

# IRISH CITIZENS FOR TRUSTWORTHY E-VOTING

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Special Group on Public Service Numbers and Expenditure Programme

A Dhuine Uasal,

Irish Citizens for Trustworthy E-voting is an independent group of over 100 citizens, information technology and security practitioners, and legal professionals who are calling for any voting system which will be used in Ireland to include a voter-verified audit trail. ICTE and its members have previously made submissions to the Commission on Electronic Voting, and to the Democracy Commission, as well as having presented expert testimony to the Joint Oireachtas Committee on the Environment, Heritage and Local Government.

As you are considering the issue of the storage of the NEDAP electronic voting machines in Ireland, ICTE wish to highlight a small number of salient points;

**\*The Final Report of the Commission on Electronic voting makes 5 recommendations that involve modifications to, or replacement of, the e-voting machines.**

Recommendations R5, R6, R7, R9 and R10 [1] require physical hardware changes. Additionally, the commission also states that the e-voting machine hardware "*is not subject to any meaningful independent audit of its vote recording function*". [2]

Reinforcing this interpretation, the e-voting committee of the Irish Computer Society, the professional body for computer scientists in Ireland, has stated that; "*It is the unanimous view of the electronic voting committee of the Irish Computer Society that under no circumstances whatsoever should any electronic voting system be implemented which does not include a voter verified audit trail.*" [3]

**\*Subsequent to the Final Report of Commission on Electronic Voting, novel and actual attacks have been demonstrated on the NEDAP voting machines.**

Members of ICTE and "Wij vertrouwen stemcomputers niet" (A Dutch group who oppose untrustworthy e-voting) have demonstrated feasible and undetectable attacks on the same NEDAP voting machine hardware that is at issue in Ireland.

Reverse-engineering the software was straightforward, and a physical replacement of the software chip takes less than 1 minute [4]. In addition, passive eavesdropping attacks which allow remote attackers to determine what vote a voter cast, have also been demonstrated. The attacks formerly posited by experts have been realised and in October 2007 the District Court of Amsterdam de-certified NEDAP machines for use in the Netherlands.

As such, we believe that the issue of the NEDAP e-voting machines' suitability for use as-is is well-settled; they are not suitable for use and there is no record of any credible scientific opinion to the contrary. Because of this, we believe there are some important considerations in the issue of fully costing any alternative;

**\*Any costings of alternatives or modifications must include a voter-verified audit trail.**

Unfortunately the issue of a VVAT lay outside the terms of reference of the Commission on Electronic Voting. However it is the well-established consensus of the computer science community that a VVAT is necessary for the trustworthiness of the voting process. As the main issue of public debate, we do not

believe that confidence could be established in any system which lacks such an audit trail.

Additionally, ICTE has informed the Minister for the Environment, Heritage and Local Government that we will seek a judicial review of any order by the minister to use a system which lacks a VVAT, on the grounds that our constitutional right to democracy will lack basic safeguard.

**\*There are strong reasons to suspect that elections conducted with e-voting are more expensive to operate than paper elections.**

Although e-voting does have the potential for some savings, (less space and fewer people are used for actually counting votes), more staff (including more well-trained staff, external consultants, and an operator per-voting-machine) are required on the election day itself.

There is also reason to believe that the number of e-voting machines purchased for Ireland is not sufficient for an orderly election. E-voting machines were purchased roughly in parity with the number of ballot boxes. However the act of using a voting machine takes more time than placing a vote into a box, and is more analogous to the time spent at the voting booth.

As such, were e-voting to be trialled in Ireland as originally planned, considerable congestion may occur, necessitating the purchase of more e-voting machines.

**\* If an e-voting system is to be used, a cost/benefit analysis is necessary.**

There has, to date, been no published or public cost/benefit analysis of the systems, despite the recommendations of the Comptroller and Auditor General [5]. Many of the potential costs remain unaccounted for, and many of the potential benefits unrealised. A trustworthy e-voting solution would have the potential for greater accessibility and accuracy in elections; yet neither of these were elements of the NEDAP/Powervote system. In fact the proposed system may have decreased accessibility for the sight-impaired (owing to the small LCD screen). It would also have maintained, rather than eliminated (as would have been simpler), the random distribution of surpluses in our PRSTV counting system.

Finally, as information and communications technology decisions become a more prevalent component of public policy, we find it sobering to note that the concerns regarding the e-voting system in Ireland - which were validated by the reports of the Commission on Electronic Voting - were reported to the Joint Oireachtas Committee on the Environment, Heritage and Local Government by experts *before* [6] a contract with the vendor was signed [7].

Indeed, the same Committee corresponded with the relevant Minister, requesting that no expenditure occur, before withdrawing that recommendation at a subsequent closed-session meeting [8]. If what are essentially technical and scientific matters are to be well-served, such that further wastes of public money can be avoided, then there is scope for thought to be given to how such decision-making may be de-politicised in future.

If ICTE can be a source of any further assistance or clarification in the course of your inquiries, we will be more than pleased to provide whatever help we can.

Le gach dea ghul,

Colm MacCárthaigh,  
Secretary, Irish Citizens for Trustworthy E-voting.

## REFERENCES

### 1. Relevant recommendations from the Commission on E-voting:

R.5. *“Measures should be introduced to allow the authenticity of the hardware and software components of the system to be independently verified by operators and observers.”*

R.6. *“Enhanced controls should be implemented within the software and hardware to restrict access to the services of the system to authorised operators and voters.”*

R.7. *“Modifications to the hardware and software components of the system that are necessary to implement the above recommendations should be carried out.”*

R.9. *“Usability issues identified by the Commission concerning the interaction between voters and the voting machine interface and that may potentially affect secrecy or accuracy at elections should be addressed.”*

R.10. *“The security of sensitive election data (including votes) contained on ballot modules and CDs should be enhanced through the use of encryption (to maintain confidentiality of the data) and cryptographic signing (to protect against any attempted alteration).”*

### 2. Section 5.2 of the 2nd report of the Commission on Electronic Voting;

*“In either case, the paper ballots are retained by election officials, with the consequence that an election can be fully audited with reference to manual vote records if required, using printed ballots that voters have seen and approved as reflecting their intentions. While the paper ballots may not necessarily require to be referred to in this way in every case, such a requirement may arise from a contested result, or it may be a sample count that is audited as part of routine checks to ensure the system is working accurately.*

*Since the chosen electronic system does not have this facility, and while it does provide features to facilitate a degree of independent audit in its vote counting function, together with features that facilitate audit at the administrative level and confirmation of statutory compliance, it is not subject to any meaningful independent audit of its vote recording function. Thus the paper system is superior in this respect.”*

### 3. The Submission of the Irish Computing Society to the Commission on Electronic Voting;

<http://www.stdlib.net/~colmmacc/Fintan%20Swanton-ICS%20CEV%20Submission.doc>

### 4. Changing the ROMs of a Nedap e-voting computer in 60 seconds;

<http://www.youtube.com/watch?v=EowKaRT3lc>

### 5. Annual report of the Comptroller and Auditor General, 2004;

*“While it is acknowledged that the decision to move to electronic voting and counting was primarily influenced by factors other than cost, the project should have been subject to more rigorous cost/benefit analysis in view of the scale of the financial commitments involved.”*

### 6. 1st E-voting Hearings of the Joint Oireachtas Committee , 10th of December 2003;

<http://www.oireachtas.ie/documents/committees29thdail/jcelg/jcelg101203.rtf>

### 7. Contract with Powervote, 19th of December 2003. Dept. of The Environment, Heritage and Local Government.

### 8. 2nd E-voting Hearings of the Joint Oireachtas Committee , 18th of December 2003;

<http://evoting.cs.may.ie/Documents/jcelg181203.rtf>