby the voter can ascertain that the vote was recorded as intended. The message may be either out-of band or protected against outside manipulation. The message may contain one or more shared secrets provided to the voter prior to the e-voting phase of the election. The message shall be electronically signed by the election system, so false messages can be detected.
It shall be ensured that the election system presents an authentic ballot to the voter.

8.3. Rules & regulations

ID	Requirement description
2.1.6	This use case refers to regulations described in the Representation of the People Act (RPA) chapter 8 and 9.
	http://www.regjeringen.no/upload/KRD/Kampanjer/valgportal/Regelverk/Representation_of_the_People_Act170609.pdf
2.1.7	This use case refers to regulations described in the Representation of the People Act (the Election Act).
	http://www.regjeringen.no/upload/KRD/Kampanjer/valgportal/Regelverk/Representation_of_the_People_Act170609.pdf
2.1.8	This use case also refer to the Council of Europe e-vote Recommendation Rec(2004) 11.
	http://www.coe.int/t/dgap/democracy/activities/GGIS/E-voting/Key_Documents/Rec(2004)11_Eng_Evoting_and_Expl_Memo_en.pdf

8.4. Performance (frequency)

ID	Requirement description
Р	The system must be easy scalable for performance of this use case in peak hours. Figures are not available at the moment.
2.1.1	

8.5. Other non-functional requirements

ID	Requirement description	Comment
NF	The voter shall not receive message about previous votes at any step in the process.	
2.1.1		