

Modernity at what cost?

Submission to the Irish Independent Commission
on Electronic Voting and Counting at Elections

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Introduction

The Republic of Ireland is on the brink of setting a European precedent by using the Powervote/Nedap electronic kiosk voting system for local and European parliamentary elections on June 11th. It is this author's considered view that introducing such technologies into the Irish electoral system could well have disastrous consequences, undermining citizens' confidence in elected politicians.

Why e-voting is different

How could disastrous consequences emerge from what appears to be a simple modernisation program for election processes? One can bank with computers, hospitals and aeroplanes are run with computers, how on earth could this be any different? Voting is a uniquely difficult computer science problem because votes must be anonymous. The system needs to be sure that users haven't already voted and that they are allowed to vote but nobody can be allowed to discover how votes have been cast. Yet, for there to be high confidence in the results of an election, there must be opportunities to audit and recount the votes without compromising voter anonymity. This is in sharp contrast with online commerce where users surrender their personal data (address, email, credit card number) to help the merchant mitigate the risks of fraud.

The technical arguments against electronic voting are numerous and complex. This submission includes links to articles that detail those arguments. But their fundamental essence is simple: It is that introducing technology into voting creates a smokescreen between the counting process and stakeholders (politicians, voters etc.). Behind the clouds of smoke persons with privileged access (suppliers, returning officers) could be manipulating the results. Alternatively something may just be going wrong (rather likely with complex technology) which alters the election's outcome. Either way, malicious or accidental changes would be hard to detect as they would be encoded in electrons inside purring computers in some office building.

The communal act of voting

Voting is a communal, social process which reinforces citizens' faith in the story of representative democracy. This story's key act is the popular vote where all the

candidates, tellers, returning officers and observers can watch and scrutinise the collation and counting of votes. A system which displays a number on a screen at the press of a button does not create the same levels of confidence in the process that a communal approach does. Additionally, with electronic counting systems, recounts become meaningless, every time the count algorithm is run the same result will be returned.

Voter verifiability

A voting system must accurately record a voter's intention. So a choice for Party A must be counted as such. However electronic voting systems raise doubts about how accurately voter intentions are stored and counted. It is technically trivial to build a system which appears to the user to store a vote for Party A whilst actually storing and counting a vote for Party B. Due to the machines being quite literally black boxes it is impossible for the voter to be aware of such activity. Hence the vital call for voter verifiability which ensures that voters and candidates can check the accuracy of an election's result. The author co-wrote and launched the European resolution for voter verifiability (<http://www.free-project.org/resolution/>). At the time of writing this resolution has the support of nearly 600 people including MEPs, MPs and councillors as well as a broad range of technologist and academics.

The best example of voter verification is the use of a paper trail. This involves the voter being presented with a print-out of their vote which is stored in a ballot box. The paper can then be counted to check the electronic results' veracity. However the introduction of paper begs the question 'Why bother with e-voting?'. Indeed this author's opinion is that electronic voting is not worth the expense nor the risks to democracy that it entails. The electoral process would be better served by a paper-based system that is easy to check and that all citizens understand and trust.

But other countries are doing it?

A large number of countries are experimenting or using electronic technologies in various parts of their electoral processes. It is beyond the scope of this submission to summarise global e-voting activity but a few comments are worth making.

Firstly, there is an understandable desire for countries experimenting with e-voting to present their experiences in the best possible light and this must be taken into account when reading their reports. All the countries experimenting with electronic voting systems have had problems and have campaigns working against the use of voting technology. The UK pilots, on which this author can comment most knowledgeably, did not have sufficient monitoring in place to be sure whether the results were compromised or not. Essentially, as the Electoral Commission has admitted, it cannot be known what levels of fraud were experienced during the pilots.

Supporting Documents

To prevent repetition only the key arguments against the introduction of e-voting have been summarised in this submission. Provided below are the key articles and web pages from the free e-democracy project's work which the author recommends to the Commission.

E-Voting technology

- A non-technical overview of the arguments for and against e-voting are presented on our website:
<http://www.free-project.org/learn/>
- A summary article of the problems with e-voting, written for the Electoral Reform Society is available here:
http://www.free-project.org/writings/evoting_doesnt_work.html
- A more technical rebuttal to e-voting written for LinuxUser magazine:
<http://www.linuxuser.co.uk/articles/issue27/lud27-freestyle.html>

Voter verifiability

- Voter verifiability is explained with clear diagrams at:
<http://www.free-project.org/resolution/explain.html>
- The European resolution calling for voter verifiable e-voting can be found at:
<http://www.free-project.org/resolution/>

The UK Pilots

- “Uncertain Elections”, this author’s analysis of the UK’s 2003 e-voting pilots has been sent with this submission to the Commission. It is online at:
http://www.free-project.org/writings/uncertain_elections.pdf
- A brief analysis of the turnout figures for the 2003 e-voting pilots:
http://www.free-project.org/writings/2003_pilots_turnout.html

Conclusion

By placing the collective action of voting into a black box which neither candidates nor citizens can peer into, electronic voting presents a situation whereby results can be manipulated undetectably. Furthermore if allegations of fraud are made, without the inclusion of a paper audit trail, it is impossible for electronic systems to categorically reject such allegations. The result could be ‘lame duck’ politicians elected by tainted results which continue to be questioned long after the count has closed.

The proposed Powervote/Nedap system presents all these problems. It may well have problems specific to its design and implementation. However because the system is not open for review one cannot be certain. It is poor security practise to create security through obscurity, if a technology can be secure even when anyone can know exactly how it functions then it offers a high level of security indeed.

This author’s recommendation would be that no electronic voting or counting system whatsoever is implemented in the Irish electoral process. However if this proves to be politically impossible then at the very least a paper-based system of voter verification along with the regular public audit of the system’s design and implementation should be mandated.

Any less would be to risk undermining the democracy of which the Irish are deservedly proud.

The Author

Jason Kitcat is an e-government and e-democracy expert.

In 1999 he began developing the world's first Free Software Internet voting system, GNU.FREE. After 3 years' work he concluded that no matter which technical methods were used electronic voting was far too risky for public elections. He ceased development of GNU.FREE and began campaigning against the introduction of e-voting, receiving considerable media coverage.

He holds a joint BSc(Hons) in Computer Science & Management Science from the University of Warwick. He also read MSc Technology & Innovation Management at SPRU (Science & Technology Policy Research), University of Sussex where he is now a DPhil candidate examining the strengths and weaknesses of online consultation processes.

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