Requirements Specification

Electronic Voting System

Group C

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Contents:

System Constraints

1 Purpose of the System

R 1.1	Voting in Ireland is currently done manually, i.e. Cast manually and tallied manually. This system according to numerous surveys is too slow and often leads to inaccurate results.
Purpose	The Irish Government wants to eliminate the inconvenience of voting and reduce the long term costs of running elections and referenda.

2 Goals of the System

R 1.2	Currently Irish citizens abroad are unable to vote during elections and referenda.
Purpose	To increase accessibility to voters
Fit Criteria	An online system will allow citizens to vote from any location.

R 1.3	It sometimes takes several re-counts and a number of days before the final results of an election are known.
Purpose	To increase the speed of calculating results
Fit Criteria	The electronic system will calculate results immediately at the end of the election/referendum.

R 1.4	The current system relies on the accuracy of human counters.
Purpose	Improve the accuracy of results
Fit Criteria	A properly implemented electronic system will give accurate results and remove human counting errors.

R 1.5	The voting cards of the current system need to be finalised well in advance of an election to allow for printing and distribution.
Purpose	To increase the flexibility of the system
Fit Criteria	The electronic voting system allows changes up until the beginning of the election/referendum.

R 1.6	The costs of printing voting cards and hiring staff for polling stations and people to count the votes in every constituency are very high.
Purpose	To reduce costs of running elections/referenda
Fit Criteria	The electronic system doesn't require any counters and will also make polling stations unnecessary.

3 The Client of the System

Who is paying for and will own the system?

The Irish Government

What happens if we don't solve this problem?

The current system will stay in use until an electronic one is designed and produced.

4 Users of the System

1 Adults (people over the age of 18) who are registered to vote
2 English or Irish speakers
3 Computer illiterate users
4 First time users
5 People with visual impairments (blindness)

5 Project Constraints

Mandated requirements of the system:
The project will meet legal requirements governing elections and referenda.

Functional and Data Requirements

6 Functional Requirements

R 5.1	The system should be easy to use.
Purpose	To allow all voters to vote without confusion
Fit Criteria	The system should allow a voter to vote in a minimal amount of time with a minimal amount of button pushes.
R 5.2	The system should be clear and easy to understand.
Purpose	To give voters confidence that they voted for whom they intended
Fit Criteria	This is done by using plain unambiguous language, both English and Irish.
R 5.3	Voters should be allowed spoil votes or partially complete ballot papers.
Purpose	To fulfil their democratic right to do so
Fit Criteria	The system allows casting of blank and uncompleted votes.
R 5.4	Voters should be allowed login as often as they wish until they vote.
Purpose	To allow undecided voters time to think
Fit Criteria	The system allows repeated logins before a vote is cast.
R 5.5	The system should be capable of calculating results for elections and referenda for each constituency, candidate and party.
Purpose	To make clear to all interested and involved the outcome
Fit Criteria	The system calculates results and allows the figures to be viewed for each referendum, constituency and candidate.
R 5.6	Voters should be able to vote with no training and knowledge of implementation of the system.
Purpose	To allow all voters equality in the voting procedure
Fit Criteria	The system requires no knowledge of implementation and a user guide will be provided with step by step simple instructions to give everyone an equal chance to vote.

R 5.7	Voters should only be able to vote during the designated election, referendum times.
Purpose	To ensure equal opportunity to all voters and accuracy of the result
Fit Criteria	The system doesn't allow voters to login outside election times.

R 5.8	Voters can vote only once.
Purpose	To ensure equal democratic say to all
Fit Criteria	Once a vote has been cast that voter is no longer able to login to the system.

R 5.9	Voters can only vote in one constituency.
Purpose	To ensure equal democratic say to all
Fit Criteria	Each voter is linked with one constituency only.

R 5.10	The system should be able to cater for any number of constituencies, candidates, referenda and voters.
Purpose	To maximise adaptability for future use
Fit Criteria	The system doesn't restrict the number of constituencies, candidates, referenda and voters.

R 5.11	The system should be adaptable for general elections, Presidential elections, local elections and referenda.
Purpose	To completely replace the current system in all elections both nationally and locally
Fit Criteria	The system allows general elections, Presidential elections and referenda. It can easily cater for local elections by using one constituency.

R 5.12	The system should not allow unauthorised access to the setup system.
Purpose	To maintain the integrity of all elections and referenda
Fit Criteria	The setup and results system is kept separate from the voter's web program and will be protected by a personal login.

Non Functional Requirements

6 Look and feel Requirements

R 6.1	The web layout should be clear and easy to understand.
Purpose	Not to confuse or inhibit the voter
Fit Criteria	See R 5.2

R 6.2	Error messages should be clear and easy to understand.
Purpose	To allow voters to see what they are doing wrong and rectify the problem easily

R 6.3	There should be no banners or colours, which are bias towards one party or candidate
Purpose	Not to influence the voters' decisions
Fit Criteria	The system does not display banners and all colours are neutral.

7 Usability Requirements

R 7.1	Error messages should be clear and easy to understand.
Purpose	See R 6.2
R 7.2	Voters should be able to vote with no knowledge of the implementation of the system.
Purpose	See R 5.6

8 Performance Requirements

R 8.1	The system should be available for testing.
Purpose	To verify its integrity and to increase user confidence
Fit Criteria	Testing documentation will be supplied and the system will be tested independently.

9 Operational Requirements

R 9.1	Voters must be registered before they can vote.
Purpose	To ensure that only eligible votes are considered and voters only vote once
Fit Criteria	A list of registered voters is held by the system and only these voters can vote.
R 9.2	The system should cater for general elections, Presidential elections, local elections and referenda.
Purpose	See R 5.11
R 9.3	The system should allow unlimited constituencies, candidates and referendums.
Purpose	See R 5.10

10 Maintainability Requirements

R 10.1	The system should keep track of all login attempts.
Purpose	The average number of login attempts per voter can be taken into account when setting a login attempt limit for future elections/referenda. See R 11.1

11 Security Requirements

R 11.1	The system should only allow each voter a fixed number of login attempts.
Purpose	A high number of attempts is likely to imply that someone is trying to login illegally thus compromising the integrity of the election result
Fit Criteria	The system will allow 5 attempts at logging in for each voter.
R 11.2	The system should use encrypted passwords.
Purpose	To increase the difficulty of “Hacking the system”
Fit Criteria	User pin numbers and passwords are encrypted.
R 11.3	Unauthorised personnel should not be able to access system setup terminals.
Purpose	See R 5.12

R 11.4	Voters should not be able to be linked with votes.
Purpose	The right to vote anonymously must be maintained. It also discourages coercion attempts and helps maintain the integrity of an election or referendum result.
Fit Criteria	The system doesn't hold the voter's name. It uses a voter number which is not allocated by the system. This voter number is not stored with any vote.

12 Political Requirements

R 12.1	There should be no banners or colours, which are bias towards one party or candidate.
Purpose	See R 6.3
R 12.2	Voters should be allowed to spoil votes, or only partially complete ballots.
Purpose	See R 5.3

13 Legal Requirements

R 13.1	The system should only allow a voter to vote once.
Purpose	Voters are only allowed to vote once by law
Fit Criteria	See R 5.8
R 13.2	The system should only allow voters to vote in one constituency.
Purpose	Voters are only allowed to vote in one constituency by law
Fit Criteria	See R 5.9
R 13.3	Voters should be allowed to spoil votes, or only partially complete ballots.
Purpose	See R 5.3, R 12.2
R 13.4	Voters should not be able to be linked with votes.
Purpose	This is one of the basic legal principles governing elections, also see R 11.4

Project Issues

14 Off the shelf solutions

Is there a ready made system that could be bought?

A number of countries have tried electronic voting. Each with different systems and differing amounts of success.

There is no suitable system for sale.

15 Cut Over

What special requirements do we have to get the existing procedures to work for the system?

R 15.1	We need voters to be issued with a pin number and password as well as their existing registered voter numbers.

16 User Documentation

R 16.1 A Systems Administrator User Manual will be produced to explain the setting up of elections and referenda as well as how to calculate the results.

R 16.2 A voter guide will be sent to all voters homes giving a simple step by step guide to using the electronic voting system.

17 Waiting Room

Requirements considered for future releases:

R 17.1 The system will be implemented in Irish.

R 17.2 The User Manuals will also be produced in Irish.

R 17.3 The setup and result program will be protected by a login system. See R 5.2

R 17.4 The system will use encrypted passwords. See R 11.2, R 17.3